

**FASSA EPOXY 300 COMP.A**

Varnostni list z dne 29/05/2025 revizija 3

**ODDELEK 1: Identifikacija snovi/zmesi in družbe/podjetja**

**1.1 Identifikator izdelka**

Identifikacija pripravka:

Komercialno ime: FASSA EPOXY 300 COMP.A

Komercialna koda: 1223

UFI: Q3QW-WAS1-C00X-AG4T

**1.2 Pomembne identificirane uporabe snovi ali zmesi in odsvetovane uporabe**

Priporočena uporaba: Epoksidna smola

Odsvetovane uporabe: Ni namenjeno za potrošniško uporabo

**1.3 Podrobnosti o dobavitelju varnostnega lista**

Dobavitelj FASSA Srl

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**1.4 Telefonska številka za nujne primere**

112 - Center za obveščanje (na voljo 24 ur)

**ODDELEK 2: Določitev nevarnosti**



**2.1 Razvrstitev snovi ali zmesi**

**Uredba (ES) št. 1272/2008 (CLP)**

Skin Irrit. 2	Povzroča draženje kože.
Eye Irrit. 2	Povzroča hudo draženje oči.
Skin Sens. 1A	Lahko povzroči alergijski odziv kože.
Repr. 1B	Ob stiku s kožo in zaužitju lahko zmanjša plodnost ali škodi zarodku.
Aquatic Chronic 2	Strupeno za vodne organizme, z dolgotrajnimi učinki.

Nevarnosti fizikalno-kemijskih lastnosti za zdravje ljudi in za okolje:

Ni drugih tveganj

**2.2 Elementi etikete**

**Uredba (ES) št. 1272/2008 (CLP)**

**Piktogrami za nevarnost in Opozorilna beseda**



Nevarno

**Stavki o nevarnosti**

H315	Povzroča draženje kože.
H317	Lahko povzroči alergijski odziv kože.
H319	Povzroča hudo draženje oči.
H360	Ob stiku s kožo in zaužitju lahko zmanjša plodnost ali škodi zarodku.
H411	Strupeno za vodne organizme, z dolgotrajnimi učinki.

**Previdnostni stavki**

P201	Pred uporabo pridobiti posebna navodila.
P261	Ne vdihavati prahu/dima/plina/meglice/hlapov/razpršila.
P273	Preprečiti sproščanje v okolje.
P280	Nadenite si zaščitne rokavice/obleke ter zaščitite oči/obraz.

P308+P313 PRI izpostavljenosti ali sumu izpostavljenosti: poiščite zdravniško pomoč/oskrbo.  
P391 Prestreči razlito tekočino.

Posebne oznake:

EUH205 Vsebuje epoksidne sestavine. Lahko povzroči alergijski odziv.

Vsebuje:

oksiran, mono[(C12-14-alkiloksi)metil]  
derivati

reakcijska zmes 2,2'-[metilenbis(4,1-fenilenoksimetilen)]dioksiran in 2-(2-[4-(oksiran-2-ilmetoksi)]fenoksi)oksiran in 2,2'-[metilenbis(2,1-fenilenoksimetilen)]dioksiran

bis-[4-(2,3-epoksipropoksi)fenil]propan

Posebne določbe v skladu s Prilogo XVII uredbe REACH in poznejše spremembe:

Nobeden

2.3 Druge nevarnosti

Ni snovi PBT, vPvB ali endokrinih motilcev v koncentraciji > = 0,1%.

Ni drugih tveganj

ODDELEK 3: Sestava/podatki o sestavinah

3.1 Snovi

ni znano

3.2 Zmesi

Identifikacija pripravka: FASSA EPOXY 300 COMP.A

Nevarne sestavine, skladno z Uredbo CLP in njeno razvrstitvijo:

Količina	Ime	Ident. št.	Razvrstitev	Registracijska številka:
≥20 - <30 %	bis-[4-(2,3-epoksipropoksi)fenil]propan	CAS:1675-54-3 EC:216-823-5 Index:603-073-00-2	Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1, H317 Aquatic Chronic 2, H411  Posebne mejne koncentracije: 5% ≤ C < 100%: Skin Irrit. 2 H315 5% ≤ C < 100%: Eye Irrit. 2 H319	01-2119456619-26-xxxx
≥10 - <20 %	reakcijska zmes 2,2'-[metilenbis(4,1-fenilenoksimetilen)]dioksiran in 2-(2-[4-(oksiran-2-ilmetoksi)]fenoksi)oksiran in 2,2'-[metilenbis(2,1-fenilenoksimetilen)]dioksiran	EC:701-263-0	Skin Irrit. 2, H315; Skin Sens. 1A, H317; Aquatic Chronic 2, H411	01-2119454392-40-xxxx
≥5 - <10 %	oksiran, mono[(C12-14-alkiloksi)metil] derivati	CAS:68609-97-2 EC:271-846-8 Index:603-103-00-4	Skin Irrit. 2, H315; Skin Sens. 1, H317; Repr. 1B, H360F	01-2119485289-22-xxxx
≥0.3 - <0.5 %	titanov dioksid	CAS:13463-67-7 EC:236-675-5 Index:022-006-00-2	Carc. 2, H351	01-2119489379-17-xxxx
≥0.3 - <0.5 %	reakcijska zmes etilbenzen, m-ksilen, p-ksilen	EC:905-562-9	Flam. Liq. 3, H226 Acute Tox. 4, H312 Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335 STOT RE 2, H373 Asp. Tox. 1, H304 Aquatic Chronic 3, H412  Ocena akutne strupenosti: ATE - Dermalno: 1100mg/kg tt ATE - Vdihavanje (Hlapi): 11mg/l	01-2119555267-33-xxxx
≥0.05 - <0.1 %	butanon	CAS:78-93-3 EC:201-159-0	Flam. Liq. 2, H225; Eye Irrit. 2, H319; STOT SE 3, H336, EUH066	01-2119457290-43-xxxx

≥0.05 - <0.1 % etil acetat	CAS:141-78-6 EC:205-500-4 Index:607-022-00-5	Flam. Liq. 2, H225; Eye Irrit. 2, H319; STOT SE 3, H336, EUH066	01-2119475103-46-xxxx
≥0.05 - <0.1 % 2-metoksi-1-metiletil acetat	CAS:108-65-6 EC:203-603-9 Index:607-195-00-7	Flam. Liq. 3, H226; STOT SE 3, H336	01-2119475791-29-xxxx
≥0.05 - <0.1 % Quaternary ammonium compounds, benzyl(hydrogenated tallow alkyl)dimethyl, chlori	CAS:61789-72-8 EC:263-081-3	Acute Tox. 4, H302; Skin Corr. 1B, H314; Eye Dam. 1, H318; Aquatic Acute 1, H400; Aquatic Chronic 1, H410, M-Chronic:1, M-Acute:10	01-2119970169-28-xxxx
≥0.005 - <0.025 % n-butil acetat	CAS:123-86-4 EC:204-658-1 Index:607-025-00-1	Flam. Liq. 3, H226; STOT SE 3, H336, EUH066	01-2119485493-29-xxxx
≥0.005 - <0.025 % Kristalni silicijev dioksid, kremen (vdihljiva frakcija)	CAS:14808-60-7 EC:238-878-4	STOT RE 1, H372	Izvezeti
≥0.005 - <0.025 % ksilen	CAS:1330-20-7 EC:215-535-7 Index:601-022-00-9	Flam. Liq. 3, H226 Acute Tox. 4, H312 Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335 STOT RE 2, H373 Asp. Tox. 1, H304	01-2119488216-32-xxxx
		Ocena akutne strupenosti: ATE - Dermalno: 1100mg/kg tt ATE - Vdihavanje (Hlapi): 11mg/l	
≥0.005 - <0.025 % etilbenzen	CAS:100-41-4 EC:202-849-4 Index:601-023-00-4	Flam. Liq. 2, H225; Acute Tox. 4, H332; STOT RE 2, H373; Asp. Tox. 1, H304	01-2119489370-35-xxxx

Opomba: kakršni koli podatki v stolpcu št. ES, ki se začnejo z „9“, so EC # Provisional List Number (začasna številka seznama), ki jo predloži ECHA do objave uradnega evropskega seznama snovi. Dodatne informacije o številki CAS snovi: reakcijska zmes etilbenzen, m-ksilen, p-ksilen: Naslednja snov je identificirana s številko CAS tako v državah, za katere ne veljajo Uredbe REACH, in v uredbah, ki še niso posodobljene z novimi nomenklaturami topil: CAS 1330-20-7.

## ODDELEK 4: Ukrepi za prvo pomoč

### 4.1 Opis ukrepov za prvo pomoč

V primeru stika s kožo:

Kontaminirana oblačila takoj slecite in jih na varen način odstranite.

V primeru stika s proizvodom in tudi v primeru suma morebitnega stika, dele telesa takoj umijte z veliko količino tekoče vode in milom.

Umijte celotno telo (tuširanje ali kopel).

V primeru stika z očmi:

V primeru stika z očmi dovolj dolgo in z odprtimi očesnimi vekami izpirajte z obilo vode, nato poiščite pomoč zdravnika oftalmologa.

Poškodovano oko zaščitite.

V primeru zaužitja:

Po zaužitju ne izzivati bruhanja, takoj poiskati zdravniško pomoč in pokazati varnostni list in nalepko.

V primeru vdihavanja:

Prizadeto osebo umaknite na svež zrak in pustite počivati na toplem.

### 4.2 Najpomembnejši simptomi in učinki, akutni in zapozneli

Simptomi in učinki so taki, kot je pričakovano glede na nevarnosti, kar je prikazano v 2. razdelku.

### 4.3 Navedba kakršne koli takojšnje medicinske oskrbe in posebnega zdravljenja

V primeru nesreče ali slabega počutja takoj poiščite zdravniško pomoč (če je mogoče, pokažite navodila za uporabo ali varnostni list).

## ODDELEK 5: Protipožarni ukrepi

### 5.1 Sredstva za gašenje

Ustrezna sredstva za gašenje:

CO<sub>2</sub>, gasilni aparat na prah, pena, pršenje z vodo.

Sredstva za gašenje, ki se jih iz varnostnih razlogov ne sme uporabljati:

Vodni curki

### 5.2 Posebne nevarnosti v zvezi s snovjo ali zmesjo

Pri gorenju nastajajo težki dimni plini.

Ne vdihavati pline, ki nastanejo pri eksploziji in/ali gorenju (ogljikov monoksid in ogljikov dioksid, dušikovi oksidi).

5.3 Nasvet za gasilce

- Uporabiti ustrezne dihalne naprave.
- Ločeno zberite kontaminirano vodo, uporabljeno za gašenje požara. Ne je izpustiti v kanalizacijo.
- Če je to varno izvedljivo, nepoškodovane vsebnike umaknite iz neposredno ogroženega območja.

ODDELEK 6: Ukrepi o nenamernih izpustih

6.1 Osební varnostní ukrepi, zaščitna oprema in postopki v sili

Za neizučeno osebe:

- Nosite osebno varovalno opremo.
- Osebe umaknite na varno mesto.
- Glejte v oddelku 7 in 8 navedene zaščitne ukrepe.

Za reševalce:

- Nosite osebno varovalno opremo.

6.2 Okoljevarstveni ukrepi

- Preprečite vstop v tla/podtalnico. Preprečite razlitje v površinske vode ali v kanalizacijo.
- V primeru puščanja plina ali razlitja v vodne tokove, tla ali kanalizacijo obvestite pristojne organe.

6.3 Metode in materiali za zadrževanje in čiščenje

- Za zbiranje primeren material: inerten vpojní materialí (npr. pesek, vermikulit).
- Po pobiranju z vodo izperite območje in prizadete materiale.
- Kontaminirano vodo za pranje shranite in odstranite.

6.4 Sklicevanje na druge oddelke

- Glejte tudi naslova 8 in 13

ODDELEK 7: Ravnanje in skladiščenje

7.1 Varnostni ukrepi za varno ravnanje

- Preprečite stik s kožo in očmi, vdihavanje hlapov in megle.
- Prazne vsebnike ne uporabite dokler niso očiščeni.
- Pred postopki prenosa se prepričajte, da v vsebnikih ni ostankov nezdružljivih materialov.

Nasveti o splošni higieni dela:

- Kontaminirana oblačila se mora pred vstopom v jedilnico zamenjati.
- Med delom ne jejte in ne pijte.
- Glejte tudi oddelk 8 o priporočeni varovalni opremi.

7.2 Pogoji za varno skladiščenje, vključno z nezdružljivostjo

- Posode hranite tesno zaprte na hladnem in dobro prezračevanem mestu proč od virov toplote.
- Hranite stran od hrane, pijač in krme.

Inkompaktibilne snovi:

- Glejte točko 10.5

Navodila za prostore:

- Primerno zračeni prostori.

7.3 Posebne končne uporabe

Priporočila

- Glejte točko 1.2

Specifične rešitve za industrijski sektor

- Nobena posebna uporaba

ODDELEK 8: Nadzor izpostavljenosti/osebna zaščita

8.1 Parametri nadzora

Mejne vrednosti za poklicno izpostavljenost

titanov dioksid

CAS: 13463-67-7	Tip OPZ	ACGIH	Dolgotrajna 0.2 mg/m3 Opombe: Nanoscale particles - A3 - (R) URT irr, Pneumoconiosis
			Dolgotrajna 2.5 mg/m3 Opombe: Finescale particles - A3 - (R) URT irr, Pneumoconiosis
	Tip OPZ	MAK	Avstrija Dolgotrajna 5 mg/m3; Kratkotrajna 10 mg/m3 Opombe: Respirable fraction
	Tip OPZ	MAK	Nemčija Dolgotrajna 0.3 mg/m3; Kratkotrajna 2.4 mg/m3 Opombe: Respirable fraction, except ultrafine particles , Multiplied by the material density
	Tip OPZ	VLEP	Belgija Dolgotrajna 10 mg/m3

Tip OPZ	VLEP	Francija	Dolgotrajna 11 mg/m3 Opombe: Inhalable aerosol
Tip OPZ	VLEP	Romunija	Dolgotrajna 10 mg/m3; Kratkotrajna 15 mg/m3
Tip OPZ	TLV	Bolgarija	Dolgotrajna 10 mg/m3
Tip OPZ	VLA	Španija	Dolgotrajna 10 mg/m3 Opombe: Inhalable fraction
Tip OPZ	SUVA	Švicar	Dolgotrajna 3 mg/m3 Opombe: Respirable aerosol
Tip OPZ	WEL	U.K.	Dolgotrajna 10 mg/m3 Opombe: Inhalable fraction
			Dolgotrajna 4 mg/m3 Opombe: Respirable fraction
Tip OPZ	GVI	Hrvaška	Dolgotrajna 10 mg/m3 Opombe: Inhalable fraction
			Dolgotrajna 4 mg/m3 Opombe: Respirable fraction
Tip OPZ	NDS	Poljska	Dolgotrajna 10 mg/m3 Opombe: Inhalable fraction
Tip OPZ	IPRV	Litva	Dolgotrajna 5 mg/m3
Tip OPZ	RV	Latvija	Dolgotrajna 10 mg/m3
Tip OPZ	NGV/KG V	Švedska	Dolgotrajna 5 mg/m3 Opombe: inhalable aerosol

reakcijska zmes etilbenzen, m-ksilen, p-ksilen

Tip OPZ	ACGIH		Dolgotrajna 20 ppm Opombe: A4, BEI - URT and eye irr, CNS impair
Tip OPZ	EU		Dolgotrajna 221 mg/m3 - 50 ppm; Kratkotrajna 442 mg/m3 - 100 ppm Opombe: Skin
Tip OPZ	MAK	Avstrija	Dolgotrajna 221 mg/m3 - 50 ppm; Kratkotrajna 442 mg/m3 - 100 ppm
Tip OPZ	MAK	Nemčija	Dolgotrajna 220 mg/m3 - 50 ppm; Kratkotrajna 440 mg/m3 - 100 ppm Opombe: Skin
Tip OPZ	VLEP	Belgija	Dolgotrajna 221 mg/m3 - 50 ppm; Kratkotrajna 442 mg/m3 - 100 ppm Opombe: Additional indication "D" means that the absorption of the agent through the skin, mucous membranes or eyes is an important part of the total exposure. It can be the result of both direct contact and its presence in the air.
Tip OPZ	VLEP	Francija	Dolgotrajna 221 mg/m3 - 50 ppm; Kratkotrajna 442 mg/m3 - 100 ppm Opombe: Skin
Tip OPZ	VLEP	Italija	Dolgotrajna 221 mg/m3 - 50 ppm; Kratkotrajna 442 mg/m3 - 100 ppm Opombe: Skin
Tip OPZ	VLEP	Romunija	Dolgotrajna 221 mg/m3 - 50 ppm; Kratkotrajna 442 mg/m3 - 100 ppm
Tip OPZ	TLV	Bolgarija	Dolgotrajna 221 mg/m3 - 50 ppm; Kratkotrajna 442 mg/m3 - 100 ppm Opombe: Skin
Tip OPZ	TLV	Češka	Dolgotrajna 200 mg/m3 - 45.4 ppm; Kratkotrajna 400 mg/m3 - 90.8 ppm Opombe: Skin
Tip OPZ	VLA	Španija	Dolgotrajna 221 mg/m3 - 50 ppm; Kratkotrajna 442 mg/m3 - 100 ppm
Tip OPZ	ÁK	Madžarska	Dolgotrajna 221 mg/m3; Kratkotrajna 442 mg/m3 Opombe: Skin
Tip OPZ	MAC	Nizozemska	Dolgotrajna 210 mg/m3 - 47.5 ppm; Kratkotrajna 442 mg/m3 - 100 ppm Opombe: Skin
Tip OPZ	VLE	Portugalska	Dolgotrajna 221 mg/m3 - 50 ppm; Kratkotrajna 442 mg/m3 - 100 ppm Opombe: Skin
Tip OPZ	SUVA	Švicar	Dolgotrajna 220 mg/m3 - 50 ppm; Kratkotrajna 440 mg/m3 - 100 ppm
Tip OPZ	WEL	U.K.	Dolgotrajna 220 mg/m3 - 50 ppm; Kratkotrajna 441 mg/m3 - 100 ppm Opombe: Skin
Tip OPZ	GVI	Hrvaška	Dolgotrajna 221 mg/m3 - 50 ppm; Kratkotrajna 442 mg/m3 - 100 ppm

				Opombe: Skin
butanon CAS: 78-93-3	Tip OPZ	AGW	Nemčija	Dolgotrajna 220 mg/m3 - 50 ppm; Kratkotrajna 440 mg/m3 - 100 ppm Opombe: Skin
	Tip OPZ	NDS	Poljska	Dolgotrajna 100 mg/m3; Kratkotrajna 200 mg/m3 Opombe: Skin
	Tip OPZ	MV	Slovenija	Dolgotrajna 221 mg/m3 - 50 ppm; Kratkotrajna 442 mg/m3 - 100 ppm Opombe: Skin
	Tip OPZ	IPRV	Litva	Dolgotrajna 221 mg/m3 - 50 ppm; Kratkotrajna 442 mg/m3 - 100 ppm Opombe: Skin
	Tip OPZ	ACGIH		Dolgotrajna 75 ppm; Kratkotrajna 150 ppm Opombe: BEI Skin - URT irr, CNS and PNS impair
	Tip OPZ	EU		Dolgotrajna 600 mg/m3 - 200 ppm; Kratkotrajna 900 mg/m3 - 300 ppm
	Tip OPZ	MAK	Avstrija	Dolgotrajna 295 mg/m3 - 100 ppm; Kratkotrajna 590 mg/m3 - 200 ppm Opombe: Skin
	Tip OPZ	MAK	Nemčija	Dolgotrajna 600 mg/m3 - 200 ppm; Kratkotrajna 600 mg/m3 - 200 ppm Opombe: Skin
	Tip OPZ	VLEP	Belgija	Dolgotrajna 600 mg/m3 - 200 ppm; Kratkotrajna 900 mg/m3 - 300 ppm
	Tip OPZ	VLEP	Francija	Dolgotrajna 600 mg/m3 - 200 ppm; Kratkotrajna 900 mg/m3 - 300 ppm
	Tip OPZ	VLEP	Italija	Dolgotrajna 600 mg/m3 - 200 ppm; Kratkotrajna 900 mg/m3 - 300 ppm
	Tip OPZ	VLEP	Romunija	Dolgotrajna 600 mg/m3 - 200 ppm; Kratkotrajna 900 mg/m3 - 300 ppm
	Tip OPZ	TLV	Bolgarija	Dolgotrajna 590 mg/m3; Kratkotrajna 885 mg/m3
	Tip OPZ	TLV	Češka	Dolgotrajna 600 mg/m3 - 200 ppm; Kratkotrajna 900 mg/m3 - 300 ppm
	Tip OPZ	VLA	Španija	Dolgotrajna 600 mg/m3 - 200 ppm; Kratkotrajna 900 mg/m3 - 300 ppm
	Tip OPZ	ÁK	Madžarska	Dolgotrajna 600 mg/m3; Kratkotrajna 900 mg/m3 Opombe: Skin
etil acetat CAS: 141-78-6	Tip OPZ	MAC	Nizozemska	Dolgotrajna 590 mg/m3 - 197 ppm; Kratkotrajna 900 mg/m3 - 300 ppm Opombe: Skin
	Tip OPZ	VLE	Portugalska	Dolgotrajna 600 mg/m3 - 200 ppm; Kratkotrajna 900 mg/m3 - 300 ppm
	Tip OPZ	SUVA	Švicar	Dolgotrajna 590 mg/m3 - 200 ppm; Kratkotrajna 590 mg/m3 - 200 ppm
	Tip OPZ	WEL	U.K.	Dolgotrajna 600 mg/m3 - 200 ppm; Kratkotrajna 899 mg/m3 - 300 ppm Opombe: Skin
	Tip OPZ	GVI	Hrvaška	Dolgotrajna 600 mg/m3 - 200 ppm; Kratkotrajna 900 mg/m3 - 300 ppm
	Tip OPZ	AGW	Nemčija	Dolgotrajna 600 mg/m3 - 200 ppm; Kratkotrajna 600 mg/m3 - 200 ppm Opombe: Skin 15
	Tip OPZ	NDS	Poljska	Dolgotrajna 450 mg/m3; Kratkotrajna 900 mg/m3 Opombe: Skin
	Tip OPZ	MV	Slovenija	Dolgotrajna 600 mg/m3 - 200 ppm; Kratkotrajna 900 mg/m3 - 300 ppm Opombe: Skin
	Tip OPZ	IPRV	Litva	Dolgotrajna 600 mg/m3 - 200 ppm; Kratkotrajna 900 mg/m3
	Tip OPZ	ACGIH		Dolgotrajna 400 ppm Opombe: URT and eye irr
	Tip OPZ	EU		Dolgotrajna 734 mg/m3 - 200 ppm; Kratkotrajna 1468 mg/m3 - 400 ppm
	Tip OPZ	MAK	Avstrija	Dolgotrajna 734 mg/m3 - 200 ppm; Kratkotrajna 1468 mg/m3 - 400 ppm
	Tip OPZ	MAK	Nemčija	Dolgotrajna 750 mg/m3 - 200 ppm; Kratkotrajna 1500 mg/m3 - 400 ppm
	Tip OPZ	VLEP	Belgija	Dolgotrajna 734 mg/m3 - 200 ppm; Kratkotrajna 1468 mg/m3 - 400 ppm
	Tip OPZ	VLEP	Francija	Dolgotrajna 734 mg/m3 - 200 ppm; Kratkotrajna 1468 mg/m3 - 400 ppm
	Tip OPZ	VLEP	Italija	Dolgotrajna 734 mg/m3 - 200 ppm; Kratkotrajna 1468 mg/m3 - 400 ppm
	Tip OPZ	VLEP	Romunija	Dolgotrajna 734 mg/m3 - 200 ppm; Kratkotrajna 400 mg/m3 - 1468 ppm
	Tip OPZ	TLV	Bolgarija	Dolgotrajna 734 mg/m3 - 200 ppm; Kratkotrajna 1468 mg/m3 - 400 ppm
	Tip OPZ	TLV	Češka	Dolgotrajna 700 mg/m3 - 191.1 ppm; Kratkotrajna 900 mg/m3 - 245.7 ppm
	Tip OPZ	VLA	Španija	Dolgotrajna 734 mg/m3 - 200 ppm; Kratkotrajna 1460 mg/m3 - 400 ppm

Tip OPZ	ÁK	Madžarska	Dolgotrajna 734 mg/m3; Kratkotrajna 1468 mg/m3
Tip OPZ	MAC	Nizozemska	Dolgotrajna 734 mg/m3 - 200 ppm; Kratkotrajna 1468 mg/m3 - 400 ppm
Tip OPZ	VLE	Portugalska	Dolgotrajna 734 mg/m3 - 200 ppm; Kratkotrajna 1468 mg/m3 - 400 ppm
Tip OPZ	SUVA	Švicar	Dolgotrajna 730 mg/m3 - 200 ppm; Kratkotrajna 1470 mg/m3 - 400 ppm
Tip OPZ	WEL	U.K.	Dolgotrajna 730 mg/m3 - 200 ppm; Kratkotrajna 1468 mg/m3 - 400 ppm
Tip OPZ	GVI	Hrvaška	Dolgotrajna 734 mg/m3 - 200 ppm; Kratkotrajna 1468 mg/m3 - 400 ppm
Tip OPZ	AGW	Nemčija	Dolgotrajna 730 mg/m3 - 200 ppm; Kratkotrajna 1460 mg/m3 - 400 ppm
Tip OPZ	NDS	Poljska	Dolgotrajna 734 mg/m3 - 200 ppm; Kratkotrajna 1468 mg/m3 - 400 ppm
Tip OPZ	MV	Slovenija	Dolgotrajna 734 mg/m3 - 200 ppm; Kratkotrajna 1468 mg/m3 - 400 ppm
Tip OPZ	IPRV	Litva	Dolgotrajna 500 mg/m3 - 150 ppm; Kratkotrajna 1100 mg/m3 - 300 ppm
Tip OPZ	RV	Latvija	Dolgotrajna 200 mg/m3 - 54 ppm; Kratkotrajna 1468 mg/m3 - 400 ppm

#### 2-metoksi-1-metiletil acetat

CAS: 108-65-6	Tip OPZ	EU	Dolgotrajna 275 mg/m3 - 50 ppm; Kratkotrajna 550 mg/m3 - 100 ppm Opombe: Skin
	Tip OPZ	MAK	Avstrija Dolgotrajna 275 mg/m3 - 50 ppm; Kratkotrajna 550 mg/m3 - 100 ppm Opombe: Skin
	Tip OPZ	MAK	Nemčija Dolgotrajna 270 mg/m3 - 50 ppm; Kratkotrajna 270 mg/m3 - 50 ppm
	Tip OPZ	VLEP	Belgija Dolgotrajna 275 mg/m3 - 50 ppm; Kratkotrajna 550 mg/m3 - 100 ppm Opombe: Additional indication "D" means that the absorption of the agent through the skin, mucous membranes or eyes is an important part of the total exposure. It can be the result of both direct contact and its presence in the air.
	Tip OPZ	VLEP	Francija Dolgotrajna 275 mg/m3 - 50 ppm; Kratkotrajna 550 mg/m3 - 100 ppm Opombe: Skin
	Tip OPZ	VLEP	Italija Dolgotrajna 275 mg/m3 - 50 ppm; Kratkotrajna 550 mg/m3 - 100 ppm Opombe: Skin
	Tip OPZ	VLEP	Romunija Dolgotrajna 275 mg/m3 - 50 ppm; Kratkotrajna 550 mg/m3 - 100 ppm
	Tip OPZ	TLV	Bolgarija Dolgotrajna 275 mg/m3 - 50 ppm; Kratkotrajna 550 mg/m3 - 100 ppm Opombe: Skin
	Tip OPZ	TLV	Češka Dolgotrajna 270 mg/m3 - 49.14 ppm; Kratkotrajna 550 mg/m3 - 10.01 ppm Opombe: Skin
	Tip OPZ	VLA	Španija Dolgotrajna 275 mg/m3 - 50 ppm; Kratkotrajna 550 mg/m3 - 100 ppm Opombe: Skin
	Tip OPZ	ÁK	Madžarska Dolgotrajna 275 mg/m3; Kratkotrajna 550 mg/m3
	Tip OPZ	MAC	Nizozemska Dolgotrajna 550 mg/m3 - 100 ppm
	Tip OPZ	VLE	Portugalska Dolgotrajna 275 mg/m3 - 50 ppm; Kratkotrajna 550 mg/m3 - 100 ppm Opombe: Skin
	Tip OPZ	SUVA	Švicar Dolgotrajna 275 mg/m3 - 50 ppm; Kratkotrajna 275 mg/m3 - 50 ppm
	Tip OPZ	WEL	U.K. Dolgotrajna 274 mg/m3 - 50 ppm; Kratkotrajna 548 mg/m3 - 100 ppm Opombe: Skin
	Tip OPZ	GVI	Hrvaška Dolgotrajna 275 mg/m3 - 50 ppm; Kratkotrajna 550 mg/m3 - 100 ppm Opombe: Skin
	Tip OPZ	AGW	Nemčija Dolgotrajna 270 mg/m3 - 50 ppm; Kratkotrajna 270 mg/m3 - 50 ppm
	Tip OPZ	NDS	Poljska Dolgotrajna 260 mg/m3; Kratkotrajna 520 mg/m3 Opombe: Skin
	Tip OPZ	MV	Slovenija Dolgotrajna 275 mg/m3 - 50 ppm; Kratkotrajna 550 mg/m3 - 100 ppm Opombe: Skin
	Tip OPZ	IPRV	Litva Dolgotrajna 250 mg/m3 - 50 ppm; Kratkotrajna 400 mg/m3 - 75 ppm Opombe: Skin
	Tip OPZ	RV	Latvija Dolgotrajna 275 mg/m3 - 50 ppm; Kratkotrajna 550 mg/m3 - 100 ppm Opombe: Skin

#### n-butil acetat

CAS: 123-86-4	Tip OPZ	ACGIH	Dolgotrajna 50 ppm; Kratkotrajna 150 ppm Opombe: Eye and URT irr
	Tip OPZ	EU	Dolgotrajna 241 mg/m3 - 50 ppm; Kratkotrajna 723 mg/m3 - 150 ppm

Tip OPZ	MAK	Avstrija	Dolgotrajna 241 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 480 mg/m <sup>3</sup> - 100 ppm
Tip OPZ	MAK	Nemčija	Dolgotrajna 480 mg/m <sup>3</sup> - 100 ppm; Kratkotrajna 960 mg/m <sup>3</sup> - 200 ppm
Tip OPZ	VLEP	Belgija	Dolgotrajna 238 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 712 mg/m <sup>3</sup> - 150 ppm Opombe: Butylacetates, all isomers
Tip OPZ	VLEP	Francija	Dolgotrajna 241 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 723 mg/m <sup>3</sup> - 150 ppm
Tip OPZ	VLEP	Italija	Dolgotrajna 241 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 723 mg/m <sup>3</sup> - 150 ppm
Tip OPZ	VLEP	Romunija	Dolgotrajna 241 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 723 mg/m <sup>3</sup> - 150 ppm
Tip OPZ	TLV	Bolgarija	Dolgotrajna 241 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 723 mg/m <sup>3</sup> - 150 ppm
Tip OPZ	TLV	Češka	Dolgotrajna 241 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 723 mg/m <sup>3</sup> - 150 ppm
Tip OPZ	VLA	Španija	Dolgotrajna 241 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 723 mg/m <sup>3</sup> - 150 ppm
Tip OPZ	ÁK	Madžarska	Dolgotrajna 241 mg/m <sup>3</sup> ; Kratkotrajna 723 mg/m <sup>3</sup>
Tip OPZ	MAC	Nizozemska	Dolgotrajna 241 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 723 mg/m <sup>3</sup> - 150 ppm
Tip OPZ	SUVA	Švicar	Dolgotrajna 240 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 720 mg/m <sup>3</sup> - 150 ppm
Tip OPZ	WEL	U.K.	Dolgotrajna 724 mg/m <sup>3</sup> - 150 ppm; Kratkotrajna 966 mg/m <sup>3</sup> - 200 ppm
Tip OPZ	GVI	Hrvaška	Dolgotrajna 724 mg/m <sup>3</sup> - 150 ppm; Kratkotrajna 966 mg/m <sup>3</sup> - 200 ppm
Tip OPZ	AGW	Nemčija	Dolgotrajna 300 mg/m <sup>3</sup> - 62 ppm; Kratkotrajna 600 mg/m <sup>3</sup> - 124 ppm
Tip OPZ	NDS	Poljska	Dolgotrajna 240 mg/m <sup>3</sup> ; Kratkotrajna 720 mg/m <sup>3</sup>
Tip OPZ	MV	Slovenija	Dolgotrajna 300 mg/m <sup>3</sup> - 62 ppm; Kratkotrajna 600 mg/m <sup>3</sup> - 124 ppm

Kristalni silicijev dioksid, kremen (vdihljiva frakcija)

CAS: 14808-60-7	Tip OPZ	ACGIH	Dolgotrajna 0.025 mg/m <sup>3</sup> Opombe: (R), A2 - Pulm fibrosis, lung cancer
	Tip OPZ	EU	Dolgotrajna 0.1 mg/m <sup>3</sup> Opombe: Respirable dust particles
	Tip OPZ	MAK	Avstrija Dolgotrajna 0.05 mg/m <sup>3</sup> Opombe: Respirable fraction
	Tip OPZ	VLEP	Belgija Dolgotrajna 0.1 mg/m <sup>3</sup> Opombe: Respirable dust; Additional indication "C" means that the agent falls within the scope of Title 2 concerning carcinogenic, mutagenic and reprotoxic agents of Book VI of the Codex on well-being at work.
	Tip OPZ	VLEP	Francija Dolgotrajna 0.1 mg/m <sup>3</sup> Opombe: Respirable fraction
	Tip OPZ	VLEP	Italija Dolgotrajna 0.1 mg/m <sup>3</sup> Opombe: Respirable dust particles
	Tip OPZ	VLA	Španija Dolgotrajna 0.05 mg/m <sup>3</sup> Opombe: Respirable fraction
	Tip OPZ	ÁK	Madžarska Dolgotrajna 0.1 mg/m <sup>3</sup> Opombe: Respirable fraction
	Tip OPZ	MAC	Nizozemska Dolgotrajna 0.075 mg/m <sup>3</sup> Opombe: Respirable fraction
	Tip OPZ	SUVA	Švicar Dolgotrajna 0.15 mg/m <sup>3</sup> Opombe: Respirable aerosol
	Tip OPZ	GVI	Hrvaška Dolgotrajna 0.1 mg/m <sup>3</sup>
	Tip OPZ	AGW	Nemčija Dolgotrajna 0.05 mg/m <sup>3</sup> ; Kratkotrajna 0.4 mg/m <sup>3</sup> Opombe: Respirable fraction
	Tip OPZ	NDS	Poljska Dolgotrajna 0.1 mg/m <sup>3</sup> Opombe: Respirable fraction
	Tip OPZ	MV	Slovenija Dolgotrajna 0.15 mg/m <sup>3</sup>
	Tip OPZ	IPRV	Litva Dolgotrajna 0.1 mg/m <sup>3</sup>
	Tip OPZ	NGV/KG V	Švedska Dolgotrajna 0.1 mg/m <sup>3</sup> Opombe: Respirable fraction

ksilen

CAS: 1330-20-7	Tip OPZ	EU	Dolgotrajna 221 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 442 mg/m <sup>3</sup> - 100 ppm Opombe: Skin
	Tip OPZ	TLV	Češka Dolgotrajna 200 mg/m <sup>3</sup> - 45.4 ppm; Kratkotrajna 400 mg/m <sup>3</sup> - 90.8 ppm



etilbenzen CAS: 100-41-4				Opombe: Skin
	Tip OPZ	RV	Latvija	Dolgotrajna 221 mg/m3 - 50 ppm; Kratkotrajna 442 mg/m3 - 100 ppm
	Tip OPZ	ACGIH		Dolgotrajna 20 ppm Opombe: A3, BEI - URT irr, kidney dam (nephropathy), cochlear impair
	Tip OPZ	EU		Dolgotrajna 442 mg/m3 - 100 ppm; Kratkotrajna 884 mg/m3 - 200 ppm Opombe: Skin
	Tip OPZ	MAK	Avstrija	Dolgotrajna 440 mg/m3 - 100 ppm; Kratkotrajna 880 mg/m3 - 200 ppm Opombe: Skin
	Tip OPZ	MAK	Nemčija	Dolgotrajna 88 mg/m3 - 20 ppm; Kratkotrajna 176 mg/m3 - 40 ppm Opombe: Skin
	Tip OPZ	VLEP	Belgija	Dolgotrajna 87 mg/m3 - 20 ppm; Kratkotrajna 551 mg/m3 - 125 ppm Opombe: Additional indication "D" means that the absorption of the agent through the skin, mucous membranes or eyes is an important part of the total exposure. It can be the result of both direct contact and its presence in the air.
	Tip OPZ	VLEP	Francija	Dolgotrajna 88.4 mg/m3 - 20 ppm; Kratkotrajna 442 mg/m3 - 100 ppm Opombe: Skin
	Tip OPZ	VLEP	Italija	Dolgotrajna 442 mg/m3 - 100 ppm; Kratkotrajna 884 mg/m3 - 200 ppm Opombe: Skin
	Tip OPZ	VLEP	Romunija	Dolgotrajna 442 mg/m3 - 100 ppm; Kratkotrajna 884 mg/m3 - 200 ppm
	Tip OPZ	TLV	Bolgarija	Dolgotrajna 435 mg/m3; Kratkotrajna 535 mg/m3 Opombe: Skin
	Tip OPZ	TLV	Češka	Dolgotrajna 200 mg/m3 - 45.4 ppm; Kratkotrajna 500 mg/m3 - 113.5 ppm Opombe: Skin
	Tip OPZ	VLA	Španija	Dolgotrajna 441 mg/m3 - 100 ppm; Kratkotrajna 884 mg/m3 - 200 ppm
	Tip OPZ	ÁK	Madžarska	Dolgotrajna 442 mg/m3; Kratkotrajna 884 mg/m3 Opombe: Skin
	Tip OPZ	MAC	Nizozemska	Dolgotrajna 215 mg/m3 - 48.6 ppm; Kratkotrajna 430 mg/m3 - 97.3 ppm Opombe: Skin
	Tip OPZ	VLE	Portugalska	Dolgotrajna 442 mg/m3 - 100 ppm; Kratkotrajna 884 mg/m3 - 200 ppm Opombe: Skin
	Tip OPZ	SUVA	Švicar	Dolgotrajna 435 mg/m3 - 100 ppm; Kratkotrajna 435 mg/m3 - 100 ppm
	Tip OPZ	WEL	U.K.	Dolgotrajna 441 mg/m3 - 100 ppm; Kratkotrajna 552 mg/m3 - 125 ppm Opombe: Skin
	Tip OPZ	GVI	Hrvaška	Dolgotrajna 442 mg/m3 - 100 ppm; Kratkotrajna 884 mg/m3 - 200 ppm Opombe: Skin
	Tip OPZ	AGW	Nemčija	Dolgotrajna 88 mg/m3 - 20 ppm; Kratkotrajna 176 mg/m3 - 40 ppm Opombe: Skin
	Tip OPZ	NDS	Poljska	Dolgotrajna 200 mg/m3; Kratkotrajna 400 mg/m3 Opombe: Skin
	Tip OPZ	MV	Slovenija	Dolgotrajna 442 mg/m3 - 100 ppm; Kratkotrajna 884 mg/m3 - 200 ppm Opombe: Skin
	Tip OPZ	IPRV	Litva	Dolgotrajna 442 mg/m3 - 100 ppm; Kratkotrajna 884 mg/m3 - 200 ppm Opombe: Skin

#### Mejna vrednost izpostavljenosti po PNEC

bis-[4-(2,3-epoksipropoksi)fenil]propan

CAS: 1675-54-3 Način izpostavitve: Sladka voda; PNEC Omejite: 0.006 mg/l

Način izpostavitve: Morska voda; PNEC Omejite: 0.001 mg/l

Način izpostavitve: Sladkovodni sedimenti; PNEC Omejite: 0.341 mg/kg

Način izpostavitve: Morski sedimenti; PNEC Omejite: 0.034 mg/kg

Način izpostavitve: Tla (kmetijska); PNEC Omejite: 0.065 mg/kg

Način izpostavitve: Mikroorganizmi v čistilnih napravah (STP); PNEC Omejite: 10 mg/l

reakcijska zmes 2,2'-[metilenbis(4,1-fenilenoksimetilen)]dioksiran in 2-(2-[4-(oksiran-2-ilmetoksi)]fenoksi)oksiran in 2,2'-[metilenbis(2,1-fenilenoksimetilen)]dioksiran

Način izpostavitve: Sladka voda; PNEC Omejite: 0.003 mg/l  
Način izpostavitve: Morska voda; PNEC Omejite: 0.0003 mg/l  
Način izpostavitve: Mikroorganizmi v čistilnih napravah (STP); PNEC Omejite: 10 mg/l  
Način izpostavitve: Morski sedimenti; PNEC Omejite: 0.0294 mg/kg  
Način izpostavitve: Sladkovodni sedimenti; PNEC Omejite: 0.294 mg/kg  
Način izpostavitve: Tla (kmetijska); PNEC Omejite: 0.237 mg/kg

oksiran, mono[(C12-14-alkiloksi)metil] derivati

CAS: 68609-97-2 Način izpostavitve: Sladka voda; PNEC Omejite: 0.106 mg/l  
Način izpostavitve: Morska voda; PNEC Omejite: 0.011 mg/l  
Način izpostavitve: Mikroorganizmi v čistilnih napravah (STP); PNEC Omejite: 10 mg/l  
Način izpostavitve: Morski sedimenti; PNEC Omejite: 30.72 mg/kg  
Način izpostavitve: Sladkovodni sedimenti; PNEC Omejite: 307.16 mg/kg  
Način izpostavitve: Prst; PNEC Omejite: 1.234 mg/kg

reakcijska zmes etilbenzen, m-ksilen, p-ksilen

Način izpostavitve: Sladka voda; PNEC Omejite: 0.044 mg/l  
Način izpostavitve: Občasni izpusti (sladka voda); PNEC Omejite: 0.01 mg/l  
Način izpostavitve: Morska voda; PNEC Omejite: 0.004 mg/l  
Način izpostavitve: Občasni izpusti (morska voda); PNEC Omejite: 0.001 mg/l  
Način izpostavitve: Sladkovodni sedimenti; PNEC Omejite: 2.52 mg/kg  
Način izpostavitve: Morski sedimenti; PNEC Omejite: 0.252 mg/kg  
Način izpostavitve: Mikroorganizmi v čistilnih napravah (STP); PNEC Omejite: 1.6 mg/l  
Način izpostavitve: Prst; PNEC Omejite: 0.852 mg/kg

butanon

CAS: 78-93-3 Način izpostavitve: Sladka voda; PNEC Omejite: 55.8 mg/l  
Način izpostavitve: Morska voda; PNEC Omejite: 55.8 mg/l  
Način izpostavitve: Sladkovodni sedimenti; PNEC Omejite: 284.74 mg/kg  
Način izpostavitve: Mikroorganizmi v čistilnih napravah (STP); PNEC Omejite: 709 mg/l  
Način izpostavitve: Prehranska veriga; PNEC Omejite: 1000 mg/kg  
Način izpostavitve: Tla (kmetijska); PNEC Omejite: 22.5 mg/kg

etil acetat

CAS: 141-78-6 Način izpostavitve: Morska voda; PNEC Omejite: 0.024 mg/l  
Način izpostavitve: Sladka voda; PNEC Omejite: 0.24 mg/l  
Način izpostavitve: Morski sedimenti; PNEC Omejite: 0.115 mg/kg  
Način izpostavitve: Sladkovodni sedimenti; PNEC Omejite: 1.15 mg/kg  
Način izpostavitve: Mikroorganizmi v čistilnih napravah (STP); PNEC Omejite: 650 mg/l  
Način izpostavitve: Tla (kmetijska); PNEC Omejite: 0.148 mg/kg  
Način izpostavitve: Sekundarno kazanje; PNEC Omejite: 0.2 mg/kg

2-metoksi-1-metiletil acetat

CAS: 108-65-6 Način izpostavitve: Sladka voda; PNEC Omejite: 0.635 mg/l  
Način izpostavitve: Morska voda; PNEC Omejite: 0.064 mg/l  
Način izpostavitve: Mikroorganizmi v čistilnih napravah (STP); PNEC Omejite: 100 mg/l  
Način izpostavitve: Sladkovodni sedimenti; PNEC Omejite: 3.29 mg/kg  
Način izpostavitve: Morski sedimenti; PNEC Omejite: 0.329 mg/kg  
Način izpostavitve: Tla (kmetijska); PNEC Omejite: 0.29 mg/kg

n-butil acetat

CAS: 123-86-4 Način izpostavitve: Morska voda; PNEC Omejite: 0.018 mg/l  
Način izpostavitve: Sladka voda; PNEC Omejite: 0.18 mg/l  
Način izpostavitve: Morski sedimenti; PNEC Omejite: 0.098 mg/kg  
Način izpostavitve: Sladkovodni sedimenti; PNEC Omejite: 0.981 mg/kg  
Način izpostavitve: Mikroorganizmi v čistilnih napravah (STP); PNEC Omejite: 35.6 mg/l  
Način izpostavitve: Tla (kmetijska); PNEC Omejite: 0.09 mg/kg

etilbenzen

CAS: 100-41-4      Način izpostavitve: Sladka voda; PNEC Omejite: 0.1 mg/l  
Način izpostavitve: Morska voda; PNEC Omejite: 0.01 mg/l  
Način izpostavitve: Mikroorganizmi v čistilnih napravah (STP); PNEC Omejite: 9.6 mg/l  
Način izpostavitve: Sladkovodni sedimenti; PNEC Omejite: 13.7 mg/kg  
Način izpostavitve: Morski sedimenti; PNEC Omejite: 1.37 mg/kg  
Način izpostavitve: Tla (kmetijska); PNEC Omejite: 2.68 mg/kg

### **Izpeljane vrednosti brez učinka. (DNEL)**

bis-[4-(2,3-epoksi)propil]fenil]propan

CAS: 1675-54-3      Način izpostavitve: Dermalno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 0.75 mg/kg; Uporabnik: 0.089 mg/kg  
  
Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 4.93 mg/m<sup>3</sup>; Uporabnik: 0.87 mg/m<sup>3</sup>  
  
Način izpostavitve: Oralno, človek; Pogostost izpostavitve: Kratkotrajna, sistemski učinek  
Uporabnik: 0.5 mg/kg

reakcijska zmes 2,2'-[metilenbis(4,1-fenilenoksimetilen)]dioksiran in 2-(2-[4-(oksiran-2-ilmetoksi)]fenoksi)oksiran in 2,2'-[metilenbis(2,1-fenilenoksimetilen)]dioksiran

Način izpostavitve: Dermalno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 104.15 mg/kg; Uporabnik: 62.5 mg/kg  
  
Način izpostavitve: Dermalno, človek; Pogostost izpostavitve: Kratkotrajna, lokalni učinek  
Strokovni delavec: 0.0083 mg/cm<sup>2</sup>  
  
Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 29.39 mg/m<sup>3</sup>; Uporabnik: 8.7 mg/m<sup>3</sup>  
  
Način izpostavitve: Oralno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Uporabnik: 6.25 mg/kg

oksiran, mono[(C12-14-alkiloksi)metil] derivati

CAS: 68609-97-2      Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 3.6 mg/m<sup>3</sup>; Uporabnik: 0.87 mg/m<sup>3</sup>  
  
Način izpostavitve: Dermalno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 1 mg/kg; Uporabnik: 0.5 mg/kg  
  
Način izpostavitve: Oralno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Uporabnik: 0.5 mg/kg

reakcijska zmes etilbenzen, m-ksilen, p-ksilen

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
delavec: 221 mg/m<sup>3</sup>; Uporabnik: 65.3 mg/m<sup>3</sup>  
  
Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Kratkotrajna, sistemski učinek  
delavec: 442 mg/m<sup>3</sup>; Uporabnik: 260 mg/m<sup>3</sup>  
  
Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, lokalni učinek  
delavec: 221 mg/m<sup>3</sup>; Uporabnik: 65.3 mg/m<sup>3</sup>  
  
Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Kratkotrajna, lokalni učinek  
delavec: 442 mg/m<sup>3</sup>; Uporabnik: 260 mg/m<sup>3</sup>  
  
Način izpostavitve: Dermalno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
delavec: 212 mg/kg; Uporabnik: 125 mg/kg  
  
Način izpostavitve: Oralno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Uporabnik: 12.5 mg/kg

butanon

CAS: 78-93-3      Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 600 mg/m<sup>3</sup>; Uporabnik: 106 mg/m<sup>3</sup>  
  
Način izpostavitve: Dermalno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 1161 mg/kg; Uporabnik: 412 mg/kg  
  
Način izpostavitve: Oralno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Uporabnik: 31 mg/kg

etil acetat

CAS: 141-78-6      Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek

Strokovni delavec: 734 mg/m<sup>3</sup>; Uporabnik: 367 mg/m<sup>3</sup>

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, lokalni učinek  
Strokovni delavec: 734 mg/m<sup>3</sup>; Uporabnik: 367 mg/m<sup>3</sup>

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Kratkotrajna, sistemski učinek  
Strokovni delavec: 1468 mg/m<sup>3</sup>; Uporabnik: 734 mg/m<sup>3</sup>

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Kratkotrajna, lokalni učinek  
Strokovni delavec: 1468 mg/m<sup>3</sup>; Uporabnik: 734 mg/m<sup>3</sup>

Način izpostavitve: Dermalno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 63 mg/kg; Uporabnik: 37 mg/kg

Način izpostavitve: Oralno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Uporabnik: 4.5 mg/kg

#### 2-metoksi-1-metiletil acetat

CAS: 108-65-6 Način izpostavitve: Dermalno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 796 mg/kg; Uporabnik: 320 mg/kg

Način izpostavitve: Oralno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Uporabnik: 36 mg/kg

Način izpostavitve: Oralno, človek; Pogostost izpostavitve: Kratkotrajna, sistemski učinek  
Uporabnik: 500 mg/kg

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 275 mg/m<sup>3</sup>; Uporabnik: 33 mg/m<sup>3</sup>

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Kratkotrajna, lokalni učinek  
Strokovni delavec: 550 mg/m<sup>3</sup>

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, lokalni učinek  
Uporabnik: 33 mg/m<sup>3</sup>

#### Quaternary ammonium compounds, benzyl(hydrogenated tallow alkyl)dimethyl, chlori

CAS: 61789-72-8 Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 3.96 mg/kg; Uporabnik: 1.64 mg/kg

Način izpostavitve: Dermalno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 5.7 mg/kg; Uporabnik: 3.4 mg/kg

#### n-butil acetat

CAS: 123-86-4 Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 300 mg/m<sup>3</sup>; Uporabnik: 35.7 mg/m<sup>3</sup>

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Kratkotrajna, sistemski učinek  
Strokovni delavec: 600 mg/m<sup>3</sup>; Uporabnik: 300 mg/m<sup>3</sup>

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, lokalni učinek  
Strokovni delavec: 300 mg/m<sup>3</sup>; Uporabnik: 35.7 mg/m<sup>3</sup>

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Kratkotrajna, lokalni učinek  
Strokovni delavec: 600 mg/m<sup>3</sup>; Uporabnik: 300 mg/m<sup>3</sup>

Način izpostavitve: Dermalno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 11 mg/kg; Uporabnik: 6 mg/kg

Način izpostavitve: Dermalno, človek; Pogostost izpostavitve: Kratkotrajna, sistemski učinek  
Strokovni delavec: 11 mg/kg; Uporabnik: 6 mg/kg

Način izpostavitve: Oralno, človek; Pogostost izpostavitve: Kratkotrajna, sistemski učinek  
Uporabnik: 2 mg/kg

Način izpostavitve: Oralno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Uporabnik: 2 mg/kg

#### etilbenzen

CAS: 100-41-4 Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 77 mg/m<sup>3</sup>; Uporabnik: 15 mg/m<sup>3</sup>

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, lokalni učinek  
Strokovni delavec: 293 mg/m<sup>3</sup>

Način izpostavitve: Dermalno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 180 mg/kg

## 8.2 Nadzor izpostavljenosti

Poskrbite za ustrezno prezračevanje. Kadar je to izvedljivo, je to mogoče doseči z uporabo nadomestnega prezračevanja in dobrim splošnim vsesavanjem.

Zaščita oči:

Očala s stranskimi varovali (EN 16321).

Zaščita kože:

Uporabljajte oblačila, primerna za popolno zaščito kože glede na dejavnost in izpostavljenost (EN 14605/EN 13982), npr. delovni kombinezon, predpasnik, zaščitna obutev, primerna oblačila.

Zaščita rok:

Ni materiala ali kombinacije materialov za rokavice, ki bi lahko zagotovili neomejeno odpornost na katero koli kombinacijo kemikalij ali proizvodov.

Za daljše ali večkratno rokovanje uporabite rokavice, odporne na kemikalije.

Ustrezne rokavice tipa (EN 374/EN 16523); FKM (Fluórkaučuk): debelina  $\geq 0.4$  mm; permeacijski čas  $\geq 480$  min. NBR (Nitrilkaučuk): debelina  $\geq 0.4$  mm; permeacijski čas  $\geq 480$  min

Izbira primernih rokavic ni odvisna samo od materiala, temveč tudi od drugih kakovostnih lastnosti, ki se razlikujejo od enega do drugega proizvajalca, in od načinov ter časov uporabe mešanice.

Zaščita dihalnih poti:

Če so delavci izpostavljeni koncentracijam nad mejnimi vrednostmi izpostavljenosti, morajo uporabljati primerne, certificirane dihalne aparate.

Kombinirana filtrirna naprava (EN 14387): maska s filtrom A-P2.

Nadzor izpostavljenosti okolja:

Glejte točko 6.2

Higienski in tehnični ukrepi

Glejte poglavje 7.

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## ODDELEK 9: Fizikalne in kemijske lastnosti

### 9.1 Podatki o osnovnih fizikalnih in kemijskih lastnostih

fizično stanje: Tekoče

Izgled: Tekoče

Barva: bel

Vonj: značilnost

Tališče/ledišče: N.D.

Vrelišče ali začetno vrelišče in območje vrelišča: N.D.

Vnetljivost: ni znano

Spodnja in zgornja meja eksplozivnosti: N.D.

Plamenišče:  $> 93^{\circ}\text{C}$

Temperatura samovžiga: N.D.

Temperatura razgradnje: N.D.

pH: ni znano

Kinematična viskoznost: ni znano

Gostota in/ali relativna gostota: 1.66 kg/l ( Interna metoda )

Relativna parna gostota: N.D.

Parni tlak: N.D.

Topnost v vodi: Netopno

Topnost v olju: ni znano

Porazdelitveni koeficient n-oktanol/voda (logaritemska vrednost): ni znano

**Lastnosti delcev:**

Velikost delcev: ni znano

### 9.2 Drugi podatki

Prevodnost: N.D.

Eksplozivne lastnosti: ni znano ( Notranja evalvacija )

Oksidativne lastnosti: ni znano ( Notranja evalvacija )

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## ODDELEK 10: Obstojnost in reaktivnost

### 10.1 Reaktivnost

Stabilen v normalnih pogojih

### 10.2 Kemijska stabilnost

Stabilen v normalnih pogojih

### 10.3 Možnost poteka nevarnih reakcij

Zaradi toplote ali v primeru požara se lahko sprostijo ogljikovi oksidi in hlapi, ki lahko škodujejo zdravju.

**10.4 Pogoji, ki se jim je treba izogniti**  
Izogibajte se bližine toplotnih virov.

**10.5 Nezdružljivi materiali**  
Nobena posebno.  
Glejte točko 10.3

**10.6 Nevarni produkti razgradnje**  
V primeru pravilnega skladiščenja in ravnanja ne pride do razvoja nevarnih produktov razgradnje.  
Glejte točko 5.2

**ODDELEK 11: Toksikološki podatki**

**11.1 Podatki o razredih nevarnosti, kakor so opredeljeni v Uredbi (ES) št. 1272/2008**

Epoksidne smole, prisotne v tem izdelku so samo delno dražilne. Kljub temu vse epoksidne smole lahko povzročajo senzibilizacijo kože, ki je različna glede na osebo.

Pri nekaterih osebah se alergični dermatitis ne pokaže takoj in se pojavi šele po večih dneh ali tednih po pogostih ali daljših stikih. Zaradi tega, čeprav so smole le lažje dražilne, se je treba skrbno izogibati stiku s kožo. Pri že razviti sensibilizaciji tudi izpostavljenost v manjših količinah lahko povzročajo lokalni edem ali eritem.

**Toksikološki podatki izdelka:**

a) akutna strupenost	Ni klasificirano
	Na podlagi razpoložljivih podatkov merila za razvrstitev niso izpolnjena.
b) jedkost za kožo/draženje kože	Proizvod je razvrščen: Skin Irrit. 2(H315)
c) resne okvare oči/draženje	Proizvod je razvrščen: Eye Irrit. 2(H319)
d) preobčutljivost pri vdihavanju in preobčutljivost kože	Proizvod je razvrščen: Skin Sens. 1A(H317)
e) mutagenost za zarodne celice	Ni klasificirano
	Na podlagi razpoložljivih podatkov merila za razvrstitev niso izpolnjena.
f) rakotvornost	Ni klasificirano
	Na podlagi razpoložljivih podatkov merila za razvrstitev niso izpolnjena.
g) strupenost za razmnoževanje	Proizvod je razvrščen: Repr. 1B(H360)
h) STOT - enkratna izpostavljenost	Ni klasificirano
	Na podlagi razpoložljivih podatkov merila za razvrstitev niso izpolnjena.
i) STOT - ponavljajoča se izpostavljenost	Ni klasificirano
	Na podlagi razpoložljivih podatkov merila za razvrstitev niso izpolnjena.
j) nevarnost pri vdihavanju	Ni klasificirano
	Na podlagi razpoložljivih podatkov merila za razvrstitev niso izpolnjena.

**Toksikološki podatki glavnih snovi, ki jih najdemo v izdelku:**

bis-[4-(2,3-epoksipropoksi)fenil]propan	
CAS: 1675-54-3	a) akutna strupenost
	LD50 Oralno Podgana > 2000 mg/kg
	LD50 Koža Podgana > 2000 mg/kg
reakcijska zmes 2,2'-[metilenbis(4,1-fenilenoksimetilen)]dioksiran in 2-(2-[4-(oksiran-2-ilmetoksi)]fenoksi)oksiran in 2,2'-[metilenbis(2,1-fenilenoksimetilen)]dioksiran	
	a) akutna strupenost
	LD50 Koža Podgana > 2000 mg/kg
	LD50 Oralno Podgana > 5000 mg/kg
oksiran, mono[(C12-14-alkiloksi)metil] derivati	
CAS: 68609-97-2	a) akutna strupenost
	LC0 Vdihavanje hlapov Podgana > 0.15 mg/l 7h
	LD50 Oralno Podgana > 2000 mg/kg
	LD50 Koža Zajec > 4000 mg/kg
titanov dioksid	
CAS: 13463-67-7	a) akutna strupenost
	LD50 Oralno Podgana > 5000 mg/kg
	LC50 Vdihavanje prahu Podgana > 6.82 mg/l 4h
reakcijska zmes etilbenzen, m-ksilen, p-ksilen	
	a) akutna strupenost
	ATE - Dermalno: 1100 mg/kg tt
	ATE - Vdihavanje (Hlapi): 11 mg/l
	LD50 Oralno Podgana 3523 mg/kg
butanon	

CAS: 78-93-3	a) akutna strupenost	LD50 Oralno Podgana > 2193 mg/kg LD50 Koža Zajec > 5000 mg/kg
etil acetat		
CAS: 141-78-6	a) akutna strupenost	LD50 Oralno Podgana 4934 mg/kg LD50 Koža Zajec > 20000 mg/kg LC50 Vdihavanje hlapov Podgana > 22.5 mg/l 6h
2-metoksi-1-metiletil acetat		
CAS: 108-65-6	a) akutna strupenost	LD50 Oralno Podgana > 5000 mg/kg LD50 Koža Zajec > 5000 mg/kg LC0 Vdihavanje hlapov Podgana > 4345 ppm 6h
Quaternary ammonium compounds, benzyl(hydrogenated tallow alkyl)dimethyl, chlori		
CAS: 61789-72-8	a) akutna strupenost	LD50 Oralno Podgana 398 mg/kg
n-butil acetat		
CAS: 123-86-4	a) akutna strupenost	LD50 Oralno Podgana 10760 mg/kg LD50 Koža Zajec 14112 mg/kg LC50 Vdihavanje hlapov Podgana > 21.1 mg/l 4h
ksilen		
CAS: 1330-20-7	a) akutna strupenost	ATE - Dermalno: 1100 mg/kg tt ATE - Vdihavanje (Hlapi): 11 mg/l
etilbenzen		
CAS: 100-41-4	a) akutna strupenost	LD50 Oralno Podgana 3500 mg/kg LD50 Koža Zajec 15400 mg/kg LC50 Vdihavanje Podgana 17629 mg/m3 4h

## 11.2 Podatki o drugih nevarnostih

### Lastnosti endokrinih motilcev:

Ni endokrinih motilcev v koncentraciji  $\geq 0,1\%$ .

## ODDELEK 12: Ekološki podatki

Uporabljajte v skladu z dobrimi delovnimi navadami, izogibajte se odlaganju izdelka v okolju.

### 12.1 Strupenost

Ekotoksikološki podatki:

Strupeno za vodne organizme, z dolgotrajnimi učinki.

#### Ekotoksikoloških lastnosti izdelka

Proizvod je razvrščen: Aquatic Chronic 2(H411)

#### Seznam sestavin z ekotoksikološkimi lastnostmi

bis-[4-(2,3-epoksipropoksi)fenil]propan

- CAS: 1675-54-3
- a) akutna strupenost za vodno okolje: EC50 Vodna bolha 1.8 mg/l 48h
  - a) akutna strupenost za vodno okolje: LC50 Riba 2 mg/l 96h
  - a) akutna strupenost za vodno okolje: EC50 Alge 11 mg/l 72h
  - b) kronična strupenost za vodno okolje: NOEC Vodna bolha 0.3 mg/l 21d

reakcijska zmes 2,2'-[metilenbis(4,1-fenilenoksimetilen)]dioksiran in 2-(2-[4-(oksiran-2-ilmetoksi)]fenoksi)oksiran in 2,2'-[metilenbis(2,1-fenilenoksimetilen)]dioksiran

- a) akutna strupenost za vodno okolje: LC50 Riba 2.54 mg/l 96h
- a) akutna strupenost za vodno okolje: EC50 Alge 1.8 mg/l 72h
- a) akutna strupenost za vodno okolje: EC50 Vodna bolha 2.55 mg/l 48h
- b) kronična strupenost za vodno okolje: NOEC Vodna bolha 0.3 mg/l - 21d

oksiran, mono[(C12-14-alkiloksi)metil] derivati

- CAS: 68609-97-2
- a) akutna strupenost za vodno okolje: LL50 Riba > 100 mg/l 96h
  - a) akutna strupenost za vodno okolje: EL50 Vodna bolha 7.2 mg/l 48h
  - a) akutna strupenost za vodno okolje: IC50 Alge 843.75 mg/l 72h

titanov dioksid

- CAS: 13463-67-7
- a) akutna strupenost za vodno okolje: LC50 Riba > 1000 mg/l 96h

a) akutna strupenost za vodno okolje: EC50 Vodna bolha > 1000 mg/l 48h

a) akutna strupenost za vodno okolje: EC50 Alge 61 mg/l 72h

butanon

CAS: 78-93-3

a) akutna strupenost za vodno okolje: LC50 Riba 2973 mg/l 96h

a) akutna strupenost za vodno okolje: EC50 Vodna bolha 308 mg/l 48h

a) akutna strupenost za vodno okolje: EC50 Alge 1229 mg/l 96h

etil acetat

CAS: 141-78-6

a) akutna strupenost za vodno okolje: LC50 Riba 230 mg/l 96h

a) akutna strupenost za vodno okolje: EC50 Vodna bolha 165 mg/l 48h

2-metoksi-1-metiletil acetat

CAS: 108-65-6

a) akutna strupenost za vodno okolje: LC50 Riba 134 mg/l 96h

a) akutna strupenost za vodno okolje: EC50 Vodna bolha 408 mg/l 48h

a) akutna strupenost za vodno okolje: EC50 Alge > 1000 mg/l 96h

b) kronična strupenost za vodno okolje: NOEC Riba 47.5 mg/l - 14 d

Quaternary ammonium compounds, benzyl(hydrogenated tallow alkyl)dimethyl, chlori

CAS: 61789-72-8

a) akutna strupenost za vodno okolje: LC50 Riba 0.1 mg/l 96h

a) akutna strupenost za vodno okolje: EC50 Vodna bolha 0.059 mg/l 48h

a) akutna strupenost za vodno okolje: EC50 Alge 0.11 mg/l 72h

n-butyl acetat

CAS: 123-86-4

a) akutna strupenost za vodno okolje: LC50 Riba 18 mg/l 96h

a) akutna strupenost za vodno okolje: EC50 Vodna bolha 44 mg/l 48h

a) akutna strupenost za vodno okolje: EC50 Alge 675 mg/l 72h

b) kronična strupenost za vodno okolje: NOEC Vodna bolha 23 mg/l - 21d

etilbenzen

CAS: 100-41-4

a) akutna strupenost za vodno okolje: LC50 Riba 4.2 mg/l 96h

a) akutna strupenost za vodno okolje: EC50 Vodna bolha 1.8 mg/l 48h

a) akutna strupenost za vodno okolje: EC50 Alge 3.6 mg/l 96h

b) kronična strupenost za vodno okolje: NOEC Vodna bolha 1 mg/l - 7d

## 12.2 Obstočnost in razgradljivost

bis-[4-(2,3-epoksi)propoksi]fenil]propan

CAS: 1675-54-3 Ni hitro razgradljivo

oksiran, mono[(C12-14-alkiloksi)metil] derivati

CAS: 68609-97-2 Hitro razgradljivo

reakcijska zmes etilbenzen, m-ksilen, p-ksilen

Hitro razgradljivo

butanon

CAS: 78-93-3

Hitro razgradljivo

etil acetat

CAS: 141-78-6

Hitro razgradljivo

2-metoksi-1-metiletil acetat

CAS: 108-65-6

Hitro razgradljivo

n-butyl acetat

CAS: 123-86-4

Hitro razgradljivo

etilbenzen

CAS: 100-41-4

Hitro razgradljivo

## 12.3 Zmožnost kopičenja v organizmih

ni znano

## 12.4 Mobilnost v tleh

reakcijska zmes etilbenzen, m-ksilen, p-ksilen

Mobilno



## 12.5 Rezultati ocene PBT in vPvB

Na podlagi razpoložljivih podatkov, preparat ne vsebuje snovi PBT/vPvB v procentu  $\geq 0.1\%$ .

## 12.6 Lastnosti endokrinih motilcev

Ni endokrinih motilcev v koncentraciji  $\geq 0,1\%$ .

## 12.7 Drugi škodljivi učinki

ni znano

# ODDELEK 13: Odstranjevanje

## 13.1 Metode ravnanja z odpadki

Če je mogoče, predelajte. Pošljite v usposobljena odlagališča ali v zažig pod kontroliranimi pogoji. Ravajte se po lokalnih in državnih predpisih.

Ne dopustite, da pride v kanalizacijo ali vodne poti.

Odstraniti posode, ki jih kontaminira izdelka v skladu z lokalnimi ali nacionalnimi predpisi.

Ko izdelku poteče življenjska doba, ga odstranite v skladu z veljavno zakonodajo.

# ODDELEK 14: Podatki o prevozu



## 14.1 Številka ZN in številka ID

3082

## 14.2 Pravilno odpremno ime ZN

ADR-uradno ime blaga: OKOLJU NEVARNA SNOV, TEKOČA, N.D.N. (bis-[4-(2,3-epoksi-propoksi)fenil]propan - reakcijska zmes 2,2'-[metilenbis(4,1-fenilenoksimetilen)]dioksiran in 2-(2-[4-(oksiran-2-ilmetoksi)]fenoksi)oksiran in 2,2'-[metilenbis(2,1-fenilenoksimetilen)]dioksiran)

IATA-uradno ime blaga: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (bis-[4-(2,3-epoksi-propoksi)fenil]propan - reakcijska zmes 2,2'-[metilenbis(4,1-fenilenoksimetilen)]dioksiran in 2-(2-[4-(oksiran-2-ilmetoksi)]fenoksi)oksiran in 2,2'-[metilenbis(2,1-fenilenoksimetilen)]dioksiran)

IMDG-uradno ime blaga: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (bis-[4-(2,3-epoksi-propoksi)fenil]propan - reakcijska zmes 2,2'-[metilenbis(4,1-fenilenoksimetilen)]dioksiran in 2-(2-[4-(oksiran-2-ilmetoksi)]fenoksi)oksiran in 2,2'-[metilenbis(2,1-fenilenoksimetilen)]dioksiran)

## 14.3 Razredi nevarnosti prevoza

ADR-Razred: 9

IATA-razred: 9

IMDG-razred: 9

## 14.4 Skupina embalaže

ADR-embalažna skupina: III

IATA-embalažna skupina: III

IMDG-embalažna skupina: III

## 14.5 Nevarnosti za okolje

Glavna strupena komponenta: Quaternary ammonium compounds, benzyl(hydrogenated tallow alkyl)dimethyl, chlori

Onesnaževalec morja: Da

Onesnažuje okolje po: Da

IMDG-EMS: F-A, S-F

## 14.6 Posebni previdnostni ukrepi za uporabnika

Cestni in železniški transport (ADR-RID):

ADR-nalepka nevarnosti: 9

ADR - Identifikacijska številka nevarnosti: 90

ADR-posebni ukrepi: 274 335 375 601

ADR-Pravilnik o cestnem prevozu nevarnega blaga:

Zračni transport (IATA):

IATA-potniška letala: 964

IATA-tovorna letala: 964

IATA-nalepka: 9

IATA-dodatne nevarnosti: -

IATA-Erg: 9L

IATA-posebni ukrepi: A97 A158 A197 A215  
Morski transport (IMDG):  
IMDG-Zlaganje in ravnanje: Category A  
IMDG-Segregacija: -  
IMDG-dodatne nevarnosti: -  
IMDG-posebni ukrepi: 274 335 969

**14.7 Pomorski prevoz v razsutem stanju v skladu z instrumenti IMO**  
ni znano

**ODDELEK 15: Zakonsko predpisani podatki**

**15.1 Predpisi/zakonodaja o zdravju, varnosti in okolju, specifični za snov ali zmes**

Dir. 98/24/ES (Varovanje delavcev pred tveganji zaradi izpostavljenosti kemičnim snovem pri delu)  
Dir. 2000/39/ES (mejne vrednosti za poklicno izpostavljenost)  
Direktiva 2010/75/EU  
Uredba (ES) št. 1907/2006 (REACH)  
Uredba (ES) št. 1272/2008 (CLP)  
Uredba (ES) št. 790/2009 (1. ATP CLP) in (EU) št. 758/2013  
Uredba (EU) 2020/878  
Uredba (EU) št. 286/2011 (2. ATP CLP)  
Uredba (EU) št. 618/2012 (3. ATP CLP)  
Uredba (EU) št. 487/2013 (4. ATP CLP)  
Uredba (EU) št. 944/2013 (5. ATP CLP)  
Uredba (EU) št. 605/2014 (6. ATP CLP)  
Uredba (EU) 2015/1221 (7. ATP CLP)  
Uredba (EU) 2016/918 (8. ATP CLP)  
Uredba (EU) 2016/1179 (9. ATP CLP)  
Uredba (EU) 2017/776 (10. ATP CLP)  
Uredba (EU) 2018/669 (11. ATP CLP)  
Uredba (EU) 2018/1480 (13. ATP CLP)  
Uredba (EU) 2019/521 (12. ATP CLP)  
Uredba (EU) 2020/217 (14. ATP CLP)  
Uredba (EU) 2020/1182 (15. ATP CLP)  
Uredba (EU) 2021/643 (16. ATP CLP)  
Uredba (EU) 2021/849 (17. ATP CLP)  
Uredba (EU) 2022/692 (18. ATP CLP)  
Uredba (EU) 2023/707  
Uredba (EU) 2023/1434 (19. ATP CLP)  
Uredba (EU) 2023/1435 (20. ATP CLP)  
Uredba (EU) 2024/197 (21. ATP CLP)

**Omejitve, povezane z izdelkom ali vsebovanimi snovmi, v skladu s Prilogo XVII Uredbe (ES) 1907/2006 (REACH) in poznejše spremembe:**

Omejitve v zvezi z izdelkom: 3  
Omejitve v zvezi z vsebovanimi snovmi: 40, 75

**Določbe v zvezi z direktivo EU 2012/18 (Seveso III)**

Kategorija Seveso III v skladu s Prilogo 1, del 1	Mejna vrednost nižje stopnje (v tonah)	Mejna vrednost višje stopnje (v tonah)
izdelek spada v kategorijo: E2	200	500

**Uredba (EU) št. 649/2012 (uredba PIC)**

Snovi niso navedene

**Nemški razred nevarnosti za vodo.**

Razred 2: ogroža vodo.

**SVHC snovi:**

Na podlagi razpoložljivih podatkov, preparat ne vsebuje snovi SVHC v procentu  $\geq 0.1\%$ .

**15.2 Ocena kemijske varnosti**

Ocena kemijske varnosti je bila opravljena za mešanice

**ODDELEK 16: Drugi podatki**

Številka	Opis
EUH066	Ponavljajoča izpostavljenost lahko povzroči nastanek suhe ali razpokane kože.

H225	Lahko vnetljiva tekočina in hlapi.
H226	Vnetljiva tekočina in hlapi.
H304	Pri zaužitju in vstopu v dihalne poti je lahko smrtno.
H312	Zdravju škodljivo v stiku s kožo.
H315	Povzroča draženje kože.
H317	Lahko povzroči alergijski odziv kože.
H319	Povzroča hudo draženje oči.
H332	Zdravju škodljivo pri vdihavanju.
H335	Lahko povzroči draženje dihalnih poti.
H336	Lahko povzroči zaspanost ali omotico.
H351	Sum povzročanja raka v primeru vdihavanja.
H360	Ob stiku s kožo in zaužitju lahko zmanjša plodnost ali škodi zarodku.
H360F	Lahko škoduje plodnosti.
H372	V primeru dolgotrajnega ali ponovljenega vdihavanja povzroča poškodbe notranjih organov.
H373	Lahko škoduje organom pri dolgotrajni ali ponavljajoči se izpostavljenosti.
H411	Strupeno za vodne organizme, z dolgotrajnimi učinki.
H412	Škodljivo za vodne organizme, z dolgotrajnimi učinki.

Številka	Razred in kategorija nevarnosti	Opis
2.6/2	Flam. Liq. 2	Vnetljiva tekočina, Kategorija 2
2.6/3	Flam. Liq. 3	Vnetljiva tekočina, Kategorija 3
3.1/4/Dermal	Acute Tox. 4	Akutna strupenost (dermalno), Kategorija 4
3.1/4/Inhal	Acute Tox. 4	Akutna strupenost (pri vdihavanju), Kategorija 4
3.10/1	Asp. Tox. 1	Nevarnost pri vdihavanju, Kategorija 1
3.2/2	Skin Irrit. 2	Draženje kože, Kategorija 2
3.3/2	Eye Irrit. 2	Draženje oči, Kategorija 2
3.4.2/1	Skin Sens. 1	Preobčutljivost kože, Kategorija 1
3.4.2/1A	Skin Sens. 1A	Preobčutljivost kože, Kategorija 1A
3.6/2	Carc. 2	Rakotvornost, Kategorija 2
3.7/1B	Repr. 1B	Strupenost za razmnoževanje, Kategorija 1B
3.8/3	STOT SE 3	Specifična strupenost za ciljne organe (STOT) – enkratna izpostavljenost STOT enkrat, Kategorija 3
3.9/1	STOT RE 1	Specifična strupenost za ciljne organe (STOT) – ponavljajoča se izpostavljenost, Kategorija 1
3.9/2	STOT RE 2	Specifična strupenost za ciljne organe (STOT) – ponavljajoča se izpostavljenost, Kategorija 2
4.1/C2	Aquatic Chronic 2	Kronično (dolgotrajno) nevarnost za vodno okolje, Kategorija 2
4.1/C3	Aquatic Chronic 3	Kronično (dolgotrajno) nevarnost za vodno okolje, Kategorija 3

#### **Razvrstitev in postopek, uporabljen za izpeljavo razvrstitve za zmesi v skladu z Uredbo (ES) 1272/2008 [uredba CLP]:**

##### **Razvrstitev v skladu z Uredbo (ES) št. 1272/2008 Postopek razvrščanja**

Skin Irrit. 2, H315	metoda izračuna
Eye Irrit. 2, H319	metoda izračuna
Skin Sens. 1A, H317	metoda izračuna
Repr. 1B, H360	metoda izračuna
Aquatic Chronic 2, H411	metoda izračuna

Ta dokument je pripravila pristojna oseba, ki je ustrezno usposobljena

Glavni bibliografski viri:

ECDIN – Informacijska mreža za okoljske podatke za kemikalije – Skupno raziskovalno središče, Komisija Evropskih skupnosti  
SAX – NEVARNE LASTNOSTI INDUSTRIJSKIH MATERIALOV – 8. izdaja – Van Nostrand Reinold  
Varnostni listi dobaviteljev surovin.

Predstavljene informacije se nanašajo na naše znanje v zgoraj navedenem datumu. Nanašajo se zgolj na omenjeni izdelek in ne predstavljajo garancije za posebno kakovost.

Uporabnik je dolžan preveriti pravilnost in popolnost teh informacij glede na svojo specifično uporabo.

Ta list razveljavlja in nadomešča vsako predhodno izdajo

Legenda okrajšav in kratic, uporabljenih v varnostnem listu:

ACGIH: Ameriška konferenca vladnih industrijskih higienikov  
 ADR: Evropski sporazum o mednarodnem prevozu nevarnih snovi v cestnem prometu.  
 ATE: Ocena akutne strupenosti  
 ATEmix: Ocena akutne strupenosti (Zmesi)  
 BEI: Biološki indeks izpostavljenosti  
 CAS: Chemical Abstracts Service (oddelek Ameriškega kemijskega društva).  
 CAV: Center za zastrupitve  
 CE: Evropska skupnost  
 CLP: Razvrščanje, etiketiranje, pakiranje.  
 CMR: Rakotvorno, mutageno in strupeno za razmnoževanje  
 COV: Hlapna organska spojina  
 CSA: Ocena kemijske varnosti  
 CSR: Poročilo o kemijski varnosti  
 DNEL: Izpeljane vrednosti brez učinka.  
 EC50: Srednja učinkovita koncentracija  
 ECHA: Evropska agencija za kemikalije  
 EINECS: Evropski seznam obstoječih snovi.  
 ES: Scenarij izpostavljenosti  
 GefStoffVO: Odlok o nevarnih snoveh, Nemčija.  
 GHS: Globalno poenoten sistem razvrščanja in označevanja nevarnih kemikalij.  
 IARC: Mednarodna agencija za raziskovanje raka  
 IATA: Mednarodno združenje za zračni transport.  
 IC50: Srednja inhibitorna koncentracija  
 IMDG: Mednarodni kodeks za prevoz nevarnega blaga po morju  
 LC50: Letalna koncentracija za 50 odstotkov testne populacije.  
 LD50: Letalna doza za 50 odstotkov testne populacije.  
 LDLo: Najnižja smrtna doza  
 N.A.: Se ne uporablja  
 N/A: Se ne uporablja  
 N/D: Ni opredeljeno/Ni razpoložljiv  
 N.D.: Ni razpoložljiv  
 NIOSH: Nacionalni inštitut za varnost in zdravje pri delu  
 NOAEL: Raven brez opaznih negativnih vplivov  
 OSHA: Upravljanje varnosti in zdravja pri delu  
 PBT: Obstojne, se kopičijo v organizmih in so strupene  
 PGK: Navodila za embalažo nevarnih snovi  
 PNEC: Predvidena koncentracija brez učinka.  
 PSG: Potniki  
 RID: Pravilnik o mednarodnem prevozu nevarnega blaga po železnici.  
 STEL: Meja za kratkotrajno izpostavljenost.  
 STOT: Specifično strupeno za ciljne organe.  
 TLV: Mejna vrednost izpostavljenosti.  
 TLV-TWA: Mejna vrednost izpostavljenosti v časovnem obdobju po 8 ur dnevno (ACGIH standard).  
 vPvB: Telo obstojno, se zelo lahko kopiči v organizmih.  
 WGK: Nemški razred nevarnosti za vodo.

**Odstavki spremenjeni od prejšnje revizije:**

- ODDELEK 1: Identifikacija snovi/zmesi in družbe/podjetja
- ODDELEK 2: Določitev nevarnosti
- ODDELEK 3: Sestava/podatki o sestavinah
- ODDELEK 8: Nadzor izpostavljenosti/osebna zaščita
- ODDELEK 9: Fizikalne in kemijske lastnosti
- ODDELEK 11: Toksikološki podatki
- ODDELEK 12: Ekološki podatki
- ODDELEK 15: Zakonsko predpisani podatki
- ODDELEK 16: Drugi podatki

# Ethyl acetate

## Substance identification

Chemical Name: Ethyl acetate

CAS number: 141-78-6

## ETHYL ACETATE

ES 1: Cosmetics, personal care products (PC39); User for consumers (SU21).  
 ES 2: Filling of drums and small packages (CS6); INDUSTRIAL USES (SU3).  
 ES 3: Formulation or repackaging (F); INDUSTRIAL USES (SU3).  
 ES 4: Use of non-reactive processing aid at industrial site (no inclusion in article) (ERC4); Industrial uses (su3); Extraction agents (PC40).  
 ES 5: PROFESSIONAL APPLICATION OF COATINGS AND INKS; INDUSTRIAL USES (SU3).  
 ES 6: Use as laboratory reagent (PROC15); Industrial uses (su3); Industrial use.  
 ES 7: Use in cleaning products (GEST4\_I, GEST4\_P, GEST4\_C); INDUSTRIAL USES (SU3).  
 ES 8: Use in lubricants (GEST6\_I, GEST6\_P, GEST6\_C); INDUSTRIAL USES (SU3).  
 ES 9: Professional application of coatings and inks (14); INDUSTRIAL USES (SU3). Covers use in coatings (paints, inks, adhesives, etc.) including exposures during use (receipt of material, storage, preparation and transfer of bulk and semi-bulk products, application by spray, roller or spreader, dipping, flow, fluidized bed on production lines and film formation), the cleaning and maintenance of the equipment and the associated laboratory activities [GES3\_I].  
 ES 10: Use as laboratory reagent (PROC15); Industrial uses (su3); Professional (G27).  
 ES 11: Use in agrochemical products (GEST11\_P, GEST11\_C); INDUSTRIAL USES (SU3).  
 ES 12: Use in detergent products (GEST4\_I, GEST4\_P, GEST4\_C).  
 ES 13: Use in lubricants (GEST6\_I, GEST6\_P, GEST6\_C).  
 ES 14: Adhesives, Sealants (PC1); Use in coatings (GEST3\_I, GEST3\_P, GEST3\_C).

## ES 5: PROFESSIONAL APPLICATION OF COATINGS AND INKS (17); INDUSTRIAL USES (SU3).

### 5.1. USE AT INDUSTRIAL SITES

#### Environment

SC 1: Use of non-reactive processing aid at industrial site (no inclusion in article) ERC4

#### Worker

SC 2: Generalized exposures (closed systems) PROC1  
 SC 3: Generalized exposures (closed systems); Use in closed systems, with sample taking PROC2  
 SC 4: Film formation - forced drying (50 -100°C). Stove (>100°C), Curing by UV/EB radiation PROC2  
 SC 5: Mixing operations, Generalized exposures PROC3  
 SC 6: Film formation, air drying PROC4  
 SC 7: Preparation of material for application, Mixing operations (open systems) PROC5  
 SC 8: Spraying (automatic/robotic) PROC7  
 SC 9: Manual spraying PROC7  
 SC 10: Material transfers, Non-Specialized site PROC8a  
 SC 11: Material transfers, Specialized site PROC8b  
 SC 12: Roller, diffusion, flow application PROC10  
 SC 13: Immersion, dipping and pouring PROC13  
 SC 14: Laboratory activities PROC15  
 SC 15: Material transfers, Drum/batch transfers, Transfer from/pour from containers PROC9  
 SC 16: Production or preparation of articles by tableting, compression, extrusion or pelletisation. PROC14

### 5.2. CONDITIONS OF USE THAT AFFECT EXPOSURE

#### 5.2.1 Environmental exposure control: Use of non-reactive processing aid at industrial site (no inclusion in article) (ERC4)

##### Amount used (or contained in articles), frequency and duration of use/exposure

Daily amount per site: ≤ 1 t/day

Annual amount per site: ≤ 300 t/year

##### Organizational and technical measures and conditions

A wastewater treatment plant is expected.

Assumed domestic sewage treatment plant flow: ≥ 2E3 m³/day

##### Conditions and measures for waste treatment (including the article of waste)

Waste treatment: Dispose of waste products or used containers according to local regulations.

##### Other conditions affecting environmental exposure

Water flow on the receiving surface: 18,000 m³/g

### 5.2.2. Worker Exposure Control: Chemical production or refinement in closed processes without likelihood of exposure or in processes with equivalent containment conditions (PROC1)

#### **Product features (article)**

Covers concentrations up to 100%.

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Organizational and technical measures and conditions**

Provide a basic level of general ventilation (1 to 3 air changes per hour).

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 5.2.3. Worker Exposure Control: Chemical production or refinery in closed process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

#### **Product features (article)**

Covers concentrations up to 100%.

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Organizational and technical measures and conditions**

Provide a basic level of general ventilation (1 to 3 air changes per hour).

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 5.2.4. Worker Exposure Control: Chemical production or refinery in closed process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

#### **Product features (article)**

Covers concentrations up to 100%.

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Organizational and technical measures and conditions**

Provide a basic level of general ventilation (1 to 3 air changes per hour).

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 5.2.5. Worker Exposure Control: Chemical production or formulation in closed batch processes, with occasional controlled exposure or processes with equivalent containment conditions (PROC3)

#### **Product features (article)**

Covers concentrations up to 100%.

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Organizational and technical measures and conditions**

Provide a basic level of general ventilation (1 to 3 air changes per hour).

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

## 5.2.6. Worker Exposure Control: Production of chemicals with the possibility of exposure (PROC4)

### **Product features (article)**

Covers concentrations up to 100%.

### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

### **Organizational and technical measures and conditions**

Local exhaust ventilation

Inhalation - minimum yield of 90%

Provide a basic level of general ventilation (1 to 3 air changes per hour).

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

## 5.2.7. Worker Exposure Control: Mixing or blending in batch processes (PROC5)

### **Product features (article)**

Covers concentrations up to 100%.

### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

### **Organizational and technical measures and conditions**

Local exhaust ventilation

Inhalation - minimum yield of 90%

Provide a basic level of general ventilation (1 to 3 air changes per hour).

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

## 5.2.8. Worker Exposure Control: Industrial spraying (PROC7)

### **Product features (article)**

Covers concentrations up to 100%.

### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

### **Organizational and technical measures and conditions**

Local exhaust ventilation

Inhalation - minimum yield of 95%

Provide a basic level of general ventilation (1 to 3 air changes per hour).

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

## 5.2.9. Worker Exposure Control: Industrial spraying (PROC7)

### **Product features (article)**

Covers concentrations up to 100%.

### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

### **Organizational and technical measures and conditions**

Local exhaust ventilation

Inhalation - minimum yield of 95%

Provide a basic level of general ventilation (1 to 3 air changes per hour).

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 5.2.10. Worker Exposure Control: Transfer of a substance or a preparation (filling/emptying) at non-dedicated facilities (PROC8a)

#### **Product features (article)**

Covers concentrations up to 100%.

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Organizational and technical measures and conditions**

Local exhaust ventilation

Inhalation - minimum yield of 90%

Provide a basic level of general ventilation (1 to 3 air changes per hour).

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 5.2.11. Worker Exposure Control: Transfer of a substance or a mixture (charging/discharging) at dedicated facilities (PROC8b)

#### **Product features (article)**

Covers concentrations up to 100%.

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Organizational and technical measures and conditions**

Local exhaust ventilation

Inhalation - minimum yield of 95%

Provide a basic level of general ventilation (1 to 3 air changes per hour).

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 5.2.12. Worker Exposure Control: Application with rollers or brushes (PROC10)

#### **Product features (article)**

Covers concentrations up to 100%.

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Organizational and technical measures and conditions**

Local exhaust ventilation

Inhalation - minimum yield of 90%

Provide a basic level of general ventilation (1 to 3 air changes per hour).

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 5.2.13. Worker Exposure Control: Treatment of articles by dipping and pouring (PROC13)

#### **Product features (article)**

Covers concentrations up to 100%.

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Organizational and technical measures and conditions**

Local exhaust ventilation

Inhalation - minimum yield of 90%

Provide a basic level of general ventilation (1 to 3 air changes per hour).

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed



### 5.2.14. Worker Exposure Control: Use as laboratory reagents (PROC15)

#### Product features (article)

Covers concentrations up to 100%.

#### Amount used (or contained in articles), frequency and duration of use/exposure

Frequency of use: Covers use up to 8 h/day

#### Organizational and technical measures and conditions

Provide a basic level of general ventilation (1 to 3 air changes per hour).

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

#### Other conditions affecting worker exposure

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 5.2.15. Worker Exposure Control: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

#### Product features (article)

Covers concentrations up to 100%.

#### Amount used (or contained in articles), frequency and duration of use/exposure

Frequency of use: Covers use up to 8 h/day

#### Organizational and technical measures and conditions

Local exhaust ventilation

Inhalation - minimum yield of 90%

Provide a basic level of general ventilation (1 to 3 air changes per hour).

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

#### Other conditions affecting worker exposure

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 5.2.16. Worker Exposure Control: Tableting, compression, extrusion, pelletising, granulation (PROC14)

#### Product features (article)

Covers concentrations up to 100%.

#### Amount used (or contained in articles), frequency and duration of use/exposure

Frequency of use: Covers use up to 8 h/day

#### Organizational and technical measures and conditions

Local exhaust ventilation

Inhalation - minimum yield of 90%

Provide a basic level of general ventilation (1 to 3 air changes per hour).

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

#### Other conditions affecting worker exposure

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

## 5.3. EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

### 5.3.1. Environmental release and exposure: Use of non-reactive processing aid at industrial site (no inclusion in article) (ERC4)

Route release	Release rate	Method for estimating for release
water	20 kg/day	Estimated release factor
air	980 kg/day	Estimated release factor
Soil	0 kg/day	Estimated release factor

Protection target	Estimated exposure	RCR
Fresh water	0.119 mg/l (EUSES v2.1)	0.495
freshwater sediments	0.708 mg/kg dry weight (EUSES v2.1)	0.616
Sea water	0.012 mg/l (EUSES v2.1)	0.495
Marine sediment	0.071 mg/kg dry weight (EUSES v2.1)	0.617
Sewage treatment plant	1.184 mg/l (EUSES v2.1)	< 0.01
Farmland	0.081 mg/kg dry weight (EUSES v2.1)	0.547
Prey for predators (freshwater)	1.469 mg/kg dry weight (EUSES v2.1)	< 0.01
Prey for predators (marine water)	0.148 mg/kg dry weight (EUSES v2.1)	< 0.01
Main predator prey (marine water)	0.031 mg/kg dry weight (EUSES v2.1)	< 0.01
Prey for Predators (Terrestrial)	0.028 mg/kg dry weight (EUSES v2.1)	< 0.01

### 5.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	0.037 mg/m <sup>3</sup> (ECETOC TRA worker v3)	< 0.01
inhalation	systemic	Short term	0.147 mg/m <sup>3</sup> (ECETOC TRA worker v3)	< 0.01
inhalation	local	Long-term	0.037 mg/m <sup>3</sup> (ECETOC TRA worker v3)	< 0.01
inhalation	local	Short term	0.147 mg/m <sup>3</sup> (ECETOC TRA worker v3)	< 0.01
dermal	systemic	Long-term	0.034 mg/kg bw/day (ECETOC TRA worker v3)	< 0.01
combined routes	systemic	Long-term	/	< 0.01

### 5.3.3. Worker exposure: Chemical production or refinery in closed process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	91.77 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.125
inhalation	systemic	Short term	361.7 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
inhalation	local	Long-term	91.77 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.125
inhalation	local	Short term	361.7 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
dermal	systemic	Long-term	1.37 mg/kg bw/day (ECETOC TRA worker v3)	0.022
combined routes	systemic	Long-term	/	0.147

### 5.3.4. Worker exposure: Chemical production or refinery in closed process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	91.77 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.125
inhalation	systemic	Short term	361.7 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
inhalation	local	Long-term	91.77 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.125
inhalation	local	Short term	361.7 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
dermal	systemic	Long-term	1.37 mg/kg bw/day (ECETOC TRA worker v3)	0.022
combined routes	systemic	Long-term	/	0.147

### 5.3.5. Worker exposure: Chemical production or formulation in closed batch processes, with occasional controlled exposure or processes with equivalent containment conditions (PROC3)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	183.5 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
inhalation	systemic	Short term	734.2 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.5
inhalation	local	Long-term	183.5 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
inhalation	local	Short term	734.2 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.5
dermal	systemic	Long-term	0.69 mg/kg bw/day (ECETOC TRA worker v3)	0.011
combined routes	systemic	Long-term	/	0.261

### 5.3.6. Worker exposure: Production of chemicals with the possibility of exposure (PROC4)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	36.71 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.05
inhalation	systemic	Short term	146.8 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.1
inhalation	local	Long-term	36.71 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.05
inhalation	local	Short term	146.8 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.1
dermal	systemic	Long-term	6.86 mg/kg bw/day (ECETOC TRA worker v3)	0.109
combined routes	systemic	Long-term	/	0.159

### 5.3.7. Worker exposure: Mixing or blending in batch processes (PROC5)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	91.77 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.125
inhalation	systemic	Short term	367.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
inhalation	local	Long-term	91.77 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.125
inhalation	local	Short term	367.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
dermal	systemic	Long-term	13.71 mg/kg bw/day (ECETOC TRA worker v3)	0.218
combined routes	systemic	Long-term	/	0.343

### 5.3.8. Worker exposure: Industrial spraying (PROC7)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	91.77 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.125
inhalation	systemic	Short term	367.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
inhalation	local	Long-term	91.77 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.125
inhalation	local	Short term	367.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
dermal	systemic	Long-term	42.86 mg/kg bw/day (ECETOC TRA worker v3)	0.68
combined routes	systemic	Long-term	/	0.805

### 5.3.9. Worker exposure: Industrial spraying (PROC7)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	91.77 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.125
inhalation	systemic	Short term	367.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
inhalation	local	Long-term	91.77 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.125
inhalation	local	Short term	367.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
dermal	systemic	Long-term	42.86 mg/kg bw/day (ECETOC TRA worker v3)	0.68
combined routes	systemic	Long-term	/	0.805

### 5.3.10. Worker exposure: Transfer of a substance or a preparation (filling/emptying) at non-dedicated facilities (PROC8a)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	91.77 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.125
inhalation	systemic	Short term	367.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
inhalation	local	Long-term	91.77 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.125
inhalation	local	Short term	367.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
dermal	systemic	Long-term	13.71 mg/kg bw/day (ECETOC TRA worker v3)	0.218
combined routes	systemic	Long-term	/	0.343

### 5.3.11. Worker exposure: Transfer of a substance or a mixture (charging/discharging) at dedicated facilities (PROC8b)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	27.53 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.038
inhalation	systemic	Short term	110.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.075
inhalation	local	Long-term	27.53 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.038
inhalation	local	Short term	110.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.075
dermal	systemic	Long-term	13.71 mg/kg bw/day (ECETOC TRA worker v3)	0.218
combined routes	systemic	Long-term	/	0.255

### 5.3.12. Worker exposure: Application with rollers or brushes (PROC10)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	91.77 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.125
inhalation	systemic	Short term	367.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
inhalation	local	Long-term	91.77 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.125
inhalation	local	Short term	367.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
dermal	systemic	Long-term	27.43 mg/kg bw/day (ECETOC TRA worker v3)	0.435
combined routes	systemic	Long-term	/	0.56

### 5.3.13. Worker exposure: Treatment of articles by dipping and pouring (PROC13)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	91.77 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.125
inhalation	systemic	Short term	367.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
inhalation	local	Long-term	91.77 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.125
inhalation	local	Short term	367.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
dermal	systemic	Long-term	13.71 mg/kg bw/day (ECETOC TRA worker v3)	0.218
combined routes	systemic	Long-term	/	0.343

### 5.3.14. Worker exposure: Use as laboratory reagents (PROC15)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	183.5 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
inhalation	systemic	Short term	734.2 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.5
inhalation	local	Long-term	183.5 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
inhalation	local	Short term	734.2 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.5
dermal	systemic	Long-term	0.34 mg/kg bw/day (ECETOC TRA worker v3)	< 0.01
combined routes	systemic	Long-term	/	0.255

### 5.3.15. Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	73.42 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.1
inhalation	systemic	Short term	293.6 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.2
inhalation	local	Long-term	73.42 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.1
inhalation	local	Short term	293.6 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.2
dermal	systemic	Long-term	6.86 mg/kg bw/day (ECETOC TRA worker v3)	0.109
combined routes	systemic	Long-term	/	0.209

#### 5.3.16. Worker exposure: Tableting, compression, extrusion, pelletising, granulation (PROC14)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	91.77 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.125
inhalation	systemic	Short term	367.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
inhalation	local	Long-term	91.77 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.125
inhalation	local	Short term	367.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
dermal	systemic	Long-term	3.43 mg/kg bw/day (ECETOC TRA worker v3)	0.054
combined routes	systemic	Long-term	/	0.179

#### 5.4. GUIDANCE FOR DOWNSTREAM USERS TO ASSESS WHETHER THEY COMPLY WITH THE LIMITS SET BY THE EXPOSURE SCENARIO

Guidance to check compliance with the exposure scenario: <https://echa.europa.eu/>

**ES 9: PROFESSIONAL APPLICATION OF COATINGS AND INKS (14); INDUSTRIAL USES (SU3). COVERS USE IN COATINGS (PAINTS, INKS, ADHESIVES, ETC.) INCLUDING EXPOSURES DURING USE (RECEIPT OF MATERIAL, STORAGE, PREPARATION AND TRANSFER OF BULK AND SEMI-BULK PRODUCTS, APPLICATION BY SPRAY, ROLLER OR SPREADER, DIPPING, FLOW, FLUIDIZED BED ON PRODUCTION LINES AND FILM FORMATION), THE CLEANING AND MAINTENANCE OF THE EQUIPMENT AND THE ASSOCIATED LABORATORY ACTIVITIES [GES3\_I].**

## **9.1. WIDE DISPERSIVE USE BY PROFESSIONAL WORKERS**

### **Environment**

SC 1: Wide dispersive use of non-reactive processing aid (no inclusion into the article, outdoor) ERC8d

### **Worker**

SC 3: Generalized exposures (closed systems) PROC1  
SC 4: Filling of equipment from drums and containers PROC2  
SC 5: Generalized exposures (closed systems), Use in closed systems PROC2  
SC 6: Preparation of material for application, Generalized exposures PROC3  
SC 7: Film formation - air drying, Indoor use PROC4  
SC 8: Film formation - air drying, Outdoor use PROC4  
SC 9: Preparation of material for application, Indoor use PROC5  
SC 10: Preparation of material for application, Outdoor use PROC5  
SC 11: Material transfers, Drum/batch transfers, Non-Specialized site PROC8a  
SC 12: 12 Material Transfers, Drum/batch transfers, specialized site PROC8b  
SC 13: Roller, diffusion, flow application, Indoor use PROC10  
SC 14: Roller, diffusion, flow application, Outdoor use PROC10  
SC 15: Manual spraying, Indoor use PROC11  
SC 16: Manual spraying, Outdoor use PROC11  
SC 17: Immersion, dipping and pouring, Indoor use PROC13  
SC 18: Immersion, dipping and pouring, Outdoor use PROC13  
SC 19: Laboratory activities PROC15  
SC 20: Hand application - finger paints, crayons, stickers, Indoor use PROC19  
SC 21: Hand application - finger paints, crayons, stickers, Outdoor use PROC19

## **9.2. CONDITIONS OF USE THAT AFFECT EXPOSURE**

### **9.2.1 Environmental exposure control: Wide dispersive use of non-reactive processing aid (no inclusion into the article, outdoor) (ERC8d)**

#### **Organizational and technical measures and conditions**

A wastewater treatment plant is expected.

#### **Conditions and measures for waste treatment (including the article of waste)**

Waste treatment: Dispose of waste products or used containers according to local regulations.

### **9.2.3. Worker Exposure Control: Chemical production or refinement in closed processes without likelihood of exposure or in processes with equivalent containment conditions (PROC1)**

#### **Product features (article)**

Covers concentrations up to 100%.

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Organizational and technical measures and conditions**

Provide a basic level of general ventilation (1 to 3 air changes per hour).

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### **9.2.4. Worker Exposure Control: Chemical production or refinery in closed process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)**

#### **Product features (article)**

Covers concentrations up to 100%.

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Organizational and technical measures and conditions**

Provide a basic level of general ventilation (1 to 3 air changes per hour).

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 9.2.5. Worker Exposure Control: Chemical production or refinery in closed process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

#### **Product features (article)**

Covers concentrations up to 100%.

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Organizational and technical measures and conditions**

Provide a basic level of general ventilation (1 to 3 air changes per hour).

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 9.2.6. Worker Exposure Control: Chemical production or formulation in closed batch processes, with occasional controlled exposure or processes with equivalent containment conditions (PROC3)

#### **Product features (article)**

Covers concentrations up to 100%.

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Organizational and technical measures and conditions**

Provide a basic level of general ventilation (3 to 5 air changes per hour).

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 9.2.7. Worker Exposure Control: Production of chemicals with the possibility of exposure (PROC4)

#### **Product features (article)**

Covers concentrations up to 100%.

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Organizational and technical measures and conditions**

Local exhaust ventilation

Inhalation - minimum yield of 80%

Provide a basic level of general ventilation (3 to 5 air changes per hour).

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 9.2.8. Worker Exposure Control: Production of chemicals with the possibility of exposure (PROC4)

#### **Product features (article)**

Covers concentrations up to 100%.

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Organizational and technical measures and conditions**

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 9.2.9. Worker Exposure Control: Mixing or blending in batch processes (PROC5)

#### **Product features (article)**

Covers concentrations up to 100%.

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Organizational and technical measures and conditions**

Local exhaust ventilation

Inhalation - minimum yield of 80%

Provide a basic level of general ventilation (3 to 5 air changes per hour).

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 9.2.10. Worker Exposure Control: Mixing or blending in batch processes (PROC5)

#### **Product features (article)**

Covers concentrations up to 100%.

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Conditions and measures for personal protection, hygiene and health assessment**

Wear suitable respirator.

For more information, refer to Section 8 of the SDS (safety data sheet).

Inhalation - minimum yield of 90%

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Outdoor use

Temperature: Process temperature up to 40°C is assumed

### 9.2.11. Worker Exposure Control: Transfer of a substance or a preparation (filling/emptying) at non-dedicated facilities (PROC8a) (PROC8b)

#### **Product features (article)**

Covers concentrations up to 100%.

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Organizational and technical measures and conditions**

Local exhaust ventilation

Inhalation - minimum yield of 90%

Provide a basic level of general ventilation (3 to 5 air changes per hour).

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 9.2.12. Worker Exposure Control: Transfer of a substance or a mixture (charging/discharging) at dedicated facilities (PROC8b)

#### **Product features (article)**

Covers concentrations up to 100%.

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Organizational and technical measures and conditions**

Local exhaust ventilation

Inhalation - minimum yield of 90%

Provide a basic level of general ventilation (1 to 3 air changes per hour).

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 9.2.13. Worker Exposure Control: Application with rollers or brushes (PROC10)

#### **Product features (article)**

Covers concentrations up to 100%.

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Organizational and technical measures and conditions**

Local exhaust ventilation

Inhalation - minimum yield of 80%

Provide a basic level of general ventilation (1 to 3 air changes per hour).

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 9.2.14. Worker Exposure Control: Application with rollers or brushes (PROC10)

#### **Product features (article)**

Covers concentrations up to 100%.

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Conditions and measures for personal protection, hygiene and health assessment**

Wear suitable respirator.

For more information, refer to Section 8 of the SDS (safety data sheet).

Inhalation - minimum yield of 90%

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed



### 9.2.15. Worker Exposure Control: Non-industrial spray application (PROC11)

#### **Product features (article)**

Covers concentrations up to 25 %

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Organizational and technical measures and conditions**

Local exhaust ventilation

Inhalation - minimum yield of 80%

Provide a basic level of general ventilation (3 to 5 air changes per hour).

#### **Conditions and measures for personal protection, hygiene and health assessment**

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, these parts should also be protected with impermeable clothing equivalent to that described for the hands.

For more information, refer to Section 8 of the SDS (safety data sheet).

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 9.2.16. Worker Exposure Control: Non-industrial spray application (PROC11)

#### **Product features (article)**

Covers concentrations up to 25 %

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Conditions and measures for personal protection, hygiene and health assessment**

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, these parts should also be protected with impermeable clothing equivalent to that described for the hands.

For more information, refer to Section 8 of the SDS (safety data sheet).

Wear suitable respirator.

For more information, refer to Section 8 of the SDS (safety data sheet).

Inhalation - minimum yield of 90%

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Outdoor use

Temperature: Process temperature up to 40°C is assumed

### 9.2.17. Worker Exposure Control: Treatment of articles by dipping and pouring (PROC13)

#### **Product features (article)**

Covers concentrations up to 25 %

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Organizational and technical measures and conditions**

Provide a good standard of general ventilation (from 5 to 10 air changes per hour).

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 9.2.18. Worker Exposure Control: Treatment of articles by dipping and pouring (PROC13)

#### **Product features (article)**

Covers concentrations up to 25 %

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Conditions and measures for personal protection, hygiene and health assessment**

Wear suitable respirator.

For more information, refer to Section 8 of the SDS (safety data sheet).

Inhalation - minimum yield of 90%

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Outdoor use

Temperature: Process temperature up to 40°C is assumed

### 9.2.19. Worker Exposure Control: Use as laboratory reagents (PROC15)

#### **Product features (article)**

Covers concentrations up to 100%.

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Organizational and technical measures and conditions**

Provide a basic level of general ventilation (1 to 3 air changes per hour).

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 9.2.20. Worker Exposure Control: Hand-mixing with direct contact and only PPE available (PROC19)

#### **Product features (article)**

Covers concentrations up to 25 %

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Organizational and technical measures and conditions**

Provide a good standard of general ventilation (from 5 to 10 air changes per hour).

#### **Conditions and measures for personal protection, hygiene and health assessment**

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, these parts should also be protected with impermeable clothing equivalent to that described for the hands.

For more information, refer to Section 8 of the SDS (safety data sheet).

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 9.2.21. Worker Exposure Control: Hand-mixing with direct contact and only PPE available (PROC19)

#### **Product features (article)**

Covers concentrations up to 5 %

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Conditions and measures for personal protection, hygiene and health assessment**

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, these parts should also be protected with impermeable clothing equivalent to that described for the hands.

For more information, refer to Section 8 of the SDS (safety data sheet).

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 9.3. EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

#### 9.3.1. Environmental release and exposure: Wide dispersive use of non-reactive processing aid (no inclusion into the article, outdoor) (ERC8d)

Route release	Release rate	Method for estimating for release
water	0.014 kg/day	Estimated release factor
air	980 kg/day	Estimated release factor
Soil	0 kg/day	Estimated release factor

Protection target	Estimated exposure	RCR
Fresh water	0.000396 mg/l (EUSES v2.1)	< 0.01
freshwater sediments	0.00236 mg/kg dry weight (EUSES v2.1)	< 0.01
Sea water	0.0000597 mg/l (EUSES v2.1)	< 0.01
Marine sediment	0.000356 mg/kg dry weight (EUSES v2.1)	< 0.01
Sewage treatment plant	0.000805 mg/l (EUSES v2.1)	< 0.01
Farmland	0.000131 mg/kg dry weight (EUSES v2.1)	< 0.01
Prey for predators (freshwater)	0.011 mg/kg wet weight (EUSES v2.1)	< 0.01
Prey for predators (marine water)	0.00167 mg/kg wet weight (EUSES v2.1)	< 0.01
Main predator prey (marine water)	0.00158 mg/kg wet weight (EUSES v2.1)	< 0.01
Prey for Predators (Terrestrial)	0.000114 mg/kg wet weight (EUSES v2.1)	< 0.01

#### 9.3.3. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	0.367 mg/m <sup>3</sup> (ECETOC TRA worker v3)	< 0.01
inhalation	systemic	Short term	1.468 mg/m <sup>3</sup> (ECETOC TRA worker v3)	< 0.01
inhalation	local	Long-term	0.367 mg/m <sup>3</sup> (ECETOC TRA worker v3)	< 0.01
inhalation	local	Short term	1.468 mg/m <sup>3</sup> (ECETOC TRA worker v3)	< 0.01
dermal	systemic	Long-term	0.034 mg/kg bw/day (ECETOC TRA worker v3)	< 0.01
combined routes	systemic	Long-term	/	< 0.01

#### 9.3.4. Worker exposure: Chemical production or refinery in closed process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	183.5 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
inhalation	systemic	Short term	734.2 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.5
inhalation	local	Long-term	183.5 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
inhalation	local	Short term	734.2 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.5
dermal	systemic	Long-term	1.37 mg/kg bw/day (ECETOC TRA worker v3)	0.022
combined routes	systemic	Long-term	/	0.272

### 9.3.5. Worker exposure: Chemical production or refinery in closed process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	183.5 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
inhalation	local	Short term	734.2 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.5
inhalation	local	Long-term	183.5 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
inhalation	systemic	Short term	734.2 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.5
dermal	systemic	Long-term	1.37 mg/kg bw/day (ECETOC TRA worker v3)	0.022
combined routes	systemic	Long-term	/	0.272

### 9.3.6. Worker exposure: Chemical production or formulation in closed batch processes, with occasional controlled exposure or processes with equivalent containment conditions (PROC3)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	256.9 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.35
inhalation	systemic	Short term	1.03 g/m <sup>3</sup> (ECETOC TRA worker v3)	0.7
inhalation	local	Long-term	256.9 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.35
inhalation	local	Short term	1.03 g/m <sup>3</sup> (ECETOC TRA worker v3)	0.7
dermal	systemic	Long-term	0.69 mg/kg bw/day (ECETOC TRA worker v3)	0.011
combined routes	systemic	Long-term	/	0.361

### 9.3.7. Worker exposure: Production of chemicals with the possibility of exposure (PROC4)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	128.4 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.175
inhalation	systemic	Short term	513.9 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.35
inhalation	local	Long-term	128.4 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.175
inhalation	local	Short term	513.9 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.35
dermal	systemic	Long-term	6.86 mg/kg bw/day (ECETOC TRA worker v3)	0.109
combined routes	systemic	Long-term	/	0.284

### 9.3.8. Worker exposure: Production of chemicals with the possibility of exposure (PROC4)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	256.9 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.35
inhalation	systemic	Short term	1.03 g/m <sup>3</sup> (ECETOC TRA worker v3)	0.7
inhalation	local	Long-term	256.9 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.35
inhalation	local	Short term	1.03 g/m <sup>3</sup> (ECETOC TRA worker v3)	0.7
dermal	systemic	Long-term	6.86 mg/kg bw/day (ECETOC TRA worker v3)	0.109
combined routes	systemic	Long-term	/	0.459

### 9.3.9. Worker exposure: Mixing or blending in batch processes (PROC5)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	256.9 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.35
inhalation	systemic	Short term	1.03 g/m <sup>3</sup> (ECETOC TRA worker v3)	0.7
inhalation	local	Long-term	256.9 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.35
inhalation	local	Short term	1.03 g/m <sup>3</sup> (ECETOC TRA worker v3)	0.7
dermal	systemic	Long-term	13.71 mg/kg bw/day (ECETOC TRA worker v3)	0.218
combined routes	systemic	Long-term	/	0.568

### 9.3.10. Worker exposure: Mixing or blending in batch processes (PROC5)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	128.4 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.175
inhalation	systemic	Short term	513.9 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.35
inhalation	local	Long-term	128.4 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.175
inhalation	local	Short term	513.9 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.35
dermal	systemic	Long-term	13.71 mg/kg bw/day (ECETOC TRA worker v3)	0.218
combined routes	systemic	Long-term	/	0.393

### 9.3.11. Worker exposure: Transfer of a substance or a preparation (filling/emptying) at non-dedicated facilities (PROC8a)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	256.9 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.35
inhalation	systemic	Short term	1.03 g/m <sup>3</sup> (ECETOC TRA worker v3)	0.7
inhalation	local	Long-term	256.9 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.35
inhalation	local	Short term	1.03 g/m <sup>3</sup> (ECETOC TRA worker v3)	0.7
dermal	systemic	Long-term	13.71 mg/kg bw/day (ECETOC TRA worker v3)	0.218
combined routes	systemic	Long-term	/	0.568

### 9.3.12. Worker exposure: Transfer of a substance or a mixture (charging/discharging) at dedicated facilities (PROC8b)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	91.77 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.125
inhalation	systemic	Short term	367.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
inhalation	local	Long-term	91.77 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.125
inhalation	local	Short term	367.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
dermal	systemic	Long-term	13.71 mg/kg bw/day (ECETOC TRA worker v3)	0.218
combined routes	systemic	Long-term	/	0.343

### 9.3.13. Worker exposure: Application with rollers or brushes (PROC10)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	256.9 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.35
inhalation	systemic	Short term	1.03 g/m <sup>3</sup> (ECETOC TRA worker v3)	0.7
inhalation	local	Long-term	256.9 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.35
inhalation	local	Short term	1.03 g/m <sup>3</sup> (ECETOC TRA worker v3)	0.7
dermal	systemic	Long-term	27.43 mg/kg bw/day (ECETOC TRA worker v3)	0.435
combined routes	systemic	Long-term	/	0.785

### 9.3.14. Worker exposure: Application with rollers or brushes (PROC10)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	128.4 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.175
inhalation	systemic	Short term	513.9 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.35
inhalation	local	Long-term	128.4 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.175
inhalation	local	Short term	513.9 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.35
dermal	systemic	Long-term	27.43 mg/kg bw/day (ECETOC TRA worker v3)	0.435
combined routes	systemic	Long-term	/	0.61

### 9.3.15. Worker exposure: Non-industrial spray application (PROC11)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	308.3 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.42
inhalation	systemic	Short term	mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.84
inhalation	local	Long-term	308.3 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.42
inhalation	local	Short term	mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.84
dermal	systemic	Long-term	12.85 mg/kg bw/day (ECETOC TRA worker v3)	0.204
combined routes	systemic	Long-term	/	0.624

### 9.3.16. Worker exposure: Non-industrial spray application (PROC11)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	154.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.21
inhalation	systemic	Short term	616.7 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.42
inhalation	local	Long-term	154.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.21
inhalation	local	Short term	616.7 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.42
dermal	systemic	Long-term	12.85 mg/kg bw/day (ECETOC TRA worker v3)	0.204
combined routes	systemic	Long-term	/	0.414

### 9.3.17. Worker exposure: Treatment of articles by dipping and pouring (PROC13)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	165.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.225
inhalation	systemic	Short term	660.7 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.45
inhalation	local	Long-term	165.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.225
inhalation	local	Short term	660.7 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.45
dermal	systemic	Long-term	8.226 mg/kg bw/day (ECETOC TRA worker v3)	0.131
combined routes	systemic	Long-term	/	0.356

### 9.3.18. Worker exposure: Treatment of articles by dipping and pouring (PROC13)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	38.54 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.053
inhalation	systemic	Short term	154.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.105
inhalation	local	Long-term	38.54 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.053
inhalation	local	Short term	154.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.105
dermal	systemic	Long-term	8.226 mg/kg bw/day (ECETOC TRA worker v3)	0.131
combined routes	systemic	Long-term	/	0.183

### 9.3.19. Worker exposure: Use as laboratory reagents (PROC15)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	183.5 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
inhalation	systemic	Short term	734.2 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.5
inhalation	local	Long-term	183.5 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.25
inhalation	local	Short term	734.2 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.5
dermal	systemic	Long-term	0.34 mg/kg bw/day (ECETOC TRA worker v3)	< 0.01
combined routes	systemic	Long-term	/	0.255

### 9.3.20. Worker exposure: Hand-mixing with direct contact and only PPE available (PROC19)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	330.3 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.45
inhalation	systemic	Short term	1.32 g/m <sup>3</sup> (ECETOC TRA worker v3)	0.9
inhalation	local	Long-term	330.3 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.45
inhalation	local	Short term	1.32 g/m <sup>3</sup> (ECETOC TRA worker v3)	0.9
dermal	systemic	Long-term	16.97 mg/kg bw/day (ECETOC TRA worker v3)	0.269
combined routes	systemic	Long-term	/	0.72

### 9.3.21. Worker exposure: Hand-mixing with direct contact and only PPE available (PROC19)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	256.9 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.35
inhalation	systemic	Short term	mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.7
inhalation	local	Long-term	256.9 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.35
inhalation	local	Short term	mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.7
dermal	systemic	Long-term	5.657 mg/kg bw/day (ECETOC TRA worker v3)	0.09
combined routes	systemic	Long-term	/	0.44

## 9.4. GUIDANCE FOR DOWNSTREAM USERS TO ASSESS WHETHER THEY COMPLY WITH THE LIMITS SET BY THE EXPOSURE SCENARIO

Guidance to check compliance with the exposure scenario: <https://echa.europa.eu/>

## ES 12: USE IN DETERGENT PRODUCTS (GEST4\_I, GEST4\_P, GEST4\_C).

### 12.1. WIDE DISPERSIVE USE BY PROFESSIONAL WORKERS

#### **Environment**

SC 1: Wide dispersive use of non-reactive processing aid (no inclusion into the article, indoors) ERC8a

#### **Worker**

SC 2: Filling of equipment from drums and containers, specialised site PROC8b

SC 3: Automated process with (semi) closed systems; Use in closed systems PROC2

SC 4: Automated process with (semi) closed systems Drum/batch transfers, Use in closed systems PROC3

SC 5: Semi-automatic process (e.g: Semi-automatic application of floor care and maintenance products) PROC4

SC 6: Filling of equipment from drums and containers, Outdoor use PROC8a

SC 7: Immersion, dipping and pouring, Manual, Surfaces, Cleaning PROC13

SC 8: Cleaning with low-pressure washers, Roller application or brushing, No spraying PROC10

SC 9: Cleaning with high pressure washers, Spraying, Indoor use PROC11

SC 10: Cleaning with high pressure washers Spraying, Outdoor use PROC11

SC 11: Application of cleaning products in closed systems, Manual, Surfaces, Cleaning PROC10

SC 12: Ad hoc manual application via trigger sprays, partial dipping, etc., Roller application or brushing PROC10

SC 13: Application of cleaning products in closed systems, Outdoor use PROC4

SC 14: Cleaning of medical devices PROC4

### 12.2. CONDITIONS OF USE THAT AFFECT EXPOSURE

#### 12.2.1 Environmental exposure control: Wide dispersive use of non-reactive processing aid (no inclusion into the article, indoors) (ERC8a)

##### **Organizational and technical measures and conditions**

A wastewater treatment plant is expected.

##### **Conditions and measures for waste treatment (including the article of waste)**

Waste treatment: Dispose of waste products or used containers according to local regulations.

#### 12.2.2. Worker Exposure Control: Transfer of a substance or a mixture (charging/discharging) at dedicated facilities (PROC8b)

##### **Product features (article)**

Covers concentrations up to 25 %

##### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

##### **Organizational and technical measures and conditions**

Provide a good standard of general ventilation (from 5 to 10 air changes per hour).

##### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

#### 12.2.3. Worker Exposure Control: Chemical production or refinery in closed process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

##### **Product features (article)**

Covers concentrations up to 25 %

##### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

##### **Organizational and technical measures and conditions**

Provide a basic level of general ventilation (1 to 3 air changes per hour).

##### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed



#### 12.2.4. Worker Exposure Control: Chemical production or formulation in closed batch processes, with occasional controlled exposure or processes with equivalent containment conditions (PROC3)

##### **Product features (article)**

Covers concentrations up to 25 %

##### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

##### **Organizational and technical measures and conditions**

Provide a basic level of general ventilation (1 to 3 air changes per hour).

##### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

#### 12.2.5. Worker Exposure Control: Production of chemicals with the possibility of exposure (PROC4)

##### **Product features (article)**

Covers concentrations up to 25 %

##### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

##### **Organizational and technical measures and conditions**

Provide a good standard of general ventilation (from 5 to 10 air changes per hour).

##### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

#### 12.2.6. Worker Exposure Control: Transfer of a substance or a preparation (filling/emptying) at non-dedicated facilities (PROC8a)

##### **Product features (article)**

Covers concentrations up to 25 %

##### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

##### **Conditions and measures for personal protection, hygiene and health assessment**

Wear suitable respirator.

For more information, refer to Section 8 of the SDS (safety data sheet).

Inhalation - minimum yield of 90%

##### **Other conditions affecting worker exposure**

Indoor and outdoor use: Outdoor use

Temperature: Process temperature up to 40°C is assumed

#### 12.2.7. Worker Exposure Control: Treatment of articles by dipping and pouring (PROC13)

##### **Product features (article)**

Covers concentrations up to 25 %

##### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

##### **Organizational and technical measures and conditions**

Provide a good standard of general ventilation (from 5 to 10 air changes per hour).

##### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

#### 12.2.8. Worker Exposure Control: Application with rollers or brushes (PROC10)

##### **Product features (article)**

Covers concentrations up to 25 %

##### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

##### **Organizational and technical measures and conditions**

Provide a good standard of general ventilation (from 5 to 10 air changes per hour).

##### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 12.2.9. Worker Exposure Control: Non-industrial spray application (PROC11)

#### **Product features (article)**

Covers concentrations up to 5 %

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Organizational and technical measures and conditions**

Provide a good standard of general ventilation (from 5 to 10 air changes per hour).

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 12.2.10. Worker Exposure Control: Non-industrial spray application (PROC11)

#### **Product features (article)**

Covers concentrations up to 1%

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Conditions and measures for personal protection, hygiene and health assessment**

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, these parts should also be protected with impermeable clothing equivalent to that described for the hands.

For more information, refer to Section 8 of the SDS (safety data sheet).

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Outdoor use

Temperature: Process temperature up to 40°C is assumed

### 12.2.11. Worker Exposure Control: Application with rollers or brushes (PROC10)

#### **Product features (article)**

Covers concentrations up to 5 %

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Organizational and technical measures and conditions**

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 5.2.12. Worker Exposure Control: Application with rollers or brushes (PROC10)

#### **Product features (article)**

Covers concentrations up to 25 %

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Organizational and technical measures and conditions**

Local exhaust ventilation

Inhalation - minimum yield of 80%

Provide a basic level of general ventilation (1 to 3 air changes per hour).

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

### 12.2.13. Worker Exposure Control: Production of chemicals with the possibility of exposure (PROC4)

#### **Product features (article)**

Covers concentrations up to 25 %

#### **Amount used (or contained in articles), frequency and duration of use/exposure**

Frequency of use: Covers use up to 8 h/day

#### **Conditions and measures for personal protection, hygiene and health assessment**

Wear suitable respirator.

For more information, refer to Section 8 of the SDS (safety data sheet).

Inhalation - minimum yield of 90%

#### **Other conditions affecting worker exposure**

Indoor and outdoor use: Outdoor use

Temperature: Process temperature up to 40°C is assumed

## 12.2.14. Worker Exposure Control: Production of chemicals with the possibility of exposure (PROC4)

### Product features (article)

Covers concentrations up to 25 %

### Amount used (or contained in articles), frequency and duration of use/exposure

Frequency of use: Covers use up to 8 h/day

### Organizational and technical measures and conditions

Local exhaust ventilation

Inhalation - minimum yield of 80%

Provide a basic level of general ventilation (1 to 3 air changes per hour).

### Other conditions affecting worker exposure

Indoor and outdoor use: Indoor use

Temperature: Process temperature up to 40°C is assumed

## 12.3. EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

### 12.3.1. Environmental release and exposure: Wide dispersive use of non-reactive processing aid (no inclusion into the article, indoors) (ERC8a)

Route release	Release rate	Method for estimating for release
water	0.014 kg/day	Environmental Release Category (ERC)
air	0.014 kg/day	Environmental Release Category (ERC)
Soil	0 kg/day	Environmental Release Category (ERC)

Protection target	Estimated exposure	RCR
Fresh water	0.000397 mg/l (EUSES v2.1)	< 0.01
freshwater sediments	0.00237 mg/kg dry weight (EUSES v2.1)	< 0.01
Sea water	0.000598 mg/l (EUSES v2.1)	< 0.01
Marine sediment	0.000357 mg/kg dry weight (EUSES v2.1)	< 0.01
Sewage treatment plant	0.000811 mg/l (EUSES v2.1)	< 0.01
Farmland	0.000131 mg/kg dry weight (EUSES v2.1)	< 0.01
Prey for predators (freshwater)	0.011 mg/kg dry weight (EUSES v2.1)	< 0.01
Prey for predators (marine water)	0.00167 mg/kg dry weight (EUSES v2.1)	< 0.01
Main predator prey (marine water)	0.00158 mg/kg dry weight (EUSES v2.1)	< 0.01
Prey for Predators (Terrestrial)	0.000114 mg/kg dry weight (EUSES v2.1)	< 0.01

### 12.3.2. Worker exposure: Transfer of a substance or a mixture (charging/discharging) at dedicated facilities (PROC8b)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	165.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.225
inhalation	systemic	Short term	660.7 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.45
inhalation	local	Long-term	165.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.225
inhalation	local	Short term	660.7 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.45
dermal	systemic	Long-term	8.226 mg/kg bw/day (ECETOC TRA worker v3)	0.131
combined routes	systemic	Long-term	/	0.356

### 12.3.3. Worker exposure: Chemical production or refinery in closed process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	110.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.15
inhalation	local	Long-term	110.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.15
inhalation	local	Short term	440.5 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.3
inhalation	systemic	Short term	440.5 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.3
dermal	systemic	Long-term	0.822 mg/kg bw/day (ECETOC TRA worker v3)	0.013
combined routes	systemic	Long-term	/	0.163

### 12.3.4. Worker exposure: Chemical production or formulation in closed batch processes, with occasional controlled exposure or processes with equivalent containment conditions (PROC3)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	220.2 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.3
inhalation	systemic	Short term	881.0 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.6
inhalation	local	Long-term	220.2 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.3
inhalation	local	Short term	881.0 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.6
dermal	systemic	Long-term	0.414 mg/kg bw/day (ECETOC TRA worker v3)	< 0.01
combined routes	systemic	Long-term	/	0.307

### 12.3.5. Worker exposure: Production of chemicals with the possibility of exposure (PROC4)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	165.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.225
inhalation	systemic	Short term	660.7 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.45
inhalation	local	Long-term	165.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.225
inhalation	local	Short term	660.7 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.45
dermal	systemic	Long-term	4.116 mg/kg bw/day (ECETOC TRA worker v3)	0.065
combined routes	systemic	Long-term	/	0.29

### 12.3.6. Worker exposure: Transfer of a substance or a preparation (filling/emptying) at non-dedicated facilities (PROC8a)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	77.09 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.105
inhalation	systemic	Short term	308.3 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.21
inhalation	local	Long-term	77.09 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.105
inhalation	local	Short term	308.3 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.21
dermal	systemic	Long-term	8.226 mg/kg bw/day (ECETOC TRA worker v3)	0.131
combined routes	systemic	Long-term	/	0.236

### 12.3.7. Worker exposure: Treatment of articles by dipping and pouring (PROC13)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	165.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.225
inhalation	systemic	Short term	660.7 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.45
inhalation	local	Long-term	165.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.225
inhalation	local	Short term	660.7 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.45
dermal	systemic	Long-term	8.226 mg/kg bw/day (ECETOC TRA worker v3)	0.131
combined routes	systemic	Long-term	/	0.356

### 12.3.8. Worker exposure: Application with rollers or brushes (PROC10)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	330.3 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.45
inhalation	systemic	Short term	mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.9
inhalation	local	Long-term	330.3 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.45
inhalation	local	Short term	mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.9
dermal	systemic	Long-term	16.45 mg/kg bw/day (ECETOC TRA worker v3)	0.261
combined routes	systemic	Long-term	/	0.711

### 12.3.9. Worker exposure: Non-industrial spray application (PROC11)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	220.2 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.3
inhalation	systemic	Short term	881.0 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.6
inhalation	local	Long-term	220.2 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.3
inhalation	local	Short term	881.0 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.6
dermal	systemic	Long-term	21.42 mg/kg bw/day (ECETOC TRA worker v3)	0.34
combined routes	systemic	Long-term	/	0.64

### 12.3.10. Worker exposure: Non-industrial spray application (PROC11)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	256.9 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.35
inhalation	systemic	Short term	1.03 g/m <sup>3</sup> (ECETOC TRA worker v3)	0.7
inhalation	local	Long-term	256.9 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.35
inhalation	local	Short term	1.03 g/m <sup>3</sup> (ECETOC TRA worker v3)	0.7
dermal	systemic	Long-term	2.143 mg/kg bw/day (ECETOC TRA worker v3)	0.034
combined routes	systemic	Long-term	/	0.384

### 12.3.11. Worker exposure: Application with rollers or brushes (PROC10)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	256.9 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.35
inhalation	systemic	Short term	1.03 g/m <sup>3</sup> (ECETOC TRA worker v3)	0.7
inhalation	local	Long-term	256.9 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.35
inhalation	local	Short term	1.03 g/m <sup>3</sup> (ECETOC TRA worker v3)	0.7
dermal	systemic	Long-term	5.486 mg/kg bw/day (ECETOC TRA worker v3)	0.087
combined routes	systemic	Long-term	/	0.437

### 12.3.12. Worker exposure: Application with rollers or brushes (PROC10)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	220.2 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.3
inhalation	systemic	Short term	881.0 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.6
inhalation	local	Long-term	220.2 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.3
inhalation	local	Short term	881.0 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.6
dermal	systemic	Long-term	16.45 mg/kg bw/day (ECETOC TRA worker v3)	0.261
combined routes	systemic	Long-term	/	0.561

### 12.3.13. Worker exposure: Production of chemicals with the possibility of exposure (PROC4)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	38.54 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.053
inhalation	systemic	Short term	154.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.105
inhalation	local	Long-term	38.54 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.053
inhalation	local	Short term	154.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.105
dermal	systemic	Long-term	4.116 mg/kg bw/day (ECETOC TRA worker v3)	0.065
combined routes	systemic	Long-term	/	0.118

### 12.3.14. Worker exposure: Production of chemicals with the possibility of exposure (PROC4)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	110.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.15
inhalation	systemic	Short term	440.5 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.3
inhalation	local	Long-term	110.1 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.15
inhalation	local	Short term	440.5 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0.3
dermal	systemic	Long-term	4.116 mg/kg bw/day (ECETOC TRA worker v3)	0.065
combined routes	systemic	Long-term	/	0.215

## 12.4. GUIDANCE FOR DOWNSTREAM USERS TO ASSESS WHETHER THEY COMPLY WITH THE LIMITS SET BY THE EXPOSURE SCENARIO

Guidance to check compliance with the exposure scenario: <https://echa.europa.eu/>

## n-butyl acetate

### Substance identification

Chemical Name: n-butyl acetate

CAS number: 123-86-4

Date - Version: 07/06/2017 10.0

## 1. USE IN COATINGS. USE IN PAINTS. USE IN PRINTING INKS. USE IN ADHESIVES.

**Short title of the exposure scenario:** Use in coatings. Use in paints. Use in printing inks. Use in adhesives.

SU3; ERC4; PROC7, PROC10, PROC13

## EXPOSURE CONTROL AND RISK MANAGEMENT MEASURES

### EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** CEPE SPERC4.1a.v1

#### *Operating conditions*

Yearly amount used in EU: 5,000,000 kgs

Minimum emission days per year: 225

Emission factor to air: 0.8%

Emission factor in water: 2%

Emission factor in soil: 0%

Receiving surface water (flow rate): 18,000 m<sup>3</sup>/day

Freshwater dilution factor: 10

Marine water dilution factor: 100

#### *Risk management measures*

Suitable measures to reduce emissions to air can be: Exhaust gas treatment with thermal oxidation.

Type of treatment plant: Municipal sewage treatment plant.

Assumed sewage treatment plant flow: 2,000 m<sup>3</sup>/day

#### *Exposure estimation and reference to its source*

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Environment

Risk Characterization Ratio (RCR): 0.925355

Risk from environmental exposure is driven by soil.

Maximum safe use amount: 1080.7 kg/day

### EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC7: Industrial spray application

**Area of use:** Industrial

#### *Operating conditions*

Substance concentration: n-butyl acetate content: ≥0 - ≤100%

Physical state: liquid

Vapor pressure of the substance during use: 1120Pa

Process temperature: 20°C

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Internal use

### ***Risk management measures***

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%

Minimize manual tasks.

Daily general cleaning of equipment and work area.

Regular inspection and maintenance of equipment and machinery.

Ensure that the activity is performed outside the operator's respiratory zone (head-product distance greater than 1m).

Avoid frequent and direct contact with the substance.

Check that risk reduction measures are implemented and that the conditions of use are respected.

Avoid splashes.

Make sure the spray booth is used.

Wear suitable clothing.

### ***Exposure estimation and reference to its source***

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Worker - dermal, long-term - systemic.

Exposure estimation: 4.2857 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.38961

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Operator - inhalation, long-term - local.

Exposure estimation: 0.0001 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.000001

### ***Guidance for downstream users***

For a comparison term, visit <http://www.ecetoc.org/tra> Please note that a revised version was used (see exposure estimates).

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC10: Application with rollers or brushes**

**Area of use: Industrial**

### ***Operating conditions***

Substance concentration: n-butyl acetate content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid

Vapor pressure of the substance during use: 1120Pa

Process temperature: 20°C

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Internal use

### ***Risk management measures***

Forced local ventilation. Effectiveness: 90%

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%

### ***Exposure estimation and reference to its source***

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Worker - dermal, long-term - systemic.

Exposure estimation: 2.7429 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.249351

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Operator - inhalation, long-term - local.

Exposure estimation: 24.1996 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.080665

### ***Guidance for downstream users***

For a comparison term, visit <http://www.ecetoc.org/tra>



## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC13: Treatment of articles by dipping and pouring

Area of use: Industrial

### ***Operating conditions***

Substance concentration: n-butyl acetate content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid

Vapor pressure of the substance during use: 1120Pa

Process temperature: 20°C

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Internal use

### ***Risk management measures***

Forced local ventilation. Effectiveness: 90%

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%

### ***Exposure estimation and reference to its source***

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Worker - dermal, long-term - systemic.

Exposure estimation: 1.3714 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.124675

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Operator - inhalation, long-term - local.

Exposure estimation: 24.1996 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.080665

### ***Guidance for downstream users***

For a comparison term, visit <http://www.ecetoc.org/tra>

## 2. USE IN COATINGS. USE IN PAINTS. USE IN PRINTING INKS. USE IN ADHESIVES.

**Short title of the exposure scenario:** Use in coatings. Use in paints. Use in printing inks. Use in adhesives.  
SU3; ERC4; PROC7, PROC10, PROC13

### EXPOSURE CONTROL AND RISK MANAGEMENT MEASURES

#### EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** CEPE SPERC4.1a.v1

##### *Operating conditions*

Yearly amount used in EU: 43,000,000 kgs

Minimum emission days per year: 225

Emission factor to air: 0.8%

Emission factor in water: 2%

Emission factor in soil: 0%

Receiving surface water (flow rate): 18,000 m<sup>3</sup>/day

Freshwater dilution factor: 10

Marine water dilution factor: 100

##### *Risk management measures*

Suitable measures to reduce emissions to air can be: Exhaust gas treatment with thermal oxidation.

Type of treatment plant: Municipal sewage treatment plant.

Assumed sewage treatment plant flow: 2,000 m<sup>3</sup>/day

##### *Exposure estimation and reference to its source*

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Environment

Risk Characterization Ratio (RCR): 0.925355

Risk from environmental exposure is driven by soil.

Maximum safe use amount: 1080.7 kg/day

#### EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC7: Industrial spray application

**Area of use:** Industrial

##### *Operating conditions*

Substance concentration: n-butyl acetate content: ≥0 - ≤100%

Physical state: liquid

Vapor pressure of the substance during use: 1120Pa

Process temperature: 20°C

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Internal use

##### *Risk management measures*

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%

Minimize manual tasks.

Daily general cleaning of equipment and work area.

Regular inspection and maintenance of equipment and machinery.

Ensure that the activity is performed outside the operator's respiratory zone (head-product distance greater than 1m).

Avoid frequent and direct contact with the substance.

Check that risk reduction measures are implemented and that the conditions of use are respected.

Avoid splashes.

Make sure the spray booth is used.

Wear suitable clothing.

##### *Exposure estimation and reference to its source*

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Worker - dermal, long-term - systemic.

Exposure estimation: 4.2857 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.38961

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Operator - inhalation, long-term - local.  
Exposure estimation: 0.0001 mg/m<sup>3</sup>  
Risk Characterization Ratio (RCR): 0.000001

#### **Guidance for downstream users**

For a comparison term, visit <http://www.ecetoc.org/tra> Please note that a revised version was used (see exposure estimates).

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC10: Application with rollers or brushes**

**Area of use: Industrial**

#### **Operating conditions**

Substance concentration: n-butyl acetate content: ≥0 - ≤100%

Physical state: liquid

Vapor pressure of the substance during use: 1120Pa

Process temperature: 20°C

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Internal use

#### **Risk management measures**

Forced local ventilation. Effectiveness: 90%

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%

#### **Exposure estimation and reference to its source**

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Worker - dermal, long-term - systemic.

Exposure estimation: 2.7429 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.249351

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Operator - inhalation, long-term - local.

Exposure estimation: 24.1996 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.080665

#### **Guidance for downstream users**

For a comparison term, visit <http://www.ecetoc.org/tra>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC13: Treatment of articles by dipping and pouring**

**Area of use: Industrial**

#### **Operating conditions**

Substance concentration: n-butyl acetate content: ≥0 - ≤100%

Physical state: liquid

Vapor pressure of the substance during use: 1120Pa

Process temperature: 20°C

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Internal use

#### **Risk management measures**

Forced local ventilation. Effectiveness: 90%

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%

#### **Exposure estimation and reference to its source**

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Worker - dermal, long-term - systemic.

Exposure estimation: 1.3714 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.124675

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Operator - inhalation, long-term - local.

Exposure estimation: 24.1996 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.080665

#### **Guidance for downstream users**

For a comparison term, visit <http://www.ecetoc.org/tra>

### 3. USE IN COATINGS. USE IN PAINTS. USE IN PRINTING INKS. USE IN ADHESIVES.

**Short title of the exposure scenario:** Use in coatings. Use in paints. Use in printing inks. Use in adhesives.  
SU22; ERC8a, ERC8d; PROC10, PROC11, PROC13, PROC19

## EXPOSURE CONTROL AND RISK MANAGEMENT MEASURES

### EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** CEPE SPERC 8a.2a.v1

#### ***Operating conditions***

Yearly amount used in EU: 2,000,000 kgs

Minimum emission days per year: 225

Emission factor to air: 99%

Emission factor in water: 1%

Emission factor in soil: 0%

Receiving surface water (flow rate): 18,000 m<sup>3</sup>/day

Freshwater dilution factor: 10

Marine water dilution factor: 100

#### ***Risk management measures***

The wastewater treatment measures considered suitable are, for example, wastewater or sewage treatment plant.

Type of treatment plant: Municipal sewage treatment plant.

Assumed sewage treatment plant flow: 2,000 m<sup>3</sup>/day

#### ***Exposure estimation and reference to its source***

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Environment

Risk Characterization Ratio (RCR): 0.012923

Risk from environmental exposure is driven by freshwater sediment.

Maximum safe use amount: 1934.6 kg/giorno

### EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** CEPE SPERC 8d.3a.v1

#### ***Operating conditions***

Yearly amount used in EU: 2,000,000 kgs

Minimum emission days per year: 225

Emission factor to air: 98%

Emission factor in water: 2%

Emission factor in soil: 0%

Receiving surface water (flow rate): 18,000 m<sup>3</sup>/day

Freshwater dilution factor: 10

Marine water dilution factor: 100

#### ***Risk management measures***

Type of treatment plant: Municipal sewage treatment plant.

Assumed sewage treatment plant flow: 2,000 m<sup>3</sup>/day

#### ***Exposure estimation and reference to its source***

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Environment

Risk Characterization Ratio (RCR): 0.092422

Risk from environmental exposure is driven by soil.

Maximum safe use amount: 1082 kg/day

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC10: Application with rollers or brushes

Area of use: Professional

### **Operating conditions**

Substance concentration: n-butyl acetate content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid

Vapor pressure of the substance during use: 1120Pa

Process temperature: 20°C

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Internal use

### **Risk management measures**

Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour). Effectiveness: 70%

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%

### **Exposure estimation and reference to its source**

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Worker - dermal, long-term - systemic.

Exposure estimation: 2.7429 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.249351

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Operator - inhalation, long-term - local.

Exposure estimation: 145.1979 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.483993

### **Guidance for downstream users**

For a comparison term, visit <http://www.ecetoc.org/tra>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC11: Non-industrial spray application

Area of use: Professional

### **Operating conditions**

Substance concentration: n-butyl acetate content:  $\geq 0$  -  $\leq 45\%$

Physical state: liquid

Vapor pressure of the substance during use: 1120Pa

Process temperature: 20°C

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Internal use

### **Risk management measures**

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%

Minimize manual tasks.

Daily general cleaning of equipment and work area.

Regular inspection and maintenance of equipment and machinery.

Ensure that the activity is performed outside the operator's respiratory zone (head-product distance greater than 1m).

Avoid frequent and direct contact with the substance.

Check that risk reduction measures are implemented and that the conditions of use are respected.

Avoid splashes.

Make sure the spray booth is used.

Wear suitable clothing.

### **Exposure estimation and reference to its source**

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Worker - dermal, long-term - systemic.

Exposure estimation: 10.7143 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.974026

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Operator - inhalation, long-term - local.

Exposure estimation: 0.0001 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.000001

### **Guidance for downstream users**

For a comparison term, visit <http://www.ecetoc.org/tra> Please note that a revised version was used (see exposure estimates).

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC11: Non-industrial spray application

Area of use: Professional

### *Operating conditions*

Substance concentration: n-butyl acetate content:  $\geq 0$  -  $\leq 45\%$

Physical state: liquid

Vapor pressure of the substance during use: 1120Pa

Process temperature: 20°C

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Internal use

### *Risk management measures*

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%

Minimize manual tasks.

Avoid frequent and direct contact with the substance.

Check that risk reduction measures are implemented and that the conditions of use are respected.

Daily general cleaning of equipment and work area.

Regular control and maintenance of equipment and machinery.

Make sure doors and windows are open (general ventilation).

Avoid splashes.

Use an adequately effective local ventilation system.

Wear suitable clothing.

### *Exposure estimation and reference to its source*

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker, modified version. The concentration of the substance has been considered using a linear approach. Worker - dermal, long-term - systemic.

Exposure estimation: 4.8214 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.438312

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker, modified version. Operator - inhalation, long-term - local.

Exposure estimation: 153 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.51

### *Guidance for downstream users*

For a comparison term, visit <http://www.ecetoc.org/tra> Please note that a revised version was used (see exposure estimates).

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC11: Non-industrial spray application

Area of use: Professional

### *Operating conditions*

Substance concentration: n-butyl acetate content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid

Vapor pressure of the substance during use: 1120Pa

Process temperature: 20°C

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Internal use

### *Risk management measures*

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%

Minimize manual tasks.

Avoid frequent and direct contact with the substance.

Check that risk reduction measures are implemented and that the conditions of use are respected.

Daily general cleaning of equipment and work area.

Regular inspection and maintenance of equipment and machinery.

Avoid splashes.

Make sure doors and windows are open (general ventilation).

Wear a half face mask with a P2L filter or better.

Wear suitable clothing.

### **Exposure estimation and reference to its source**

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker, modified version. The concentration of the substance has been considered using a linear approach. Worker - dermal, long-term - systemic.

Exposure estimation: 4.8214 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.438312

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker, modified version. Operator - inhalation, long-term - local.

Exposure estimation: 116 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.386667

### **Guidance for downstream users**

For a comparison term, visit <http://www.ecetoc.org/tra> Please note that a revised version was used (see exposure estimates).

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC13: Treatment of articles by dipping and pouring**

**Area of use: Professional**

### **Operating conditions**

Substance concentration: n-butyl acetate content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid

Vapor pressure of the substance during use: 1120Pa

Process temperature: 20°C

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Internal use

### **Risk management measures**

Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour). Effectiveness: 70%

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%

### **Exposure estimation and reference to its source**

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Worker - dermal, long-term - systemic.

Exposure estimation: 1.3714 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.124675

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Operator - inhalation, long-term - local.

Exposure estimation: 145.1979 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.483993

### **Guidance for downstream users**

For a comparison term, visit <http://www.ecetoc.org/tra>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC19: Manual mixing with direct contact with the only use of personal protective equipment**

**Area of use: Professional**

### **Operating conditions**

Substance concentration: n-butyl acetate content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid

Vapor pressure of the substance during use: 1120Pa

Process temperature: 20°C

Duration and frequency of application: 240 mins. 5 days a week

Indoor/Outdoor: Internal use

### **Risk management measures**

Forced local ventilation: Effectiveness: 80%

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%

Ensure a good standard of general or controlled ventilation (no less than 3-5 air changes per hour). Effectiveness: 30%

### ***Exposure estimation and reference to its source***

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Worker - dermal, long-term - systemic.

Exposure estimation: 8.4857 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.771429

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Operator - inhalation, long-term - local.

Exposure estimation: 67.759 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.225863

### ***Guidance for downstream users***

For a comparison term, visit <http://www.ecetoc.org/tra>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC19: Manual mixing with direct contact with the only use of personal protective equipment**

Area of use: Professional

### ***Operating conditions***

Substance concentration: n-butyl acetate content: ≥0 - ≤100%

Physical state: liquid

Vapor pressure of the substance during use: 1120Pa

Process temperature: 20°C

Duration and frequency of application: 60 mins. 5 days a week

Indoor/Outdoor: Internal use

### ***Risk management measures***

Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour). Effectiveness: 70%

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%

### ***Exposure estimation and reference to its source***

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Worker - dermal, long-term - systemic.

Exposure estimation: 2.8286 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.257143

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Operator - inhalation, long-term - local.

Exposure estimation: 145.1979 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.483993

### ***Guidance for downstream users***

For a comparison term, visit <http://www.ecetoc.org/tra>



# Reaction mass of ethylbenzene and m-xylene and p-xylene

## Substance identification

Chemical Name: Reaction mass of ethylbenzene and m-xylene and p-xylene

EC number: 905-562-9

Date - Version: 24/05/2019

Identified use	Process category (PROC)	Product Category (PC)	Sector of use (SU)	Article category (AC)	Environmental Release Category (ERC)	EU tonnage (in thousands of tons)	Regional fraction
Coatings (industrial)	PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC13, PROC15	ND	3	ND	4	50	0.1
Coatings (professional)	PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC19	ND	22	ND	8a, 8d	50	0.1

## USE IN THE XYLENE CATEGORY IN COATINGS - INDUSTRIAL USE

### SECTION 1. TITLE OF THE EXPOSURE SCENARIO

#### Title

Use of the xylene category in coatings

#### Sector of use

Industrial use SU3

#### Process categories

PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC13, PROC15

#### Environmental Release Categories

ERC4

#### Processes, tasks, activities considered

Considers use in coatings (paints, inks, adhesives, etc.) including exposure during use (including receipt of material, storage, preparation and transfer from bulk or semi-bulk, spray, roller, spatula application, dipping, flow, fluid layers in production lines and in film formation) and equipment cleaning, maintenance and associated laboratory activities.

### SECTION 2. OPERATING CONDITIONS AND RISK MANAGEMENT MEASURES

#### SECTION 2.1 WORKERS EXPOSURE CONTROL

##### Product features

Liquid, vapor pressure >10 kPa [OC5].

##### Concentration of the substance in the product

Covers a percentage substance in the product up to 100% (unless otherwise stated) [G13].

##### Quantities used

Not applicable.

##### Frequency and duration of use

Covers a daily exposure up to 8 hours (unless otherwise specified) [G2].

##### Human factors not influenced by risk management

Not applicable.

##### Other operational conditions affecting worker exposure

Assumes use at not more than 20°C above ambient temperature [G15].

Assumes a good basic standard of occupational hygiene is implemented.

### Scenarios and risk management measures

#### General exposures (closed systems) [CS15].

Handle substance within a closed system [E47].

#### General exposures (closed systems) [CS15]. With sampling [CS56]. Use in closed systems [CS38].

Handle substance within a closed system [E47].

#### Film formation - Forced drying (50-100°C). Drying (> 100°C). UV/EB radiation curing [CS94].

Handle substance within a closed system [E47].

**Mixing operations (closed systems) [CS29]. General exposures (closed systems) [CS15].**

Handle substance within a closed system [E47]. Provide a good standard of general ventilation (not less than 3-5 air changes per hour) [E11]. Avoid carrying out activities involving exposure for more than 4 hours [OC28].

**Film formation - air drying [CS95].**

Provide a good standard of general ventilation (not less than 3-5 air changes per hour) [E11].

**Preparation of material for application [CS96]. Film formation - air drying [CS95].**

Provide a good standard of general or controlled ventilation (10-15 air changes per hour) [E40].

**Spray application (automatic/robotic) [CS97].**

Perform in a ventilated booth supported by laminar airflow [E59].

**Manual [CS34]. Spraying [CS10].**

Provide a good standard of general or controlled ventilation (10-15 air changes per hour) [E40]. Wear a respirator conforming to EN140 with a type A filter or better [PPE22].

**Material transfers [CS3]. Non-dedicated facility [CS82].**

Ensure material transfers are under containment or extract ventilation [E66].

**Material transfers [CS3]. Dedicated facility [CS81].**

Ensure material transfers are under containment or extract ventilation [E66].

**Roller application, spreader, flow [CS98].**

Provide extract ventilation at points where emissions occur [E54].

**Dipping and pouring [CS4].**

Provide a good standard of general or controlled ventilation (10-15 air changes per hour) [E40].

**Laboratory activity [CS36].**

No specific measures have been identified [E118].

**Material transfers [CS3]. Drum/batch transfers [CS8]. Transfer/pour from containers [CS22].**

Provide a good standard of general or controlled ventilation (10-15 air changes per hour) [E40].

**Equipment cleaning and maintenance [CS39].**

Drain system before equipment downtime or maintenance [E65].

**Storage [CS67]. With occasional controlled exposure [CS137].**

Handle substance within a closed system [E47].

## SECTION 2.2 ENVIRONMENTAL EXPOSURE CONTROL

**Evaluation method**

EUSES 2.1.1 using predefined release fractions from ESVO SpERC 4.3a.v1

**Product features**

The xylene category consists of liquids of medium volatility.

The solubility in water for the category is 166mg/l; the vapor pressure is 821 Pa at 20°C; and log Kow is 3.16 and is readily biodegradable.

**Quantities used**

EU tonnage: 50 kt/year

Regional tonnage: 5 kt/year

Main fraction of local origin: 1

**Frequency and duration of use**

Issue days per year: 300

**Environmental factors not influenced by risk management**

Local fresh water dilution factor: 10

Local dilution factor in sea water: 100

The conditions reported on the SPERC information sheet (ESVO SpERC 4.3.v1) give rise to the following fraction versions

**Additional conditions of use affecting environmental exposure**

Fraction of release to air from process before RMMs: 0.98.

Fraction of release to waste water from process before RMMs: 0.007.

Fraction of release to soil from process before RMMs: 0.

**On-site conditions and technical measures to reduce or limit discharges, emissions to air and releases to soil**

Treat air emissions to provide a typical removal efficiency of [TCR7]: >90%.

Typical on-site waste water treatment technology provides removal efficiency of [TCR11]: 93.67%.

Soil emission controls are not applicable as there is no direct release to soil [TCR4].

Prevent discharge of undissolved substance to or recover from waste water [TCR14].

**Organisational measures to avoid/limit release from a site**

Do not apply industrial sludge to natural soils [OMS2].

Sludge should be incinerated, contained or reclaimed [OMS3].

**Conditions and measures for the municipal sewage treatment plant**

Estimated substance removal from wastewater via municipal sewage treatment [STP3]: 93.67%.

Assumed domestic sewage treatment plant flow (m³/d) [STP5]: 2000.

**Conditions and measures for external treatment of waste for disposal**

External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3].

**Conditions and measures for the external recovery of waste**

External recovery or recycling of waste must be in accordance with applicable local and/or national laws [ERW1].

**Other environmental control measures in addition to those described above**

None.

## SECTION 3. EXPOSURE ESTIMATION

### SECTION 3.1 HEALTH

When complying with the recommended risk management measures (RMMs) and operational conditions (OCs), exposure is not expected to exceed the DNELs and the risk characterisation ratio should be less than 1.

### SECTION 3.2 ENVIRONMENT

When complying with the recommended risk management measures (RMMs) and operational conditions (OCs), exposure is not expected to exceed the PNECs and the risk characterisation ratio should be less than 1.

## SECTION 4. GUIDELINES FOR THE DU TO VERIFY COMPLIANCE WITH THE EXPOSURE SCENARIO

### SECTION 4.1 HEALTH

Confirm that the RMMs and OCs match the description or have equivalent efficiency.

### SECTION 4.2 ENVIRONMENT

Confirm that the RMMs and OCs match the description or have equivalent efficiency.

As typically found in a waste water treatment plant, the required waste water removal efficiency is: 93.67%.

### Scaling values

Further details on scaling and control technologies are provided in the SPERC sheet [DSU4].

Basis for scaling: Environment. Risk: ground. MSafe 68871 kg/day after RMM.

Use of the site: 5 kt/year

On-site emission factors: Water - 93.67% efficiency. Air - 0% efficiency.

Dilution factors Fresh water 10. Marine water 100.

Initial fraction of release to water on-site (before RMMs): 0.7%.

Typical release to water after RMMs 3.75E-02 mg/l.

## USE IN THE XYLENE CATEGORY IN COATINGS - PROFESSIONAL USE

### SECTION 1. TITLE OF THE EXPOSURE SCENARIO

#### **Title**

Use of the xylene category in coatings

#### **Sector of use**

Professional use, SU22

#### **Process categories**

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC19

#### **Environmental Release Categories**

ERC8a, ERC8d

#### **Processes, tasks, activities considered**

Considers use in coatings (paints, inks, adhesives, etc.) including exposure during use (including receipt of material, storage, preparation and transfer from bulk or semi-bulk, spray, roller, brush, manual spatula application or similar methods and in film formation) and equipment cleaning, maintenance and associated laboratory activities.

### SECTION 2. OPERATING CONDITIONS AND RISK MANAGEMENT MEASURES

#### SECTION 2.1 WORKERS EXPOSURE CONTROL

##### **Product features**

Liquid, vapour pressure 0.5 - 10 kPa [OC4].

##### **Concentration of the substance in the product**

Covers a percentage substance in the product up to 100% (unless otherwise stated) [G13].

##### **Quantities used**

Not applicable.

##### **Frequency and duration of use**

Covers a daily exposure up to 8 hours (unless otherwise specified) [G2].

##### **Human factors not influenced by risk management**

Not applicable.

##### **Other operational conditions affecting worker exposure**

Assumes use at not more than 20°C above ambient temperature [G15].

Assumes a good basic standard of occupational hygiene is implemented.

#### Scenarios and risk management measures

##### **General exposures (closed systems) [CS15].**

Handle substance within a closed system [E47].

##### **Filling/preparation of equipment from drums or containers [CS45].**

Handle substance within a closed system [E47]. Ensure material transfers are under containment or extract ventilation [E66].

##### **General exposures (closed systems) [CS15]. Use in closed systems [CS38].**

Handle substance within a closed system [E47]. Ensure material transfers are under containment or extract ventilation [E66].

##### **Preparation of material for application [CS96].**

Handle substance within a closed system [E47]. Provide a good standard of general or controlled ventilation (10-15 air changes per hour) [E40].

##### **Film formation - air drying [CS95]. Outdoor [OC9].**

Make sure the operation is performed outdoors [E69]. Avoid carrying out activities involving exposure for more than 1 hour [OC27]. Wear suitable gloves tested to standard EN374 [PPE15].

##### **Film formation - air drying [CS95]. Indoor [OC8].**

Provide extract ventilation at points where emissions occur [E54]. Provide a good standard of general ventilation (not less than 3-5 air changes per hour) [E11].

##### **Preparation of material for application [CS96]. Indoor [OC8].**

Provide a good standard of general or controlled ventilation (10-15 air changes per hour) [E40]. Avoid carrying out activities involving exposure for more than 1 hour [OC27].

##### **Preparation of material for application [CS96]. Outdoor [OC9].**

Make sure the operation is performed outdoors [E69]. Avoid carrying out activities involving exposure for more than 1 hour [OC27].

##### **Material transfers [CS3]. Drum/batch transfers [CS8].**

Transfer via enclosed lines [E52]. Provide a good standard of general ventilation (not less than 3-5 air changes per hour) [E11].

##### **Roller application, spreader, flow [CS98]. Indoor [OC8].**

Provide a good standard of general or controlled ventilation (10-15 air changes per hour) [E40]. Wear a respirator conforming to EN140 with a type A filter or better [PPE22].

##### **Roller application, spreader, flow [CS98]. Outdoor [OC9].**

Make sure the operation is performed outdoors [E69]. Wear a respirator conforming to EN140 with a type A filter or better [PPE22].

**Manual [CS34]. Spraying [CS10]. Indoor [OC8].**

Perform in a ventilated booth supported by laminar airflow [E59].

**Manual [CS34]. Spraying [CS10]. Outdoor [OC9].**

Make sure the operation is performed outdoors [E69]. Avoid carrying out activities involving exposure for more than 4 hours [OC28]. Wear suitable gloves tested to standard EN374 [PPE15]. Wear a full face respirator conforming to EN140 with type A filter or better [PPE24].

**Dipping and pouring [CS4]. Indoor [OC8].**

Provide extract ventilation at points where emissions occur [E54]. Avoid carrying out activities involving exposure for more than 4 hours [OC28].

**Dipping and pouring [CS4]. Outdoor [OC9].**

Make sure the operation is performed outdoors [E69]. Wear a respirator conforming to EN140 with a type A filter or better [PPE22].

**Laboratory activity [CS36].**

Handle in a fume cupboard or under extract ventilation [E83].

**Hand application - finger paints, crayons, stickers [CS72]. Indoor [OC8].**

Limit the substance content in the product to 5% [OC17]. Provide a good standard of controlled ventilation (10-15 air changes per hour) [E40]. Wear suitable gloves tested to standard EN374 [PPE15].

**Hand application - finger paints, crayons, stickers [CS72]. Outdoor [OC9].**

Limit the substance content in the product to 5% [OC17]. Avoid carrying out activities involving exposure for more than 4 hours [OC28]. Wear suitable gloves tested to standard EN374 [PPE15].

**Equipment cleaning and maintenance [CS39].**

Drain system before equipment downtime or maintenance [E65]. Avoid carrying out activities involving exposure for more than 4 hours [OC28].

**Storage [CS67]. With occasional controlled exposure [CS137].**

Handle substance within a closed system [E47]. Provide a good standard of general or controlled ventilation (10-15 air changes per hour) [E40].

**SECTION 2.2 ENVIRONMENTAL EXPOSURE CONTROL****Evaluation method**

EUSES 2.1.1 using predefined release fractions from ESVOC SpERC 8.3b.v1

**Product features**

The xylene category consists of liquids of medium volatility.

The solubility in water for the category is 166mg/l; the vapor pressure is 821 Pa at 20°C; and log Kow is 3.16 and is readily biodegradable.

**Quantities used**

EU tonnage: 50 kt/year

Regional tonnage: 5 kt/year

Main fraction of local origin: 0.002

**Frequency and duration of use**

Issue days per year: 365

**Environmental factors not influenced by risk management**

Local fresh water dilution factor: 10

Local dilution factor in sea water: 100

The conditions reported on the SPERC information sheet (ESVOC SpERC 4.3.v1) give rise to the following fraction versions

**Additional conditions of use affecting environmental exposure**

Fraction of release to air from process before RMMs: 0.98

Fraction of release to waste water from process before RMMs: 0.01

Fraction of release to soil from process before RMMs: 0.01

**On-site conditions and technical measures to reduce or limit discharges, emissions to air and releases to soil**

Treat air emissions to provide a typical removal efficiency of [TCR7]: 0%.

Typical on-site waste water treatment technology provides removal efficiency of [TCR11]: 93.67%.

**Organisational measures to avoid/limit release from a site**

Prevent environmental discharge consistent with regulatory requirements [OMS4].

**Conditions and measures for the municipal sewage treatment plant**

Estimated substance removal from wastewater via municipal sewage treatment [STP3]: 93.67%.

Assumed domestic sewage treatment plant flow (m³/d) [STP5]: 2000.

**Conditions and measures for external treatment of waste for disposal**

External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3].

**Conditions and measures for the external recovery of waste**

External recovery or recycling of waste must be in accordance with applicable local and/or national laws [ERW1].

**Other environmental control measures in addition to those described above**

None.

**SECTION 3. EXPOSURE ESTIMATION****SECTION 3.1 HEALTH**

When complying with the recommended risk management measures (RMMs) and operational conditions (OCs), exposure is not expected to exceed the DNELs and the risk characterisation ratio should be less than 1.

**SECTION 3.2 ENVIRONMENT**

When complying with the recommended risk management measures (RMMs) and operational conditions (OCs), exposure is not expected to exceed the PNECs and the risk characterisation ratio should be less than 1.

## SECTION 4. GUIDELINES FOR THE DU TO VERIFY COMPLIANCE WITH THE EXPOSURE SCENARIO

### SECTION 4.1 HEALTH

Confirm that the RMMs and OCs match the description or have equivalent efficiency.

### SECTION 4.2 ENVIRONMENT

Confirm that the RMMs and OCs match the description or have equivalent efficiency.

As typically found in a waste water treatment plant, the required waste water removal efficiency is: 93.67%.

#### Scaling values

Further details on scaling and control technologies are provided in the SPERC sheet [DSU4].

Basis for scaling: Environment. Risk: Fresh water sediments MSafe 68871 kg/day after RMM.

Use of the site: 0.01 kt/year

On-site emission factors: Water - 93.67% efficiency. Air - 0% efficiency.

Dilution factors Fresh water 10. Marine water 100.

Initial fraction of release to water on-site (before RMMs): 1%.

Typical release to water after RMMs 1.50E-03 mg/l.

# bis-[4-(2,3-epoxipropoxy)phenyl]propane

## Substance identification

Chemical Name: bis-[4-(2,3-epoxipropoxy)phenyl]propane

CAS number: 1675-54-3

Date - Version: 29/12/2021 - 1.3

## INDUSTRIAL USE - PROFESSIONAL USES: PUBLIC SECTOR (ADMINISTRATION, EDUCATION, ENTERTAINMENT, SERVICES, CRAFTS) (SU22).

### 1. TITLE SECTION

**Exposure scenario name:** Industrial use.

**Structured short title:** Professional uses: public sector (administration, education, entertainment, service, crafts) (SU22).

**Substance:** 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane

EC number: 216-823-5

Registration number: 01-2119456619-26

### ENVIRONMENT

**SC 1:** Use of non-reactive processing aid at industrial site (no inclusion in article) ERC4

### WORKER

**SC 2:** Use as laboratory reagents PROC15

**SC 3:** Treatment of articles by dipping and pouring PROC13

**SC 4:** Tableting, compression, extrusion, pelletising, granulation PROC14

**SC 5:** General greasing/lubrication in high energy conditions PROC18

**SC 6** Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8a

### 2. CONDITIONS OF USE AFFECTING EXPOSURE

#### 2.1. ENVIRONMENTAL EXPOSURE CONTROL: Use of non-reactive processing aid at industrial site (no inclusion in article) (ERC4)

##### *Product features (article)*

Physical form of the product: Liquid

##### *Amount used (or contained in articles), frequency and duration of use/exposure*

Daily amount per site: 0,6 ton/day

Annual amount per site: 20 ton/year

##### *Conditions and measures related to sewage treatment plant*

STP Type: Municipal wastewater treatment plant.

Learn more about STP: biological elimination.

STP sludge treatment: It may be landfilled when allowed by local regulations.

STP effluent: 2,000 m³/day

##### *Other conditions affecting environmental exposure*

Water flow on the receiving surface: 18,000 m³/day

Outdoor / Indoor Indoor use.

#### 2.2. WORKERS EXPOSURE CONTROL: Use as laboratory reagents (PROC15)

##### *Product features (article)*

Covers the percentage of substance in the product up to 100%.

Physical form of the product: Liquid.

Temperature: < 40°C

### ***Amount used (or contained in articles), frequency and duration of use/exposure***

Duration: Covers daily exposures up to 8 hours.

### ***Organizational and technical measures and conditions***

Assumes a good basic standard of occupational hygiene is implemented.

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Dermal: minimum efficiency of 0%.

Inhalation: minimum yield of 30%.

### ***Conditions and measures for personal protection, hygiene and health assessment***

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

Use adequate eye protection.

Dermal: minimum efficiency of 95%.

Inhalation: minimum yield of 0%.

### ***Other conditions affecting worker exposure***

Outdoor / Indoor Inside.

Temperature: < 40°C

## **2.3. WORKERS EXPOSURE CONTROL: Treatment of articles by dipping and pouring (PROC13)**

### ***Product features (article)***

Covers the percentage of substance in the product up to 25%.

Physical form of the product: Liquid.

Vapour pressure: 0,00741 Pa

Temperature: < 70°C

### ***Amount used (or contained in articles), frequency and duration of use/exposure***

Duration: Covers daily exposures up to 8 hours.

### ***Organizational and technical measures and conditions***

Assumes a good basic standard of occupational hygiene is implemented.

Provide a good standard of general ventilation (not less than 1 to 3 air changes per hour).

Dermal: minimum efficiency of 0%.

Inhalation: minimum yield of 0%.

### ***Conditions and measures for personal protection, hygiene and health assessment***

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

Use adequate eye protection.

Dermal: minimum efficiency of 95%.

Inhalation: minimum yield of 0%.

Wear suitable respirator.

Inhalation: minimum yield of 90%.

### ***Other conditions affecting worker exposure***

Outdoor / Indoor Inside.

Temperature: < 40°C

## **2.4. WORKERS EXPOSURE CONTROL: Tableting, compression, extrusion, pelletising, granulation (PROC14)**

### ***Product features (article)***

Covers the percentage of substance in the product up to 100%.

Physical form of the product: Liquid.

Temperature: < 40°C

### ***Amount used (or contained in articles), frequency and duration of use/exposure***

Duration: Covers daily exposures up to 8 hours.

### ***Organizational and technical measures and conditions***

Assumes a good basic standard of occupational hygiene is implemented.

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Dermal: minimum efficiency of 0%.

Inhalation: minimum yield of 30%.



### **Conditions and measures for personal protection, hygiene and health assessment**

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

Use adequate eye protection.

Dermal: minimum efficiency of 95%.

Inhalation: minimum yield of 0%.

### **Other conditions affecting worker exposure**

Outdoor / Indoor Inside.

Temperature: < 40°C

## **2.5. WORKERS EXPOSURE CONTROL: General greasing/lubrication in high energy conditions (PROC18)**

### **Product features (article)**

Covers concentrations up to 20%.

Physical form of the product: Liquid.

Temperature: ≤ 800°C

### **Amount used (or contained in articles), frequency and duration of use/exposure**

Duration: Covers daily exposures up to 8 hours.

### **Conditions and measures for personal protection, hygiene and health assessment**

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

Use adequate eye protection.

Dermal: minimum efficiency of 95%.

Inhalation: minimum yield of 0%.

Wear suitable respirator.

Inhalation: minimum yield of 90%.

### **Other conditions affecting worker exposure**

Outdoor / Indoor Outside.

Industrial or professional environments: Professional use.

Temperature: ≤ 800°C

## **2.6. WORKERS EXPOSURE CONTROL: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC8a)**

### **Product features (article)**

Covers the percentage of substance in the product up to 25%.

Physical form of the product: Liquid.

### **Amount used (or contained in articles), frequency and duration of use/exposure**

Duration: Covers daily exposures up to 8 hours.

### **Conditions and measures for personal protection, hygiene and health assessment**

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

Use adequate eye protection.

Dermal: minimum efficiency of 95%.

Inhalation: minimum yield of 0%.

### **Other conditions affecting worker exposure**

Outdoor / Indoor Outside.

Industrial or professional environments: Professional use.

Temperature: A process temperature of up to < 40°C is assumed.

### 3. EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

#### 3.1. Environmental release and exposure: Use of non-reactive processing aid at industrial site (no inclusion in article) (ERC4)

Route release	Release rate	Method for estimating for release
water	1.2E-10kg/day	FEICA SPERC 5.1 a.v1
air	3E-4kg/day	FEICA SPERC 5.1 a.v1
Soil	0%	FEICA SPERC 5.1 a.v1

Protection target	Estimated Exposure (EUSES v2.1)	RCR
Fresh water	3.76E-4mg/l	0.063
Fresh water sediments	0.018mg/l	0.053
Sea water	2.95E-5mg/kg dry weight	0.049
Marine sediment	1.42E-3mg/kg dry weight	0.042
Sewage treatment plant	5.68E-11mg/l	< 0.01
Farmland	2.88E-6mg/kg dry weight	< 0.01
Prey for predators (freshwater)	mg/kg wet weight (EUSES v2.1)	< 0.01
Prey for predators (marine water)	9.13E-4mg/kg wet weight	< 0.01
Main predator prey (marine water)	9.13E-4mg/kg wet weight	< 0.01
Prey for Predators (Terrestrial)	1.68E-4mg/kg wet weight	< 0.01
Man through the environment - inhalation	7.65E-9mg/m <sup>3</sup>	< 0.01
Man through the environment - oral	3E-5mg/kgbw/day	< 0.01
Population exposed through the environment	-	< 0.01

#### 3.2. Worker exposure: Use as laboratory reagents (PROC15)

Exposure routes	Health effect	Exposure indicator	Estimated exposure (ECETOC TRA worker v3)	RCR
inhalation	systemic	Long-term	0.993mg/m <sup>3</sup>	0.201
inhalation	local	Long-term	0.993mg/m <sup>3</sup>	-
inhalation	local	Short term	0.993mg/m <sup>3</sup>	-
dermal	systemic	Long-term	0.172mg/kg bw/day	0.045
dermal	local	Short term	9.92E-3mg/cm <sup>2</sup>	-
combined routes	-	-	-	0.247

#### 3.3. Worker exposure: Treatment of articles by dipping and pouring (PROC13)

Exposure routes	Health effect	Exposure indicator	Estimated exposure (ECETOC TRA worker v3)	RCR
inhalation	systemic	Long-term	0.085mg/m <sup>3</sup>	0.017
inhalation	local	Long-term	0.085mg/m <sup>3</sup>	-
inhalation	local	Short term	0.085mg/m <sup>3</sup>	-
dermal	systemic	Long-term	0.411mg/kgbw/day	0.548
dermal	local	Short term	0.06mg/cm <sup>2</sup>	-
combined routes	-	-	-	0.566

### 3.4. Worker exposure: Tableting, compression, extrusion, pelletising, granulation (PROC14)

Exposure routes	Health effect	Exposure indicator	Estimated exposure (ECETOC TRA worker v3)	RCR
inhalation	systemic	Long-term	0.993mg/m <sup>3</sup>	0.201
inhalation	local	Long-term	0.993mg/m <sup>3</sup>	-
inhalation	local	Short term	0.993mg/m <sup>3</sup>	-
dermal	systemic	Long-term	0.172mg/kg bw/day	0.229
dermal	local	Short term	0.0025mg/cm <sup>2</sup>	-
combined routes	-	-	-	0.43

### 3.5. Worker exposure: General greasing/lubrication in high energy conditions (PROC18)

Exposure routes	Health effect	Exposure indicator	Estimated exposure (ECETOC TRA worker v3)	RCR
inhalation	systemic	Long-term	0.596mg/m <sup>3</sup>	0.121
inhalation	local	Long-term	0.596mg/m <sup>3</sup>	-
inhalation	local	Short term	0.596mg/m <sup>3</sup>	-
dermal	systemic	Long-term	0.411mg/kgbw/day	0.548
dermal	local	Short term	0.03mg/cm <sup>2</sup>	-
combined routes	-	-	-	0.669

### 3.6. Worker exposure: Transfer of a substance or a preparation (filling/emptying) at non-dedicated facilities (PROC8a)

Exposure routes	Health effect	Exposure indicator	Estimated exposure (ECETOC TRA worker v3)	RCR
inhalation	systemic	Long-term	0.596mg/m <sup>3</sup>	0.121
inhalation	local	Long-term	0.596mg/m <sup>3</sup>	-
inhalation	local	Short term	0.596mg/m <sup>3</sup>	-
dermal	systemic	Long-term	0.411mg/kgbw/day	0.548
dermal	local	Short term	0.03mg/cm <sup>2</sup>	-
combined routes	-	-	-	0.669

## 4. GUIDANCE FOR DOWNSTREAM USERS TO ASSESS WHETHER THEY COMPLY WITH THE LIMITS SET BY THE EXPOSURE SCENARIO

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

## PROFESSIONAL USE - PROFESSIONAL USES: PUBLIC SECTOR (ADMINISTRATION, EDUCATION, ENTERTAINMENT, SERVICES, CRAFTS) (SU22).

### 1. TITLE SECTION

**Exposure scenario name:** Professional.

**Structured short title:** Professional uses: public sector (administration, education, entertainment, service, crafts) (SU22).

**Substance:** 2,2'-[[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane

EC number: 216-823-5

Registration number: 01-2119456619-26

### ENVIRONMENT

**SC 1:** Use at an industrial site leading to inclusion in article ERC5

### WORKER

**SC 2:** Industrial spraying PROC7

**SC 3** Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8a

**SC 4:** Transfer of substance or mixture (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC8b

**SC 5:** Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC9

**SC 6:** Application with rollers or brushes PROC10

**SC 7:** Non-industrial spraying PROC11

### 2. CONDITIONS OF USE AFFECTING EXPOSURE

#### 2.1. ENVIRONMENTAL EXPOSURE CONTROL: Use at an industrial site leading to inclusion in article (ERC5)

##### *Product features (article)*

Covers a percentage of substance in the product up to 100%.

Physical form of the product: Liquid

##### *Amount used (or contained in articles), frequency and duration of use/exposure*

Annual amount per site: 30,000 tons/year

Daily amount per site: 100 tons/day

##### *Conditions and measures related to sewage treatment plant*

STP Type: Municipal wastewater treatment plant.

Learn more about STP: biological elimination.

STP sludge treatment: It may be landfilled when allowed by local regulations.

STP effluent: 2,000 m<sup>3</sup>/day

##### *Other conditions affecting environmental exposure*

Water flow on the receiving surface: 18,000 m<sup>3</sup>/day

#### 2.2. WORKERS EXPOSURE CONTROL: Industrial spraying (PROC7)

##### *Product features (article)*

Covers the percentage of substance in the product up to 25%.

Physical form of the product: Liquid.

Vapour pressure: 0,00741 Pa

##### *Amount used (or contained in articles), frequency and duration of use/exposure*

Duration: Covers daily exposures up to 8 hours.

##### *Organizational and technical measures and conditions*

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

### ***Conditions and measures for personal protection, hygiene and health assessment***

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

Use adequate eye protection.

If skin contamination is expected to extend to other parts of the body, these parts should also be protected with impermeable clothing equivalent to that described for the hands.

Wear suitable respirator.

Dermal: minimum efficiency of 99%.

Inhalation: minimum yield of 90%.

### ***Other conditions affecting worker exposure***

Outdoor / Indoor Inside.

Industrial or professional environments Professional use.

Temperature: Process temperature up to 70°C is assumed.

## **2.3. WORKERS EXPOSURE CONTROL: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC8a)**

### ***Product features (article)***

Covers the percentage of substance in the product up to 25%.

Physical form of the product: Liquid.

Vapour pressure: 0,00741 Pa

Temperature: 70°C

### ***Amount used (or contained in articles), frequency and duration of use/exposure***

Duration: Covers daily exposures up to 8 hours.

### ***Organizational and technical measures and conditions***

Provide a good standard of general ventilation (not less than 1 to 3 air changes per hour).

Dermal: minimum efficiency of 0%.

Inhalation: minimum yield of 0%.

### ***Conditions and measures for personal protection, hygiene and health assessment***

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

Use adequate eye protection.

Dermal: minimum efficiency of 95%.

Inhalation: minimum yield of 0%.

### ***Other conditions affecting worker exposure***

Outdoor / Indoor Inside.

Industrial or professional environments Professional use.

Temperature: 70°C

## **2.4. WORKERS EXPOSURE CONTROL: Transfer of substance or mixture (charging/discharging) from/to vessels/large containers at dedicated facilities. (PROC8b)**

### ***Product features (article)***

Covers the percentage of substance in the product up to 100%.

Physical form of the product: Liquid.

Vapour pressure: 0,00741 Pa

Temperature: 70°C

### ***Amount used (or contained in articles), frequency and duration of use/exposure***

Duration: Covers daily exposures up to 8 hours.

### ***Organizational and technical measures and conditions***

Assumes a good basic standard of occupational hygiene is implemented.

Provide a good standard of general ventilation (not less than 1 to 3 air changes per hour).

### ***Conditions and measures for personal protection, hygiene and health assessment***

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

Use adequate eye protection.

Dermal: minimum efficiency of 95%.

Inhalation: minimum yield of 0%.

Wear suitable respirator.

Inhalation: minimum yield of 90%.

### ***Other conditions affecting worker exposure***

Outdoor / Indoor Inside.

Temperature: 70°C

## **2.5. WORKERS EXPOSURE CONTROL: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)**

### ***Product features (article)***

Covers concentrations up to 100%.

Physical form of the product: Liquid.

Vapour pressure: 0,00741 Pa

Temperature: < 50°C

### ***Amount used (or contained in articles), frequency and duration of use/exposure***

Duration: Covers daily exposures up to 8 hours.

### ***Organizational and technical measures and conditions***

Assumes a good basic standard of occupational hygiene is implemented.

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Dermal: minimum efficiency of 0%.

Inhalation: minimum yield of 30%.

### ***Conditions and measures for personal protection, hygiene and health assessment***

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

Use adequate eye protection.

Dermal: minimum efficiency of 95%.

Inhalation: minimum yield of 0%.

Wear suitable respirator.

Inhalation: minimum yield of 90%.

### ***Other conditions affecting worker exposure***

Outdoor / Indoor Inside.

Temperature: < 50°C

## **2.6. WORKERS EXPOSURE CONTROL: Application with rollers or brushes (PROC10)**

### ***Product features (article)***

Covers the percentage of substance in the product up to 25%.

Physical form of the product: Liquid.

Vapour pressure: 0,00741 Pa

Temperature: < 70°C

### ***Amount used (or contained in articles), frequency and duration of use/exposure***

Duration: Covers daily exposures up to 8 hours.

### ***Organizational and technical measures and conditions***

Assumes a good basic standard of occupational hygiene is implemented.

Provide a good standard of general ventilation (not less than 1 to 3 air changes per hour).

Local exhaust ventilation.

Dermal: minimum efficiency of 0%.

Inhalation: minimum yield of 90%.

### ***Conditions and measures for personal protection, hygiene and health assessment***

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

Use adequate eye protection.

Dermal: minimum efficiency of 99%.

Inhalation: minimum yield of 0%.

### ***Other conditions affecting worker exposure***

Outdoor / Indoor Inside.

Temperature: < 70°C.

## 2.7. WORKERS EXPOSURE CONTROL: Non-industrial spraying (PROC11)

### **Product features (article)**

Covers the percentage of substance in the product up to 25%.

Physical form of the product: Liquid.

Temperature: < 40°C

### **Amount used (or contained in articles), frequency and duration of use/exposure**

Duration: Covers daily exposures up to 8 hours.

### **Organizational and technical measures and conditions**

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

### **Conditions and measures for personal protection, hygiene and health assessment**

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

Use adequate eye protection.

If skin contamination is expected to extend to other parts of the body, these parts should also be protected with impermeable clothing equivalent to that described for the hands.

Wear suitable respirator.

Dermal: minimum efficiency of 99%.

Inhalation: minimum yield of 90%.

### **Other conditions affecting worker exposure**

Outdoor / Indoor Inside.

Temperature: < 40°C.

## 3. EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

### **3.1. Environmental release and exposure: Use at an industrial site leading to inclusion in article (ERC5)**

Route release	Release rate	Method for estimating for release
water	0.06 kg/day	FEICA SPERC 8c.1 b.v1
air	0 kg/day	FEICA SPERC 8c.1 b.v1
Soil	0%	FEICA SPERC 8c.1 b.v1

Protection target	Estimated Exposure (EUSES v2.1)	RCR
Fresh water	3.22E-3mg/l	0,536
Fresh water sediments	0.155mg/l	0,454
Sea water	3.14E-4mg/l	0,523
Marine sediment	0.015mg/kg dry weight	0,442
Sewage treatment plant	0.028mg/l	< 0.01
Farmland	0.05mg/kg dry weight	0,779
Prey for predators (freshwater)	0.048mg/kg wet weight	< 0.01
Prey for predators (marine water)	4.53E-3mg/kg wet weight	< 0.01
Main predator prey (marine water)	1.64E-3mg/kg wet weight	< 0.01
Prey for Predators (Terrestrial)	0.056mg/kg wet weight	< 0.01
Man through the environment - inhalation	Concentration in air: 3.45E-11 mg/m <sup>3</sup>	< 0.01
Man through the environment - oral	1.47E-3mg/kg pc/giorno	< 0.01
Population exposed through the environment	-	< 0.01



### 3.2. Worker exposure: Industrial spraying (PROC7)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	0.34mg/m <sup>3</sup> (ART v1.5)	0.069
inhalation	local	Long-term	0.34mg/m <sup>3</sup> (ART v1.5)	-
inhalation	local	Short term	0.78mg/m <sup>3</sup> (ART v1.5)	-
dermal	systemic	Long-term	0.257mg/kgbw/day (ECETOC TRA worker v3)	0.343
dermal	local	Short term	0.012mg/cm <sup>2</sup> (ECETOC TRA worker v3)	-
combined routes	-	-	-	0.412

### 3.3. Worker exposure: Transfer of a substance or a preparation (filling/emptying) at non-dedicated facilities (PROC8a)

Exposure routes	Health effect	Exposure indicator	Estimated exposure (ECETOC TRA worker v3)	RCR
inhalation	systemic	Long-term	0.851mg/m <sup>3</sup>	0.173
inhalation	local	Long-term	0.851mg/m <sup>3</sup>	-
inhalation	local	Short term	0.851mg/m <sup>3</sup>	-
dermal	systemic	Long-term	0.411mg/kgbw/day	0.548
dermal	local	Short term	0.03mg/cm <sup>2</sup>	-
combined routes	-	-	-	0.721

### 3.4. Worker exposure: Transfer of a substance or a mixture (fill/discharge) at dedicated facilities (PROC8b)

Exposure routes	Health effect	Exposure indicator	Estimated exposure (ECETOC TRA worker v3)	RCR
inhalation	systemic	Long-term	0.085mg/m <sup>3</sup>	0.017
inhalation	local	Long-term	0.085mg/m <sup>3</sup>	-
inhalation	local	Short term	0.0851mg/m <sup>3</sup>	-
dermal	systemic	Long-term	0.411mg/kgbw/day	0.548
dermal	local	Short term	0.03mg/cm <sup>2</sup>	-
combined routes	-	-	-	0.566

### 3.5. Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Exposure routes	Health effect	Exposure indicator	Estimated exposure (ECETOC TRA worker v3)	RCR
inhalation	systemic	Long-term	0.099mg/m <sup>3</sup>	0.02
inhalation	local	Long-term	0.099mg/m <sup>3</sup>	-
inhalation	local	Short term	0.993mg/m <sup>3</sup>	-
dermal	systemic	Long-term	0.343mg/kgbw/day	0.457
dermal	local	Short term	0.05mg/cm <sup>2</sup>	-
combined routes	-	-	-	0.659



### 3.6. Worker exposure: Application with rollers or brushes (PROC10)

Exposure routes	Health effect	Exposure indicator	Estimated exposure (ECETOC TRA worker v3)	RCR
inhalation	systemic	Long-term	0.085mg/m <sup>3</sup>	0.017
inhalation	local	Long-term	0.085mg/m <sup>3</sup>	-
inhalation	local	Short term	0.085mg/m <sup>3</sup>	-
dermal	systemic	Long-term	0.165mg/kgbw/day	0.219
dermal	local	Short term	0.012mg/cm <sup>2</sup>	-
combined routes	-	-	-	0.237

### 3.7. Worker exposure: Non-industrial spraying (PROC11)

Exposure routes	Health effect	Exposure indicator	Estimated exposure	RCR
inhalation	systemic	Long-term	0.34mg/m <sup>3</sup> (ART v1 .5)	0.069
inhalation	local	Long-term	0.34mg/m <sup>3</sup> (ART v1 .5)	-
inhalation	local	Short term	0.78mg/m <sup>3</sup> (ART v1 .5)	-
dermal	systemic	Long-term	0.643mg/kgbw/day (ECETOC TRA worker v3)	0.857
dermal	local	Short term	0.03mg/cm <sup>2</sup> (ECETOC TRA worker v3)	-
combined routes	-	-	-	0.926

## 4. GUIDANCE FOR DOWNSTREAM USERS TO ASSESS WHETHER THEY COMPLY WITH THE LIMITS SET BY THE EXPOSURE SCENARIO

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

## 2-methoxy-1-methylethyl acetate

### Substance identification

Chemical Name: 2-methoxy-1-methylethyl acetate

CAS number: 108-65-6

Date - Version: 02/08/2021 18.0

## 4. USE IN COATINGS. - USE IN INDUSTRIAL PLANTS

**Short title of the exposure scenario:** Use in coatings. - Use in industrial plants

SU3; ERC4; PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15

## EXPOSURE CONTROL AND RISK MANAGEMENT MEASURES

### EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: ERC4: Industrial use of processing aids not becoming part of articles.

#### Operating conditions

Yearly amount used in EU: 63,050,000 kg

Daily amount per site: 105.087 kg

Minimum continuous emission days per year: 300

Emission factor to air: 27%

Emission factor in water: 2%

Emission factor in soil: 0.1%

Releases based on A&B tables from TGD 2003

Freshwater dilution factor: 10

Marine water dilution factor: 100

#### Risk management measures

Treat air emissions to provide a typical removal efficiency of 70%.

Prevent discharge of undissolved substance, or recover from wastewater.

Type of treatment plant: Municipal sewage treatment plant.

Total removal efficiency of the substance from the wastewater after Risk Management Measures and treatment in the treatment plant (5): 87.3%

Assumed treatment plant flow: 2,000 m<sup>3</sup>/day

#### Measures relative to the waste

Dispose of waste cans and containers according to local regulations.

#### Exposure estimation and reference to its source

Risk Characterization Ratio (RCR): 0.1338

Risk from environmental exposure is driven by freshwater and marine water.

Maximum safe use amount: 79,180 kg/day

### EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC1: Use in closed process, no likelihood of exposure.

Area of use: Industrial

#### Operating conditions

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤100%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 0.04 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.0001

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 0.34 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.01

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC2: Use in closed, continuous process with occasional controlled exposure.  
**General exposure.** Continuous process (closed system) with sample collection.

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤100%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 1.37 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.03

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC2: Use in closed, continuous process with occasional controlled exposure.  
**Film formation - Fast drying.**

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤100%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Operation is carried out at elevated temperature (> 20°C above ambient temperature).

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 187.71 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.5

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 1.37 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.03

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC3: Use in batch process (synthesis or formulation). Mixing operations. General exposure (closed system).

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 93.85 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.25

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 0.34 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.01

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC4: Use in batch process (synthesis) where opportunity for exposure arises. Film formation - Air drying.

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 75.08 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.2

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 6.86 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.14

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC5: Mixing in batch processes for formulation of preparations and articles (multistage and/or significant contact). Preparation of material for application. Mixing operations (open systems).

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 187.71 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.51

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 13.71 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.27

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC7: Industrial spray application. Spraying (automatic/robotic).**

**Area of use: Industrial**

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤100%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Carry out in a vented booth or extracted enclosure. Effectiveness: 95%.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 46.93 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.13

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 2.14 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.04

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC7: Industrial spray application. Spraying (manual).**

**Area of use: Industrial**

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤100%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Effectiveness: 70%.

Wear suitable gloves compliant with EN ISO 374-1. Effectiveness: 80%.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 281.56 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.76

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 8.57 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.17

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities. Material transfers. Non-dedicated system.

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 187.71 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.51

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 13.71 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.27

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Material transfers. Dedicated plant.

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 187.71 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.51

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 6.86 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.14

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Material transfers. Drum/batch transfers. Transfer from containers. Dedicated plant.

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 187.71 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.51

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 6.86 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.14

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC10: Application with rollers or brushes. Roller, spatula, jet application.**

**Area of use: Industrial**

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤100%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Wear suitable gloves compliant with EN ISO 374-1. Effectiveness: 80%

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 187.71 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.51

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 5.49 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.11

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC13: Treatment of articles by dipping, pouring, enamelling.**

**Area of use: Industrial**

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤100%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 187.71 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.51

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 13.71 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.27

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC14: Production of preparations or articles by tableting, compression, extrusion or pelletising. Production or preparation of articles by tableting, compression, extrusion.

Area of use: Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 187.71 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.51

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 3.43 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.07

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC15: Use as laboratory reagent. Laboratory activities.

Area of use: Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 0.34 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.01

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>



## 5. USE IN COATINGS. - USE IN INDUSTRIAL PLANTS

**Short title of the exposure scenario:** Use in coatings. - Use in industrial plants

SU3; ERC4; PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15

### EXPOSURE CONTROL AND RISK MANAGEMENT MEASURES

#### EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** ERC4: Industrial use of processing aids not becoming part of articles.

##### *Operating conditions*

Yearly amount used in EU: 2,600,000 kgs

Daily amount per site: 430kg

Minimum continuous emission days per year: 300

Emission factor to air: 80%

Emission factor in water: 10%

Emission factor in soil: 0.1%

Releases based on A&B tables from TGD 2003

Freshwater dilution factor: 10

Marine water dilution factor: 100

##### *Risk management measures*

Prevent discharge of undissolved substance, or recover from wastewater.

Type of treatment plant: Municipal sewage treatment plant.

Total removal efficiency of the substance from the wastewater after Risk Management Measures and treatment in the treatment plant (5): 87.3%

Assumed treatment plant flow: 2,000 m<sup>3</sup>/day

##### *Measures relative to the waste*

Dispose of waste cans and containers according to local regulations.

##### *Exposure estimation and reference to its source*

Risk Characterization Ratio (RCR): 0.029

Risk from environmental exposure is driven by freshwater and marine water.

Maximum safe use amount: 140.104 kg/day

#### EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC1: Use in closed process, no likelihood of exposure (closed system). General exposure.

**Area of use:** Industrial

##### *Operating conditions*

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤5%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

##### *Exposure estimation and reference to its source*

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure.

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

##### *Guidance for downstream users*

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

#### EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC2: Use in closed, continuous process with occasional controlled exposure. General exposure. Continuous process (closed system) with sample collection.

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 7.51 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.02

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 1.37 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.03

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC2: Use in closed, continuous process with occasional controlled exposure.  
**Film formation - Fast drying.**

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Operation is carried out at elevated temperature ( $> 20^\circ\text{C}$  above ambient temperature).

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 1.37 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.03

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC3: Use in batch process (synthesis or formulation). Mixing operations.  
**General exposure (closed system).**

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 18.77 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.05

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 0.34 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.01

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC4: Use in batch process (synthesis) where opportunity for exposure arises. Film formation - Air drying.

Area of use: Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 15.02 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.04

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 6.86 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.14

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC5: Mixing in batch processes for formulation of preparations and articles (multistage and/or significant contact). Preparation of material for application. Mixing operations (open systems).

Area of use: Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 13.71 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.27

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC7: Industrial spray application. Spraying (automatic/robotic). Spraying (manual)

Area of use: Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Wear suitable gloves compliant with EN ISO 374-1. Effectiveness: 80%.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 187.71 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.51

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 8.57 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.17

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC7: Industrial spray application. Spraying (manual).**

**Area of use: Industrial**

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤5%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Wear suitable gloves compliant with EN ISO 374-1.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities. Material transfers. Non-dedicated system.**

**Area of use: Industrial**

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤5%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 13.71 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.27

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Material transfers. Dedicated plant.**

**Area of use: Industrial**

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 6.86 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.14

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Material transfers. Drum/batch transfers. Transfer from containers. Dedicated plant.

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 6.86 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.14

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC10: Application with rollers or brushes. Roller, spatula, jet application.

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 27.43 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.54

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC13: Treatment of articles by dipping, pouring, enamelling.

Area of use: Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 13.71 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.27

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC14: Production of preparations or articles by tableting, compression, extrusion or pelletising. Production or preparation of articles by tableting, compression, extrusion.

Area of use: Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 3.43 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.07

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC15: Use as laboratory reagent. Laboratory activities.

Area of use: Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

**Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 7.51 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.02

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 0.34 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.01

**Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## 7 USE IN COATINGS. - USE IN INDUSTRIAL PLANTS

**Short title of the exposure scenario:** Use in coatings. - Use in professional installations

SU22; ERC8a, ERC8d; PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC19

### EXPOSURE CONTROL AND RISK MANAGEMENT MEASURES

#### EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** ERC8a: Wide dispersive indoor use of processing aids in open systems.

##### *Operating conditions*

Yearly amount used in EU: 2,600,000 kgs

Daily amount per site: 433 kg

Minimum continuous emission days per year: 300

Emission factor to air: 80%

Emission factor in water: 10%

Emission factor in soil: 0.1%

Releases based on A&B tables from TGD 2003

Freshwater dilution factor: 10

Marine water dilution factor: 100

##### *Risk management measures*

Prevent discharge of undissolved substance, or recover from wastewater.

Type of treatment plant: Municipal sewage treatment plant.

Total removal efficiency of the substance from the wastewater after Risk Management Measures and treatment in the treatment plant (5): 87.3%

Assumed treatment plant flow: 2,000 m<sup>3</sup>/day

##### *Measures relative to the waste*

Dispose of waste cans and containers according to local regulations.

##### *Exposure estimation and reference to its source*

Risk Characterization Ratio (RCR): 0.029

Risk from environmental exposure is driven by freshwater and marine water.

Maximum safe use amount: 15,141 kg/day

#### EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** ERC8d: Wide dispersive outdoor use of processing aids in open systems.

##### *Operating conditions*

Yearly amount used in EU: 2,600,000 kgs

Daily amount per site: 433 kg

Minimum continuous emission days per year: 300

Emission factor to air: 80%

Emission factor in water: 10%

Emission factor in soil: 0.1%

Releases based on A&B tables from TGD 2003

Freshwater dilution factor: 10

Marine water dilution factor: 100

##### *Risk management measures*

Prevent discharge of undissolved substance, or recover from wastewater.

Type of treatment plant: Municipal sewage treatment plant.

Total removal efficiency of the substance from the wastewater after Risk Management Measures and treatment in the treatment plant (5): 87.3%

Assumed treatment plant flow: 2,000 m<sup>3</sup>/day



### **Measures relative to the waste**

Dispose of waste cans and containers according to local regulations.

### **Exposure estimation and reference to its source**

Risk Characterization Ratio (RCR): 0.029

Risk from environmental exposure is driven by freshwater and marine water.

Maximum safe use amount: 15,141 kg/day

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC1: Use in closed process, no likelihood of exposure.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 0.04 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.0001

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 0.34 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.01

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC2: Use in closed, continuous process with occasional controlled exposure.

**Filling/Preparation of equipment required for drums and containers.**

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure.

The use has been assessed as safe.

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC2: Use in closed, continuous process with occasional controlled exposure.

**General exposure. Use in confined systems (closed system). Filling/Preparation of equipment required for drums and containers.**

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Operation is carried out at elevated temperature ( $> 20^\circ\text{C}$  above ambient temperature).

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 75.08 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.2

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 1.37 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.03

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC3: Use in batch process (synthesis or formulation). Preparation of material for application

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤100%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 93.85 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.25

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 0.34 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.01

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC4: Use in batch process (synthesis) where opportunity for exposure arises. Film formation - Air drying.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤100%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 187.71 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.51

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 6.86 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.14

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC4: Use in batch and other processes (synthesis) where opportunity for exposure arises. Film formation - Air drying.

Area of use: Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure.

The use has been assessed as safe.

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC5: Mixing in batch processes for formulation of preparations and articles (multistage and/or significant contact). Preparation of material for application.

Area of use: Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Effectiveness: 30%.

Alternatively: Ensure that operations are carried out externally.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 269.79 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.71

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 13.71 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.27

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC5: Mixing in batch processes for formulation of preparations and articles (multistage and/or significant contact). Preparation of material for application.

Area of use: Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### ***Risk management measures***

Ensure that operations are carried out externally.

### ***Exposure estimation and reference to its source***

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

### ***Guidance for downstream users***

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities. Material transfers. Drum/batch transfers. Non-dedicated system.**

**Area of use: Professional**

### ***Operating conditions***

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### ***Risk management measures***

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Effectiveness: 30%.

### ***Exposure estimation and reference to its source***

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 262.79 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.71

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 13.71 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.27

### ***Guidance for downstream users***

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Material transfers. Drum/batch transfers Dedicated plant.**

**Area of use: Professional**

### ***Operating conditions***

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### ***Exposure estimation and reference to its source***

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 187.71 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.51

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 6.86 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.14

### ***Guidance for downstream users***

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC10: Application with rollers or brushes. Roller, spatula, jet application.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Effectiveness: 30%.

Wear suitable gloves compliant with EN ISO 374-1. Effectiveness: 80%

If there is no general ventilation, ensure that operations are carried out outdoors.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 262.79 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.71

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 5.49 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.11

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC10: Application with rollers or brushes. Roller, spatula, jet application.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Ensure that operations are carried out externally.

Wear suitable gloves compliant with EN ISO 374-1.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC11: Non-industrial spray application. Spraying (manual).

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Carry out in a vented booth or extracted enclosure. Effectiveness: 80%.

Wear a respirator conforming to EN140 with type A filter or better. Effectiveness: 90%.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 2.14 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.04

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC11: Non-industrial spray application. Spraying (manual).**

**Area of use: Professional**

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤100%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Ensure that operations are carried out externally. Effectiveness: 30%.

Wear a respirator conforming to EN140 with type A filter or better. Effectiveness: 90%.

Wear suitable gloves compliant with EN ISO 374-1. Effectiveness: 80%.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 131.4 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.36

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 21.43 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.42

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC13: Treatment of articles by dipping, pouring, enamelling.**

**Area of use: Professional**

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤100%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Effectiveness: 30%.

Alternatively: Ensure that operations are carried out externally.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 262.79 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.71

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 13.71 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.27

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC13: Treatment of articles by dipping, pouring, enamelling.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Ensure that operations are carried out externally.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC15: Use as laboratory reagent. Laboratory activities.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 0.34 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.01

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC19: Manual mixing with direct contact using only personal protective equipment. Hand application - fingerpaints, pastels, adhesives.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Effectiveness: 30%.

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%.

If there is no general ventilation, ensure that operations are carried out outdoors.



### ***Exposure estimation and reference to its source***

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 262.79 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.71

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 14.14 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.28

### ***Guidance for downstream users***

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC19: Manual mixing with direct contact using only personal protective equipment. Hand application - fingerpaints, pastels, adhesives.

**Area of use:** Professional

### ***Operating conditions***

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤100%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### ***Risk management measures***

Ensure that operations are carried out externally.

Wear chemically resistant gloves in combination with "basic" employee training.

### ***Exposure estimation and reference to its source***

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

### ***Guidance for downstream users***

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>



## 8. USE IN COATINGS. - USE IN INDUSTRIAL PLANTS

**Short title of the exposure scenario:** Use in coatings. - Use in professional installations

SU22; ERC8a, ERC8d; PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC19

### EXPOSURE CONTROL AND RISK MANAGEMENT MEASURES

#### EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** ERC8a: Wide dispersive indoor use of processing aids in open systems.

##### *Operating conditions*

Yearly amount used in EU: 2,600,000 kgs

Daily amount per site: 433 kg

Minimum continuous emission days per year: 300

Emission factor to air: 80%

Emission factor in water: 10%

Emission factor in soil: 0.1%

Releases based on A&B tables from TGD 2003

Freshwater dilution factor: 10

Marine water dilution factor: 100

##### *Risk management measures*

Prevent discharge of undissolved substance, or recover from wastewater.

Type of treatment plant: Municipal sewage treatment plant.

Total removal efficiency of the substance from the wastewater after Risk Management Measures and treatment in the treatment plant (5): 87.3%

Assumed treatment plant flow: 2,000 m<sup>3</sup>/day

##### *Measures relative to the waste*

Dispose of waste cans and containers according to local regulations.

##### *Exposure estimation and reference to its source*

Risk Characterization Ratio (RCR): 0.029

Risk from environmental exposure is driven by freshwater and marine water.

Maximum safe use amount: 15,141 kg/day

#### EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** ERC8d: Wide dispersive outdoor use of processing aids in open systems.

##### *Operating conditions*

Yearly amount used in EU: 2,600,000 kgs

Daily amount per site: 433 kg

Minimum continuous emission days per year: 300

Emission factor to air: 80%

Emission factor in water: 10%

Emission factor in soil: 0.1%

Releases based on A&B tables from TGD 2003

Freshwater dilution factor: 10

Marine water dilution factor: 100

##### *Risk management measures*

Prevent discharge of undissolved substance, or recover from wastewater.

Type of treatment plant: Municipal sewage treatment plant.

Total removal efficiency of the substance from the wastewater after Risk Management Measures and treatment in the treatment plant (5): 87.3%

Assumed treatment plant flow: 2,000 m<sup>3</sup>/day

### **Measures relative to the waste**

Dispose of waste cans and containers according to local regulations.

### **Exposure estimation and reference to its source**

Risk Characterization Ratio (RCR): 0.029

Risk from environmental exposure is driven by freshwater and marine water.

Maximum safe use amount: 15,141 kg/day

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC1: Use in closed process, no likelihood of exposure. General exposure (closed system).

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC2: Use in closed, continuous process with occasional controlled exposure. Filling/Preparation of equipment required for drums and containers.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC2: Use in closed, continuous process with occasional controlled exposure. General exposure. Use in confined systems (closed system). Filling/Preparation of equipment required for drums and containers.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Operation is carried out at elevated temperature ( $> 20^\circ\text{C}$  above ambient temperature).

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 15.02 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.4

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 1.37 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.03

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC3: Use in batch process (synthesis or formulation). Preparation of material for application

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤5%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 18.77 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.05

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 0.34 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.01

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC4: Use in batch and other processes (synthesis) where opportunity for exposure arises. Film formation - Air drying.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤5%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 6.86 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.14

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC4: Use in batch and other processes (synthesis) where opportunity for exposure arises. Film formation - Air drying.

Area of use: Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Indoor use.

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC5: Mixing in batch processes for formulation of preparations and articles (multistage and/or significant contact). Preparation of material for application.

Area of use: Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 75.08 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.2

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 13.71 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.27

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC5: Mixing in batch processes for formulation of preparations and articles (multistage and/or significant contact). Preparation of material for application.

Area of use: Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Ensure that operations are carried out externally.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities. Material transfers. Drum/batch transfers. Non-dedicated system.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 75.08 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.2

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 13.71 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.27

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Material transfers. Drum/batch transfers Dedicated plant.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 6.86 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.14

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC10: Application with rollers or brushes. Roller, spatula, jet application.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 75.08 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.2

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 27.43 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.54

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC10: Application with rollers or brushes. Roller, spatula, jet application.**

**Area of use: Professional**

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤5%

Indoor/Outdoor: Outdoor use.

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC11: Non-industrial spray application. Spraying (manual).**

**Area of use: Professional**

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤5%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Effectiveness: 30%.

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%.

If there is no general ventilation, ensure that operations are carried out outdoors.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 262.79 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.71

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 10.71 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.21

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC11: Non-industrial spray application. Spraying (manual).

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Ensure that operations are carried out externally.

Wear chemically resistant gloves in combination with "basic" employee training.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC13: Treatment of articles by dipping, pouring, enamelling.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 75.08 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.2

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 13.71 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.27

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC13: Treatment of articles by dipping, pouring, enamelling.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Indoor use.

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Ensure that operations are carried out externally.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>



## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC15: Use as laboratory reagent. Laboratory activities.

Area of use: Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 7.51 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.02

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 0.34 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.01

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC19: Manual mixing with direct contact using only personal protective equipment. Hand application - fingerpaints, pastels, adhesives.

Area of use: Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Wear suitable gloves compliant with EN ISO 374-1. Effectiveness: 80%.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 75.08 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.2

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 28.29 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.56

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC19: Manual mixing with direct contact using only personal protective equipment. Hand application - fingerpaints, pastels, adhesives.

Area of use: Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Outdoor use.

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Wear suitable gloves compliant with EN ISO 374-1.



### ***Exposure estimation and reference to its source***

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

### ***Guidance for downstream users***

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

# Xylene

## Identification of the exposure scenario

Product name: Xylene

Reach registration number: 01-2119488216-32-XXXX

CAS number: 1330-20-7

EC number: 215-535-7

Review date: 14/02/2022 rev. 3.0

## USE IN COATINGS - INDUSTRIAL USE

### 1. Title of the exposure scenario

**Process purpose:** Includes use in coatings (varnishes, inks, adhesives, etc.), including exposure during application (including material receipt, storage, bulk and semi-bulk preparation and transfer, application by spray, roller, manual spraying, dip, flow, fluid layers in production lines and in film formation) and system cleaning, maintenance and related laboratory activities.

**Main sector:** SU3 Industrial uses

#### Environment

**Environmental Release Categories [ERC]:** ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article).

**Specific Environmental Release Category [SPERC]:** ESVOC SPERC 4.3a.v1

#### Worker

##### Process categories:

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.

PROC 3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions.

PROC4 Production of chemicals with the possibility of exposure.

PROC5 Mixing or blending in batch processes

PROC7 Industrial spraying.

PROC8a Transfer of a substance or preparation (charging/discharging) at non-dedicated facilities.

PROC8a Transfer of substance or mixture (charging/discharging) at non-dedicated facilities.

PROC10 Application with rollers or brushes.

PROC13 Treatment of articles by dipping and pouring.

PROC15 Use as laboratory reagent.

PROC24 High (mechanical) energy work-up of substances bound in/on materials and/or articles.

### 2. Other conditions of use affecting exposure (Industrial - Environment 1)

#### Products features

**Form:** Liquid, vapor pressure 0.5 - 10 kPa at STP

Easily biodegradable.

#### Amounts used:

Annual amount per site: 2500 tonnes

#### Frequency and duration of use

Issue days: 300 days/year

#### Additional operating conditions relating to environmental exposure

##### Emission factor - air

Air release rate produced by the process (initial release prior to risk management measures): 0.98

##### Emission factor - water

Waste water release rate produced by the process (initial release prior to risk management measures): 0.007

##### Emission factor - soil

Soil release rate produced by the process (initial release prior to risk management measures): 0

## ***Environmental factors that are not influenced by risk management***

### **Dilution**

Local fresh water dilution factor: 10

Local seawater dilution factor: 100

### ***Risk management measures***

#### **Sewage Treatment Plant Data (STP)**

Estimated substance removal from waste water via domestic sewage treatment: 95.8%

Assumed domestic sewage treatment plant flow: 2000 m<sup>3</sup>/day

## ***Local technical conditions and measures to reduce and limit discharges and air emissions***

### **Air:**

Treat air emission to provide a typical removal efficiency of > 90%.

### **Water:**

Avoid releasing the undiluted substance into local waste water or recover it on site. The typical on-site purification technique has a removal efficiency of 95.8%.

### **Ground:**

Soil emission controls are not applicable as there is no direct release to soil.

## ***Conditions and measures for external treatment of waste***

### **Sludge treatment:**

Do not spread industrial sludge on natural soils. Sewerage sludge should be burned, stored or regenerated.

### **Waste treatment:**

No waste of the substance is formed during production.

## **2. Other conditions of use affecting exposure (Workers - Health 1)**

### ***Products features***

#### **Form:**

Liquid, vapor pressure 0.5 - 10 kPa at STP

**Concentration information:** Includes concentrations up to 100%, unless otherwise indicated.

### ***Quantities used***

Not applicable.

### ***Frequency and duration of use***

Covers daily exposures up to 8 hours (unless stated differently).

### ***Other operational conditions affecting worker exposure***

**Temperature:** (unless stated differently) assumes use at not more than 20°C above ambient temperature.

**Ventilation Rate:** Ensure a sufficient amount of controlled ventilation (10 to 15 air changes per hour). Assumes a good basic standard of occupational hygiene is implemented.

### ***Technical conditions and process-level (source) measures to prevent releases***

#### **Technical protective measures:**

Handle substance within a closed system. Provide supplementary ventilation to points where emissions occur. Ensure material transfers are managed using closed or air exhaust systems. Drain or remove substance from equipment before opening or servicing PROC7 Industrial spraying: spraying (automatic/robotic) should be carried out in a ventilated booth with laminar air flow.

#### **Risk management measures:**

PROC7 Industrial spraying.

Manual spraying.

Wear respiratory protection in accordance with EN 140 with filter type A or better.

## **3. Verification of exposure (Environment 1)**

### **Environmental exposure:**

Predicted exposures are not expected to exceed the specific risks (listed in chapter 8 of the safety datasheet), when the risk management measures/operational conditions outlined in section 2 are implemented.

Maximum allowable site tonnage (M<sub>safe</sub>), based on release following total waste water treatment removal: 9874 kg/day

### **3. Exposure Verification (Health 1)**

#### **Exposure**

Predicted workplace exposures are not expected to exceed the DNEL when risk identification measures are implemented.

### **4. Guidance to check compliance with the exposure scenario (Environment 1)**

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures.

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

Required removal efficiency for waste water can be achieved using on-site/off-site technologies, either alone or in combination.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

### **4. Guidance to check compliance with the exposure scenario (Health 1)**

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

## USE IN COATINGS - PROFESSIONAL USE

### 1. Title of the exposure scenario

**Process purpose:** Includes use in coatings (varnishes, inks, adhesives, etc.), including exposure during application (including material receipt, storage, bulk and semi-bulk preparation and transfer, application by spray, roller, brush and manual spraying or similar processes and film formation) and system cleaning, maintenance and related laboratory activities.

**Main sector:** SU22 Professional uses

#### **Environment**

##### **Environmental Release Categories [ERC]:**

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor).

ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor).

ERC8c Widespread use leading to inclusion into/onto article (indoor).

ERC8f Widespread use leading to inclusion into/onto article (outdoor).

Specific Environmental Release Category [SPERC]: ESVOC SPERC 8.3b.v1

#### **Worker**

##### **Process categories:**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.

PROC 3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions.

PROC4 Production of chemicals with the possibility of exposure.

PROC5 Mixing or blending in batch processes

PROC8a Transfer of a substance or preparation (charging/discharging) at non-dedicated facilities.

PROC8a Transfer of substance or mixture (charging/discharging) at non-dedicated facilities.

PROC10 Application with rollers or brushes.

PROC11 Non-industrial spray application.

PROC13 Treatment of articles by dipping and pouring.

PROC15 Use as laboratory reagent.

PROC19 Manual activities with direct contact.

PROC24 High (mechanical) energy work-up of substances bound in/on materials and/or articles.

### 2. Other conditions of use affecting exposure (Industrial - Environment 1)

#### **Products features**

**Form:** Liquid, vapor pressure 0.5 - 10 kPa at STP Easily biodegradable.

#### **Quantities used**

Annual amount per site: 10 tonnes

#### **Frequency and duration of use**

Issue days: 365 days/year

#### **Additional operating conditions relating to environmental exposure**

##### **Emission factor - air**

Air release rate produced by the process (initial release prior to risk management measures): 0.98

##### **Emission factor - water**

Waste water release rate produced by the process (initial release prior to risk management measures): 0.01

##### **Emission factor - soil**

Soil release rate produced by the process (initial release prior to risk management measures): 0.01

#### **Environmental factors that are not influenced by risk management**

##### **Dilution**

Local fresh water dilution factor: 10

Local seawater dilution factor: 100

### ***Risk management measures***

Sewage Treatment Plant Data (STP)

Estimated substance removal from waste water via domestic sewage treatment 95.8%

Assumed domestic sewage treatment plant flow: 2000 m<sup>3</sup>/day

### ***Local technical conditions and measures to reduce and limit discharges and air emissions***

Air: Treat air emission to provide a typical removal efficiency of 0%.

Water: The typical on-site purification technique has a removal efficiency of 95.8%.

### ***Conditions and measures for external treatment of waste***

Waste treatment: External treatment and disposal of waste should comply with applicable local and/or national regulations.

## **2. Other conditions of use affecting exposure (Workers - Health 1)**

### ***Products features***

#### **Form:**

Liquid, vapor pressure 0.5 - 10 kPa at STP

#### **Concentration information:**

Includes concentrations up to 100%, unless otherwise indicated.

### ***Quantities used***

Not applicable.

### ***Frequency and duration of use***

Covers daily exposures up to 8 hours (unless stated differently).

### ***Other operational conditions affecting worker exposure***

#### **Temperature:**

(unless stated differently) assumes use at not more than 20°C above ambient temperature.

#### **Ventilation Rate:**

Provide a good standard of controlled ventilation (10 to 15 air changes per hour) or ensure operation is undertaken outdoors.

Assumes a good basic standard of occupational hygiene is implemented.

### ***Technical conditions and process-level (source) measures to prevent releases***

#### **Technical protective measures:**

Handle substance within a closed system. Provide supplementary ventilation to points where emissions occur. Ensure material transfers are managed using closed or air exhaust systems. Clean/flush equipment prior to opening or maintenance. Transport on closed roads. PROC11 Non-industrial spray application. Indoor use. Perform in a laminar flow ventilated booth. PROC15 Use as laboratory reagents handle under fume hood or extract air.

### ***Organizational measures to prevent/limit releases, dispersion and exposure***

#### **Organizational measures**

Avoid activities with an exposure of more than 4 hours.

Hand Application - Finger Paints, Chalks, Stickers:

Limit the amount of substance in the mixture to 5%.

### ***Risk management measures***

Wear protective gloves according to EN 374, resistant to solvents.

PROC10 Application with rollers or brushes.

PROC11 Non-industrial spray application. Outdoor use.

PROC13 Treatment of articles by dipping and pouring. Outdoor use.

Wear respiratory protection in accordance with EN 140 with filter type A or better.

## **3. Verification of exposure (Environment 1)**

### **Environmental exposure**

Predicted exposures are not expected to exceed the specific risks (listed in chapter 8 of the safety datasheet), when the risk management measures/operational conditions outlined in section 2 are implemented.

Maximum allowable site tonnage (M<sub>safe</sub>), based on release following total waste water treatment removal: 5969 kg/day

### **3. Exposure Verification (Health 1)**

#### **Exposure**

Predicted workplace exposures are not expected to exceed the DNEL when risk identification measures are implemented.

### **4. Guidance to check compliance with the exposure scenario (Environment 1)**

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures.

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

Required removal efficiency for waste water can be achieved using on-site/off-site technologies, either alone or in combination.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

### **4. Guidance to check compliance with the exposure scenario (Health 1)**

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

**FASSA EPOXY 300 COMP.B**

Varnostni list z dne 21/05/2025 revizija 3

**ODDELEK 1: Identifikacija snovi/zmesi in družbe/podjetja**

**1.1 Identifikator izdelka**

Identifikacija pripravka:

Komercialno ime: FASSA EPOXY 300 COMP.B

Komercialna koda: 1223.B

UFI: N338-4HGK-Y30U-GJ0Q

**1.2 Pomembne identificirane uporabe snovi ali zmesi in odsvetovane uporabe**

Priporočena uporaba: Epoksidna smola

Odsvetovane uporabe: Ni namenjeno za potrošniško uporabo

**1.3 Podrobnosti o dobavitelju varnostnega lista**

Dobavitelj FASSA Srl

Via Lazzaris, 3 - 31027 Spresiano (TV) - ITALY

Tel. +39 0422 7222

Fax +39 0422 887509

Odgovorni: laboratorio.spresiano@fassabortolo.it

**1.4 Telefonska številka za nujne primere**

112 - Center za obveščanje (na voljo 24 ur)

**ODDELEK 2: Določitev nevarnosti**



**2.1 Razvrstitev snovi ali zmesi**

**Uredba (ES) št. 1272/2008 (CLP)**

Skin Corr. 1B Povzroča hude opekline kože in poškodbe oči.

Skin Sens. 1A Lahko povzroči alergijski odziv kože.

Repr. 2 Sum škodljivosti za plodnost. Sum škodljivosti za nerojenega otroka.

STOT RE 2 V primeru dolgotrajnega ali ponovljenega vdihavanja in zaužitja lahko povzroči poškodbe notranjih organov.

Aquatic Chronic 2 Strupeno za vodne organizme, z dolgotrajnimi učinki.

Nevarnosti fizikalno-kemijskih lastnosti za zdravje ljudi in za okolje:

Ni drugih tveganj

**2.2 Elementi etikete**

**Uredba (ES) št. 1272/2008 (CLP)**

**Piktogrami za nevarnost in Opozorilna beseda**



Nevarno

**Stavki o nevarnosti**

H314 Povzroča hude opekline kože in poškodbe oči.

H317 Lahko povzroči alergijski odziv kože.

H361fd Sum škodljivosti za plodnost. Sum škodljivosti za nerojenega otroka.

H373 V primeru dolgotrajnega ali ponovljenega vdihavanja in zaužitja lahko povzroči poškodbe notranjih organov.

H411 Strupeno za vodne organizme, z dolgotrajnimi učinki.

**Previdnostni stavki**

P260 Ne vdihavati prahu/dima/plina/meglice/hlapov/razpršila.

P264 Po uporabi temeljito umiti z vodo.



- P280 Nadenite si zaščitne rokavice/obleke ter zaščitite oči/obraz.
- P303+P361+P353 PRI STIKU S KOŽO (ali lasmi): Takoj sleči vsa kontaminirana oblačila. Kožo izprati z vodo ali prho.
- P305+P351+P338 PRI STIKU Z OČMI: Previdno izpirati z vodo nekaj minut. Odstranite kontaktne leče, če jih imate in če to lahko storite brez težav. Nadaljujte z izpiranjem.
- P310 Takoj pokličite CENTER ZA ZASTRUPITVE/ zdravnika.

Vsebuje:

tetraetilenpentamin  
amini, polietilenpoli-,  
trietilentetramin frakcija

2-piperazin-1-iletilamin  
benzil alkohol

Maščobne kisline, C18-nesatd., dimeri,  
polimerni reakcijski produkti z maščobnimi  
kisljinami iz visokih olj in trietilentetramin

12-hidroksi-N-[6-(12-  
hidroksioktadekanamido)heksil]  
oktadekanamid

reakcijski produkti formaldehid in 4-  
nonilfenol in trietilentetramin in 2-  
piperazin-1-iletilamin

Posebne določbe v skladu s Prilogo XVII uredbe REACH in poznejše spremembe:

Nobeden

2.3 Druge nevarnosti

Ni snovi PBT, vPvB ali endokrinih motilcev v  
koncentraciji > = 0,1%.

Ni drugih tveganj

ODDELEK 3: Sestava/podatki o sestavinah

3.1 Snovi

ni znano

3.2 Zmesi

Identifikacija pripravka: FASSA EPOXY 300 COMP.B

Nevarne sestavine, skladno z Uredbo CLP in njeno razvrstitvijo:

Količina	Ime	Ident. št.	Razvrstitev	Registracijska številka:
≥50 - <80 %	Maščobne kisline, C18-nesatd., dimeri, polimerni reakcijski produkti z maščobnimi kisljinami iz visokih olj in trietilentetramin	CAS:68082-29-1 EC:500-191-5	Skin Irrit. 2, H315; Eye Dam. 1, H318; Skin Sens. 1A, H317; Aquatic Chronic 2, H411	01-2119972320-44-xxxx
≥10 - <20 %	reakcijski produkti formaldehid in 4-nonilfenol in trietilentetramin in 2-piperazin-1-iletilamin	EC:922-006-0	Eye Dam. 1, H318; Skin Sens. 1, H317; Skin Corr. 1B, H314	
≥10 - <20 %	benzil alkohol	CAS:100-51-6 EC:202-859-9 Index:603-057-00-5	Acute Tox. 4, H302 Eye Irrit. 2, H319 Skin Sens. 1B, H317 Ocena akutne strupenosti: ATE - Oralno: 1200mg/kg tt	01-2119492630-38-xxxx
≥3 - <5 %	2-piperazin-1-iletilamin	CAS:140-31-8 EC:205-411-0 Index:612-105-00-4	Acute Tox. 3, H311 Acute Tox. 4, H302 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 STOT RE 1, H372 Aquatic Chronic 3, H412 Repr. 2, H361fd Ocena akutne strupenosti: ATE - Oralno: 500mg/kg tt	01-2119471486-30-xxxx
≥1 - <3 %	ksilen	CAS:1330-20-7 EC:215-535-7 Index:601-022-00-9	Flam. Liq. 3, H226 Acute Tox. 4, H312 Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335 STOT RE 2, H373	01-2119488216-32-xxxx

			Asp. Tox. 1, H304	
			Ocena akutne strupenosti: ATE - Dermalno: 1100mg/kg tt ATE - Vdihavanje (Hlapi): 11mg/l	
≥0.5 - <1 %	amini, polietilenpoli-, trietilentetramin frakcija	CAS:90640-67-8 EC:292-588-2	Acute Tox. 4, H312; Acute Tox. 4, H302; Skin Corr. 1B, H314; Eye Dam. 1, H318; Skin Sens. 1, H317; Aquatic Chronic 3, H412	01-2119487919-13-xxxx
≥0.5 - <1 %	tetraetilenpentamin	CAS:90640-66-7 EC:292-587-7	Acute Tox. 4, H312 Acute Tox. 4, H302 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 Aquatic Chronic 3, H412	01-2119487290-37-xxxx
			Ocena akutne strupenosti: ATE - Oralno: 500mg/kg tt ATE - Dermalno: 1100mg/kg tt	
≥0.3 - <0.5 %	12-hidroksi-N-[6-(12-hidroksioktadekanamido)heksil]oktadekanamid	EC:434-430-9	Skin Sens. 1, H317; Aquatic Chronic 4, H413	01-0000018057-71-xxxx
≥0.3 - <0.5 %	2-metoksi-1-metiletil acetat	CAS:108-65-6 EC:203-603-9 Index:607-195-00-7	Flam. Liq. 3, H226; STOT SE 3, H336	01-2119475791-29-xxxx
≥0.3 - <0.5 %	etilbenzen	CAS:100-41-4 EC:202-849-4 Index:601-023-00-4	Flam. Liq. 2, H225; Acute Tox. 4, H332; STOT RE 2, H373; Asp. Tox. 1, H304; Aquatic Chronic 3, H412	01-2119489370-35-xxxx
≥0.05 - <0.1 %	toluen	CAS:108-88-3 EC:203-625-9 Index:601-021-00-3	Flam. Liq. 2, H225; Repr. 2, H361d; Asp. Tox. 1, H304; STOT RE 2, H373; Skin Irrit. 2, H315; STOT SE 3, H336; Aquatic Chronic 3, H412	01-2119471310-51-xxxx
≥0.05 - <0.1 %	n-butil acetat	CAS:123-86-4 EC:204-658-1 Index:607-025-00-1	Flam. Liq. 3, H226; STOT SE 3, H336, EUH066	01-2119485493-29-xxxx
≥0.05 - <0.1 %	ksilen	CAS:1330-20-7 EC:215-535-7 Index:601-022-00-9	Flam. Liq. 3, H226 Acute Tox. 4, H312 Acute Tox. 4, H332 Asp. Tox. 1, H304 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335 STOT RE 2, H373 Aquatic Chronic 3, H412	01-2119488216-32-xxxx
			Ocena akutne strupenosti: ATE - Dermalno: 1100mg/kg tt ATE - Vdihavanje (Hlapi): 11mg/l	
≥0.05 - <0.1 %	Kristalni silicijev dioksid, kremen (vdihljiva frakcija)	CAS:14808-60-7 EC:238-878-4	STOT RE 1, H372	Izvzeti
≥0.05 - <0.1 %	etilbenzen	CAS:100-41-4 EC:202-849-4 Index:601-023-00-4	Flam. Liq. 2, H225; Acute Tox. 4, H332; STOT RE 2, H373; Asp. Tox. 1, H304	01-2119489370-35-xxxx
≥0.05 - <0.1 %	butanon	CAS:78-93-3 EC:201-159-0 Index:606-002-00-3	Flam. Liq. 2, H225; Eye Irrit. 2, H319; STOT SE 3, H336, EUH066	01-2119457290-43-xxxx

## ODDELEK 4: Ukrepi za prvo pomoč

### 4.1 Opis ukrepov za prvo pomoč

V primeru stika s kožo:

Kontaminirana oblačila takoj slecite in jih na varen način odstranite.

TAKOJ SE POSVETUJTE Z ZDRAVNIKOM.

V primeru stika z očmi:

V primeru stika z očmi dovolj dolgo in z odprtimi očesnimi vekami izpirajte z obilo vode, nato poiščite pomoč zdravnika oftalmologa.

Poškodovano oko zaščitite.

V primeru zaužitja:

Po zaužitju ne izzivati bruhanja, takoj poiskati zdravniško pomoč in pokazati varnostni list in nalepko.

V primeru vdihavanja:

Prizadeto osebo umaknite na svež zrak in pustite počivati na toplem.

V primeru neenakomernega ali odsotnosti dihanja izvajajte umetno dihanje.

Če pride do zaužitja, takoj poiskati zdravniško pomoč in pokazati embalažo ali etiketo.

#### **4.2 Najpomembnejši simptomi in učinki, akutni in zapozneli**

Simptomi in učinki so taki, kot je pričakovano glede na nevarnosti, kar je prikazano v 2. razdelku.

#### **4.3 Navedba kakršne koli takojšnje medicinske oskrbe in posebnega zdravljenja**

V primeru nesreče ali slabega počutja takoj poiščite zdravniško pomoč (če je mogoče, pokažite navodila za uporabo ali varnostni list).

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### **ODDELEK 5: Protipožarni ukrepi**

#### **5.1 Sredstva za gašenje**

Ustrezna sredstva za gašenje:

CO<sub>2</sub>, gasilni aparat na prah, pena, pršenje z vodo.

Sredstva za gašenje, ki se jih iz varnostnih razlogov ne sme uporabljati:

Vodni curki

#### **5.2 Posebne nevarnosti v zvezi s snovjo ali zmesjo**

Pri gorenju nastajajo težki dimni plini.

Ne vdihavati pline, ki nastanejo pri eksploziji in/ali gorenju (ogljikov monoksid in ogljikov dioksid, dušikovi oksidi).

#### **5.3 Nasvet za gasilce**

Uporabiti ustrezne dihalne naprave.

Ločeno zberite kontaminirano vodo, uporabljeno za gašenje požara. Ne je izpustiti v kanalizacijo.

Če je to varno izvedljivo, nepoškodovane vsebnike umaknite iz neposredno ogroženega območja.

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### **ODDELEK 6: Ukrepi o nenamernih izpustih**

#### **6.1 Osebni varnostni ukrepi, zaščitna oprema in postopki v sili**

**Za neizučeno osebje:**

Nosite osebno varovalno opremo.

V primeru izpostavljenosti hlapom/prahu/aerosolom nosite dihalne aparate.

Omogočite primerno zračenje.

Uporabite ustrezno zaščito dihal.

Glejte v oddelku 7 in 8 navedene zaščitne ukrepe.

**Za reševalce:**

Nosite osebno varovalno opremo.

#### **6.2 Okoljevarstveni ukrepi**

Preprečite vstop v tla/podtalnico. Preprečite razlitje v površinske vode ali v kanalizacijo.

V primeru puščanja plina ali razlitja v vodne tokove, tla ali kanalizacijo obvestite pristojne organe.

#### **6.3 Metode in materiali za zadrževanje in čiščenje**

Za zbiranje primeren material: inerten vpojni materiali (npr. pesek, vermikulit).

Po pobiranju z vodo izperite območje in prizadete materiale.

Kontaminirano vodo za pranje shranite in odstranite.

#### **6.4 Sklizevanje na druge oddelke**

Glejte tudi naslova 8 in 13

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### **ODDELEK 7: Ravnanje in skladiščenje**

#### **7.1 Varnostni ukrepi za varno ravnanje**

Preprečite stik s kožo in očmi, vdihavanje hlapov in megle.

Uporabite lokaliziran sistem prezračevanja.

Prazne vsebnike ne uporabite dokler niso očiščeni.

Pred postopki prenosa se prepričajte, da v vsebnikih ni ostankov nezdružljivih materialov.

**Nasveti o splošni higieni dela:**

Kontaminirana oblačila se mora pred vstopom v jedilnico zamenjati.

Med delom ne jejte in ne pijte.

Glejte tudi oddelek 8 o priporočeni varovalni opremi.

#### **7.2 Pogoji za varno skladiščenje, vključno z nezdružljivostjo**

Posode hranite tesno zaprte na hladnem in dobro prezračevanem mestu proč od virov toplote.

Hranite stran od hrane, pijač in krme.

Inkompaktibilne snovi:

Glejte točko 10.5

Navodila za prostore:

**7.3 Posebne končne uporabe**

Priporočila

Glejte točko 1.2

Specifične rešitve za industrijski sektor

Nobena posebna uporaba

**ODDELEK 8: Nadzor izpostavljenosti/osebna zaščita****8.1 Parametri nadzora****Mejne vrednosti za poklicno izpostavljenost**

benzil alkohol

CAS: 100-51-6	Tip OPZ	MAK	Nemčija	Dolgotrajna 22 mg/m <sup>3</sup> - 5 ppm; Kratkotrajna 44 mg/m <sup>3</sup> - 10 ppm Opombe: Inhalable fraction and vapour, Skin
	Tip OPZ	TLV	Bolgarija	Dolgotrajna 5 mg/m <sup>3</sup>
	Tip OPZ	TLV	Češka	Dolgotrajna 40 mg/m <sup>3</sup> - 8.88 ppm; Kratkotrajna 80 mg/m <sup>3</sup> - 17.76 ppm
	Tip OPZ	SUVA	Švicar	Dolgotrajna 22 mg/m <sup>3</sup> - 5 ppm
	Tip OPZ	AGW	Nemčija	Dolgotrajna 22 mg/m <sup>3</sup> - 5 ppm; Kratkotrajna 44 mg/m <sup>3</sup> - 10 ppm Opombe: Inhalable fraction and vapour
	Tip OPZ	NDS	Poljska	Dolgotrajna 240 mg/m <sup>3</sup>
	Tip OPZ	MV	Slovenija	Dolgotrajna 22 mg/m <sup>3</sup> - 5 ppm; Kratkotrajna 44 mg/m <sup>3</sup> - 10 ppm Opombe: Skin
	Tip OPZ	IPRV	Litva	Dolgotrajna 5 mg/m <sup>3</sup> Opombe: Skin

ksilen

CAS: 1330-20-7	Tip OPZ	EU		Dolgotrajna 221 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 442 mg/m <sup>3</sup> - 100 ppm Opombe: Skin
	Tip OPZ	TLV	Češka	Dolgotrajna 200 mg/m <sup>3</sup> - 45.4 ppm; Kratkotrajna 400 mg/m <sup>3</sup> - 90.8 ppm Opombe: Skin
	Tip OPZ	RV	Latvija	Dolgotrajna 221 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 442 mg/m <sup>3</sup> - 100 ppm

2-metoksi-1-metiletil acetat

CAS: 108-65-6	Tip OPZ	EU		Dolgotrajna 275 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 550 mg/m <sup>3</sup> - 100 ppm Opombe: Skin
	Tip OPZ	MAK	Avstrija	Dolgotrajna 275 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 550 mg/m <sup>3</sup> - 100 ppm Opombe: Skin
	Tip OPZ	MAK	Nemčija	Dolgotrajna 270 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 270 mg/m <sup>3</sup> - 50 ppm
	Tip OPZ	VLEP	Belgija	Dolgotrajna 275 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 550 mg/m <sup>3</sup> - 100 ppm Opombe: Additional indication "D" means that the absorption of the agent through the skin, mucous membranes or eyes is an important part of the total exposure. It can be the result of both direct contact and its presence in the air.
	Tip OPZ	VLEP	Francija	Dolgotrajna 275 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 550 mg/m <sup>3</sup> - 100 ppm Opombe: Skin
	Tip OPZ	VLEP	Italija	Dolgotrajna 275 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 550 mg/m <sup>3</sup> - 100 ppm Opombe: Skin
	Tip OPZ	VLEP	Romunija	Dolgotrajna 275 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 550 mg/m <sup>3</sup> - 100 ppm
	Tip OPZ	TLV	Bolgarija	Dolgotrajna 275 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 550 mg/m <sup>3</sup> - 100 ppm Opombe: Skin
	Tip OPZ	TLV	Češka	Dolgotrajna 270 mg/m <sup>3</sup> - 49.14 ppm; Kratkotrajna 550 mg/m <sup>3</sup> - 10.01 ppm Opombe: Skin
	Tip OPZ	VLA	Španija	Dolgotrajna 275 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 550 mg/m <sup>3</sup> - 100 ppm Opombe: Skin
	Tip OPZ	ÁK	Madžarska	Dolgotrajna 275 mg/m <sup>3</sup> ; Kratkotrajna 550 mg/m <sup>3</sup>
	Tip OPZ	MAC	Nizozemska	Dolgotrajna 550 mg/m <sup>3</sup> - 100 ppm
	Tip OPZ	VLE	Portugalska	Dolgotrajna 275 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 550 mg/m <sup>3</sup> - 100 ppm Opombe: Skin

	Tip OPZ	SUVA	Švicar	Dolgotrajna 275 mg/m3 - 50 ppm; Kratkotrajna 275 mg/m3 - 50 ppm
	Tip OPZ	WEL	U.K.	Dolgotrajna 274 mg/m3 - 50 ppm; Kratkotrajna 548 mg/m3 - 100 ppm Opombe: Skin
	Tip OPZ	GVI	Hrvaška	Dolgotrajna 275 mg/m3 - 50 ppm; Kratkotrajna 550 mg/m3 - 100 ppm Opombe: Skin
	Tip OPZ	AGW	Nemčija	Dolgotrajna 270 mg/m3 - 50 ppm; Kratkotrajna 270 mg/m3 - 50 ppm
	Tip OPZ	NDS	Poljska	Dolgotrajna 260 mg/m3; Kratkotrajna 520 mg/m3 Opombe: Skin
	Tip OPZ	MV	Slovenija	Dolgotrajna 275 mg/m3 - 50 ppm; Kratkotrajna 550 mg/m3 - 100 ppm Opombe: Skin
	Tip OPZ	IPRV	Litva	Dolgotrajna 250 mg/m3 - 50 ppm; Kratkotrajna 400 mg/m3 - 75 ppm Opombe: Skin
	Tip OPZ	RV	Latvija	Dolgotrajna 275 mg/m3 - 50 ppm; Kratkotrajna 550 mg/m3 - 100 ppm Opombe: Skin
etilbenzen				
CAS: 100-41-4	Tip OPZ	ACGIH		Dolgotrajna 20 ppm Opombe: A3, BEI - URT irr, kidney dam (nephropathy), cochlear impair
	Tip OPZ	EU		Dolgotrajna 442 mg/m3 - 100 ppm; Kratkotrajna 884 mg/m3 - 200 ppm Opombe: Skin
	Tip OPZ	MAK	Avstrija	Dolgotrajna 440 mg/m3 - 100 ppm; Kratkotrajna 880 mg/m3 - 200 ppm
	Tip OPZ	MAK	Nemčija	Dolgotrajna 88 mg/m3 - 20 ppm; Kratkotrajna 176 mg/m3 - 40 ppm Opombe: Skin
	Tip OPZ	VLEP	Belgija	Dolgotrajna 87 mg/m3 - 20 ppm; Kratkotrajna 551 mg/m3 - 125 ppm Opombe: Additional indication "D" means that the absorption of the agent through the skin, mucous membranes or eyes is an important part of the total exposure. It can be the result of both direct contact and its presence in the air.
	Tip OPZ	VLEP	Francija	Dolgotrajna 88.4 mg/m3 - 20 ppm; Kratkotrajna 442 mg/m3 - 100 ppm
	Tip OPZ	VLEP	Italija	Dolgotrajna 442 mg/m3 - 100 ppm; Kratkotrajna 884 mg/m3 - 200 ppm
	Tip OPZ	VLEP	Romunija	Dolgotrajna 442 mg/m3 - 100 ppm; Kratkotrajna 884 mg/m3 - 200 ppm
	Tip OPZ	TLV	Češka	Dolgotrajna 200 mg/m3 - 45.4 ppm; Kratkotrajna 500 mg/m3 - 113.5 ppm Opombe: Skin
	Tip OPZ	VLA	Španija	Dolgotrajna 441 mg/m3 - 100 ppm; Kratkotrajna 884 mg/m3 - 200 ppm Opombe: Skin
	Tip OPZ	ÁK	Madžarska	Dolgotrajna 442 mg/m3; Kratkotrajna 884 mg/m3
	Tip OPZ	MAC	Nizozemska	Dolgotrajna 215 mg/m3; Kratkotrajna 430 mg/m3
	Tip OPZ	VLE	Portugalska	Dolgotrajna 442 mg/m3 - 100 ppm; Kratkotrajna 884 mg/m3 - 200 ppm Opombe: Skin
	Tip OPZ	SUVA	Švicar	Dolgotrajna 435 mg/m3 - 100 ppm; Kratkotrajna 435 mg/m3 - 100 ppm
	Tip OPZ	WEL	U.K.	Dolgotrajna 441 mg/m3 - 100 ppm; Kratkotrajna 552 mg/m3 - 125 ppm
	Tip OPZ	GVI	Hrvaška	Dolgotrajna 442 mg/m3 - 100 ppm; Kratkotrajna 884 mg/m3 - 200 ppm Opombe: Skin
	Tip OPZ	AGW	Nemčija	Dolgotrajna 88 mg/m3 - 20 ppm; Kratkotrajna 176 mg/m3 - 40 ppm Opombe: Skin
	Tip OPZ	NDS	Poljska	Dolgotrajna 200 mg/m3; Kratkotrajna 400 mg/m3
	Tip OPZ	MV	Slovenija	Dolgotrajna 442 mg/m3 - 100 ppm; Kratkotrajna 884 mg/m3 - 200 ppm Opombe: Skin
toluen				
CAS: 108-88-3	Tip OPZ	ACGIH		Dolgotrajna 20 ppm Opombe: A4, BEI - Visual impair, female repro, pregnancy loss
	Tip OPZ	EU		Dolgotrajna 192 mg/m3 - 50 ppm; Kratkotrajna 384 mg/m3 - 100 ppm Opombe: Skin
	Tip OPZ	MAK	Avstrija	Dolgotrajna 190 mg/m3 - 50 ppm; Kratkotrajna 380 mg/m3 - 100 ppm
	Tip OPZ	MAK	Nemčija	Dolgotrajna 190 mg/m3 - 50 ppm; Kratkotrajna 380 mg/m3 - 100 ppm Opombe: Skin

Tip OPZ	VLEP	Belgija	Dolgotrajna 77 mg/m3 - 20 ppm; Kratkotrajna 384 mg/m3 - 100 ppm Opombe: Additional indication "D" means that the absorption of the agent through the skin, mucous membranes or eyes is an important part of the total exposure. It can be the result of both direct contact and its presence in the air.
Tip OPZ	VLEP	Francija	Dolgotrajna 76.8 mg/m3 - 20 ppm; Kratkotrajna 384 mg/m3 - 100 ppm
Tip OPZ	VLEP	Italija	Dolgotrajna 192 mg/m3 - 50 ppm Opombe: Skin
Tip OPZ	VLEP	Romunija	Dolgotrajna 192 mg/m3 - 50 ppm; Kratkotrajna 384 mg/m3 - 100 ppm
Tip OPZ	TLV	Češka	Dolgotrajna 192 mg/m3 - 50.112 ppm; Kratkotrajna 384 mg/m3 - 100.224 ppm Opombe: Skin
Tip OPZ	VLA	Španija	Dolgotrajna 192 mg/m3 - 50 ppm; Kratkotrajna 384 mg/m3 - 100 ppm Opombe: Skin
Tip OPZ	ÁK	Madžarska	Dolgotrajna 190 mg/m3; Kratkotrajna 380 mg/m3
Tip OPZ	MAC	Nizozemska	Dolgotrajna 150 mg/m3; Kratkotrajna 384 mg/m3
Tip OPZ	VLE	Portugalska	Dolgotrajna 192 mg/m3 - 50 ppm; Kratkotrajna 384 mg/m3 - 100 ppm Opombe: Skin
Tip OPZ	SUVA	Švicar	Dolgotrajna 190 mg/m3 - 50 ppm; Kratkotrajna 760 mg/m3 - 200 ppm
Tip OPZ	WEL	U.K.	Dolgotrajna 191 mg/m3 - 50 ppm; Kratkotrajna 384 mg/m3 - 100 ppm
Tip OPZ	GVI	Hrvaška	Dolgotrajna 192 mg/m3 - 50 ppm; Kratkotrajna 384 mg/m3 - 100 ppm Opombe: Skin
Tip OPZ	AGW	Nemčija	Dolgotrajna 190 mg/m3 - 50 ppm; Kratkotrajna 760 mg/m3 - 200 ppm
Tip OPZ	NDS	Poljska	Dolgotrajna 100 mg/m3; Kratkotrajna 200 mg/m3
Tip OPZ	MV	Slovenija	Dolgotrajna 192 mg/m3 - 50 ppm; Kratkotrajna 384 mg/m3 - 100 ppm Opombe: Skin

#### n-butil acetat

CAS: 123-86-4

Tip OPZ	ACGIH		Dolgotrajna 50 ppm; Kratkotrajna 150 ppm Opombe: Eye and URT irr
Tip OPZ	EU		Dolgotrajna 241 mg/m3 - 50 ppm; Kratkotrajna 723 mg/m3 - 150 ppm
Tip OPZ	MAK	Avstrija	Dolgotrajna 241 mg/m3 - 50 ppm; Kratkotrajna 480 mg/m3 - 100 ppm
Tip OPZ	MAK	Nemčija	Dolgotrajna 480 mg/m3 - 100 ppm; Kratkotrajna 960 mg/m3 - 200 ppm
Tip OPZ	VLEP	Belgija	Dolgotrajna 238 mg/m3 - 50 ppm; Kratkotrajna 712 mg/m3 - 150 ppm Opombe: Butylacetates, all isomers
Tip OPZ	VLEP	Francija	Dolgotrajna 241 mg/m3 - 50 ppm; Kratkotrajna 723 mg/m3 - 150 ppm
Tip OPZ	VLEP	Italija	Dolgotrajna 241 mg/m3 - 50 ppm; Kratkotrajna 723 mg/m3 - 150 ppm
Tip OPZ	VLEP	Romunija	Dolgotrajna 241 mg/m3 - 50 ppm; Kratkotrajna 723 mg/m3 - 150 ppm
Tip OPZ	TLV	Bolgarija	Dolgotrajna 241 mg/m3 - 50 ppm; Kratkotrajna 723 mg/m3 - 150 ppm
Tip OPZ	TLV	Češka	Dolgotrajna 241 mg/m3 - 50 ppm; Kratkotrajna 723 mg/m3 - 150 ppm
Tip OPZ	VLA	Španija	Dolgotrajna 241 mg/m3 - 50 ppm; Kratkotrajna 723 mg/m3 - 150 ppm
Tip OPZ	ÁK	Madžarska	Dolgotrajna 241 mg/m3; Kratkotrajna 723 mg/m3
Tip OPZ	MAC	Nizozemska	Dolgotrajna 241 mg/m3 - 50 ppm; Kratkotrajna 723 mg/m3 - 150 ppm
Tip OPZ	SUVA	Švicar	Dolgotrajna 240 mg/m3 - 50 ppm; Kratkotrajna 720 mg/m3 - 150 ppm
Tip OPZ	WEL	U.K.	Dolgotrajna 724 mg/m3 - 150 ppm; Kratkotrajna 966 mg/m3 - 200 ppm
Tip OPZ	GVI	Hrvaška	Dolgotrajna 724 mg/m3 - 150 ppm; Kratkotrajna 966 mg/m3 - 200 ppm
Tip OPZ	AGW	Nemčija	Dolgotrajna 300 mg/m3 - 62 ppm; Kratkotrajna 600 mg/m3 - 124 ppm
Tip OPZ	NDS	Poljska	Dolgotrajna 240 mg/m3; Kratkotrajna 720 mg/m3
Tip OPZ	MV	Slovenija	Dolgotrajna 300 mg/m3 - 62 ppm; Kratkotrajna 600 mg/m3 - 124 ppm

#### ksilen

CAS: 1330-20-7

Tip OPZ	ACGIH		Dolgotrajna 20 ppm Opombe: A4, BEI - URT and eye irr, CNS impair
Tip OPZ	EU		Dolgotrajna 221 mg/m3 - 50 ppm; Kratkotrajna 442 mg/m3 - 100 ppm Opombe: Skin
Tip OPZ	MAK	Avstrija	Dolgotrajna 221 mg/m3 - 50 ppm; Kratkotrajna 442 mg/m3 - 100 ppm
Tip OPZ	MAK	Nemčija	Dolgotrajna 220 mg/m3 - 50 ppm; Kratkotrajna 440 mg/m3 - 100 ppm Opombe: Skin

Tip OPZ	VLEP	Belgija	Dolgotrajna 221 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 442 mg/m <sup>3</sup> - 100 ppm Opombe: Additional indication "D" means that the absorption of the agent through the skin, mucous membranes or eyes is an important part of the total exposure. It can be the result of both direct contact and its presence in the air.
Tip OPZ	VLEP	Francija	Dolgotrajna 221 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 442 mg/m <sup>3</sup> - 100 ppm Opombe: Skin
Tip OPZ	VLEP	Italija	Dolgotrajna 221 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 442 mg/m <sup>3</sup> - 100 ppm Opombe: Skin
Tip OPZ	VLEP	Romunija	Dolgotrajna 221 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 442 mg/m <sup>3</sup> - 100 ppm
Tip OPZ	TLV	Bolgarija	Dolgotrajna 221 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 442 mg/m <sup>3</sup> - 100 ppm Opombe: Skin
Tip OPZ	TLV	Češka	Dolgotrajna 200 mg/m <sup>3</sup> - 45.4 ppm; Kratkotrajna 400 mg/m <sup>3</sup> - 90.8 ppm Opombe: Skin
Tip OPZ	VLA	Španija	Dolgotrajna 221 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 442 mg/m <sup>3</sup> - 100 ppm
Tip OPZ	ÁK	Madžarska	Dolgotrajna 221 mg/m <sup>3</sup> ; Kratkotrajna 442 mg/m <sup>3</sup> Opombe: Skin
Tip OPZ	MAC	Nizozemska	Dolgotrajna 210 mg/m <sup>3</sup> - 47.5 ppm; Kratkotrajna 442 mg/m <sup>3</sup> - 100 ppm Opombe: Skin
Tip OPZ	VLE	Portugalska	Dolgotrajna 221 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 442 mg/m <sup>3</sup> - 100 ppm Opombe: Skin
Tip OPZ	SUVA	Švicar	Dolgotrajna 220 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 440 mg/m <sup>3</sup> - 100 ppm
Tip OPZ	WEL	U.K.	Dolgotrajna 220 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 441 mg/m <sup>3</sup> - 100 ppm Opombe: Skin
Tip OPZ	GVI	Hrvaška	Dolgotrajna 221 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 442 mg/m <sup>3</sup> - 100 ppm Opombe: Skin
Tip OPZ	AGW	Nemčija	Dolgotrajna 220 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 440 mg/m <sup>3</sup> - 100 ppm Opombe: Skin
Tip OPZ	NDS	Poljska	Dolgotrajna 100 mg/m <sup>3</sup> ; Kratkotrajna 200 mg/m <sup>3</sup> Opombe: Skin
Tip OPZ	MV	Slovenija	Dolgotrajna 221 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 442 mg/m <sup>3</sup> - 100 ppm Opombe: Skin
Tip OPZ	IPRV	Litva	Dolgotrajna 221 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 442 mg/m <sup>3</sup> - 100 ppm Opombe: Skin
Tip OPZ	RV	Latvija	Dolgotrajna 221 mg/m <sup>3</sup> - 50 ppm; Kratkotrajna 442 mg/m <sup>3</sup> - 100 ppm Opombe: Skin

Kristalni silicijev dioksid, kremen (vdihljiva frakcija)

CAS: 14808-60-7

Tip OPZ	ACGIH		Dolgotrajna 0.025 mg/m <sup>3</sup> Opombe: (R), A2 - Pulm fibrosis, lung cancer
Tip OPZ	EU		Dolgotrajna 0.1 mg/m <sup>3</sup> Opombe: Respirable dust particles
Tip OPZ	MAK	Avstrija	Dolgotrajna 0.05 mg/m <sup>3</sup> Opombe: Respirable fraction
Tip OPZ	VLEP	Belgija	Dolgotrajna 0.1 mg/m <sup>3</sup> Opombe: Respirable dust; Additional indication "C" means that the agent falls within the scope of Title 2 concerning carcinogenic, mutagenic and reprotoxic agents of Book VI of the Codex on well-being at work.
Tip OPZ	VLEP	Francija	Dolgotrajna 0.1 mg/m <sup>3</sup> Opombe: Respirable fraction
Tip OPZ	VLEP	Italija	Dolgotrajna 0.1 mg/m <sup>3</sup> Opombe: Respirable dust particles
Tip OPZ	VLA	Španija	Dolgotrajna 0.05 mg/m <sup>3</sup> Opombe: Respirable fraction
Tip OPZ	ÁK	Madžarska	Dolgotrajna 0.1 mg/m <sup>3</sup> Opombe: Respirable fraction
Tip OPZ	MAC	Nizozemska	Dolgotrajna 0.075 mg/m <sup>3</sup>

			Opombe: Respirable fraction
	Tip OPZ	SUVA Švicar	Dolgotrajna 0.15 mg/m3 Opombe: Respirable aerosol
	Tip OPZ	GVI Hrvaška	Dolgotrajna 0.1 mg/m3
	Tip OPZ	AGW Nemčija	Dolgotrajna 0.05 mg/m3; Kratkotrajna 0.4 mg/m3 Opombe: Respirable fraction
	Tip OPZ	NDS Poljska	Dolgotrajna 0.1 mg/m3 Opombe: Respirable fraction
	Tip OPZ	MV Slovenija	Dolgotrajna 0.15 mg/m3
	Tip OPZ	IPRV Litva	Dolgotrajna 0.1 mg/m3
	Tip OPZ	NGV/KG Švedska V	Dolgotrajna 0.1 mg/m3 Opombe: Respirable fraction
etilbenzen CAS: 100-41-4	Tip OPZ	ACGIH	Dolgotrajna 20 ppm Opombe: A3, BEI - URT irr, kidney dam (nephropathy), cochlear impair
	Tip OPZ	EU	Dolgotrajna 442 mg/m3 - 100 ppm; Kratkotrajna 884 mg/m3 - 200 ppm Opombe: Skin
	Tip OPZ	MAK Avstrija	Dolgotrajna 440 mg/m3 - 100 ppm; Kratkotrajna 880 mg/m3 - 200 ppm Opombe: Skin
	Tip OPZ	MAK Nemčija	Dolgotrajna 88 mg/m3 - 20 ppm; Kratkotrajna 176 mg/m3 - 40 ppm Opombe: Skin
	Tip OPZ	VLEP Belgija	Dolgotrajna 87 mg/m3 - 20 ppm; Kratkotrajna 551 mg/m3 - 125 ppm Opombe: Additional indication "D" means that the absorption of the agent through the skin, mucous membranes or eyes is an important part of the total exposure. It can be the result of both direct contact and its presence in the air.
	Tip OPZ	VLEP Francija	Dolgotrajna 88.4 mg/m3 - 20 ppm; Kratkotrajna 442 mg/m3 - 100 ppm Opombe: Skin
	Tip OPZ	VLEP Italija	Dolgotrajna 442 mg/m3 - 100 ppm; Kratkotrajna 884 mg/m3 - 200 ppm Opombe: Skin
	Tip OPZ	VLEP Romunija	Dolgotrajna 442 mg/m3 - 100 ppm; Kratkotrajna 884 mg/m3 - 200 ppm
	Tip OPZ	TLV Bolgarija	Dolgotrajna 435 mg/m3; Kratkotrajna 535 mg/m3 Opombe: Skin
	Tip OPZ	TLV Češka	Dolgotrajna 200 mg/m3 - 45.4 ppm; Kratkotrajna 500 mg/m3 - 113.5 ppm Opombe: Skin
	Tip OPZ	VLA Španija	Dolgotrajna 441 mg/m3 - 100 ppm; Kratkotrajna 884 mg/m3 - 200 ppm
	Tip OPZ	ÁK Madžarska	Dolgotrajna 442 mg/m3; Kratkotrajna 884 mg/m3 Opombe: Skin
	Tip OPZ	MAC Nizozemska	Dolgotrajna 215 mg/m3 - 48.6 ppm; Kratkotrajna 430 mg/m3 - 97.3 ppm Opombe: Skin
	Tip OPZ	VLE Portugalska	Dolgotrajna 442 mg/m3 - 100 ppm; Kratkotrajna 884 mg/m3 - 200 ppm Opombe: Skin
	Tip OPZ	SUVA Švicar	Dolgotrajna 435 mg/m3 - 100 ppm; Kratkotrajna 435 mg/m3 - 100 ppm
	Tip OPZ	WEL U.K.	Dolgotrajna 441 mg/m3 - 100 ppm; Kratkotrajna 552 mg/m3 - 125 ppm Opombe: Skin
	Tip OPZ	GVI Hrvaška	Dolgotrajna 442 mg/m3 - 100 ppm; Kratkotrajna 884 mg/m3 - 200 ppm Opombe: Skin
	Tip OPZ	AGW Nemčija	Dolgotrajna 88 mg/m3 - 20 ppm; Kratkotrajna 176 mg/m3 - 40 ppm Opombe: Skin
	Tip OPZ	NDS Poljska	Dolgotrajna 200 mg/m3; Kratkotrajna 400 mg/m3 Opombe: Skin
	Tip OPZ	MV Slovenija	Dolgotrajna 442 mg/m3 - 100 ppm; Kratkotrajna 884 mg/m3 - 200 ppm Opombe: Skin
	Tip OPZ	IPRV Litva	Dolgotrajna 442 mg/m3 - 100 ppm; Kratkotrajna 884 mg/m3 - 200 ppm Opombe: Skin



butanon

CAS: 78-93-3

Tip OPZ	ACGIH		Dolgotrajna 75 ppm; Kratkotrajna 150 ppm Opombe: BEI Skin - URT irr, CNS and PNS impair
Tip OPZ	EU		Dolgotrajna 600 mg/m <sup>3</sup> - 200 ppm; Kratkotrajna 900 mg/m <sup>3</sup> - 300 ppm
Tip OPZ	MAK	Avstrija	Dolgotrajna 295 mg/m <sup>3</sup> - 100 ppm; Kratkotrajna 590 mg/m <sup>3</sup> - 200 ppm Opombe: Skin
Tip OPZ	MAK	Nemčija	Dolgotrajna 600 mg/m <sup>3</sup> - 200 ppm; Kratkotrajna 600 mg/m <sup>3</sup> - 200 ppm Opombe: Skin
Tip OPZ	VLEP	Belgija	Dolgotrajna 600 mg/m <sup>3</sup> - 200 ppm; Kratkotrajna 900 mg/m <sup>3</sup> - 300 ppm
Tip OPZ	VLEP	Francija	Dolgotrajna 600 mg/m <sup>3</sup> - 200 ppm; Kratkotrajna 900 mg/m <sup>3</sup> - 300 ppm
Tip OPZ	VLEP	Italija	Dolgotrajna 600 mg/m <sup>3</sup> - 200 ppm; Kratkotrajna 900 mg/m <sup>3</sup> - 300 ppm
Tip OPZ	VLEP	Romunija	Dolgotrajna 600 mg/m <sup>3</sup> - 200 ppm; Kratkotrajna 900 mg/m <sup>3</sup> - 300 ppm
Tip OPZ	TLV	Bolgarija	Dolgotrajna 590 mg/m <sup>3</sup> ; Kratkotrajna 885 mg/m <sup>3</sup>
Tip OPZ	TLV	Češka	Dolgotrajna 600 mg/m <sup>3</sup> - 200 ppm; Kratkotrajna 900 mg/m <sup>3</sup> - 300 ppm
Tip OPZ	VLA	Španija	Dolgotrajna 600 mg/m <sup>3</sup> - 200 ppm; Kratkotrajna 900 mg/m <sup>3</sup> - 300 ppm
Tip OPZ	ÁK	Madžarska	Dolgotrajna 600 mg/m <sup>3</sup> ; Kratkotrajna 900 mg/m <sup>3</sup> Opombe: Skin
Tip OPZ	MAC	Nizozemska	Dolgotrajna 590 mg/m <sup>3</sup> - 197 ppm; Kratkotrajna 900 mg/m <sup>3</sup> - 300 ppm Opombe: Skin
Tip OPZ	VLE	Portugalska	Dolgotrajna 600 mg/m <sup>3</sup> - 200 ppm; Kratkotrajna 900 mg/m <sup>3</sup> - 300 ppm
Tip OPZ	SUVA	Švicar	Dolgotrajna 590 mg/m <sup>3</sup> - 200 ppm; Kratkotrajna 590 mg/m <sup>3</sup> - 200 ppm
Tip OPZ	WEL	U.K.	Dolgotrajna 600 mg/m <sup>3</sup> - 200 ppm; Kratkotrajna 899 mg/m <sup>3</sup> - 300 ppm Opombe: Skin
Tip OPZ	GVI	Hrvaška	Dolgotrajna 600 mg/m <sup>3</sup> - 200 ppm; Kratkotrajna 900 mg/m <sup>3</sup> - 300 ppm
Tip OPZ	AGW	Nemčija	Dolgotrajna 600 mg/m <sup>3</sup> - 200 ppm; Kratkotrajna 600 mg/m <sup>3</sup> - 200 ppm Opombe: Skin 15
Tip OPZ	NDS	Poljska	Dolgotrajna 450 mg/m <sup>3</sup> ; Kratkotrajna 900 mg/m <sup>3</sup> Opombe: Skin
Tip OPZ	MV	Slovenija	Dolgotrajna 600 mg/m <sup>3</sup> - 200 ppm; Kratkotrajna 900 mg/m <sup>3</sup> - 300 ppm Opombe: Skin
Tip OPZ	IPRV	Litva	Dolgotrajna 600 mg/m <sup>3</sup> - 200 ppm; Kratkotrajna 900 mg/m <sup>3</sup>

### Mejna vrednost izpostavljenosti po PNEC

Maščobne kisline, C18-nesatd., dimeri, polimerni reakcijski produkti z maščobnimi kislinami iz visokih olj in trietilentetramin

CAS: 68082-29-1

Način izpostavitve: Morska voda; PNEC Omejite: 0 mg/l  
Način izpostavitve: Sladka voda; PNEC Omejite: 0.004 mg/l  
Način izpostavitve: Mikroorganizmi v čistilnih napravah (STP); PNEC Omejite: 3.84 mg/l  
Način izpostavitve: Morski sedimenti; PNEC Omejite: 43.4 mg/kg  
Način izpostavitve: Sladkovodni sedimenti; PNEC Omejite: 434.02 mg/kg  
Način izpostavitve: Prst; PNEC Omejite: 86.78 mg/kg

benzil alkohol

CAS: 100-51-6

Način izpostavitve: Sladka voda; PNEC Omejite: 1 mg/l  
Način izpostavitve: Morska voda; PNEC Omejite: 0.1 mg/l  
Način izpostavitve: Mikroorganizmi v čistilnih napravah (STP); PNEC Omejite: 39 mg/l  
Način izpostavitve: Sladkovodni sedimenti; PNEC Omejite: 5.27 mg/kg  
Način izpostavitve: Morski sedimenti; PNEC Omejite: 0.527 mg/kg  
Način izpostavitve: Tla (kmetijska); PNEC Omejite: 0.456 mg/kg

2-piperazin-1-iletilamin

CAS: 140-31-8

Način izpostavitve: Sladka voda; PNEC Omejite: 0.058 mg/l  
Način izpostavitve: Morska voda; PNEC Omejite: 5.8 µg/l  
Način izpostavitve: Mikroorganizmi v čistilnih napravah (STP); PNEC Omejite: 250 mg/l  
Način izpostavitve: Sladkovodni sedimenti; PNEC Omejite: 215 mg/kg  
Način izpostavitve: Morski sedimenti; PNEC Omejite: 21.5 mg/kg  
Način izpostavitve: Prst; PNEC Omejite: 1 mg/kg

amini, polietilenpoli-, trietilentetramin frakcija

CAS: 90640-67-8 Način izpostavitve: Sladka voda; PNEC Omejite: 0.027 mg/l  
Način izpostavitve: Morska voda; PNEC Omejite: 0.003 mg/l  
Način izpostavitve: Mikroorganizmi v čistilnih napravah (STP); PNEC Omejite: 0.13 mg/l  
Način izpostavitve: Sladkovodni sedimenti; PNEC Omejite: 8.572 mg/kg  
Način izpostavitve: Morski sedimenti; PNEC Omejite: 0.857 mg/kg  
Način izpostavitve: Tla (kmetijska); PNEC Omejite: 1.25 mg/kg

2-metoksi-1-metiletil acetat

CAS: 108-65-6 Način izpostavitve: Sladka voda; PNEC Omejite: 0.635 mg/l  
Način izpostavitve: Morska voda; PNEC Omejite: 0.064 mg/l  
Način izpostavitve: Mikroorganizmi v čistilnih napravah (STP); PNEC Omejite: 100 mg/l  
Način izpostavitve: Sladkovodni sedimenti; PNEC Omejite: 3.29 mg/kg  
Način izpostavitve: Morski sedimenti; PNEC Omejite: 0.329 mg/kg  
Način izpostavitve: Tla (kmetijska); PNEC Omejite: 0.29 mg/kg

etilbenzen

CAS: 100-41-4 Način izpostavitve: Sladka voda; PNEC Omejite: 0.1 mg/l  
Način izpostavitve: Morska voda; PNEC Omejite: 0.01 mg/l  
Način izpostavitve: Mikroorganizmi v čistilnih napravah (STP); PNEC Omejite: 9.6 mg/l  
Način izpostavitve: Sladkovodni sedimenti; PNEC Omejite: 13.7 mg/kg  
Način izpostavitve: Morski sedimenti; PNEC Omejite: 1.37 mg/kg  
Način izpostavitve: Tla (kmetijska); PNEC Omejite: 2.68 mg/kg

toluen

CAS: 108-88-3 Način izpostavitve: Morska voda; PNEC Omejite: 0.68 mg/l  
Način izpostavitve: Sladka voda; PNEC Omejite: 0.68 mg/l  
Način izpostavitve: Morski sedimenti; PNEC Omejite: 16.39 mg/kg  
Način izpostavitve: Sladkovodni sedimenti; PNEC Omejite: 16.39 mg/kg  
Način izpostavitve: Mikroorganizmi v čistilnih napravah (STP); PNEC Omejite: 13.61 mg/l  
Način izpostavitve: Tla (kmetijska); PNEC Omejite: 2.89 mg/kg

n-butil acetat

CAS: 123-86-4 Način izpostavitve: Morska voda; PNEC Omejite: 0.018 mg/l  
Način izpostavitve: Sladka voda; PNEC Omejite: 0.18 mg/l  
Način izpostavitve: Morski sedimenti; PNEC Omejite: 0.098 mg/kg  
Način izpostavitve: Sladkovodni sedimenti; PNEC Omejite: 0.981 mg/kg  
Način izpostavitve: Mikroorganizmi v čistilnih napravah (STP); PNEC Omejite: 35.6 mg/l  
Način izpostavitve: Tla (kmetijska); PNEC Omejite: 0.09 mg/kg

ksilen

CAS: 1330-20-7 Način izpostavitve: Morska voda; PNEC Omejite: 0.327 mg/l  
Način izpostavitve: Sladka voda; PNEC Omejite: 0.327 mg/l  
Način izpostavitve: Mikroorganizmi v čistilnih napravah (STP); PNEC Omejite: 6.58 mg/l  
Način izpostavitve: Morski sedimenti; PNEC Omejite: 12.46 mg/kg  
Način izpostavitve: Sladkovodni sedimenti; PNEC Omejite: 12.46 mg/kg  
Način izpostavitve: Tla (kmetijska); PNEC Omejite: 2.31 mg/kg

etilbenzen

CAS: 100-41-4 Način izpostavitve: Sladka voda; PNEC Omejite: 0.1 mg/l  
Način izpostavitve: Morska voda; PNEC Omejite: 0.01 mg/l  
Način izpostavitve: Mikroorganizmi v čistilnih napravah (STP); PNEC Omejite: 9.6 mg/l  
Način izpostavitve: Sladkovodni sedimenti; PNEC Omejite: 13.7 mg/kg  
Način izpostavitve: Morski sedimenti; PNEC Omejite: 1.37 mg/kg  
Način izpostavitve: Tla (kmetijska); PNEC Omejite: 2.68 mg/kg

butanon

CAS: 78-93-3 Način izpostavitve: Sladka voda; PNEC Omejite: 55.8 mg/l  
Način izpostavitve: Morska voda; PNEC Omejite: 55.8 mg/l

Način izpostavitve: Sladkovodni sedimenti; PNEC Omejite: 284.74 mg/kg

Način izpostavitve: Mikroorganizmi v čistilnih napravah (STP); PNEC Omejite: 709 mg/l

Način izpostavitve: Prehranska veriga; PNEC Omejite: 1000 mg/kg

Način izpostavitve: Tla (kmetijska); PNEC Omejite: 22.5 mg/kg

### Izpeljane vrednosti brez učinka. (DNEL)

Maščobne kisline, C18-nesatd., dimeri, polimerni reakcijski produkti z maščobnimi kislinami iz visokih olj in trietilentetramin

CAS: 68082-29-1 Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 3.9 mg/m<sup>3</sup>; Uporabnik: 0.97 mg/m<sup>3</sup>

Način izpostavitve: Dermalno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 1.1 mg/kg; Uporabnik: 0.56 mg/kg

Način izpostavitve: Oralno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Uporabnik: 0.56 mg/kg

benzil alkohol

CAS: 100-51-6 Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Kratkotrajna, sistemski učinek  
Strokovni delavec: 110 mg/m<sup>3</sup>; Uporabnik: 27 mg/m<sup>3</sup>

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 22 mg/m<sup>3</sup>; Uporabnik: 5.4 mg/m<sup>3</sup>

Način izpostavitve: Dermalno, človek; Pogostost izpostavitve: Kratkotrajna, sistemski učinek  
Strokovni delavec: 40 mg/kg; Uporabnik: 20 mg/kg

Način izpostavitve: Dermalno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 8 mg/kg; Uporabnik: 4 mg/kg

Način izpostavitve: Oralno, človek; Pogostost izpostavitve: Kratkotrajna, sistemski učinek  
Uporabnik: 20 mg/kg

Način izpostavitve: Oralno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Uporabnik: 4 mg/kg

2-piperazin-1-iletilamin

CAS: 140-31-8 Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Kratkotrajna, sistemski učinek  
Strokovni delavec: 10.6 mg/m<sup>3</sup>

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 10.6 mg/m<sup>3</sup>

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, lokalni učinek  
Strokovni delavec: 0.015 mg/m<sup>3</sup>

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Kratkotrajna, lokalni učinek  
Strokovni delavec: 0.08 mg/m<sup>3</sup>

Način izpostavitve: Dermalno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 3.33 mg/kg

amini, polietilenpoli-, trietilentetramin frakcija

CAS: 90640-67-8 Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 0.54 mg/m<sup>3</sup>; Uporabnik: 0.096 mg/m<sup>3</sup>

Način izpostavitve: Oralno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 0.14 mg/kg

2-metoksi-1-metiletil acetat

CAS: 108-65-6 Način izpostavitve: Dermalno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 796 mg/kg; Uporabnik: 320 mg/kg

Način izpostavitve: Oralno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Uporabnik: 36 mg/kg

Način izpostavitve: Oralno, človek; Pogostost izpostavitve: Kratkotrajna, sistemski učinek  
Uporabnik: 500 mg/kg

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 275 mg/m<sup>3</sup>; Uporabnik: 33 mg/m<sup>3</sup>

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Kratkotrajna, lokalni učinek  
Strokovni delavec: 550 mg/m<sup>3</sup>

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, lokalni učinek  
Uporabnik: 33 mg/m<sup>3</sup>

#### etilbenzen

CAS: 100-41-4 Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 77 mg/m<sup>3</sup>; Uporabnik: 15 mg/m<sup>3</sup>

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Kratkotrajna, lokalni učinek  
Strokovni delavec: 293 mg/m<sup>3</sup>

Način izpostavitve: Dermalno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 180 mg/kg

Način izpostavitve: Oralno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Uporabnik: 1.6 mg/kg

#### toluen

CAS: 108-88-3 Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 192 mg/m<sup>3</sup>; Uporabnik: 56.5 mg/m<sup>3</sup>

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Kratkotrajna, sistemski učinek  
Strokovni delavec: 384 mg/m<sup>3</sup>; Uporabnik: 226 mg/m<sup>3</sup>

Način izpostavitve: Dermalno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 384 mg/kg; Uporabnik: 226 mg/kg

Način izpostavitve: Oralno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Uporabnik: 8.13 mg/kg

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, lokalni učinek  
Strokovni delavec: 192 mg/m<sup>3</sup>; Uporabnik: 56.5 mg/m<sup>3</sup>

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Kratkotrajna, lokalni učinek  
Strokovni delavec: 384 mg/m<sup>3</sup>; Uporabnik: 226 mg/m<sup>3</sup>

#### n-butil acetat

CAS: 123-86-4 Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 300 mg/m<sup>3</sup>; Uporabnik: 35.7 mg/m<sup>3</sup>

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Kratkotrajna, sistemski učinek  
Strokovni delavec: 600 mg/m<sup>3</sup>; Uporabnik: 300 mg/m<sup>3</sup>

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, lokalni učinek  
Strokovni delavec: 300 mg/m<sup>3</sup>; Uporabnik: 35.7 mg/m<sup>3</sup>

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Kratkotrajna, lokalni učinek  
Strokovni delavec: 600 mg/m<sup>3</sup>; Uporabnik: 300 mg/m<sup>3</sup>

Način izpostavitve: Dermalno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 11 mg/kg; Uporabnik: 6 mg/kg

Način izpostavitve: Dermalno, človek; Pogostost izpostavitve: Kratkotrajna, sistemski učinek  
Strokovni delavec: 11 mg/kg; Uporabnik: 6 mg/kg

Način izpostavitve: Oralno, človek; Pogostost izpostavitve: Kratkotrajna, sistemski učinek  
Uporabnik: 2 mg/kg

Način izpostavitve: Oralno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Uporabnik: 2 mg/kg

#### ksilen

CAS: 1330-20-7 Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 221 mg/m<sup>3</sup>; Uporabnik: 65.3 mg/m<sup>3</sup>

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Kratkotrajna, sistemski učinek  
Strokovni delavec: 442 mg/m<sup>3</sup>; Uporabnik: 260 mg/m<sup>3</sup>

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Kratkotrajna, lokalni učinek  
Strokovni delavec: 442 mg/m<sup>3</sup>; Uporabnik: 260 mg/m<sup>3</sup>

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, lokalni učinek  
Strokovni delavec: 221 mg/m<sup>3</sup>; Uporabnik: 65.3 mg/m<sup>3</sup>

Način izpostavitve: Dermalno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 212 mg/kg; Uporabnik: 125 mg/kg

Način izpostavitve: Oralno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek

Uporabnik: 12.5 mg/kg

etilbenzen

CAS: 100-41-4 Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 77 mg/m<sup>3</sup>; Uporabnik: 15 mg/m<sup>3</sup>

Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, lokalni učinek  
Strokovni delavec: 293 mg/m<sup>3</sup>

Način izpostavitve: Dermalno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 180 mg/kg

Način izpostavitve: Oralno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Uporabnik: 1.6 mg/kg

butanon

CAS: 78-93-3 Način izpostavitve: Z vdihavanjem, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 600 mg/m<sup>3</sup>; Uporabnik: 106 mg/m<sup>3</sup>

Način izpostavitve: Dermalno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Strokovni delavec: 1161 mg/kg; Uporabnik: 412 mg/kg

Način izpostavitve: Oralno, človek; Pogostost izpostavitve: Dolgotrajna, sistemski učinek  
Uporabnik: 31 mg/kg

## 8.2 Nadzor izpostavljenosti

Poskrbite za ustrezno prezračevanje. Kadar je to izvedljivo, je to mogoče doseči z uporabo nadomestnega prezračevanja in dobrim splošnim vsesavanjem.

Zaščita oči:

Očala s stranskimi varovali (EN 166).

Zaščita kože:

Uporabljajte oblačila, primerna za popolno zaščito kože glede na dejavnost in izpostavljenost (EN 14605/EN 13982), npr. delovni kombinezon, predpasnik, zaščitna obutev, primerna oblačila.

Zaščita rok:

Ni materiala ali kombinacije materialov za rokavice, ki bi lahko zagotovili neomejeno odpornost na katero koli kombinacijo kemikalij ali proizvodov.

Za daljše ali večkratno rokovanje uporabite rokavice, odporne na kemikalije.

Ustrezne rokavice tipa (EN 374/EN 16523); FKM (Fluórkaučuk): debelina  $\geq 0.4$  mm; permeacijski čas  $\geq 480$  min. NBR (Nitrilkaučuk): debelina  $\geq 0.4$  mm; permeacijski čas  $\geq 480$  min

Izbira primernih rokavic ni odvisna samo od materiala, temveč tudi od drugih kakovostnih lastnosti, ki se razlikujejo od enega do drugega proizvajalca, in od načinov ter časov uporabe mešanice.

Zaščita dihalnih poti:

Če so delavci izpostavljeni koncentracijam nad mejnimi vrednostmi izpostavljenosti, morajo uporabljati primerne, certificirane dihalne aparate.

Kombinirana filtrirna naprava (EN 14387): maska s filtrom A-P2.

Nadzor izpostavljenosti okolja:

Glejte točko 6.2

Higienski in tehnični ukrepi

Glejte poglavje 7.

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## ODDELEK 9: Fizikalne in kemijske lastnosti

### 9.1 Podatki o osnovnih fizikalnih in kemijskih lastnostih

fizično stanje: Tekoče

Izgled: Tekoče

Barva: črn

Vonj: amin

Tališče/ledišče: N.D.

Vrelišče ali začetno vrelišče in območje vrelišča: N.D.

Vnetljivost: ni znano

Spodnja in zgornja meja eksplozivnosti: N.D.

Plamenišče:  $> 93^{\circ}\text{C}$

Temperatura samovžiga: N.D.

Temperatura razgradnje: N.D.

pH:  $\geq 10.50 \leq 11.50$  ( Interna metoda )

Kinematična viskoznost: ni znano

Gostota in/ali relativna gostota: 1.04 kg/l ( Interna metoda )

Relativna parna gostota: N.D.

Parni tlak: N.D.  
Topnost v vodi: ni znano  
Topnost v olju: ni znano  
Porazdelitveni koeficient n-oktanol/voda (logaritemska vrednost): ni znano

**Lastnosti delcev:**

Velikost delcev: ni znano

**9.2 Drugi podatki**

Prevodnost: N.D.  
Eksplozivne lastnosti: ni znano ( Notranja evalvacija )  
Oksidativne lastnosti: ni znano ( Notranja evalvacija )

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**ODDELEK 10: Obstočnost in reaktivnost**

**10.1 Reaktivnost**

Stabilen v normalnih pogojih

**10.2 Kemijska stabilnost**

Stabilen v normalnih pogojih

**10.3 Možnost poteka nevarnih reakcij**

V stiku z močnimi oksidatorji se lahko vname.  
Zaradi toplote ali v primeru požara se lahko sprostijo ogljikovi oksidi in hlapi, ki lahko škodujejo zdravju.

**10.4 Pogoji, ki se jim je treba izogniti**

Izogibajte se bližine toplotnih virov.

**10.5 Nezdružljivi materiali**

Močni oksidanti, močni reduktorji, alifatski in aromatski amini.  
Glejte točko 10.3

**10.6 Nevarni produkti razgradnje**

V primeru pravilnega skladiščenja in ravnanja ne pride do razvoja nevarnih produktov razgradnje.  
Glejte točko 5.2

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**ODDELEK 11: Toksikološki podatki**

**11.1 Podatki o razredih nevarnosti, kakor so opredeljeni v Uredbi (ES) št. 1272/2008**

**Toksikološki podatki izdelka:**

a) akutna strupenost	Ni klasificirano Na podlagi razpoložljivih podatkov merila za razvrstitev niso izpolnjena.
b) jedkost za kožo/draženje kože	Proizvod je razvrščen: Skin Corr. 1B(H314)
c) resne okvare oči/draženje	Ni klasificirano Na podlagi razpoložljivih podatkov merila za razvrstitev niso izpolnjena.
d) preobčutljivost pri vdihavanju in preobčutljivost kože	Proizvod je razvrščen: Skin Sens. 1A(H317)
e) mutagenost za zarodne celice	Ni klasificirano Na podlagi razpoložljivih podatkov merila za razvrstitev niso izpolnjena.
f) rakotvornost	Ni klasificirano Na podlagi razpoložljivih podatkov merila za razvrstitev niso izpolnjena.
g) strupenost za razmnoževanje	Proizvod je razvrščen: Repr. 2(H361)
h) STOT - enkratna izpostavljenost	Ni klasificirano Na podlagi razpoložljivih podatkov merila za razvrstitev niso izpolnjena.
i) STOT - ponavljajoča se izpostavljenost	Proizvod je razvrščen: STOT RE 2(H373)
j) nevarnost pri vdihavanju	Ni klasificirano Na podlagi razpoložljivih podatkov merila za razvrstitev niso izpolnjena.

**Toksikološki podatki glavnih snovi, ki jih najdemo v izdelku:**

Maščobne kisline, C18-nesatd., dimeri, polimerni reakcijski produkti z maščobnimi kislinami iz visokih olj in trietilentetramin

CAS: 68082-29-1 a) akutna strupenost LD50 Oralno Podgana > 2000 mg/kg  
LD50 Koža Podgana > 2000 mg/kg

benzil alkohol

CAS: 100-51-6 a) akutna strupenost ATE - Oralno: 1200 mg/kg tt  
LD50 Oralno Podgana 1620 mg/kg

2-piperazin-1-iletilamin		
CAS: 140-31-8	a) akutna strupenost	ATE - Oralno: 500 mg/kg tt LD50 Koža Zajec 866 mg/kg
ksilen		
CAS: 1330-20-7	a) akutna strupenost	ATE - Dermalno: 1100 mg/kg tt ATE - Vdihavanje (Hlapi): 11 mg/l
amini, polietilenpoli-, trietilentetramin frakcija		
CAS: 90640-67-8	a) akutna strupenost	LD50 Oralno Podgana 1716 mg/kg LD50 Koža Zajec 1465 mg/kg
tetraetilenpentamin		
CAS: 90640-66-7	a) akutna strupenost	ATE - Oralno: 500 mg/kg tt ATE - Dermalno: 1100 mg/kg tt
2-metoksi-1-metiletil acetat		
CAS: 108-65-6	a) akutna strupenost	LD50 Oralno Podgana > 5000 mg/kg LD50 Koža Zajec > 5000 mg/kg LC0 Vdihavanje hlapov Podgana > 4345 ppm 6h
etilbenzen		
CAS: 100-41-4	a) akutna strupenost	LD50 Oralno Podgana 3500 mg/kg LD50 Koža Zajec 15400 mg/kg LC50 Vdihavanje Podgana 17629 mg/m3 4h
toluen		
CAS: 108-88-3	a) akutna strupenost	LD50 Oralno Podgana 5000 mg/kg LD50 Koža Zajec 12267 mg/kg LC50 Vdihavanje hlapov Podgana 25.7 mg/l 4h
n-butil acetat		
CAS: 123-86-4	a) akutna strupenost	LD50 Oralno Podgana 10760 mg/kg LD50 Koža Zajec 14112 mg/kg LC50 Vdihavanje hlapov Podgana > 21.1 mg/l 4h
ksilen		
CAS: 1330-20-7	a) akutna strupenost	ATE - Dermalno: 1100 mg/kg tt ATE - Vdihavanje (Hlapi): 11 mg/l LD50 Oralno Podgana 3523 mg/kg
etilbenzen		
CAS: 100-41-4	a) akutna strupenost	LD50 Oralno Podgana 3500 mg/kg LD50 Koža Zajec 15400 mg/kg LC50 Vdihavanje Podgana 17629 mg/m3 4h
butanon		
CAS: 78-93-3	a) akutna strupenost	LD50 Oralno Podgana > 2193 mg/kg LD50 Koža Zajec > 5000 mg/kg

## 11.2 Podatki o drugih nevarnostih

### Lastnosti endokrinih motilcev:

Ni endokrinih motilcev v koncentraciji  $\geq 0,1\%$ .

## ODDELEK 12: Ekološki podatki

Uporabljajte v skladu z dobrimi delovnimi navadami, izogibajte se odlaganju izdelka v okolju.

### 12.1 Strupenost

Ekotoksikološki podatki:

Strupeno za vodne organizme, z dolgotrajnimi učinki.

#### Ekotoksikoloških lastnosti izdelka

Proizvod je razvrščen: Aquatic Chronic 2(H411)

#### Seznam sestavin z ekotoksikološkimi lastnostmi

Maščobne kisline, C18-nesatd., dimeri, polimerni reakcijski produkti z maščobnimi kislinami iz visokih olj in trietilentetramin

- CAS: 68082-29-1 a) akutna strupenost za vodno okolje: LC50 Riba 7.07 mg/l 96h  
a) akutna strupenost za vodno okolje: EC50 Vodna bolha 7.07 mg/l 48h  
a) akutna strupenost za vodno okolje: EC50 Alge 4.34 mg/l 72h

benzil alkohol

- CAS: 100-51-6 a) akutna strupenost za vodno okolje: LC50 Riba 460 mg/l 96h  
a) akutna strupenost za vodno okolje: EC50 Vodna bolha 230 mg/l 48h  
a) akutna strupenost za vodno okolje: EC50 Alge 770 mg/l 72h  
b) kronična strupenost za vodno okolje: NOEC Vodna bolha 51 mg/l 21d  
b) kronična strupenost za vodno okolje: NOEC Alge 310 mg/l 72h

2-piperazin-1-iletilamin

- CAS: 140-31-8 a) akutna strupenost za vodno okolje: LC50 Riba 2190 mg/l 96h  
a) akutna strupenost za vodno okolje: EC50 Vodna bolha 58 mg/l 48h  
a) akutna strupenost za vodno okolje: EC50 Alge > 1000 mg/l 72h

amini, polietilenpoli-, trietilentetramin frakcija

- CAS: 90640-67-8 a) akutna strupenost za vodno okolje: LC50 Riba 330 mg/l 96h  
a) akutna strupenost za vodno okolje: EC50 Vodna bolha 31.1 mg/l 48h  
a) akutna strupenost za vodno okolje: EC50 Alge 20 mg/l 72h

tetraetilenpentamin

- CAS: 90640-66-7 a) akutna strupenost za vodno okolje: LC50 Riba 420 mg/l 96h  
a) akutna strupenost za vodno okolje: EC50 Vodna bolha 24.1 mg/l 48h

2-metoksi-1-metiletil acetat

- CAS: 108-65-6 a) akutna strupenost za vodno okolje: LC50 Riba 134 mg/l 96h  
a) akutna strupenost za vodno okolje: EC50 Vodna bolha 408 mg/l 48h  
a) akutna strupenost za vodno okolje: EC50 Alge > 1000 mg/l 96h  
b) kronična strupenost za vodno okolje: NOEC Riba 47.5 mg/l - 14 d

etilbenzen

- CAS: 100-41-4 a) akutna strupenost za vodno okolje: LC50 Riba 4.2 mg/l 96h  
a) akutna strupenost za vodno okolje: EC50 Vodna bolha 1.8 mg/l 48h  
a) akutna strupenost za vodno okolje: EC50 Alge 3.6 mg/l 96h  
b) kronična strupenost za vodno okolje: NOEC Vodna bolha 1 mg/l - 7d

toluen

- CAS: 108-88-3 a) akutna strupenost za vodno okolje: LC50 Riba 5.5 mg/l 96h  
a) akutna strupenost za vodno okolje: EC50 Vodna bolha 3.78 mg/l 48h

n-butil acetat

- CAS: 123-86-4 a) akutna strupenost za vodno okolje: LC50 Riba 18 mg/l 96h  
a) akutna strupenost za vodno okolje: EC50 Vodna bolha 44 mg/l 48h  
a) akutna strupenost za vodno okolje: EC50 Alge 675 mg/l 72h  
b) kronična strupenost za vodno okolje: NOEC Vodna bolha 23 mg/l - 21d

etilbenzen

- CAS: 100-41-4 a) akutna strupenost za vodno okolje: LC50 Riba 4.2 mg/l 96h  
a) akutna strupenost za vodno okolje: EC50 Vodna bolha 1.8 mg/l 48h  
a) akutna strupenost za vodno okolje: EC50 Alge 3.6 mg/l 96h  
b) kronična strupenost za vodno okolje: NOEC Vodna bolha 1 mg/l - 7d

butanon

- CAS: 78-93-3 a) akutna strupenost za vodno okolje: LC50 Riba 2973 mg/l 96h  
a) akutna strupenost za vodno okolje: EC50 Vodna bolha 308 mg/l 48h  
a) akutna strupenost za vodno okolje: EC50 Alge 1229 mg/l 96h

## 12.2 Obstočnost in razgradljivost

Maščobne kisline, C18-nesatd., dimeri, polimerni reakcijski produkti z maščobnimi kislinami iz visokih olj in trietilentetramin

CAS: 68082-29-1 Ni hitro razgradljivo



benzil alkohol

CAS: 100-51-6 Hitro razgradljivo

amini, polietilenpoli-, trietilentetramin frakcija

CAS: 90640-67-8 Ni hitro razgradljivo

2-metoksi-1-metiletil acetat

CAS: 108-65-6 Hitro razgradljivo

etilbenzen

CAS: 100-41-4 Hitro razgradljivo

toluen

CAS: 108-88-3 Hitro razgradljivo

n-butil acetat

CAS: 123-86-4 Hitro razgradljivo

ksilen

CAS: 1330-20-7 Hitro razgradljivo

etilbenzen

CAS: 100-41-4 Hitro razgradljivo

butanon

CAS: 78-93-3 Hitro razgradljivo

### 12.3 Zmožnost kopičenja v organizmih

ksilen

CAS: 1330-20-7 Se ne kopiči v organizmih

### 12.4 Mobilnost v tleh

ksilen

CAS: 1330-20-7 Mobilno

### 12.5 Rezultati ocene PBT in vPvB

Na podlagi razpoložljivih podatkov, preparat ne vsebuje snovi PBT/vPvB v procentu  $\geq 0.1\%$ .

### 12.6 Lastnosti endokrinih motilcev

Ni endokrinih motilcev v koncentraciji  $> = 0,1\%$ .

### 12.7 Drugi škodljivi učinki

ni znano

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## ODDELEK 13: Odstranjevanje

### 13.1 Metode ravnanja z odpadki

Če je mogoče, predelajte. Pošljite v usposobljena odlagališča ali v zažig pod kontroliranimi pogoji. Ravnajte se po lokalnih in državnih predpisih.

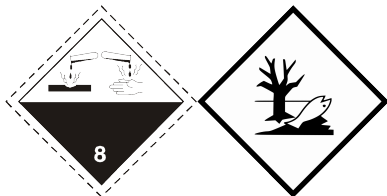
Ne dopustite, da pride v kanalizacijo ali vodne poti.

Odstraniti posode, ki jih kontaminira izdelka v skladu z lokalnimi ali nacionalnimi predpisi.

Ko izdelku poteče življenjska doba, ga odstranite v skladu z veljavno zakonodajo.

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## ODDELEK 14: Podatki o prevozu



### 14.1 Številka ZN in številka ID

1760

### 14.2 Pravilno odpremno ime ZN

ADR-uradno ime blaga: JEDKA TEKOČINA, N.D.R. (reakcijski produkti formaldehid in 4-nonilfenol in trietilentetramin in 2-piperazin-1-iletilamin - 2-piperazin-1-iletilamin)

IATA-uradno ime blaga: CORROSIVE LIQUID, N.O.S. (reakcijski produkti formaldehid in 4-nonilfenol in trietilentetramin in 2-

piperazin-1-iletilamin - 2-piperazin-1-iletilamin)

IMDG-uradno ime blaga: CORROSIVE LIQUID, N.O.S. (reakcijski produkti formaldehid in 4-nonilfenol in trietilentetramin in 2-piperazin-1-iletilamin - 2-piperazin-1-iletilamin)

#### 14.3 Razredi nevarnosti prevoza

ADR-Razred: 8

IATA-razred: 8

IMDG-razred: 8

#### 14.4 Skupina embalaže

ADR-embalažna skupina: II

IATA-embalažna skupina: II

IMDG-embalažna skupina: II

#### 14.5 Nevarnosti za okolje

Onesnaževalec morja: Da

Onesnažuje okolje po: Da

IMDG-EMS: F-A, S-B

#### 14.6 Posebni previdnostni ukrepi za uporabnika

Cestni in železniški transport (ADR-RID):

ADR-nalepka nevarnosti: 8

ADR - Identifikacijska številka nevarnosti: 80

ADR-posebni ukrepi: 274

ADR-Pravilnik o cestnem prevozu nevarnega blaga:

Zračni transport (IATA):

IATA-potniška letala: 851

IATA-tovorna letala: 855

IATA-nalepka: 8

IATA-dodatne nevarnosti: -

IATA-Erg: 8L

IATA-posebni ukrepi: A3 A803

Morski transport (IMDG):

IMDG-Zlaganje in ravnanje: Category B SW2

IMDG-Segregacija: -

IMDG-dodatne nevarnosti: -

IMDG-posebni ukrepi: 274

#### 14.7 Pomorski prevoz v razsutem stanju v skladu z instrumenti IMO

ni znano

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### ODDELEK 15: Zakonsko predpisani podatki

#### 15.1 Predpisi/zakonodaja o zdravju, varnosti in okolju, specifični za snov ali zmes

Dir. 98/24/ES (Varovanje delavcev pred tveganji zaradi izpostavljenosti kemičnim snovem pri delu)

Dir. 2000/39/ES (mejne vrednosti za poklicno izpostavljenost)

Direktiva 2010/75/EU

Uredba (ES) št. 1907/2006 (REACH)

Uredba (ES) št. 1272/2008 (CLP)

Uredba (ES) št. 790/2009 (1. ATP CLP) in (EU) št. 758/2013

Uredba (EU) 2020/878

Uredba (EU) št. 286/2011 (2. ATP CLP)

Uredba (EU) št. 618/2012 (3. ATP CLP)

Uredba (EU) št. 487/2013 (4. ATP CLP)

Uredba (EU) št. 944/2013 (5. ATP CLP)

Uredba (EU) št. 605/2014 (6. ATP CLP)

Uredba (EU) 2015/1221 (7. ATP CLP)

Uredba (EU) 2016/918 (8. ATP CLP)

Uredba (EU) 2016/1179 (9. ATP CLP)

Uredba (EU) 2017/776 (10. ATP CLP)

Uredba (EU) 2018/669 (11. ATP CLP)

Uredba (EU) 2018/1480 (13. ATP CLP)

Uredba (EU) 2019/521 (12. ATP CLP)

Uredba (EU) 2020/217 (14. ATP CLP)

Uredba (EU) 2020/1182 (15. ATP CLP)

Uredba (EU) 2021/643 (16. ATP CLP)

Uredba (EU) 2021/849 (17. ATP CLP)

Uredba (EU) 2022/692 (18. ATP CLP)

Uredba (EU) 2023/707  
Uredba (EU) 2023/1434 (19. ATP CLP)  
Uredba (EU) 2023/1435 (20. ATP CLP)  
Uredba (EU) 2024/197 (21. ATP CLP)

**Omejitve, povezane z izdelkom ali vsebovanimi snovmi, v skladu s Prilogo XVII Uredbe (ES) 1907/2006 (REACH) in poznejše spremembe:**

Omejitve v zvezi z izdelkom: 3  
Omejitve v zvezi z vsebovanimi snovmi: 40, 48, 75

**Določbe v zvezi z direktivo EU 2012/18 (Seveso III)**

Kategorija Seveso III v skladu s Prilogo 1, del 1	Mejna vrednost nižje stopnje (v tonah)	Mejna vrednost višje stopnje (v tonah)
izdelek spada v kategorijo: E2	200	500

**Uredba (EU) št. 649/2012 (uredba PIC)**

Snovi niso navedene

**Nemški razred nevarnosti za vodo.**

Razred 3: izjemno nevarna.

**SVHC snovi:**

Na podlagi razpoložljivih podatkov, preparat ne vsebuje snovi SVHC v procentu  $\geq 0.1\%$ .

**15.2 Ocena kemijske varnosti**

Ocena kemijske varnosti je bila opravljena za mešanice

**ODDELEK 16: Drugi podatki**

Številka	Opis
EUH066	Ponavljajoča izpostavljenost lahko povzroči nastanek suhe ali razpokane kože.
H225	Lahko vnetljiva tekočina in hlapi.
H226	Vnetljiva tekočina in hlapi.
H302	Zdravju škodljivo pri zaužitju.
H304	Pri zaužitju in vstopu v dihalne poti je lahko smrtno.
H311	Strupeno v stiku s kožo.
H312	Zdravju škodljivo v stiku s kožo.
H314	Povzroča hude opekline kože in poškodbe oči.
H315	Povzroča draženje kože.
H317	Lahko povzroči alergijski odziv kože.
H318	Povzroča hude poškodbe oči.
H319	Povzroča hudo draženje oči.
H332	Zdravju škodljivo pri vdihavanju.
H335	Lahko povzroči draženje dihalnih poti.
H336	Lahko povzroči zaspanost ali omotico.
H361d	Sum škodljivosti za nerojenega otroka.
H361fd	Sum škodljivosti za plodnost. Sum škodljivosti za nerojenega otroka.
H372	V primeru dolgotrajnega ali ponovljenega vdihavanja povzroča poškodbe notranjih organov.
H373	Lahko škoduje organom pri dolgotrajni ali ponavljajoči se izpostavljenosti.
H373	V primeru dolgotrajnega ali ponovljenega vdihavanja in zaužitja lahko povzroči poškodbe notranjih organov.
H411	Strupeno za vodne organizme, z dolgotrajnimi učinki.
H412	Škodljivo za vodne organizme, z dolgotrajnimi učinki.
H413	Lahko ima dolgotrajne škodljive učinke na vodne organizme.

Številka	Razred in kategorija nevarnosti	Opis
2.6/2	Flam. Liq. 2	Vnetljiva tekočina, Kategorija 2
2.6/3	Flam. Liq. 3	Vnetljiva tekočina, Kategorija 3
3.1/3/Dermal	Acute Tox. 3	Akutna strupenost (dermalno), Kategorija 3
3.1/4/Dermal	Acute Tox. 4	Akutna strupenost (dermalno), Kategorija 4
3.1/4/Inhal	Acute Tox. 4	Akutna strupenost (pri vdihavanju), Kategorija 4
3.1/4/Oral	Acute Tox. 4	Akutna strupenost (oralno), Kategorija 4

3.10/1	Asp. Tox. 1	Nevarnost pri vdihavanju, Kategorija 1
3.2/1B	Skin Corr. 1B	Jedkost za kožo, Kategorija 1B
3.2/2	Skin Irrit. 2	Draženje kože, Kategorija 2
3.3/1	Eye Dam. 1	Hude poškodbe oči, Kategorija 1
3.3/2	Eye Irrit. 2	Draženje oči, Kategorija 2
3.4.2/1	Skin Sens. 1	Preobčutljivost kože, Kategorija 1
3.4.2/1A	Skin Sens. 1A	Preobčutljivost kože, Kategorija 1A
3.4.2/1B	Skin Sens. 1B	Preobčutljivost kože, Kategorija 1B
3.7/2	Repr. 2	Strupenost za razmnoževanje, Kategorija 2
3.8/3	STOT SE 3	Specifična strupenost za ciljne organe (STOT) – enkratna izpostavljenost STOT enkrat, Kategorija 3
3.9/1	STOT RE 1	Specifična strupenost za ciljne organe (STOT) – ponavljajoča se izpostavljenost, Kategorija 1
3.9/2	STOT RE 2	Specifična strupenost za ciljne organe (STOT) – ponavljajoča se izpostavljenost, Kategorija 2
4.1/C2	Aquatic Chronic 2	Kronično (dolgotrajno) nevarnost za vodno okolje, Kategorija 2
4.1/C3	Aquatic Chronic 3	Kronično (dolgotrajno) nevarnost za vodno okolje, Kategorija 3
4.1/C4	Aquatic Chronic 4	Kronično (dolgotrajno) nevarnost za vodno okolje, Kategorija 4

#### **Razvrstitev in postopek, uporabljen za izpeljavo razvrstitve za zmesi v skladu z Uredbo (ES) 1272/2008 [uredba CLP]:**

##### **Razvrstitev v skladu z Uredbo (ES) št. 1272/2008 Postopek razvrščanja**

Skin Corr. 1B, H314	metoda izračuna
Skin Sens. 1A, H317	metoda izračuna
Repr. 2, H361fd	metoda izračuna
STOT RE 2, H373	metoda izračuna
Aquatic Chronic 2, H411	metoda izračuna

Ta dokument je pripravila pristojna oseba, ki je ustrezno usposobljena

Glavni bibliografski viri:

ECDIN – Informacijska mreža za okoljske podatke za kemikalije – Skupno raziskovalno središče, Komisija Evropskih skupnosti  
SAX – NEVARNE LASTNOSTI INDUSTRIJSKIH MATERIALOV – 8. izdaja – Van Nostrand Reinold  
Varnostni listi dobaviteljev surovin.

Predstavljene informacije se nanašajo na naše znanje v zgoraj navedenem datumu. Nanašajo se zgolj na omenjeni izdelek in ne predstavljajo garancije za posebno kakovost.

Uporabnik je dolžan preveriti pravilnost in popolnost teh informacij glede na svojo specifično uporabo.

Ta list razveljavlja in nadomešča vsako predhodno izdajo

Legenda okrajšav in kratic, uporabljenih v varnostnem listu:

ACGIH: Ameriška konferenca vladnih industrijskih higienikov  
ADR: Evropski sporazum o mednarodnem prevozu nevarnih snovi v cestnem prometu.  
ATE: Ocena akutne strupenosti  
ATEmix: Ocena akutne strupenosti (Zmesi)  
BEI: Biološki indeks izpostavljenosti  
CAS: Chemical Abstracts Service (oddelek Ameriškega kemijskega društva).  
CAV: Center za zastupitve  
CE: Evropska skupnost  
CLP: Razvrščanje, etiketiranje, pakiranje.  
CMR: Rakotvorno, mutageno in strupeno za razmnoževanje  
COV: Hlapna organska spojina  
CSA: Ocena kemijske varnosti  
CSR: Poročilo o kemijski varnosti  
DNEL: Izpeljane vrednosti brez učinka.  
EC50: Srednja učinkovita koncentracija  
ECHA: Evropska agencija za kemikalije  
EINECS: Evropski seznam obstoječih snovi.  
ES: Scenarij izpostavljenosti  
GefStoffVO: Odlok o nevarnih snoveh, Nemčija.  
GHS: Globalno poenoten sistem razvrščanja in označevanja nevarnih kemikalij.  
IARC: Mednarodna agencija za raziskovanje raka  
IATA: Mednarodno združenje za zračni transport.

IC50: Srednja inhibitorna koncentracija  
IMDG: Mednarodni kodeks za prevoz nevarnega blaga po morju  
LC50: Letalna koncentracija za 50 odstotkov testne populacije.  
LD50: Letalna doza za 50 odstotkov testne populacije.  
LDLo: Najnižja smrtna doza  
N.A.: Se ne uporablja  
N/A: Se ne uporablja  
N/D: Ni opredeljeno/Ni razpoložljiv  
N.D.: Ni razpoložljiv  
NIOSH: Nacionalni inštitut za varnost in zdravje pri delu  
NOAEL: Raven brez opaznih negativnih vplivov  
OSHA: Upravljanje varnosti in zdravja pri delu  
PBT: Obstojne, se kopičijo v organizmih in so strupene  
PGK: Navodila za embalažo nevarnih snovi  
PNEC: Predvidena koncentracija brez učinka.  
PSG: Potniki  
RID: Pravilnik o mednarodnem prevozu nevarnega blaga po železnici.  
STEL: Meja za kratkotrajno izpostavljenost.  
STOT: Specifično strupeno za ciljne organe.  
TLV: Mejna vrednost izpostavljenosti.  
TLV-TWA: Mejna vrednost izpostavljenosti v časovnem obdobju po 8 ur dnevno (ACGIH standard).  
vPvB: Telo obstojno, se zelo lahko kopiči v organizmih.  
WGK: Nemški razred nevarnosti za vodo.

**Odstavki spremenjeni od prejšnje revizije:**

- ODDELEK 1: Identifikacija snovi/zmesi in družbe/podjetja
- ODDELEK 8: Nadzor izpostavljenosti/osebna zaščita
- ODDELEK 9: Fizikalne in kemijske lastnosti
- ODDELEK 15: Zakonsko predpisani podatki

## n-butyl acetate

### Substance identification

Chemical Name: n-butyl acetate

CAS number: 123-86-4

Date - Version: 07/06/2017 10.0

## 1. USE IN COATINGS. USE IN PAINTS. USE IN PRINTING INKS. USE IN ADHESIVES.

**Short title of the exposure scenario:** Use in coatings. Use in paints. Use in printing inks. Use in adhesives.

SU3; ERC4; PROC7, PROC10, PROC13

## EXPOSURE CONTROL AND RISK MANAGEMENT MEASURES

### EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** CEPE SPERC4.1a.v1

#### *Operating conditions*

Yearly amount used in EU: 5,000,000 kgs

Minimum emission days per year: 225

Emission factor to air: 0.8%

Emission factor in water: 2%

Emission factor in soil: 0%

Receiving surface water (flow rate): 18,000 m<sup>3</sup>/day

Freshwater dilution factor: 10

Marine water dilution factor: 100

#### *Risk management measures*

Suitable measures to reduce emissions to air can be: Exhaust gas treatment with thermal oxidation.

Type of treatment plant: Municipal sewage treatment plant.

Assumed sewage treatment plant flow: 2,000 m<sup>3</sup>/day

#### *Exposure estimation and reference to its source*

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Environment

Risk Characterization Ratio (RCR): 0.925355

Risk from environmental exposure is driven by soil.

Maximum safe use amount: 1080.7 kg/day

### EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC7: Industrial spray application

**Area of use:** Industrial

#### *Operating conditions*

Substance concentration: n-butyl acetate content: ≥0 - ≤100%

Physical state: liquid

Vapor pressure of the substance during use: 1120Pa

Process temperature: 20°C

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Internal use

### ***Risk management measures***

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%

Minimize manual tasks.

Daily general cleaning of equipment and work area.

Regular inspection and maintenance of equipment and machinery.

Ensure that the activity is performed outside the operator's respiratory zone (head-product distance greater than 1m).

Avoid frequent and direct contact with the substance.

Check that risk reduction measures are implemented and that the conditions of use are respected.

Avoid splashes.

Make sure the spray booth is used.

Wear suitable clothing.

### ***Exposure estimation and reference to its source***

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Worker - dermal, long-term - systemic.

Exposure estimation: 4.2857 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.38961

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Operator - inhalation, long-term - local.

Exposure estimation: 0.0001 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.000001

### ***Guidance for downstream users***

For a comparison term, visit <http://www.ecetoc.org/tra> Please note that a revised version was used (see exposure estimates).

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC10: Application with rollers or brushes**

**Area of use: Industrial**

### ***Operating conditions***

Substance concentration: n-butyl acetate content: ≥0 - ≤100%

Physical state: liquid

Vapor pressure of the substance during use: 1120Pa

Process temperature: 20°C

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Internal use

### ***Risk management measures***

Forced local ventilation. Effectiveness: 90%

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%

### ***Exposure estimation and reference to its source***

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Worker - dermal, long-term - systemic.

Exposure estimation: 2.7429 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.249351

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Operator - inhalation, long-term - local.

Exposure estimation: 24.1996 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.080665

### ***Guidance for downstream users***

For a comparison term, visit <http://www.ecetoc.org/tra>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC13: Treatment of articles by dipping and pouring

Area of use: Industrial

### ***Operating conditions***

Substance concentration: n-butyl acetate content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid

Vapor pressure of the substance during use: 1120Pa

Process temperature: 20°C

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Internal use

### ***Risk management measures***

Forced local ventilation. Effectiveness: 90%

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%

### ***Exposure estimation and reference to its source***

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Worker - dermal, long-term - systemic.

Exposure estimation: 1.3714 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.124675

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Operator - inhalation, long-term - local.

Exposure estimation: 24.1996 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.080665

### ***Guidance for downstream users***

For a comparison term, visit <http://www.ecetoc.org/tra>



## 2. USE IN COATINGS. USE IN PAINTS. USE IN PRINTING INKS. USE IN ADHESIVES.

**Short title of the exposure scenario:** Use in coatings. Use in paints. Use in printing inks. Use in adhesives.  
SU3; ERC4; PROC7, PROC10, PROC13

### EXPOSURE CONTROL AND RISK MANAGEMENT MEASURES

#### EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** CEPE SPERC4.1a.v1

##### *Operating conditions*

Yearly amount used in EU: 43,000,000 kgs

Minimum emission days per year: 225

Emission factor to air: 0.8%

Emission factor in water: 2%

Emission factor in soil: 0%

Receiving surface water (flow rate): 18,000 m<sup>3</sup>/day

Freshwater dilution factor: 10

Marine water dilution factor: 100

##### *Risk management measures*

Suitable measures to reduce emissions to air can be: Exhaust gas treatment with thermal oxidation.

Type of treatment plant: Municipal sewage treatment plant.

Assumed sewage treatment plant flow: 2,000 m<sup>3</sup>/day

##### *Exposure estimation and reference to its source*

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Environment

Risk Characterization Ratio (RCR): 0.925355

Risk from environmental exposure is driven by soil.

Maximum safe use amount: 1080.7 kg/day

#### EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC7: Industrial spray application

**Area of use:** Industrial

##### *Operating conditions*

Substance concentration: n-butyl acetate content: ≥0 - ≤100%

Physical state: liquid

Vapor pressure of the substance during use: 1120Pa

Process temperature: 20°C

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Internal use

##### *Risk management measures*

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%

Minimize manual tasks.

Daily general cleaning of equipment and work area.

Regular inspection and maintenance of equipment and machinery.

Ensure that the activity is performed outside the operator's respiratory zone (head-product distance greater than 1m).

Avoid frequent and direct contact with the substance.

Check that risk reduction measures are implemented and that the conditions of use are respected.

Avoid splashes.

Make sure the spray booth is used.

Wear suitable clothing.

##### *Exposure estimation and reference to its source*

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Worker - dermal, long-term - systemic.

Exposure estimation: 4.2857 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.38961

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Operator - inhalation, long-term - local.  
Exposure estimation: 0.0001 mg/m<sup>3</sup>  
Risk Characterization Ratio (RCR): 0.000001

#### **Guidance for downstream users**

For a comparison term, visit <http://www.ecetoc.org/tra> Please note that a revised version was used (see exposure estimates).

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC10: Application with rollers or brushes**

**Area of use: Industrial**

#### **Operating conditions**

Substance concentration: n-butyl acetate content: ≥0 - ≤100%

Physical state: liquid

Vapor pressure of the substance during use: 1120Pa

Process temperature: 20°C

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Internal use

#### **Risk management measures**

Forced local ventilation. Effectiveness: 90%

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%

#### **Exposure estimation and reference to its source**

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Worker - dermal, long-term - systemic.

Exposure estimation: 2.7429 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.249351

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Operator - inhalation, long-term - local.

Exposure estimation: 24.1996 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.080665

#### **Guidance for downstream users**

For a comparison term, visit <http://www.ecetoc.org/tra>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC13: Treatment of articles by dipping and pouring**

**Area of use: Industrial**

#### **Operating conditions**

Substance concentration: n-butyl acetate content: ≥0 - ≤100%

Physical state: liquid

Vapor pressure of the substance during use: 1120Pa

Process temperature: 20°C

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Internal use

#### **Risk management measures**

Forced local ventilation. Effectiveness: 90%

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%

#### **Exposure estimation and reference to its source**

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Worker - dermal, long-term - systemic.

Exposure estimation: 1.3714 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.124675

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Operator - inhalation, long-term - local.

Exposure estimation: 24.1996 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.080665

#### **Guidance for downstream users**

For a comparison term, visit <http://www.ecetoc.org/tra>

### 3. USE IN COATINGS. USE IN PAINTS. USE IN PRINTING INKS. USE IN ADHESIVES.

**Short title of the exposure scenario:** Use in coatings. Use in paints. Use in printing inks. Use in adhesives. SU22; ERC8a, ERC8d; PROC10, PROC11, PROC13, PROC19

## EXPOSURE CONTROL AND RISK MANAGEMENT MEASURES

### EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** CEPE SPERC 8a.2a.v1

#### ***Operating conditions***

Yearly amount used in EU: 2,000,000 kgs

Minimum emission days per year: 225

Emission factor to air: 99%

Emission factor in water: 1%

Emission factor in soil: 0%

Receiving surface water (flow rate): 18,000 m<sup>3</sup>/day

Freshwater dilution factor: 10

Marine water dilution factor: 100

#### ***Risk management measures***

The wastewater treatment measures considered suitable are, for example, wastewater or sewage treatment plant.

Type of treatment plant: Municipal sewage treatment plant.

Assumed sewage treatment plant flow: 2,000 m<sup>3</sup>/day

#### ***Exposure estimation and reference to its source***

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Environment

Risk Characterization Ratio (RCR): 0.012923

Risk from environmental exposure is driven by freshwater sediment.

Maximum safe use amount: 1934.6 kg/giorno

### EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** CEPE SPERC 8d.3a.v1

#### ***Operating conditions***

Yearly amount used in EU: 2,000,000 kgs

Minimum emission days per year: 225

Emission factor to air: 98%

Emission factor in water: 2%

Emission factor in soil: 0%

Receiving surface water (flow rate): 18,000 m<sup>3</sup>/day

Freshwater dilution factor: 10

Marine water dilution factor: 100

#### ***Risk management measures***

Type of treatment plant: Municipal sewage treatment plant.

Assumed sewage treatment plant flow: 2,000 m<sup>3</sup>/day

#### ***Exposure estimation and reference to its source***

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Environment

Risk Characterization Ratio (RCR): 0.092422

Risk from environmental exposure is driven by soil.

Maximum safe use amount: 1082 kg/day

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC10: Application with rollers or brushes

**Area of use:** Professional

### **Operating conditions**

Substance concentration: n-butyl acetate content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid

Vapor pressure of the substance during use: 1120Pa

Process temperature: 20°C

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Internal use

### **Risk management measures**

Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour). Effectiveness: 70%

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%

### **Exposure estimation and reference to its source**

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Worker - dermal, long-term - systemic.

Exposure estimation: 2.7429 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.249351

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Operator - inhalation, long-term - local.

Exposure estimation: 145.1979 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.483993

### **Guidance for downstream users**

For a comparison term, visit <http://www.ecetoc.org/tra>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC11: Non-industrial spray application

**Area of use:** Professional

### **Operating conditions**

Substance concentration: n-butyl acetate content:  $\geq 0$  -  $\leq 45\%$

Physical state: liquid

Vapor pressure of the substance during use: 1120Pa

Process temperature: 20°C

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Internal use

### **Risk management measures**

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%

Minimize manual tasks.

Daily general cleaning of equipment and work area.

Regular inspection and maintenance of equipment and machinery.

Ensure that the activity is performed outside the operator's respiratory zone (head-product distance greater than 1m).

Avoid frequent and direct contact with the substance.

Check that risk reduction measures are implemented and that the conditions of use are respected.

Avoid splashes.

Make sure the spray booth is used.

Wear suitable clothing.

### **Exposure estimation and reference to its source**

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Worker - dermal, long-term - systemic.

Exposure estimation: 10.7143 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.974026

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Operator - inhalation, long-term - local.

Exposure estimation: 0.0001 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.000001

### **Guidance for downstream users**

For a comparison term, visit <http://www.ecetoc.org/tra> Please note that a revised version was used (see exposure estimates).

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC11: Non-industrial spray application

Area of use: Professional

### **Operating conditions**

Substance concentration: n-butyl acetate content:  $\geq 0$  -  $\leq 45\%$

Physical state: liquid

Vapor pressure of the substance during use: 1120Pa

Process temperature: 20°C

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Internal use

### **Risk management measures**

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%

Minimize manual tasks.

Avoid frequent and direct contact with the substance.

Check that risk reduction measures are implemented and that the conditions of use are respected.

Daily general cleaning of equipment and work area.

Regular control and maintenance of equipment and machinery.

Make sure doors and windows are open (general ventilation).

Avoid splashes.

Use an adequately effective local ventilation system.

Wear suitable clothing.

### **Exposure estimation and reference to its source**

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker, modified version. The concentration of the substance has been considered using a linear approach. Worker - dermal, long-term - systemic.

Exposure estimation: 4.8214 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.438312

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker, modified version. Operator - inhalation, long-term - local.

Exposure estimation: 153 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.51

### **Guidance for downstream users**

For a comparison term, visit <http://www.ecetoc.org/tra> Please note that a revised version was used (see exposure estimates).

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC11: Non-industrial spray application

Area of use: Professional

### **Operating conditions**

Substance concentration: n-butyl acetate content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid

Vapor pressure of the substance during use: 1120Pa

Process temperature: 20°C

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Internal use

### **Risk management measures**

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%

Minimize manual tasks.

Avoid frequent and direct contact with the substance.

Check that risk reduction measures are implemented and that the conditions of use are respected.

Daily general cleaning of equipment and work area.

Regular inspection and maintenance of equipment and machinery.

Avoid splashes.

Make sure doors and windows are open (general ventilation).

Wear a half face mask with a P2L filter or better.

Wear suitable clothing.

### **Exposure estimation and reference to its source**

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker, modified version. The concentration of the substance has been considered using a linear approach. Worker - dermal, long-term - systemic.

Exposure estimation: 4.8214 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.438312

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker, modified version. Operator - inhalation, long-term - local.

Exposure estimation: 116 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.386667

### **Guidance for downstream users**

For a comparison term, visit <http://www.ecetoc.org/tra> Please note that a revised version was used (see exposure estimates).

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC13: Treatment of articles by dipping and pouring**

**Area of use: Professional**

### **Operating conditions**

Substance concentration: n-butyl acetate content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid

Vapor pressure of the substance during use: 1120Pa

Process temperature: 20°C

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Internal use

### **Risk management measures**

Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour). Effectiveness: 70%

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%

### **Exposure estimation and reference to its source**

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Worker - dermal, long-term - systemic.

Exposure estimation: 1.3714 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.124675

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Operator - inhalation, long-term - local.

Exposure estimation: 145.1979 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.483993

### **Guidance for downstream users**

For a comparison term, visit <http://www.ecetoc.org/tra>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC19: Manual mixing with direct contact with the only use of personal protective equipment**

**Area of use: Professional**

### **Operating conditions**

Substance concentration: n-butyl acetate content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid

Vapor pressure of the substance during use: 1120Pa

Process temperature: 20°C

Duration and frequency of application: 240 mins. 5 days a week

Indoor/Outdoor: Internal use

### **Risk management measures**

Forced local ventilation: Effectiveness: 80%

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%

Ensure a good standard of general or controlled ventilation (no less than 3-5 air changes per hour). Effectiveness: 30%

### ***Exposure estimation and reference to its source***

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Worker - dermal, long-term - systemic.

Exposure estimation: 8.4857 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.771429

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Operator - inhalation, long-term - local.

Exposure estimation: 67.759 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.225863

### ***Guidance for downstream users***

For a comparison term, visit <http://www.ecetoc.org/tra>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC19: Manual mixing with direct contact with the only use of personal protective equipment**

Area of use: Professional

### ***Operating conditions***

Substance concentration: n-butyl acetate content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid

Vapor pressure of the substance during use: 1120Pa

Process temperature: 20°C

Duration and frequency of application: 60 mins. 5 days a week

Indoor/Outdoor: Internal use

### ***Risk management measures***

Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour). Effectiveness: 70%

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%

### ***Exposure estimation and reference to its source***

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Worker - dermal, long-term - systemic.

Exposure estimation: 2.8286 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.257143

Evaluation method: EASY TRA v4.1, ECETOC TRA v3.0, Worker. Operator - inhalation, long-term - local.

Exposure estimation: 145.1979 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.483993

### ***Guidance for downstream users***

For a comparison term, visit <http://www.ecetoc.org/tra>



# Toluene

## Identification of the exposure scenario

**Product name:** Toluene

**CAS number:** 108-88-3

**EC number:** 203-625-9

**Review date:** 02/03/2017

## 2 - INDUSTRIAL USES

Identified industrial uses of toluene and generic exposure scenario.

Table 1 lists the industrial uses identified for toluene.

If DUs wish to verify compliance with the ES, they should start with summary table 1 and, based on the textual description of the exposure scenarios, determine their own identified use, the PROC and the ERC associated with their specific activity.

DUs may identify the specific scenarios of their interest in section 2.2.1 for the environment, 2.2.2 for workers and 2.2.3 for consumers and verify the exposure and risk characterisation for the environment and for workers in section 2.3. The operating conditions described in each specific scenario do not necessarily apply to all sites. It may therefore be necessary to apply the graduated scaling method (appropriate adaptation to the actual conditions on site), in order to identify compliance with the conditions described in the exposure scenarios.

### Table 1. Industrial contributing exposure scenarios identified for toluene

**Identifier use:** ES1 Manufacturing

**Description:** Manufacture of the substance or use as an intermediate, or as a process chemical or extraction agent. Includes recycling/recovery activities, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including on vessels/barges, tank wagons or tank trucks and large IBCs).

**Sector of use (SU):** 3, 8, 9

**Process categories (PROC):** 1, 2, 3, 4, 8a, 8b, 15

**Environmental Release Categories (ERC):** 1

**Identifier use:** ES2 Distribution

**Description:** Loading (including on vessel/barges, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its distribution and associated laboratory activities.

**Sector of use (SU):** 3, 8, 9

**Process categories (PROC):** 1, 2, 3, 4, 8a, 8b, 9, 15

**Environmental Release Categories (ERC):** 1 (load) - 2 (repacking)

**Identifier use:** ES3 Use as an intermediate

**Description:** Use as an intermediate

**Sector of use (SU):** 3, 8, 9

**Process categories (PROC):** 1, 2, 3, 4, 8a, 8b, 15

**Environmental Release Categories (ERC):** 6a

**Identifier use:** ES5 Use in cleaning agents

**Description:** Covers the use as a component of cleaning products including transfer from storage, pouring/unloading from drums or containers. Exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping, automated and by hand), related equipment cleaning and maintenance.

**Sector of use (SU):** 3, 10

**Process categories (PROC):** 2, 3, 4, 7, 8a, 8b, 10, 13

**Environmental Release Categories (ERC):** 4

**Identifier use:** ES7 Use as fuel

**Description:** Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

**Sector of use (SU):** 3, 10

**Process categories (PROC):** 1, 2, 3, 4, 8a, 8b, 16

**Environmental Release Categories (ERC):** 7

**Identifier use:** ES10 Use in coatings

**Description:** Covers use in coatings (paints, inks, adhesives, etc.), including exposures during use (including materials receipt, storage, preparation and bulk and semi-bulk transfer, application by spray, roller, spreader, dip, flow, fluidised bed on production lines and film formation) and equipment cleaning, maintenance and associated laboratory activities.

**Sector of use (SU):** 3, 10

**Process categories (PROC):** 1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 13, 14, 15

**Environmental Release Categories (ERC):** 4

**Identifier use:** ES13 Use in oil field drilling and production operations

**Description:** Well drilling activities in oil and production fields (including drilling muds and well cleaning), including material transfers, on-site formulation, also wellhead operations, shaker room activities and related maintenance.

**Sector of use (SU):** 3, 10

**Process categories (PROC):** 1, 2, 3, 4, 8a, 8b

**Environmental Release Categories (ERC):** 4



**Identifier use:** ES14 Use in binders and release agents

**Description:** Covers the use as binders and release agents, including material transfers, mixing, application (including spraying and brushing), mould forming and casting and handling of waste.

**Sector of use (SU):** 3, 8, 9

**Process categories (PROC):** 1, 2, 3, 4, 6, 7, 8b, 10, 14

**Environmental Release Categories (ERC):** 5

**Identifier use:** ES16 Use as laboratory reagent

**Description:** Use of the substance within laboratory settings, including material transfers and equipment cleaning.

**Sector of use (SU):** 3, 10

**Process categories (PROC):** 10, 15

**Environmental Release Categories (ERC):** 2, 4

**Identifier use:** ES18 Use in functional fluids

**Description:** Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in industrial equipment including maintenance and related material transfers.

**Sector of use (SU):** 3, 8, 9

**Process categories (PROC):** 1, 2, 3, 4, 8a, 8b, 9

**Environmental Release Categories (ERC):** 7

**Identifier use:** ES20 Use in rubber production and processing

**Description:** Manufacture of tyres and general rubber articles, including processing of raw (cured) rubber, handling and mixing of rubber additives, vulcanising, cooling and finishing.

**Sector of use (SU):** 10

**Process categories (PROC):** 1, 2, 3, 4, 5, 6, 7, 8a, 8b, 14, 15

**Environmental Release Categories (ERC):** 4, 6d

**Identifier use:** ES21 Formulation

**Description:** Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, material transfers, mixing, large and small scale packing, maintenance and associated laboratory activities.

**Sector of use (SU):** 3, 10

**Process categories (PROC):** 1, 2, 3, 4, 5, 8a, 8b, 9, 14, 15

**Environmental Release Categories (ERC):** 2

## 2.1 INDUSTRIAL USES OF TOLUENE AND TOLUENE-CONTAINING PRODUCTS

**Title:** Industrial uses of toluene and toluene-containing products

**Sectors of use:** 3, 8, 9, 10

**Process categories:** 1, 2, 3, 4, 5, 6, 7, 8a, 8b, 9, 10, 13, 14, 15

**Environmental Release Categories:** 1, 2, 4, 5, 6a, 6d, 7

**Scope of the process:** Industrial processes relevant to toluene and toluene-containing products

## 2.2 OPERATING CONDITIONS AND RISK MANAGEMENT MEASURES

### 2.2.1. Contributing scenario controlling exposure for the environment

**Method used for evaluation:** EUSES 2.1.1 with use of predefined ESVOC SpERC release fractions (see Table 3 for the specific versions of each scenario).

#### Operating conditions

**Product features:** Toluene is a liquid of medium volatility. The water solubility of this category is 573 mg/l; the vapour pressure is 4030 Pa at 20°C; the log Kow is 2.73. Toluene is readily biodegradable.

**Frequency and duration of use:** Issue days: 300 days/year

**Quantity used:** See table 2.

**Environmental factors not influenced by risk management:** See table 2.

**Other given operational conditions affecting environmental exposure:** See table 2.

#### Risk Management Measures

**Local technical conditions and measures to reduce and limit discharges, air emissions and soil release:**

Treat air emission to provide a typical removal efficiency of [TCR7]; for each scenario, see Table 2 Typical onsite wastewater treatment technology provides removal efficiency of 93.3% [TCR11]. (unless otherwise specified).

ES5, ES7, ES10, ES14: Soil emission controls are not applicable as there is no direct release to soil [TCR4].

**Organizational measures to prevent/limit release from site:**

ES1, ES2, ES3, ES5, ES7, ES10, ES14, ES16, ES18, ES20, ES21: Do not apply industrial sludge to natural soils [OMS2].

ES3: Sewage sludge should be incinerated, contained or reclaimed [OMS3].

ES13: Prevent environmental discharge consistent with regulatory requirements.

**Conditions and measures for the domestic sewage treatment plan:**

Estimated substance removal from wastewater via municipal sewage treatment 93.3 (%) [STP3]. (unless otherwise specified).

Assumed domestic sewage treatment plant flow 2000 (m³/g) [STP5]. (unless otherwise specified).

**Conditions and measures for external treatment of waste for disposal:**

ES1: No waste of the substance is generated during production. [ETW4].

ES2, ES5, ES10, ES13, ES14, ES16, ES18, ES20, ES21: External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3].

ES3, ES7: This substance is consumed during use and no waste of the substance is generated [ETW5].

**Conditions and measures for external recovery of waste:**

ES1: No waste related to the substance [ERW2] is generated during production.

ES2, ES10, ES13, ES14, ES16, ES18, ES20, ES21: External recovery and recycling of waste should comply with applicable local and/or national regulations [ERW1].

ES3, ES5, ES7: This substance is consumed during use and no waste of the substance is generated [ERW3].

## 2.2.2 Contributing scenario controlling exposure for workers

**Product features:** Liquid, vapour pressure 0.5 - 10 kPa [OC4].

**Concentration of the substance in the product:** Covers a percentage substance in the product up to 100% (unless otherwise stated) [G13].

**Frequency and duration of use/exposure:** Covers a daily exposure up to 8 hours (unless otherwise specified) [G2].

**Human factors not influenced by risk management:** Not applicable.

**Other given operating conditions affecting employee exposure:**

Assumes use of the product at not more than 20°C above ambient temperature, unless otherwise specified [G15].

Assumes a good basic standard of occupational hygiene has been implemented [G1].

Users are advised to consider national Occupational Exposure Limits or other equivalent values [G38].

### **Operational conditions and risk management measures affecting worker exposure**

**General measures (skin irritants) (G19):**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear suitable gloves (tested to EN374) if hand contact with substance is likely. Remove impurities/product spills as they occur. Immediately remove any contamination with skin. Provide basic staff training so that exposure is minimised and any skin problems are reported (E3).

In addition (where there is potential for further significant aerosol exposure): Other skin protection measures, such as impermeable overalls and visors, will be necessary during activities involving high dispersion with the possible release of aerosols.

**General measures for assessing the inhalation risk - qualitative assessment:**

Do not swallow. Implement a good basic standard of occupational hygiene. Avoid contact with contaminated tools and objects. Management/supervision in place to check that the RMMs implemented are being used correctly and OCs followed. Staff training on good practices. Adequate standard of personal hygiene.

For the operational conditions and risk management measures for each scenario, see Table 3.

## 2.2.3 Contributing scenario controlling consumer exposure

There is no consumer exposure for this scenario.

## 2.3 EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

### 2.3.1 Contributing scenario for estimating environmental exposure

**Tool used for evaluation:** EUSES 2.1.1 with use of predefined ESVO release fractions (see Table 3 for the specific versions of each scenario).

When complying with the recommended risk management measures (RMMs) and operating conditions (OCs), exposure is not expected to exceed the PNECs and the risk characterisation ratios should be less than 1, as shown in table 2.

### 2.3.2 Contributing scenario for estimating worker exposure

**Tool used for evaluation** ECETOC TRA v2 ([www.ecetoc.org/tra](http://www.ecetoc.org/tra))

**General parameters used:**

Environment type: industrial

Dustiness: low (liquid substance)

Duration of exposure: > 4 hours/day, unless otherwise stated in the RMMs

Ventilation use: none, unless otherwise stated in the RMMs

Use of respiratory protection: none, unless otherwise stated in the RMMs

Use of skin protection: none, unless otherwise stated in the RMMs

Concentration in preparations: > 25%

When complying with the recommended risk management measures (RMMs) and operating conditions (OCs), exposure is not expected to exceed the DNELs and the risk characterisation ratios should be less than 1, as shown in table 3.

### 2.3.3 Contributing scenario for estimating consumer exposure

There is no consumer exposure for this scenario.

## 2.4. GUIDELINES FOR THE DU TO VERIFY COMPLIANCE WITH THE EXPOSURE SCENARIO

### 2.4.1 Guidelines for DU to verify compliance with the environmental exposure scenario

Confirm that the RMMs and OCs are as described or have equivalent efficiency.

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1].

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2].

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination [DSU3].

Further details on scaling and control technologies are provided in SPERC factsheet.

### 2.4.2 Guidelines for DU to verify compliance with the contributing scenario for worker exposure estimation

Predicted exposures are not expected to exceed the DNEL when the RMMs and OCs outlined in Table 3 are implemented [G22].

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels [G23].

Risk characterisation ratios (RCRs) are calculated by comparing the estimated exposure levels with the corresponding DNELs ( $RCR = \text{exposure level}/\text{DNEL}$ ).

**Table 2.**

identifiers			Operating Conditions and Risk Management Measures						Risk characterization					
		Quantity used	Dilution factors		RMM to be implemented									
	ERC/ SpERC	Tonnage per site t/ year	Fresh water	Sea water	Water treatment efficiency %	Air abatement efficiency %	Waste treatment total removal %	Domestic wastewater treatment flow m³/d	RCR fresh water	RCR marine water	RCR freshwater sediments	RCR marine water sediments	RCR soil	RCR STP extension
ES1	ESVOC SpERC 1.1.v1 for air and soil	300000	40	100	>93.3%	90%	93.3%	2000	0.125	0.0495	0.125	0.0494	0.029	0.246
ES2	ESVOC SpERC 1.1b.v1	300000	10	100	>93.3%	90%	93.3%	2000	5.14E-02	5.11E-03	5.14E-02	5.11E-03	7.37E-02	2.46E-02
ES3	ESVOC SpERC 6.1a.v1	12000	10	100	>93.3%	80%	93.3%	2000	5.93E-01	5.93E-02	5.93E-01	5.93E-02	8.77E-01	2.95E-01
ES5	ESVOC SpERC 4.4a.v1	1500	10	100	>93.3%	70%	93.3%	2000	2.79E-03	2.52E-04	2.79E-03	2.52E-04	1.96E-03	3.59E-04
ES7	ESVOC SpERC 7.12a.v1	15000	10	100	>93.3%	95%	93.3%	2000	4.47E-03	4.20E-04	4.46E-03	4.19E-04	4.31E-03	1.20E-03
ES10	ESVOC SpERC 4.3a.v1	4500	10	100	>93.3%	90%	93.3%	2000	5.05E-01	5.05E-02	5.05E-01	5.05E-02	7.55E-01	2.52E-01
ES13	Discharge into the aquatic environment is restricted by law and industry prohibits it: OSPAR Commission 2009. Discharges, Spills and Emissions from Offshore Oil and Gas installations in 2007, including the assessment of data reported in 2006 and 2007.													
ES14	ESVOC SpERC 4.10a.v1	1500	10	100	>93.3%	80%	93.3%	2000	2.79E-03	2.52E-04	2.79E-03	2.52E-04	6.71E-03	3.59E-04
ES16	SPERC proposes evaluation using ERC	1500	10	100	>93.3%	0%	93.3%	2000	4.81E-01	4.81E-02	4.81E-01	4.81E-02	7.12E-01	2.40E-01
ES18	ESVOC SpERC 7.13a.v1	1500	10	100	>93.3%	0%	93.3%	2000	9.26E-03	8.99E-04	9.26E-03	8.99E-04	1.10E-02	3.59E-03
ES20	ESVOC SpERC 4.19.v1	6000	10	100	>93.3%	0%	93.3%	2000	2.90E-01	2.89E-02	2.90E-01	2.89E-02	4.28E-01	1.44E-01
ES21	ESVOC SpERC 2.2.v1	15000	10	100	>93.3%	0%	93.3%	2000	4.95E-01	4.95E-02	4.95E-01	4.94E-02	7.38E-01	2.46E-01

**Table 3. OC, RMM, Risk Characterization - Workers - Industrial uses**

**Identifier: ES1 PROC1**

**Operating Conditions and Risk Management Measures**

**Contributing scenario:** General exposures (closed systems) [CS15].

**OC and typical RMMs:** Continuous; daily; 15 mins - 1 hour; Product temp. Outside. Process closed.

**RMM to be implemented:** No specific measures identified [EI18].

**Risk characteristics**

**RCR Inhalation:** 0.00

**Dermal RCR:** 0.00

**RCR (all ways):** 0.00

**Identifier: ES2 PROC2**

**Operating Conditions and Risk Management Measures**

**Contributing scenario:** General exposures (closed systems) [CS15]. With sample collection [CS56]. Product sampling [CS137].

**OC and typical RMMs:** Continuous; daily; 15 mins - 1 hour; Product temp. Outdoor Process included. Outdoor placement. Closed/semi-closed sampling point.

**RMM to be implemented:** No specific measures identified [EI18].

**Risk characteristics**

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00

**RCR (all ways):** 0.20

**Identifier: ES1 PROC3**

**Operating Conditions and Risk Management Measures**

**Contributing scenario:** General exposures (closed systems) [CS15]. Use in contained batch processes [CS37].

**OC and typical RMMs:** Batch process; daily; 15 mins - 1 hour; Product temp. Indoor/Outdoor. Closed equipment, sample point included or with venting.

**RMM to be implemented:** No specific measures identified [EI18].

**Risk characteristics**

**RCR Inhalation:** 0.49

**Dermal RCR:** 0.00

**RCR (all ways):** 0.49

**Identifier: ES1 PROC4**

**Operating Conditions and Risk Management Measures**

**Contributing scenario:** General exposures (open systems) [CS16]. Batch process [CS55]. With sample collection [CS56].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product temp. Indoor/Outdoor Transfers included. Clean lines before decoupling.

**RMM to be implemented:** No specific measures identified [EI18].

**Risk characteristics**

**RCR Inhalation:** 0.39

**Dermal RCR:** 0.02

**RCR (all ways):** 0.41

**Identifier: ES1 PROC8b**

**Operating Conditions and Risk Management Measures**

**Contributing scenario:** In-Process Sampling [CS2].

**OC and typical RMMs:** Daily; <15 mins; Product temp. Indoor/Outdoor. Closed or ventilated sample points.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11] Wear suitable respiratory protection (conforming to EN140 with type A filter or better) and gloves (type EN374) if regular skin contact likely [PPE21].

**Risk characteristics**

**RCR Inhalation:** 0.29 Ventilation dilution efficiency 70%.

**Dermal RCR:** 0.02

**RCR (all ways):** 0.31

**Identifier: ES1 PROC15**

**Operating Conditions and Risk Management Measures**

**Contributing scenario:** Laboratory activity [CS36].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product temp. Indoor; hood. PPE.

**RMM to be implemented:** No specific measures identified [EI18].

**Risk characteristics**

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00

**RCR (all ways):** 0.20

## Identifier: ES1 PROC8b

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Bulk product transfer [CS14]. (open systems) [CS108]. With potential for aerosol generation [CS138].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product temp. Indoor/Outdoor Transfers included. Clean lines before decoupling.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11]. Operate away from sources of emission or release of the substance. [E77]. If technical measures are not practical [G16], wear suitable respiratory protection (conforming to EN140 with type A filter or better) and gloves (type EN374) if regular skin contact likely [PPE21].

### *Risk characteristics*

**RCR Inhalation:** 0.29 Ventilation dilution efficiency 70%.

**Dermal RCR:** 0.02

**RCR (all ways):** 0.31

## Identifier: ES1 PROC8b

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Bulk product transfer [CS14]. (closed systems) [CS107].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product temp. Indoor/Outdoor. Transfers included. Transfer points with vents. Clean lines before decoupling.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11]. Operate activity away from sources of substance emission or release [E77]. If technical measures are not practical [G16], wear suitable respiratory protection (conforming to EN140 with type A filter or better) and gloves (type EN374) if regular skin contact likely [PPE21].

### *Risk characteristics*

**RCR Inhalation:** 0.29 Ventilation dilution efficiency 70%.

**Dermal RCR:** 0.02

**RCR (all ways):** 0.31

## Identifier: ES1 PROC8a

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Equipment cleaning and maintenance [CS39]

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product temp. Collection of line waste in containers. Indoor/Outdoor. Lines included. Retain drain downs in sealed storage pending disposal, use as a recycled material in subsequent formulations, or recycle. PPE.

**RMM to be implemented:** Drain down system prior to equipment break-in or maintenance [E65].

### *Risk characteristics*

**RCR Inhalation:** 0.20 Additional exposure modifier: 0.2. Assumes LEV efficiency equivalent to SOP for drainage etc. before maintenance; additional LEV 80%.

**Dermal RCR:** 0.00 TRA dermal exposure LEV reduction factor 0.01.

**RCR (all ways):** 0.20

## Identifier: ES2 PROC2

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Storage [CS67]. Product sampling [CS137].

**OC and typical RMMs:** Daily; 8 hours; Product temp. Samples collected at dedicated sample points.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00

**RCR (all ways):** 0.20

## Identifier: ES2 PROC1

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** General exposures (closed systems) [CS15].

**OC and typical RMMs:** Continuous; Daily; 15 mins - 1 hour; Product temp. Process closed. No exposure.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.00

**Dermal RCR:** 0.00

**RCR (all ways):** 0.00

## Identifier: ES2 PROC2

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** General exposures (closed systems) [CS15]. With sample collection [CS56]. Product sampling [CS137].

**OC and typical RMMs:** Continuous; Daily; 15 mins - 1 hour; Product temp. Outside. Process included. Closed/semi-closed sampling point.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00

**RCR (all ways):** 0.20

## Identifier: ES2 PROC3

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** General exposures (closed systems) [CS15]. Use in contained batch processes [CS37].

**OC and typical RMMs:** batch process; Daily; 15 mins - 1 hour; Product at temp. environment. Outside. Closed equipment, sample point included or with venting.

**RMM to be implemented:** No specific provision identified [E118]

### *Risk characteristics*

**RCR Inhalation:** 0.49

**Dermal RCR:** 0.00

**RCR (all ways):** 0.49

## Identifier: ES2 PROC4

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** General exposures (open systems) [CS16]. Batch process [CS55]. With sample collection [CS56].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product at temp. environment. Indoor/Outdoor. Transfers included. Clean lines before decoupling.

**RMM to be implemented:** No specific provision identified [E118]

### *Risk characteristics*

**RCR Inhalation:** 0.39.

**Dermal RCR:** 0.02

**RCR (all ways):** 0.41

## Identifier: ES2 PROC3

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** In-Process Sampling [CS2].

**OC and typical RMMs:** Daily; <15 mins; Product at temp. environment. Outside. Closed or ventilated sample points.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.49

**Dermal RCR:** 0.00

**RCR (all ways):** 0.49

## Identifier: ES2 PROC15

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Laboratory activity [CS36].

**OC and typical RMMs:** Continuous; Daily; 15 mins - 1 hour; Product at temp. environment. Inside. Hood. PPE

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00

**RCR (all ways):** 0.20

## Identifier: ES2 PROC8b

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Bulk product transfer [CS14]. (closed systems) [CS107]

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product at temp. environment. Outside. Potential exposure during interruption of connections. Transfers included. Clean lines before decoupling.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### *Risk characteristics*

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.02

**RCR (all ways):** 0.70

## Identifier: ES2 PROC8b

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Bulk product transfer [CS14]. (open systems) [CS108]

**OC and typical RMMs:** Daily; 1 - 4 hours; Product at temp. environment. Outdoor Potential exposure due to emission of vapours from opening tanks. Transfers included. Submerged load through tank opening. Collection of drops from loading arm. May require LEV and/or RPE.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11]. Operate activity away from sources of substance emission or release [E77]. If technical measures are not practical [G16], wear suitable respiratory protection (conforming to EN140 with type A filter or better) and gloves (type EN374) if regular skin contact likely [PPE21].

### *Risk characteristics*

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.02

**RCR (all ways):** 0.70

## Identifier: ES2 PROC9

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Drum and small package filling [CS6].

**OC and typical RMMs:** Continuous; Daily; 8 hours; Product temp. Outside. Transfers included. Transfer points with vents. Dedicated filling lines.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11]. Wear suitable respiratory protection (conforming to EN140 with type A filter or better) and gloves (type EN374) if regular skin contact likely [PPE21].

### *Risk characteristics*

**RCR Inhalation:** 0.69. Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.02

**RCR (all ways):** 0.70

## Identifier: ES2 PROC8a

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Cleaning and maintenance of equipment [CS39].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product temp. Collection of line residues in a container. Lines included. Retain washes in sealed storage awaiting disposal or use as a recycled material in subsequent formulations. PPE.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11]. Wear suitable respiratory protection (conforming to EN140 with type A filter or better) and gloves (type EN374) if regular skin contact likely [PPE21].

### *Risk characteristics*

**RCR Inhalation:** 0.10 Additional exposure modifier 0.01. Assumes LEV efficiency equivalent to SOP for drainage etc. before maintenance.

**Dermal RCR:** 0.04

**RCR (all ways):** 0.13

## Identifier: ES2 PROC2

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Storage [CS67]. Product sampling [CS137].

**OC and typical RMMs:** Daily; 8 hours; Product temp. Outside. Samples collected at dedicated sample points.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00

**RCR (all ways):** 0.20

## Identifier: ES3

Human health assessment is not required for this use, use as an intermediate is included in the toluene production.

## Identifier: ES5 PROC8a

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Bulk product transfer [CS14]. (open systems) [CS108]

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Room temp. Collection of line residues in a container. Transfers included. Transfer points with vents. Clean lines before decoupling.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### *Risk characteristics*

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.04

**RCR (all ways):** 0.72

## Identifier: ES5 PROC2

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Automated process with (semi) closed systems [CS93]. Use in contained systems [CS38].

**OC and typical RMMs:** Daily; 8 hours. Process included. closed/semi-closed.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00

**RCR (all ways):** 0.20

## Identifier: ES5 PROC3

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Automated process with (semi) closed systems [CS93]. Use in contained systems [CS38]. Kegs/Batch Transfers [CS8].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Room temp. Process included. closed/semi-closed.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.49

**Dermal RCR:** 0.00

**RCR (all ways):** 0.49



## Identifier: ES5 PROC2

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Application of cleaning products in closed systems [CS101].

**OC and typical RMMs:** Daily; 8 hours. Process included. closed/semi-closed.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00

**RCR (all ways):** 0.20

## Identifier: ES5 PROC8b

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Filling of equipment from drums or containers [CS45]. Dedicated system [CS81].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Room temp. Pumping from drums to equipment.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11]. If technical measures are not practical [G16], wear suitable respiratory protection (conforming to EN140 with type A filter or better) and gloves (type EN374) if regular skin contact likely [PPE21].

### *Risk characteristics*

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.00 TRA dermal exposure LEV reduction factor 0.1.

**RCR (all ways):** 0.69

## Identifier: ES5 PROC4

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Use in contained batch processes [CS37]. Heating treatment [OC129].

**OC and typical RMMs:** Daily; 1 - 4 hours. Temperature above boiling point. Outdood Equipment closed. Transfer points included or with vent.

**RMM to be implemented:** Provide extract ventilation in points where emissions occur [E54].

### *Risk characteristics*

**RCR Inhalation:** 0.20 TRA LEV efficiency 90%.

**Dermal RCR:** 0.00 TRA dermal exposure LEV reduction factor 0.1.

**RCR (all ways):** 0.20

## Identifier: ES5 PROC13

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Degreasing small objects in cleaning station [CS41].

**OC and typical RMMs:** Daily; >4 hours; Environment. Local aspiration on open surfaces; eliminate leaks as soon as they occur. PPE.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### *Risk characteristics*

**RCR Inhalation:** 0.69. Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.04

**RCR (all ways):** 0.72

## Identifier: ES5 PROC10

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Cleaning with low-pressure washers [CS42].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Room temp. Specific training of workers. PPE.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### *Risk characteristics*

**RCR Inhalation:** 0.69

**Dermal RCR:** 0.07

**RCR (all ways):** 0.76

## Identifier: ES5 PROC7

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Cleaning with high pressure washers [CS44].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Room temp. Specific training of workers. PPE.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 10 to 15 air changes per hour) [E40]. Limit substance content in the product to 5 % [OC17].

### *Risk characteristics*

**RCR Inhalation:** 0.15 Ventilation dilution efficiency 70%. TRA factor RPE half mask.

**Dermal RCR:** 0.11

**RCR (all ways):** 0.26

## Identifier: ES5 PROC10

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Manual cleaning of surfaces. No spraying [CS60].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Room temp. Collection of waste and cleaning cloths in a container.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### *Risk characteristics*

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.07

**RCR (all ways):** 0.76



## Identifier: ES5 PROC8a

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Cleaning and maintenance of equipment [CS39].

**OC and typical RMMs:** Daily; 15 mins -1 hour; Product temp. Collection of line waste in containers. Indoor/Outdoor. Lines included. Retain drain downs in sealed storage pending disposal, use as a recycled material in subsequent formulations, or recycle. PPE.

**RMM to be implemented:** Drain down system prior to equipment break-in or maintenance [E65].

### **Risk characteristics**

**RCR Inhalation:** 0.20 Additional exposure modifier: 0.2. Efficiency of LEVs equivalent to drainage SOP etc. is assumed. before maintenance; additional LEV (80%).

**Dermal RCR:** 0.00 TRA dermal exposure LEV reduction factor 0.1.

**RCR (all ways):** 0.20

## Identifier: ES5 PROC2

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Storage [CS67]. Product sampling [CS137].

**OC and typical RMMs:** Daily; <15 mins. Samples collected at dedicated sample points.

**RMM to be implemented:** No specific measures identified [E118].

### **Risk characteristics**

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00

**RCR (all ways):** 0.20

## Identifier: ES7 PROC4

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Bulk product transfer [CS14].

**OC and typical RMMs:** Daily; 1 - 4 hours; Room temp. Transfers included. Clean lines before decoupling.

**RMM to be implemented:** No specific measures identified [E118].

### **Risk characteristics**

**RCR Inhalation:** 0.39

**Dermal RCR:** 0.02

**RCR (all ways):** 0.41

## Identifier: ES7 PROC8b

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Drum/Batch Transfers [CS8].

**OC and typical RMMs:** Daily; 1 -4 hours; Room temp. Pumping from drums to equipment.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### **Risk characteristics**

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.02

**RCR (all ways):** 0.70

## Identifier: ES7 PROC1

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** General exposures (closed systems) [CS15].

**OC and typical RMMs:** Daily; >4 hours. Inside. Closed equipment; designed for easy maintenance. PPE.

No specific measure identified

**RMM to be implemented:** No specific measures identified [E118].

### **Risk characteristics**

**RCR Inhalation:** 0.00

**Dermal RCR:** 0.00

**RCR (all ways):** 0.00

## Identifier: ES7 PROC2

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** General exposures (closed systems) [CS15]. Product sampling [CS137].

**OC and typical RMMs:** Daily; >4 hours. Inside. Closed equipment; designed for easy maintenance. PPE.

**RMM to be implemented:** No specific measures identified [E118].

### **Risk characteristics**

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00

**RCR (all ways):** 0.20

## Identifier: ES7 PROC3

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** General exposures (closed systems) [CS15]. Batch process [CS55].

**OC and typical RMMs:** Daily; >4 hours. Inside. Closed equipment; designed for easy maintenance. PPE.

**RMM to be implemented:** No specific measures identified [EI18].

### **Risk characteristics**

**RCR Inhalation:** 0.49

**Dermal RCR:** 0.00

**RCR (all ways):** 0.49

## Identifier: ES7 PROC16

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** General exposures (open systems) [CS16]. (closed systems) [CS107].

**OC and typical RMMs:** Daily; >4 hours, 100%. Equipment closed.

**RMM to be implemented:** No specific measures identified [EI18].

### **Risk characteristics**

**RCR Inhalation:** 0.10

**Dermal RCR:** 0.00

**RCR (all ways):** 0.10

## Identifier: ES7 PROC3

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** General exposures (open systems) [CS16]. (closed systems) [CS107]. Batch process [CS55].

**OC and typical RMMs:** Daily; >4 hours, 100%. Equipment closed.

**RMM to be implemented:** No specific measures identified [EI18].

### **Risk characteristics**

**RCR Inhalation:** 0.4

**Dermal RCR:** 0.00

**RCR (all ways):** 0.49

## Identifier: ES7 PROC8a

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Equipment Maintenance [CS5].

**OC and typical RMMs:** Daily; >4 hours, 100%. Operator training.

**RMM to be implemented:** Drain down system prior to equipment break-in or maintenance [E55]. Wear coveralls to prevent skin exposure [PPE27].

### **Risk characteristics**

**RCR Inhalation:** 0.20 Additional exposure modifier: 0.2. It is assumed that the SOPs reduce both inhalation and dermal exposure by up to 80%. (x0.2)

**Dermal RCR:** 0.01 TRA dermal exposure LEV reduction factor 0.2.

**RCR (all ways):** 0.20

## Identifier: ES7 PROC8a

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Cleaning of containers and vessels [CS103].

**OC and typical RMMs:** Infrequent; >4 hours. Procedures for entry into containers. Store drainage liquids in sealed containers pending disposal. PPE.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### **Risk characteristics**

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.04

**RCR (all ways):** 0.72

## Identifier: ES7 PROC1

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Storage [CS67].

**OC and typical RMMs:** Daily; 8 hours; Room temp. Samples collected at dedicated sample points.

**RMM to be implemented:** No specific measures identified [EI18].

### **Risk characteristics**

**RCR Inhalation:** 0.00

**Dermal RCR:** 0.00

**RCR (all ways):** 0.00

## Identifier: ES7 PROC2

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Storage [CS67]. Product sampling [CS137].

**OC and typical RMMs:** Daily; 8 hours; Room temp. Samples collected at dedicated sample points.

**RMM to be implemented:** No specific measures identified [EI18].

### **Risk characteristics**

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00

**RCR (all ways):** 0.20

## Identifier: ES10 PROC1

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** General exposures (closed systems) [CS15].

**OC and typical RMMs:** Continuous; Daily; 8 hours. Process included. Closed/semi-closed sampling point.

**RMM to be implemented:** No specific provision identified [EI18]

### **Risk characteristics**

**RCR Inhalation:** 0.00

**Dermal RCR:** 0.00

**RCR (all ways):** 0.00

## Identifier: ES10 PROC2

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** General exposures (closed systems) [CS15]. With sample collection [CS56]. Use in contained systems [CS38].

**OC and typical RMMs:** Continuous; Daily; 8 hours. Process included; closed/semi-closed sampling point.

**RMM to be implemented:** No specific provision identified [EI18]

### **Risk characteristics**

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00

**RCR (all ways):** 0.20

## Identifier: ES10 PROC2

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Film formation. Forced drying (50-100°C). Stoving (>100°C). UV / EB radiation finish [CS94].

**OC and typical RMMs:** Process included.

**RMM to be implemented:** No specific provision identified [EI18]

### **Risk characteristics**

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00

**RCR (all ways):** 0.20

## Identifier: ES10 PROC3

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Mixing operations (closed systems) [CS29]. General exposures (closed systems) [CS15].

**OC and typical RMMs:** -

**RMM to be implemented:** No specific measures identified [EI18].

### **Risk characteristics**

**RCR Inhalation:** 0.49

**Dermal RCR:** 0.00

**RCR (all ways):** 0.49

## Identifier: ES10 PROC4

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Film formation - air drying [CS95].

**OC and typical RMMs:** -

**RMM to be implemented:** No specific measures identified [EI18].

### **Risk characteristics**

**RCR Inhalation:** 0.39

**Dermal RCR:** 0.02

**RCR (all ways):** 0.41

## Identifier: ES10 PROC5

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Preparation of material for application [CS96]. Mixing operations (open systems) [CS30].

**OC and typical RMMs:** Liquid/powder products - batch. Indoor/Outdoor.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### **Risk characteristics**

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.04

**RCR (all ways):** 0.72

## Identifier: ES10 PROC7

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Spray application (automatic/robotic) [CS97].

**OC and typical RMMs:** Daily; >4 hours; Product temp. Spray booth with vents. Specific training of operators. PPE.

**RMM to be implemented:** Carry out in a vented booth or extracted enclosure [E57].

### **Risk characteristics**

**RCR Inhalation:** 0.05 TRA LEV: 99% efficiency.

**Dermal RCR:** 0.01 TRA dermal exposure LEV reduction factor 0.05.

**RCR (all ways):** 0.05

## Identifier: ES10 PROC7

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Manual spray application.

**OC and typical RMMs:** Outside. Air mask/respirator.

**RMM to be implemented:** Carry out in a vented booth or extracted enclosure [E57]. Oppure, Provide a good standard of controlled ventilation (10 to 15 air changes per hour) [E40]. Wear a respirator conforming to EN140 with type A filter or better [PPE22].

### **Risk characteristics**

**RCR Inhalation:** 0.1 Ventilation dilution efficiency 70%. TRA factor RPE half mask.

**Dermal RCR:** 0.011

**RCR (all ways):** 0.26

## Identifier: ES10 PROC8a

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Material transfers [CS3]. Non-dedicated facility [CS82].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product temp. Collection of line waste in containers. Outdoor/Indoor. Transfers included. Transfer points with vents. Clean lines before decoupling.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### **Risk characteristics**

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.04

**RCR (all ways):** 0.72

## Identifier: ES10 PROC8a

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Material transfers [CS3]. Dedicated system [CS81].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product at temp. environment. Collection of line waste in containers. Outdoor/Indoor. Transfers included. Transfer points with vents. Clean lines before decoupling.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### **Risk characteristics**

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.02

**RCR (all ways):** 0.70

## Identifier: ES10 PROC10

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Application by roller, spatula, flux [CS98].

**OC and typical RMMs:** Daily; >4 hours; Product at temp. environment. Range from 2-3% up to 40-50%. Aspiration localized to the rollers. Eliminate leaks as they occur. PPE. Large scale (open equipment).

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### **Risk characteristics**

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.07

**RCR (all ways):** 0.76

## Identifier: ES10 PROC13

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Immersion, dipping and pouring [CS4].

**OC and typical RMMs:** Daily; >4 hours; Environment. Local aspiration on open surfaces. Eliminate leaks as they occur. PPE.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### **Risk characteristics**

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%

**Dermal RCR:** 0.04

**RCR (all ways):** 0.72

## Identifier: ES10 PROC15

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Laboratory activity [CS36].

**OC and typical RMMs:** Small-scale business. Small amounts. Daily 15 min.

**RMM to be implemented:** No specific measures identified [E118].

### **Risk characteristics**

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00

**RCR (all ways):** 0.20

## Identifier: ES10 PROC9

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Material transfers [CS3]. Kegs/Batch Transfers [CS8]. Transfer from / pour from containers [CS22].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product temp. Use goggles gloves.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### **Risk characteristics**

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.02

**RCR (all ways):** 0.70

## Identifier: ES10 PROC14

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Production of preparations or articles by tableting, compression, extrusion, pelettisation [CS100].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product at temp. environment. Use protective goggles and gloves.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### **Risk characteristics**

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.01

**RCR (all ways):** 0.70

## Identifier: ES10 PROC8a

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Cleaning and maintenance of equipment [CS39].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product at temp. environment. Collection of line waste in containers. Indoor/Outdoor. Lines included. Retain drain downs in sealed storage pending disposal, use as a recycled material in subsequent formulations, or recycle. PPE.

**RMM to be implemented:** Drain down system prior to equipment break-in or maintenance [E65].

### **Risk characteristics**

**RCR Inhalation:** 0.20 Additional exposure modifier: 0.2. Efficiency of LEVs equivalent to drainage SOP etc. is assumed. before maintenance; additional LEV (80%).

**Dermal RCR:** 0.00 TRA dermal exposure LEV reduction factor 0.01.

**RCR (all ways):** 0.20

## Identifier: ES10 PROC2

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Storage [CS67]. Product sampling [CS137].

**OC and typical RMMs:** Daily; <15 mins; Product at temp. environment. Samples collected at dedicated sample points.

**RMM to be implemented:** No specific measures identified [E18].

### **Risk characteristics**

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00

**RCR (all ways):** 0.20

## Identifier: ES10 PROC8b

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Bulk product transfer [CS14].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product at temp. environment. Transfers included. Clean lines before decoupling.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11]. Oppure, Operate activity away from sources of substance emission or release [E77]. If technical measures are not feasible [G16]. Wear suitable respiratory protection (conforming to EN140 with type A filter or better) and gloves (type EN374) if regular skin contact likely [PPE21].

### **Risk characteristics**

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.02

**RCR (all ways):** 0.70

## Identifier: ES10 PROC8b

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Filling of equipment from drums or containers [CS45].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product at temp. environment. Pumping from drums to equipment.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### **Risk characteristics**

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.02

**RCR (all ways):** 0.70

## Identifier: ES13 PROC3

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Ground drilling operations [CS116].

**OC and typical RMMs:** Daily; 1 - 4 hours; Product at temp. environment. Inside. Closed equipment, sample point included or with venting.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.49

**Dermal RCR:** 0.00

**RCR (all ways):** 0.49

## Identifier: ES13 PROC4

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Ground drilling operations [CS116].

**OC and typical RMMs:** Daily; 1 - 4 hours; Product at temp. environment. Outside.

**RMM to be implemented:** Make sure the operation is done outdoors [E69]

### *Risk characteristics*

**RCR Inhalation:** 0.39

**Dermal RCR:** 0.02

**RCR (all ways):** 0.41

## Identifier: ES13 PROC4

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Solid filtering operations - steam exposures [CS118].

**OC and typical RMMs:** Daily; >4 hours. Inside. Product temperature approx. 60°C. LEV.

**RMM to be implemented:** Ensure material transfers are under containment or extract ventilation [E66].

### *Risk characteristics*

**RCR Inhalation:** 0.39

**Dermal RCR:** 0.02

**RCR (all ways):** 0.41

## Identifier: ES13 PROC4

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Solid filtering operations - aerosol exposures [CS119].

**OC and typical RMMs:** Daily; >4 hours. Inside. Product temperature approx. 60°C. LEV.

**RMM to be implemented:** Ensure material transfers are under containment or extract ventilation [E66].

### *Risk characteristics*

**RCR Inhalation:** 0.39

**Dermal RCR:** 0.02

**RCR (all ways):** 0.41

## Identifier: ES13 PROC8a

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Filtering operations of solids [CS117].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product at temp. environment. Localized aspiration.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### *Risk characteristics*

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.04

**RCR (all ways):** 0.72

## Identifier: ES13 PROC3

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Treatment and disposal of filtered solids [CS121].

**OC and typical RMMs:** Daily; 1 - 4 hours; Product at temp. environment. Outside. Base oil content 1-5%. Localized aspiration.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.49

**Dermal RCR:** 0.00

**RCR (all ways):** 0.49

## Identifier: ES13 PROC3

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** In-Process Sampling [CS2].

**OC and typical RMMs:** Daily; <15 mins; Product at temp. environment. Indoor or outdoor Sample point enclosed or vented.

**RMM to be implemented:** No specific provision identified [EI18]

### **Risk characteristics**

**RCR Inhalation:** 0.49

**Dermal RCR:** 0.00

**RCR (all ways):** 0.49

## Identifier: ES13 PROC1

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** General exposures (closed systems) [CS15].

**OC and typical RMMs:** Daily; >4 hours; Product at temp. environment. Outside.

**RMM to be implemented:** No specific provision identified [EI18]

### **Risk characteristics**

**RCR Inhalation:** 0.00

**Dermal RCR:** 0.00

**RCR (all ways):** 0.00

## Identifier: ES13 PROC8a

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Pouring from small containers [CS9].

**OC and typical RMMs:** Daily; <15 mins; Product at temp. environment. Indoor or outdoor

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11]. Wear suitable gloves tested to EN374 [PPE15].

### **Risk characteristics**

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.04

**RCR (all ways):** 0.72

## Identifier: ES13 PROC4

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** General exposures (open systems) [CS16].

**OC and typical RMMs:** Daily; >4 hours; Product at temp. environment. Localized or external aspiration.

**RMM to be implemented:** Make sure the operation is performed outdoors [E69].

### **Risk characteristics**

**RCR Inhalation:** 0.27 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.02

**RCR (all ways):** 0.29

## Identifier: ES13 PROC8a

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Cleaning and maintenance of equipment [CS39].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product at temp. environment. Collection of line waste in containers. Lines included. Retain washes in sealed storage pending disposal or use as a recycled material in subsequent formulations. PPE.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11]. Wear suitable gloves tested to EN374 [PPE15].

### **Risk characteristics**

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.04

**RCR (all ways):** 0.72

## Identifier: ES13 PROC1

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Batch process [CS55].

**OC and typical RMMs:** Continuous; Daily; 8 hours. Process included. Closed/semi-closed sampling point.

**RMM to be implemented:** No specific provision identified [EI18]

### **Risk characteristics**

**RCR Inhalation:** 0.00

**Dermal RCR:** 0.00

**RCR (all ways):** 0.00

## Identifier: ES13 PROC2

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Batch process [CS55]. Product sampling [CS137].

**OC and typical RMMs:** Continuous; Daily; 8 hours. Process included. Closed/semi-closed sampling point.

**RMM to be implemented:** Provide extract ventilation in points where emissions occur [E54].

### **Risk characteristics**

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00

**RCR (all ways):** 0.20



## Identifier: ES14 PROC1

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Material transfers [CS3].

**OC and typical RMMs:** Daily; 1 - 4 hours; Room temp. Transfers included. Clean lines before decoupling.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.00

**Dermal RCR:** 0.00

**RCR (all ways):** 0.00

## Identifier: ES14 PROC2

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Material transfers [CS3]. Product sampling [CS137].

**OC and typical RMMs:** Daily; 1 - 4 hours; Room temp. Transfers included. Clean lines before decoupling.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00

**RCR (all ways):** 0.20

## Identifier: ES14 PROC3

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Material transfers [CS3]. Batch process [CS55]. (closed systems) [CS107].

**OC and typical RMMs:** Daily; 1 - 4 hours; Room temp. Transfers included. Clean lines before decoupling.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.49

**Dermal RCR:** 0.00

**RCR (all ways):** 0.49

## Identifier: ES14 PROC8b

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Kegs/Batch Transfers [CS8].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Room temp. Pumping from drums to equipment.

**RMM to be implemented:** Provide a good standard of controlled ventilation (10 to 15 air changes per hour) [E40].

### *Risk characteristics*

**RCR Inhalation:** 0.29 Ventilation dilution efficiency 70%.

**Dermal RCR:** 0.02

**RCR (all ways):** 0.31

## Identifier: ES14 PROC3

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Mixing operations (closed systems) [CS29].

**OC and typical RMMs:** Daily; >4 hours. Mixers included or vented.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.49

**Dermal RCR:** 0.00

**RCR (all ways):** 0.49

## Identifier: ES14 PROC4

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Mixing operations (open systems) [CS30].

**OC and typical RMMs:** Daily; >4 hours. Improved general ventilation.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.39

**Dermal RCR:** 0.02

**RCR (all ways):** 0.41

## Identifier: ES14 PROC14

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Stamping forming [CS31].

**OC and typical RMMs:** Daily; >4 hours; Room temp. PPE.

**RMM to be implemented:** Provide a good standard of controlled ventilation (10 to 15 air changes per hour) [E40].

### *Risk characteristics*

**RCR Inhalation:** 0.29 Ventilation dilution efficiency 70%.

**Dermal RCR:** 0.01

**RCR (all ways):** 0.30



## Identifier: ES14 PROC6

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Casting operations [CS32].

**OC and typical RMMs:** Daily; 1 - 4 hours. High temperature, sufficient to create fumes. Improved general ventilation. PPE.

**RMM to be implemented:** Provide extract ventilation in points where emissions occur [E54].

### *Risk characteristics*

**RCR Inhalation:** 0.49 TRA LEV: 90% efficiency

**Dermal RCR:** 0.00 TRA dermal exposure LEV reduction factor 0.05.

**RCR (all ways):** 0.49

## Identifier: ES14 PROC7

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Machine spraying.

**OC and typical RMMs:** Daily; 1 - 4 hours; Room temp. Production line included or ventilated. Automation.

**RMM to be implemented:** Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings [E60].

### *Risk characteristics*

**RCR Inhalation:** 0.25 TRA LEV: 95% efficiency.

**Dermal RCR:** 0.01 TRA dermal exposure LEV reduction factor 0.05.

**RCR (all ways):** 0.25

## Identifier: ES14 PROC10

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Manual application by roller or brush [CS13].

**OC and typical RMMs:** Daily; 1 - 4 hours; Room temp. PPE.

**RMM to be implemented:** Provide a good standard of controlled ventilation (10 to 15 air changes per hour) [E40].

### *Risk characteristics*

**RCR Inhalation:** 0.29 Ventilation dilution efficiency 70%.

**Dermal RCR:** 0.07

**RCR (all ways):** 0.37

## Identifier: ES14 PROC7

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Manual spraying

**OC and typical RMMs:** Daily; 1 - 4 hours; Room temp. PPE, mask.

**RMM to be implemented:** Carry out in a vented booth or extracted enclosure [E57].

### *Risk characteristics*

**RCR Inhalation:** 0.05 TRA LEV: 99% efficiency.

**Dermal RCR:** 0.11

**RCR (all ways):** 0.16

## Identifier: ES14 PROC1

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Storage [CS67].

**OC and typical RMMs:** Daily; 8 hours; Room temp. Samples collected at dedicated sample points.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.00

**Dermal RCR:** 0.00

**RCR (all ways):** 0.00

## Identifier: ES14 PROC2

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Storage [CS67]. With occasional controlled exposure [CS137]

**OC and typical RMMs:** Daily; 8 hours; Room temp. Samples collected at dedicated sample points.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00

**RCR (all ways):** 0.20

## Identifier: ES16 PROC15

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Laboratory [CS36]. On a small scale [CS61]. Handling of small amounts (<1000ml) for more than 4 hours/day - under hood.

**OC and typical RMMs:** Continuous; Daily; >4 hours; Room temp. Hood or ventilated glove box Selected disposable gloves.

**RMM to be implemented:** No specific measures identified [E118].

### **Risk characteristics**

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00 TRA dermal exposure LEV reduction factor 0.1.

**RCR (all ways):** 0.20

## Identifier: ES16 PROC10

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Cleaning [CS47]. Application by roller, brush [CS51]. Cleaning of containers and vessels [CS103]. Cleaning of equipment, glass etc. under general ventilation for 15 min - 1 hour/day.

**OC and typical RMMs:** Continuous; Daily; 15min - 1 hour/day; Room temp. Controlled general ventilation (10 air changes per hour). Selected disposable gloves.

**RMM to be implemented:** Provide a good standard of controlled ventilation (10 to 15 air changes per hour) [E40].

### **Risk characteristics**

**RCR Inhalation:** 0.29 Ventilation dilution efficiency 70%.

**Dermal RCR:** 0.07

**RCR (all ways):** 0.37

## Identifier: ES18 PROC1

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Bulk transfer [CS14]

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Room temp. Transfers included. Clean lines before decoupling.

**RMM to be implemented:** No specific measures identified [E118].

### **Risk characteristics**

**RCR Inhalation:** 0.00

**Dermal RCR:** 0.00

**RCR (all ways):** 0.00

## Identifier: ES18 PROC2

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Bulk product transfer [CS14]. Product sampling [CS137].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Room temp. Transfers included. Clean lines before decoupling.

**RMM to be implemented:** No specific measures identified [E118].

### **Risk characteristics**

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00

**RCR (all ways):** 0.20

## Identifier: ES18 PROC3

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Bulk product transfer [CS14]. Batch process [CS55].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Room temp. Transfers included. Clean lines before decoupling.

**RMM to be implemented:** No specific measures identified [E118].

### **Risk characteristics**

**RCR Inhalation:** 0.49

**Dermal RCR:** 0.00

**RCR (all ways):** 0.49

## Identifier: ES18 PROC4

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Bulk transfer [CS14]

**OC and typical RMMs:** Daily; 15min - 1 hour; Room temp. Transfers included. Clean lines before decoupling.

**RMM to be implemented:** No specific measures identified [E118].

### **Risk characteristics**

**RCR Inhalation:** 0.39

**Dermal RCR:** 0.02

**RCR (all ways):** 0.41

## Identifier: ES18 PROC8b

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Kegs/Batch Transfers [CS8]. Dedicated system [CS81].

**OC and typical RMMs:** Continuous; Daily; 15min - 1 hour; Room temp. Pumping from drums to tanks.

**RMM to be implemented:** Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings [E60].

### **Risk characteristics**

**RCR Inhalation:** 0.03 TRA LEV: 97% efficiency.

**Dermal RCR:** 0.00 TRA dermal exposure LEV reduction factor 0.1.

**RCR (all ways):** 0.03

## Identifier: ES18 PROC9

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Pelletizing [CS53]. (closed systems) [CS107].

**OC and typical RMMs:** Daily; >4 hours; Room temp. Operations included. Size of openings minimized.

**RMM to be implemented:** Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings [E60].

### **Risk characteristics**

**RCR Inhalation:** 0.10 TRA LEV: 90% efficiency.

**Dermal RCR:** 0.00 TRA dermal exposure LEV reduction factor 0.1.

**RCR (all ways):** 0.10

## Identifier: ES18 PROC8a

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Filling of equipment from drums or containers [CS45].

**OC and typical RMMs:** Daily; 1 - 4 hours; Room temp. Pour carefully. Worker training.

**RMM to be implemented:** Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings [E60].

### **Risk characteristics**

**RCR Inhalation:** 0.10 TRA LEV: 90% efficiency.

**Dermal RCR:** 0.00 TRA dermal exposure LEV reduction factor 0.1.

**RCR (all ways):** 0.10

## Identifier: ES18 PROC2

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** General exposures (closed systems) [CS15].

**OC and typical RMMs:** Daily; >4 hours; Room temp.

**RMM to be implemented:** No specific measures identified [E18].

### **Risk characteristics**

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00

**RCR (all ways):** 0.209

## Identifier: ES18 PROC4

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** General exposures (open systems) [CS16].

**OC and typical RMMs:** Daily; >4 hours; Room temp. Ventilated area.

**RMM to be implemented:** No specific measures identified [E18].

### **Risk characteristics**

**RCR Inhalation:** 0.39

**Dermal RCR:** 0.02

**RCR (all ways):** 0.41

## Identifier: ES18 PROC4

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** General exposures (open systems) [CS16].

**OC and typical RMMs:** Daily; >4 hours. (product at 80°C)

**RMM to be implemented:** No specific measures identified [E18].

### **Risk characteristics**

**RCR Inhalation:** 0.39

**Dermal RCR:** 0.02

**RCR (all ways):** 0.41

## Identifier: ES18 PROC9

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Rework rejected items [CS19].

**OC and typical RMMs:** Daily; >4 hours; Room temp. Working methods. Empty before the activity. Keep spills.

**RMM to be implemented:** Drain down system prior to equipment break-in or maintenance [E65].

### **Risk characteristics**

**RCR Inhalation:** 0.20 Additional exposure modifier: 0.2. Discharging SOPs are equal to an 80% reduction in LEVs (x0.2).

**Dermal RCR:** 0.02

**RCR (all ways):** 0.21

## Identifier: ES18 PROC8a

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Equipment Maintenance [CS5].

**OC and typical RMMs:** Daily; 1 - 4 hours; Product temp. environment. Working methods. Empty before the activity. Keep spills. Gloves.

**RMM to be implemented:** Drain down system prior to equipment break-in or maintenance [E65].

### **Risk characteristics**

**RCR Inhalation:** 0.20 Additional exposure modifier: 0.2. Discharging SOPs are equal to an 80% reduction in LEVs (x0.2).

**Dermal RCR:** 0.00

**RCR (all ways):** 0.20

## Identifier: ES18 PROC1

### *Operating Conditions and Risk Management Measures*

Contributing scenario: Storage [CS67].

OC and typical RMMs: Daily; 8 hours; Product temp. environment. Samples collected at dedicated sample points.

RMM to be implemented: No specific measures identified [E118].

### *Risk characteristics*

RCR Inhalation: 0.00

Dermal RCR: 0.00

RCR (all ways): 0.00

## Identifier: ES18 PROC2

### *Operating Conditions and Risk Management Measures*

Contributing scenario: Storage [CS67]. Product sampling [CS137].

OC and typical RMMs: Daily; 8 hours; Room temp. Samples collected at dedicated sample points.

RMM to be implemented: No specific measures identified [E118].

### *Risk characteristics*

RCR Inhalation: 0.20

Dermal RCR: 0.00

RCR (all ways): 0.20

## Identifier: ES20 PROC1

### *Operating Conditions and Risk Management Measures*

Contributing scenario: Material transfers [CS3].

OC and typical RMMs: Daily; 15 mins - 1 hour; Room temp. Transfers included. Clean lines before decoupling.

RMM to be implemented: No specific measures identified [E118].

### *Risk characteristics*

RCR Inhalation: 0.00

Dermal RCR: 0.00

RCR (all ways): 0.00

## Identifier: ES20 PROC2

### *Operating Conditions and Risk Management Measures*

Contributing scenario: Material transfers [CS3]. Product sampling [CS137].

OC and typical RMMs: Daily; 15 mins - 1 hour; Room temp. Transfers included. Clean lines before decoupling.

RMM to be implemented: No specific measures identified [E118].

### *Risk characteristics*

RCR Inhalation: 0.20

Dermal RCR: 0.00

RCR (all ways): 0.20

## Identifier: ES20 PROC8b

### *Operating Conditions and Risk Management Measures*

Contributing scenario: Material transfers [CS3]. Dedicated system [CS81].

OC and typical RMMs: Daily; 15 mins - 1 hour; Room temp. General ventilation. Minimize spills.

RMM to be implemented: Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### *Risk characteristics*

RCR Inhalation: 0.69 Ventilation dilution effectiveness 30%.

Dermal RCR: 0.02

RCR (all ways): 0.70

## Identifier: ES20 PROC1

### *Operating Conditions and Risk Management Measures*

Contributing scenario: Bulk weighing [CS91].

OC and typical RMMs: Daily; 15 mins - 1 hour; Room temp. Activity included.

RMM to be implemented: No specific measures identified [E118].

### *Risk characteristics*

RCR Inhalation: 0.00

Dermal RCR: 0.00

RCR (all ways): 0.00

## Identifier: ES20 PROC2

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Bulk weighing [CS91]. Product sampling [CS137].  
**OC and typical RMMs:** Daily; 15 mins - 1 hour; Room temp. Activity included.  
**RMM to be implemented:** No specific measures identified [E118].

### **Risk characteristics**

**RCR Inhalation:** 0.20  
**Dermal RCR:** 0.00  
**RCR (all ways):** 0.20

## Identifier: ES20 PROC9

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Small Scale Weighing [CS90].  
**OC and typical RMMs:** Daily; 15 mins - 1 hour; Room temp. LEV. Minimize spills. Operator training.  
**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### **Risk characteristics**

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.  
**Dermal RCR:** 0.02  
**RCR (all ways):** 0.70

## Identifier: ES20 PROC3

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Additive premixes [CS92].  
**OC and typical RMMs:** Daily; 15 mins - 1 hour; Room temp. LEV. Minimize spills.  
**RMM to be implemented:** No specific measures identified [E118].

### **Risk characteristics**

**RCR Inhalation:** 0.49  
**Dermal RCR:** 0.00  
**RCR (all ways):** 0.49

## Identifier: ES20 PROC4

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Additive premixes [CS92].  
**OC and typical RMMs:** Daily; 15 mins - 1 hour; Room temp. LEV. Minimize spills.  
**RMM to be implemented:** No specific measures identified [E118].

### **Risk characteristics**

**RCR Inhalation:** 0.39  
**Dermal RCR:** 0.02  
**RCR (all ways):** 0.41

## Identifier: ES20 PROC8b

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Material transfers [CS3]. Dedicated system [CS81].  
**OC and typical RMMs:** Daily; 15 mins - 1 hour; Room temp. Activity included.  
**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### **Risk characteristics**

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.  
**Dermal RCR:** 0.02  
**RCR (all ways):** 0.70

## Identifier: ES20 PROC9

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Material transfers [CS3].  
**OC and typical RMMs:** Daily; 15 mins - 1 hour; Room temp. Activity included.  
**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### **Risk characteristics**

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.  
**Dermal RCR:** 0.02  
**RCR (all ways):** 0.72

## Identifier: ES20 PROC5

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Additive premixes [CS92]. Batch process [CS55].  
**OC and typical RMMs:** Daily; 1 - 4 hours; Room temp. LEV. Minimize spills.  
**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### **Risk characteristics**

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.  
**Dermal RCR:** 0.04  
**RCR (all ways):** 0.72

## Identifier: ES20 PROC6

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Calendering (including Banburys) [CS64].

**OC and typical RMMs:** Daily; >4 hours; High temperatures. LEV. Minimize area/size of openings.

**RMM to be implemented:** Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings [E60].

### *Risk characteristics*

**RCR Inhalation:** 0.49 TRA LEV: 90% efficiency.

**Dermal RCR:** 0.00 TRA dermal exposure LEV reduction factor 0.05.

**RCR (all ways):** 0.49

## Identifier: ES20 PROC6

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Calendering (including Banburys) [CS64].

**OC and typical RMMs:** Daily; >4 hours. High temperatures. LEV. Minimize area/size of openings.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### *Risk characteristics*

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.07

**RCR (all ways):** 0.76

## Identifier: ES20 PROC14

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Pressing uncured rubber blanks [CS73].

**OC and typical RMMs:** Daily; 1 - 4 hours; Room temp. Good general ventilation

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 10 to 15 air changes per hour) [E40].

### *Risk characteristics*

**RCR Inhalation:** 0.29 Ventilation dilution efficiency 70%.

**Dermal RCR:** 0.01

**RCR (all ways):** 0.30

## Identifier: ES20 PROC6

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Vulcanization [CS70].

**OC and typical RMMs:** Daily; > 4 hours. High temperatures. LEV at the points of issue. Minimize area/size of openings. Good general ventilation.

**RMM to be implemented:** Provide a good standard of controlled ventilation (10 to 15 air changes per hour) [E40].

### *Risk characteristics*

**RCR Inhalation:** 0.59 Ventilation dilution efficiency 70%.

**Dermal RCR:** 0.07

**RCR (all ways):** 0.66

## Identifier: ES20 PROC6

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Cooling cured articles [CS71].

**OC and typical RMMs:** Daily; > 4 hours; Room temp. LEV. Aspiration / hood.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### *Risk characteristics*

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.07

**RCR (all ways):** 0.76

## Identifier: ES20 PROC15

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Laboratory activity [CS36]

**OC and typical RMMs:** Daily; >15 mins; Room temp. Localized aspiration at the filling point. PPE.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00

**RCR (all ways):** 0.20

## Identifier: ES20 PROC8a

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Equipment Maintenance [CS5].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Room temp. Collection of line waste in containers. Lines included. Retain washes in sealed storage pending disposal or use as a recycled material in subsequent formulations. PPE.

**RMM to be implemented:** Drain or remove substance from equipment prior to break-in or maintenance [E81]

### *Risk characteristics*

**RCR Inhalation:** 0.10 Additional exposure modifier: 0.1. Ninety percent LEV efficiency is assumed equivalent to the SOPs for drainage etc. before maintenance (0.1).

**Dermal RCR:** 0.04

**RCR (all ways):** 0.13

## Identifier: ES21 PROC1

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** General exposures (closed systems) [CS15]

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product temp. Processes closed.

**RMM to be implemented:** No specific measures identified [EI18].

### **Risk characteristics**

**RCR Inhalation:** 0.00

**Dermal RCR:** 0.00

**RCR (all ways):** 0.00

## Identifier: ES21 PROC2

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** General exposures (closed systems) [CS15]. With sample collection [CS56]. Product sampling [CS137].

**OC and typical RMMs:** Continuous; Daily; 15 mins - 1 hour. Process included. Closed/semi-closed sampling point.

**RMM to be implemented:** No specific provision identified [EI18]

### **Risk characteristics**

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00

**RCR (all ways):** 0.20

## Identifier: ES21 PROC3

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** General exposures (closed systems) [CS15]. Use in contained batch processes [CS37].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product temp. Batch process. Equipment closed. Sample point enclosed or vented.

**RMM to be implemented:** No specific provision identified [EI18]

### **Risk characteristics**

**RCR Inhalation:** 0.49

**Dermal RCR:** 0.00

**RCR (all ways):** 0.49

## Identifier: ES21 PROC4

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** General exposures (open systems) [CS16]. Batch process [CS55]. With sample collection [CS56]. With potential for aerosol generation [CS138].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product temp. Inside. Transfers included. Clean lines before decoupling.

**RMM to be implemented:** No specific measures identified [EI18].

### **Risk characteristics**

**RCR Inhalation:** 0.39

**Dermal RCR:** 0.02

**RCR (all ways):** 0.41

## Identifier: ES21 PROC5

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Batch processes at elevated temperatures [CS136].

**OC and typical RMMs:** Daily; 15 mins - 1 hour. High product temp. Equipment closed. Sample point enclosed or vented.

**RMM to be implemented:** Ensure material transfers are under containment or extract ventilation [E66]. Provide extract ventilation in points where emissions occur [E54].

### **Risk characteristics**

**RCR Inhalation:** 0.20 TRA LEV: 90% efficiency.

**Dermal RCR:** 0.00 TRA dermal exposure LEV reduction factor 0.1.

**RCR (all ways):** 0.20

## Identifier: ES21 PROC6

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** In-Process Sampling [CS2].

**OC and typical RMMs:** Daily; <15 mins; Product temp. Closed or ventilated sample points.

**RMM to be implemented:** No specific measures identified [EI18].

### **Risk characteristics**

**RCR Inhalation:** 0.49

**Dermal RCR:** 0.00

**RCR (all ways):** 0.49

## Identifier: ES21 PROC15

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Laboratory activity [CS36].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product at temp. environment. Inside. Hood. PPE.

**RMM to be implemented:** No specific provision identified [EI18]

### **Risk characteristics**

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00

**RCR (all ways):** 0.20



## Identifier: ES21 PROC8b

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Bulk product transfer [CS14].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product at temp. environment. Collection of line waste in containers. Transfers included. Transfer points with vents. Clean lines before decoupling.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### *Risk characteristics*

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.02

**RCR (all ways):** 0.70

## Identifier: ES21 PROC5

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Mixing operations (open systems) [CS30]. With potential for aerosol generation [CS138].

**OC and typical RMMs:** Daily; 8 hours; Product at temp. environment. Inside. Batch process. LEV, PPE.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### *Risk characteristics*

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.04

**RCR (all ways):** 0.72

## Identifier: ES21 PROC8a

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Transfer from / pour from containers [CS22]. manual [CS34].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product at temp. environment. Inside. Manual transfers. LEV, PPE, RPE.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### *Risk characteristics*

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.04

**RCR (all ways):** 0.72

## Identifier: ES21 PROC8b

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Kegs/Batch Transfers [CS8].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product temp. Inside. Pumps for drums or dedicated drum handling equipment.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### *Risk characteristics*

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.02

**RCR (all ways):** 0.70

## Identifier: ES21 PROC14

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Production of preparations or articles by tableting, compression, extrusion, pelettisation [CS100].

**OC and typical RMMs:** Daily; 8 hours; Product at temp. environment. Inside. LEV, PPE.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### *Risk characteristics*

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.01

**RCR (all ways):** 0.70

## Identifier: ES21 PROC9

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Drum and small package filling [CS6].

**OC and typical RMMs:** Continuous; Daily; 8 hours; Product at temp. environment. Inside. Transfers included. Transfer points with vents.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### *Risk characteristics*

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.02

**RCR (all ways):** 0.70

## Identifier: ES21 PROC8a

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Cleaning and maintenance of equipment [CS39].

**OC and typical RMMs:** Daily; 1 - 4 hours; Product at temp. environment. Inside. Collection of line waste in containers. Lines included. Retain drain downs in sealed storage pending disposal, use as a recycled material in subsequent formulations, or recycle. PPE.

**RMM to be implemented:** Drain down system prior to equipment break-in or maintenance. [E55]

### *Risk characteristics*

**RCR Inhalation:** 0.10 Additional exposure modifier: 0.1. Assumes LEV efficiency equivalent to SOP for drainage etc. before maintenance. RPE (0.1x).

**Dermal RCR:** 0.00 TRA dermal exposure LEV reduction factor 0.1.

**RCR (all ways):** 0.10



## Identifier: ES21 PROC2

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Storage [CS67] With occasional controlled exposure [CS137]

**OC and typical RMMs:** Daily; <15 mins; Product at temp. environment. Samples collected at dedicated sample points.

**RMM to be implemented:** No specific provision identified [EI18]

### *Risk characteristics*

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00

**RCR (all ways):** 0.20

### 3 - PROFESSIONAL USES

Identified professional uses of Toluene and generic exposure scenario.

Table 4 lists the professional uses identified for toluene.

If DUs wish to verify compliance with the ES, they should start with summary table 4 and, based on the textual description of the exposure scenarios, determine their own identified use, the PROC and the ERC associated with their specific activity.

DU can identify the specific scenarios of their interest in section 3.2.1 for the environment, for workers 3.2.2 and 3.2.3 for the consumer, check in section 3.3 the exposure and risk characterization for the environment and for the workers. The operating conditions described in each specific scenario do not necessarily apply to all sites. It may therefore be necessary to apply the graduated scaling method (appropriate adaptation to the actual conditions on site), in order to identify compliance with the conditions described in the exposure scenarios.

**Table 1. Contributing occupational exposure scenarios identified for toluene**

**Identifier use:** ES4 Use in roads and construction

**Description:** Application of surface coatings and binders in road and construction activities, including paving, manual road surfacing and in the application of roofing and water-proofing membranes.

**Sector of use (SU):** 22

**Process categories (PROC):** 1, 2, 8a, 8b, 9, 10, 11, 13

**Environmental Release Categories (ERC):** 8d, 8f

**Identifier use:** ES6 Use in cleaning agents

**Description:** Covers the use as a component of cleaning products including transfer and unloading from drums or containers. Exposures during mixing/diluting in the preparatory phase of cleaning activities (including spraying, brushing, dipping, wiping, automated and by hand).

**Sector of use (SU):** 22

**Process categories (PROC):** 1, 2, 3, 4, 8a, 8b, 10, 11, 13

**Environmental Release Categories (ERC):** 8a, 8d

**Identifier use:** ES8 Use as fuel

**Description:** Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

**Sector of use (SU):** 22

**Process categories (PROC):** 1, 2, 3, 4, 8a, 8b, 16

**Environmental Release Categories (ERC):** 9a, 9b

**Identifier use:** ES11 Use in coatings

**Description:** Covers the use in coatings (paints, inks, adhesives, etc.), including exposures during use (including materials receipt, storage, preparation and bulk and semi-bulk transfer, application by spray, roller, spreader and similar methods and film formation) and equipment cleaning, maintenance and associated laboratory activities.

**Sector of use (SU):** 22

**Process categories (PROC):** 1, 2, 3, 4, 5, 8a, 8b, 10, 11, 13, 15, 19

**Environmental Release Categories (ERC):** 8a, 8d

**Identifier use:** ES15 Use in binding and release agents

**Description:** Covers the use as binders and release agents, including material transfers, mixing, application by spraying and brushing and handling of waste.

**Sector of use (SU):** 22

**Process categories (PROC):** 1, 2, 3, 4, 6, 8a, 8b, 10, 11, 14

**Environmental Release Categories (ERC):** 8a, 8b, 8c, 8d, 8e, 8f

**Identifier use:** ES17 Use as laboratory reagent

**Description:** Use of the substance within laboratory settings, including material transfers and equipment cleaning.

**Sector of use (SU):** 22

**Process categories (PROC):** 10, 15

**Environmental Release Categories (ERC):** 8a

**Identifier use:** ES19 Use in functional fluids

**Description:** Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in professional equipment, including maintenance and related material transfers.

**Sector of use (SU):** 22

**Process categories (PROC):** 1, 2, 3, 8a, 9, 20

**Environmental Release Categories (ERC):** 9a, 9b

#### 3.1 PROFESSIONAL USE OF TOLUENE AND PRODUCTS CONTAINING TOLUENE

**Title:** Professional uses of toluene and products containing toluene

**Sectors of use:** Professional (SU22)

**Process categories:** 1, 2, 3, 4, 5, 6, 7, 8a, 8b, 9, 10, 11, 13, 14, 15, 19, 20

**Environmental Release Categories:** 8a, 8b, 8c, 8d, 8e, 8f, 9a, 9b

**Scope of the process:** Professional processes relevant to toluene and toluene-containing products

## 3.2 OPERATING CONDITIONS AND RISK MANAGEMENT MEASURES

### 3.2.1. Contributing scenario controlling exposure for the environment

**Method used for evaluation:** EUSES 2.1.1 with use of predefined ESVOc SpERC release fractions (see Table 5 for the specific versions of each scenario).

#### **Operating conditions**

**Product features:** Toluene is a liquid of medium volatility. The water solubility of this category is 573 mg/l; the vapour pressure is 4030 Pa at 20°C; the log Kow is 2.73. Toluene is readily biodegradable.

**Frequency and duration of use:** Issue days: 365 days/year

**Quantity used:** See table 5.

**Environmental factors not influenced by risk management:** See table 5.

**Other given operational conditions affecting environmental exposure:** See table 5.

#### **Risk Management Measures**

**Local technical conditions and measures to reduce and limit discharges, air emissions and soil release:**

Treat air emission to provide a typical removal efficiency of >0% [TCR7]. Typical onsite wastewater treatment technology provides removal efficiency of 93.3% [TCR11]. ES6, ES8, ES17, ES19: Soil emission controls are not applicable as there is no direct release to soil [TCR4].

**Organizational measures to prevent/limit release from site:**

ES4, ES6, ES8, ES11, ES17, ES19: Do not apply industrial sludge to natural soils [OMS2].

ES15: Not applicable.

**Conditions and measures for the domestic sewage treatment plan:**

Estimated substance removal from wastewater via municipal sewage treatment 93.3 (%) [STP3].

Assumed domestic sewage treatment plant flow 2000 (m³/g) [STP5].

**Conditions and measures for external treatment of waste for disposal:**

ES4, ES6, ES11, ES15, ES17, ES19: External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3].

ES8: This substance is consumed during use and no waste of the substance is generated [ETW5].

**Conditions and measures for external recovery of waste:**

ES4, ES6, ES11, ES15, ES17, ES19: External recovery and recycling of waste should comply with applicable local and/or national regulations [ERW1].

ES8: This substance is consumed during use and no waste of the substance is generated [EWR3].

### 3.2.2 Contributing scenario controlling exposure for workers

**Product features:** Liquid, vapour pressure 0.5 - 10 kPa [OC4].

**Concentration of the substance in the product:** Covers a percentage substance in the product up to 100% (unless otherwise stated) [G13].

**Frequency and duration of use/exposure:** Covers a daily exposure up to 8 hours (unless otherwise specified) [G2].

**Human factors not influenced by risk management:** Not applicable.

**Other given operating conditions affecting employee exposure:**

Assumes use of the product at not more than 20°C above ambient temperature, unless otherwise specified [G15].

Assumes a good basic standard of occupational hygiene has been implemented [G1].

Users are advised to consider national Occupational Exposure Limits or other equivalent values [G38].

#### **Operational conditions and risk management measures affecting worker exposure**

**General measures (skin irritants) (G19):**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear suitable gloves (tested to EN374) if hand contact with substance is likely. Remove impurities/product spills as they occur. Immediately remove any contamination with skin. Provide basic staff training so that exposure is minimised and any skin problems are reported (E3).

In addition (where there is potential for further significant aerosol exposure): Other skin protection measures, such as impermeable overalls and visors, will be necessary during activities involving high dispersion with the possible release of aerosols.

**General measures for assessing the inhalation risk - qualitative assessment:**

Do not swallow. Implement a good basic standard of occupational hygiene. Avoid contact with contaminated tools and objects. Management/supervision in place to check that the RMMs implemented are being used correctly and OCs followed. Staff training on good practices. Adequate standard of personal hygiene.

For the operational conditions and risk management measures for each scenario, see Table 6.

### 3.2.3 Contributing scenario controlling consumer exposure

There is no consumer exposure for this scenario.

## 3.3 EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

### 3.3.1 Contributing scenario for estimating environmental exposure

**Tool used for evaluation:** EUSES 2.1.1 with use of predefined ESVOc SpERC release fractions (see Table 5 for the specific versions of each scenario).

When complying with the recommended risk management measures (RMMs) and operating conditions (OCs), exposure is not expected to exceed the PNECs and the risk characterisation ratios should be less than 1, as shown in Table 5.

### 3.3.2 Contributing scenario for estimating worker exposure

**Tool used for evaluation** ECETOC TRA v2 ([www.ecetoc.org/tra](http://www.ecetoc.org/tra))

**General parameters used:**

Environment type: professional

Dustiness: low (liquid substance)

Duration of exposure: > 4 hours/day, unless otherwise stated in the RMMs

Ventilation use: none, unless otherwise stated in the RMMs

Use of respiratory protection: none, unless otherwise stated in the RMMs

Use of skin protection: none, unless otherwise stated in the RMMs

Concentration in preparations: > 25%

When complying with the recommended risk management measures (RMMs) and operating conditions (OCs), exposure is not expected to exceed the DNELs and the risk characterisation ratios should be less than 1, as shown in table 6.

### 3.3.3 Contributing scenario for estimating consumer exposure

There is no consumer exposure for this scenario.

## 3.4. GUIDELINES FOR THE DU TO VERIFY COMPLIANCE WITH THE EXPOSURE SCENARIO

### 3.4.1 Guidelines for DU to verify compliance with the environmental exposure scenario

Confirm that the RMMs and OCs are as described or have equivalent efficiency.

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1].

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2].

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination [DSU3].

Further details on scaling and control technologies are provided in SPERC factsheet.

### 3.4.2 Guidelines for DU to verify compliance with the contributing scenario for worker exposure estimation

Predicted exposures are not expected to exceed the DNEL when the RMMs and OCs outlined in Table 3 are implemented (G22).

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels [G23].

Risk characterisation ratios (RCRs) are calculated by comparing the estimated exposure levels with the corresponding DNELs (RCR = exposure level/DNEL).

**Table 2.**

identifiers			Operating Conditions and Risk Management Measures						Risk characterization					
		Quantity used	Dilution factors		RMM to be implemented									
	ERC/ SpERC	Tonnage per site t/ year	Fresh water	Sea water	Water treatment efficiency %	Air abatement efficiency %	Waste treatment total removal %	Domestic wastewater treatment flow m³/d	RCR fresh water	RCR marine water	RCR freshwater sediments	RCR marine water sediments	RCR soil	RCR STP extension
ES4	ESVOC SpERC 8.15.v1	6	10	100	>93.3%	>0%	93.3%	2000	2.86E-03	2.59E-04	2.86E-03	2.59E-04	1.33E-03	3.94E-04
ES6	ESVOC SpERC 8.4b.v1	3	10	100	>93.3%	>0%	93.3%	2000	2.07E-03	1.80E-04	2.07E-03	1.80E-04	6.42E-05	1.97E-06
ES8	ESVOC SpERC 9.12b.v1	30	10	100	>93.3%	>0%	93.3%	2000	2.07E-03	1.80E-04	2.07E-03	1.80E-04	6.36E-05	1.97E-06
ES11	ESVOC SpERC 8.3b.v1	30	10	100	>93.3%	>0%	93.3%	2000	6.01E-03	5.74E-04	6.01E-03	5.74E-04	6.45E-03	1.97E-03
ES15	ESVOC SpERC 8.10b.v1	3	10	100	>93.3%	>0%	93.3%	2000	3.05E-03	2.78E-04	3.05E-03	2.78E-04	1.57E-03	4.92E-04
ES17	ESVOC SpERC 8.17.v1	3	10	100	>93.3%	>0%	93.3%	2000	2.18E-02	2.15E-03	2.18E-02	2.15E-03	2.93E-02	9.85E-03
ES19	ESVOC SpERC 9.13b.v1	3	10	100	>93.3%	>0%	93.3%	2000	3.05E-03	2.78E-04	3.05E-03	2.78E-04	1.52E-03	4.92E-04

**Table 6. OC, RMM, Risk Characterization - Workers - Professional use.**

**Identifier: ES4 PROC8a**

**Operating Conditions and Risk Management Measures**

**Contributing scenario:** Kegs/Batch Transfers [CS8]. Non-dedicated facility [CS82].

**OC and typical RMMs:** Daily; > 4 hours; Product at temp. environment. Product transfer - non-dedicated systems.

**RMM to be implemented:** Provide a good standard of controlled ventilation (10 to 15 air changes per hour) [E40].

**Risk characteristics**

**RCR Inhalation:** 0.59 Ventilation dilution efficiency 70%.

**Dermal RCR:** 0.00

**RCR (all ways):** 0.59

**Identifier: ES4 PROC8b**

**Operating Conditions and Risk Management Measures**

**Contributing scenario:** Kegs/Batch Transfers [CS8]. Dedicated system [CS81].

**OC and typical RMMs:** Daily; > 4 hours. High product temperature. Product transfer - dedicated systems.

**RMM to be implemented:** Ensure material transfers are under containment or extract ventilation [E66].

**Risk characteristics**

**RCR Inhalation:** 0.49 TRA LEV: 90% efficiency.

**Dermal RCR:** 0.00 TRA dermal exposure LEV reduction factor 0.1.

**RCR (all ways):** 0.49

**Identifier: ES4 PROC10**

**Operating Conditions and Risk Management Measures**

**Contributing scenario:** Manual application by roller or brush [CS13].

**OC and typical RMMs:** Daily; >4 hours; Product at temp. environment. Outside.

**RMM to be implemented:** Make sure the operation is performed outdoors [E69].

**Risk characteristics**

**RCR Inhalation:** 0.14 Ventilation dilution effectiveness 30%. TRA factor RPE half mask.

**Dermal RCR:** 0.07

**RCR (all ways):** 0.21

**Identifier: ES4 PROC11**

**Operating Conditions and Risk Management Measures**

**Contributing scenario:** Spraying, machine mist application [CS25].

**OC and typical RMMs:** Daily; > 4 hours; Product at temp. environment. Outside. Mixed at 50% with diesel. Enclosed equipment, operator far from spraying point. PPE.

**RMM to be implemented:** Make sure the operation is performed outdoors [E69]. Wear a respirator conforming to EN140 with type A filter or better [PPE22].

**Risk characteristics**

**RCR Inhalation:** 0.14 TRA LEV: 80% efficiency. Ventilation dilution effectiveness 30%. TRA factor RPE half mask.

**Dermal RCR:** 0.01 TRA dermal exposure LEV reduction factor 0.02.

**RCR (all ways):** 0.14

**Identifier: ES4 PROC13**

**Operating Conditions and Risk Management Measures**

**Contributing scenario:** Immersion, dipping and pouring [CS4].

**OC and typical RMMs:** Daily; > 4 hours; Product at temp. environment. Outside.

**RMM to be implemented:** Make sure the operation is performed outdoors [E69].

**Risk characteristics**

**RCR Inhalation:** 0.59 Ventilation dilution efficiency 70%.

**Dermal RCR:** 0.04

**RCR (all ways):** 0.62

**Identifier: ES4 PROC8a**

**Operating Conditions and Risk Management Measures**

**Contributing scenario:** Cleaning and maintenance of equipment [CS39].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product at temp. environment. Collection of line waste in sealed containers pending disposal. PPE.

**RMM to be implemented:** Provide a good standard of controlled ventilation (10 to 15 air changes per hour) [E40]. Retain drain downs in sealed storage pending disposal or for subsequent recycle [ENV4].

**Risk characteristics**

**RCR Inhalation:** 0.59 Ventilation dilution efficiency 70%.

**Dermal RCR:** 0.04

**RCR (all ways):** 0.62

## Identifier: ES4 PROC1

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Storage [CS67].

**OC and typical RMMs:** Daily; 8 hours; Room temp. Samples collected at dedicated sample points.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.00

**Dermal RCR:** 0.00

**RCR (all ways):** 0.00

## Identifier: ES4 PROC2

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Storage [CS67]. Product sampling [CS137].

**OC and typical RMMs:** Daily; 8 hours; Product temp. Samples collected at dedicated sample points.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.39

**Dermal RCR:** 0.00

**RCR (all ways):** 0.39

## Identifier: ES6 PROC8b

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Filling of equipment from drums or containers [CS45]. Dedicated system [CS81].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product temp. (<10%) Manual transfer from small packs to equipment for application.

**RMM to be implemented:** Provide a good standard of controlled ventilation (10 to 15 air changes per hour) [E40].

### *Risk characteristics*

**RCR Inhalation:** 0.29 Ventilation dilution efficiency 70%.

**Dermal RCR:** 0.02

**RCR (all ways):** 0.31

## Identifier: ES6 PROC2

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Automated process with (semi) closed systems [CS93]. Use in contained systems [CS38].

**OC and typical RMMs:** Daily; 8 hours. Process included; closed.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.39

**Dermal RCR:** 0.00

**RCR (all ways):** 0.40

## Identifier: ES6 PROC3

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Automated process with (semi) closed systems [CS93]. Use in contained systems [CS38]. Kegs/Batch Transfers [CS8].

**OC and typical RMMs:** Daily; 15 mins - 1 hour. Process included; closed.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.49

**Dermal RCR:** 0.00

**RCR (all ways):** 0.49

## Identifier: ES6 PROC4

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Semi-automated process. (e.g.: semi-automatic application of floor care and maintenance products) [CS76].

**OC and typical RMMs:** Daily; 8 hours. Semi-included process; closed.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### *Risk characteristics*

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.02

**RCR (all ways):** 0.70

## Identifier: ES6 PROC8a

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Filling of equipment from drums or containers [CS45]. Outdoor [OC9].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Room temp. Outside. Manual transfer from small packs to equipment for application.

**RMM to be implemented:** Make sure the operation is performed outdoors [E69]. Avoid carrying out activities involving exposure for more than 4 hours [OC28].

### *Risk characteristics*

**RCR Inhalation:** 0.82 Ventilation dilution effectiveness 30%. TRA duration factor 1-4 hours.

**Dermal RCR:** 0.04

**RCR (all ways):** 0.86

## Identifier: ES6 PROC13

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Manual cleaning of surfaces. Immersion, dipping and pouring [CS4].

**OC and typical RMMs:** Daily; >4 hours; Room temp. No local aspiration on open surfaces; eliminate leaks as soon as they occur. PPE.

**RMM to be implemented:** Provide a good standard of controlled ventilation (10 to 15 air changes per hour) [E40].

### *Risk characteristics*

**RCR Inhalation:** 0.59 Ventilation dilution efficiency 70%.

**Dermal RCR:** 0.04

**RCR (all ways):** 0.62

## Identifier: ES6 PROC10

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Cleaning with low-pressure washers [CS42]. Application by roller, brush [CS51]. No spraying [CS60].

**OC and typical RMMs:** Daily; >4 hours; Room temp. Blends at 5% max. Specific training of workers. PPE.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11]. Wear a respirator conforming to EN140 with type A filter or better [PPE22].

### *Risk characteristics*

**RCR Inhalation:** 0.14 Ventilation dilution effectiveness 30%. TRA factor RPE half mask.

**Dermal RCR:** 0.07

**RCR (all ways):** 0.21

## Identifier: ES6 PROC11

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Cleaning with high pressure washers [CS44]. Spray application [CS10]. Indoor [OC8].

**OC and typical RMMs:** Daily; 8 hours; Room temp. Inside. Blends at 0.5% max. Specific training of workers. PPE.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11]. Wear a respirator conforming to EN140 with type A filter or better [PPE22].

### *Risk characteristics*

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%. TRA factor RPE half mask.

**Dermal RCR:** 0.28

**RCR (all ways):** 0.97

## Identifier: ES6 PROC11

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Cleaning with high pressure washers [CS44]. Spray application [CS10]. Outdoor [OC9].

**OC and typical RMMs:** Continuous; Daily; 8 hours; Room temp. Outside. Blends at 0.5% max. Specific training of workers. PPE.

**RMM to be implemented:** Make sure the operation is performed outdoors [E69]. Wear a respirator conforming to EN140 with type A filter or better [PPE22].

### *Risk characteristics*

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%. TRA factor RPE half mask.

**Dermal RCR:** 0.28

**RCR (all ways):** 0.97

## Identifier: ES6 PROC10

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Manual cleaning of surfaces. Spraying [CS10].

**OC and typical RMMs:** Daily; >4 hours; Room temp. Blends at 10% max. Waste is washed together with the wastewater, keep cleaning cloths in a container.

**RMM to be implemented:** Provide a basic standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan [E1]. Wear a respirator conforming to EN140 with type A filter or better [PPE22].

### *Risk characteristics*

**RCR Inhalation:** 0.14 Ventilation dilution effectiveness 30%. TRA factor RPE half mask.

**Dermal RCR:** 0.07

**RCR (all ways):** 0.21

## Identifier: ES6 PROC10

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Ad-hoc manual application via trigger sprays, dipping, etc. [CS27]. Application by roller, brush [CS51].

**OC and typical RMMs:** Daily; >4 hours; Room temp. In a workshop (with LEV). Waste is washed together with the wastewater, keep cleaning cloths in a container.

**RMM to be implemented:** Provide extract ventilation in points where emissions occur [E54].

### *Risk characteristics*

**RCR Inhalation:** 0.39. TRA LEV: 80% efficiency.

**Dermal RCR:** 0.00 TRA dermal exposure. LEV reduction factor 0.05.

**RCR (all ways):** 0.40

## Identifier: ES6 PROC10

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Ad-hoc manual application via trigger sprays, dipping, etc. [CS27]. Application by roller, brush [CS51].

**OC and typical RMMs:** Daily; <1 hour; Room temp. Occasional use. Waste is washed together with the wastewater, keep cleaning cloths in a container.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11]. Wear a respirator conforming to EN140 with type A filter or better [PPE22].

### *Risk characteristics*

**RCR Inhalation:** 0.14 Ventilation dilution effectiveness 30%. TRA factor RPE half mask.

**Dermal RCR:** 0.07

**RCR (all ways):** 0.21

## Identifier: ES6 PROC4

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Application of cleaning products in closed systems [CS101]. Outdoor [OC9].

**OC and typical RMMs:** Daily; 8 hours. Process included. closed/semi-closed.

**RMM to be implemented:** Make sure the operation is performed outdoors [E69].

### *Risk characteristics*

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.02

**RCR (all ways):** 0.70

## Identifier: ES6 PROC4

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Cleaning of medical devices [CS74].

**OC and typical RMMs:** Daily; 8 hours; Room temp. Process included. closed/semi-closed.

**RMM to be implemented:** Provide extract ventilation in points where emissions occur [E54].

### *Risk characteristics*

**RCR Inhalation:** 0.20 TRA LEV: 80% efficiency.

**Dermal RCR:** 0.00 TRA dermal exposure. LEV reduction factor 0.1.

**RCR (all ways):** 0.20

## Identifier: ES6 PROC8a

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Cleaning and maintenance of equipment [CS39].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product temp. Collection of line waste in containers. Indoor/Outdoor. Lines included. Retain drain downs in sealed storage pending disposal, use as a recycled material in subsequent formulations, or recycle. PPE.

**RMM to be implemented:** Drain down system prior to equipment break-in or maintenance [E65].

### *Risk characteristics*

**RCR Inhalation:** 0.39 Additional exposure modifier: 0.2. Assumes LEV efficiency equivalent to SOP for drainage etc. before maintenance. Additional LEV 80%.

**Dermal RCR:** 0.04.

**RCR (all ways):** 0.43

## Identifier: ES6 PROC2

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Storage [CS67]. Product sampling [CS137].

**OC and typical RMMs:** Daily; <15 mins; Product temp. Samples collected at dedicated sample points.

**RMM to be implemented:** No specific measures identified [E18].

### *Risk characteristics*

**RCR Inhalation:** 0.39

**Dermal RCR:** 0.00

**RCR (all ways):** 0.40

## Identifier: ES8 PROC4

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Bulk product transfer [CS14].

**OC and typical RMMs:** Daily; 1 - 4 hours; Room temp. Transfers included. Clean lines before decoupling.

**RMM to be implemented:** Provide a good standard of controlled ventilation (10 to 15 air changes per hour) [E40].

### *Risk characteristics*

**RCR Inhalation:** 0.29 Ventilation dilution efficiency 70%.

**Dermal RCR:** 0.02

**RCR (all ways):** 0.31



## Identifier: ES8 PROC8b

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Kegs/Batch Transfers [CS8].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Room temp. Pumping from drums to equipment.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### *Risk characteristics*

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.01

**RCR (all ways):** 0.70

## Identifier: ES8 PROC8b

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Immersion, dipping and pouring [CS4].

**OC and typical RMMs:** Daily; >4 hours. At 100%. Pumping to the vehicle.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### *Risk characteristics*

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.01

**RCR (all ways):** 0.70

## Identifier: ES8 PROC1

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** General exposures (closed systems) [CS15].

**OC and typical RMMs:** Daily; >4 hours. Equipment closed.

**RMM to be implemented:** No specific measures identified [E18].

### *Risk characteristics*

**RCR Inhalation:** 0.00

**Dermal RCR:** 0.00

**RCR (all ways):** 0.00

## Identifier: ES8 PROC2

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** (closed systems) [CS15]. Product sampling [CS137].

**OC and typical RMMs:** Daily; > 4 hours. Equipment closed.

**RMM to be implemented:** No specific measures identified [E18].

### *Risk characteristics*

**RCR Inhalation:** 0.39

**Dermal RCR:** 0.00

**RCR (all ways):** 0.39

## Identifier: ES8 PROC3

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** General exposures (open systems) [CS16]. (closed systems) [CS107]. Batch process [CS55].

**OC and typical RMMs:** Daily; >4 hours. Blends up to 100%. Mixers included or vented.

**RMM to be implemented:** No specific measures identified [E18].

### *Risk characteristics*

**RCR Inhalation:** 0.49

**Dermal RCR:** 0.00

**RCR (all ways):** 0.49

## Identifier: ES8 PROC16

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** General exposures (open systems) [CS16]. (closed systems) [CS107].

**OC and typical RMMs:** Daily; >4 hours. At 100%. Equipment included.

**RMM to be implemented:** Handle substance within a closed system [E47]. No other specific measures identified [E120].

### *Risk characteristics*

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00

**RCR (all ways):** 0.20

## Identifier: ES8 PROC8a

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Cleaning and maintenance of equipment [CS39].

**OC and typical RMMs:** Daily; >4 hours. At 100%. PPE. Operator training.

**RMM to be implemented:** Drain down system prior to equipment break-in or maintenance [E55].

### *Risk characteristics*

**RCR Inhalation:** 0.39 Additional exposure modifier: 0.2. Eighty percent LEV efficiency is assumed equivalent to the SOPs for drainage etc. before maintenance (x0.2).

**Dermal RCR:** 0.04

**RCR (all ways):** 0.43

## Identifier: ES8 PROC8a

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Cleaning of containers and vessels [CS103].

**OC and typical RMMs:** Daily; >4 hours. At 100%. Procedures for entry into containers. Retain washes in sealed storage pending disposal. PPE.

**RMM to be implemented:** Drain down system prior to equipment break-in or maintenance [E65].

### *Risk characteristics*

**RCR Inhalation:** 0.39 Additional exposure modifier: 0.2 Eighty percent LEV efficiency is assumed equivalent to the SOPs for drainage etc. before maintenance. Additional LEV 80% (x0.2).

**Dermal RCR:** 0.04

**RCR (all ways):** 0.43

## Identifier: ES8 PROC1

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Storage [CS67].

**OC and typical RMMs:** Daily; 8 hours; Room temp. Samples collected at dedicated sample points.

**RMM to be implemented:** Store substance in a closed system [E84].

### *Risk characteristics*

**RCR Inhalation:** 0.00

**Dermal RCR:** 0.00

**RCR (all ways):** 0.00

## Identifier: ES11 PROC1

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** General exposures (closed systems) [CS15].

**OC and typical RMMs:** Continuous; Daily; 8 hours. Closed.

**RMM to be implemented:** No specific provision identified [E18]

### *Risk characteristics*

**RCR Inhalation:** 0.00

**Dermal RCR:** 0.00

**RCR (all ways):** 0.00

## Identifier: ES11 PROC2

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Filling of equipment from drums or containers [CS45].

**OC and typical RMMs:** Continuous. Closed.

**RMM to be implemented:** No specific provision identified [E18]

### *Risk characteristics*

**RCR Inhalation:** 0.39

**Dermal RCR:** 0.00

**RCR (all ways):** 0.40

## Identifier: ES11 PROC2

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** General exposures (closed systems) [CS15]. Use in contained systems [CS38].

**OC and typical RMMs:** Continuous; Daily; 8 hours. Process included. Closed/semi-closed sampling point.

**RMM to be implemented:** No specific measures identified [E18].

### *Risk characteristics*

**RCR Inhalation:** 0.39

**Dermal RCR:** 0.00

**RCR (all ways):** 0.40

## Identifier: ES11 PROC3

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Preparation of material for application [CS96].

**OC and typical RMMs:** Continuous. Closed.

**RMM to be implemented:** No specific measures identified [E18].

### *Risk characteristics*

**RCR Inhalation:** 0.49

**Dermal RCR:** 0.00

**RCR (all ways):** 0.49

## Identifier: ES11 PROC4

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Film formation - air drying [CS95]. Outdoor [OC9].

**OC and typical RMMs:** Outdoor

**RMM to be implemented:** Make sure the operation is performed outdoors [E69].

### *Risk characteristics*

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.02

**RCR (all ways):** 0.70

## Identifier: ES11 PROC4

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Film formation - air drying [CS95]. Indoor [OC8].

**OC and typical RMMs:** Daily; >4 hours; Product at temp. environment. Inside. Good general ventilation (equivalent to outdoor activity) with added LEV.

**RMM to be implemented:** Provide a good standard of controlled ventilation (10 to 15 air changes per hour) [E40].

### *Risk characteristics*

**RCR Inhalation:** 0.29 Ventilation dilution efficiency 70%.

**Dermal RCR:** 0.02

**RCR (all ways):** 0.31

## Identifier: ES11 PROC5

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Preparation of material for application [CS96]. Indoor [OC8].

**OC and typical RMMs:** Discontinuous Inside. Wit/without LEV.

**RMM to be implemented:** Provide a good standard of controlled ventilation (10 to 15 air changes per hour) [E40].

### *Risk characteristics*

**RCR Inhalation:** 0.59 Ventilation dilution efficiency 70%.

**Dermal RCR:** 0.04

**RCR (all ways):** 0.62

## Identifier: ES11 PROC5

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Preparation of material for application [CS96]. Outdoor [OC9].

**OC and typical RMMs:** Outside.

**RMM to be implemented:** Make sure the operation is performed outdoors [E69].

### *Risk characteristics*

**RCR Inhalation:** 0.82 Ventilation dilution effectiveness 30%. TRA duration factor 1-4 hours.

**Dermal RCR:** 0.04

**RCR (all ways):** 0.86

## Identifier: ES11 PROC8a

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Material transfers [CS3]. Kegs/Batch Transfers [CS8].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product at temp. environment. Inside. Outside. Pumping from drums to equipment. With and without LEV.

**RMM to be implemented:** Use drum pumps or carefully pour from container [E64].

### *Risk characteristics*

**RCR Inhalation:** 0.39 TRA LEV: 80% efficiency.

**Dermal RCR:** 0.00 TRA dermal exposure LEV reduction factor 0.1.

**RCR (all ways):** 0.40

## Identifier: ES11 PROC8b

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Material transfers [CS3]. Drum/Batch Transfers [CS8].

**OC and typical RMMs:** Daily; 15 min - 1 hour; Product at temp. environment. Inside. Pumping from drums to equipment. With LEV.

**RMM to be implemented:** Use drum pumps or carefully pour from container [E64].

### *Risk characteristics*

**RCR Inhalation:** 0.20 TRA LEV: 80% efficiency.

**Dermal RCR:** 0.00 TRA dermal exposure LEV reduction factor 0.1.

**RCR (all ways):** 0.20

## Identifier: ES11 PROC10

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Application by roller, spatula, flux [CS98]. Indoor [OC8].

**OC and typical RMMs:** Inside.

**RMM to be implemented:** Provide a good standard of controlled ventilation (10 to 15 air changes per hour) [E40].

### *Risk characteristics*

**RCR Inhalation:** 0.59 Ventilation dilution efficiency 70%.

**Dermal RCR:** 0.07

**RCR (all ways):** 0.66

## Identifier: ES11 PROC10

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Application by roller, spatula, flux [CS98]. Outdoor. [OC9].

**OC and typical RMMs:** Outside. PPE.

**RMM to be implemented:** Make sure the operation is performed outdoors [E69].

### *Risk characteristics*

**RCR Inhalation:** 0.14 Ventilation dilution effectiveness 30%. TRA factor RPE half mask.

**Dermal RCR:** 0.07

**RCR (all ways):** 0.21

## Identifier: ES11 PROC11

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Manual [CS34]. Spray application [CS10]. Indoor [OC8].

**OC and typical RMMs:** Daily; >4 hours; Environment. Inside. Spray booth with vents Specific training of operators. PPE.

**RMM to be implemented:** Carry out in a vented booth or extracted enclosure [E57].

### **Risk characteristics**

**RCR Inhalation:** 0.98 TRA LEV: 90% efficiency.

**Dermal RCR:** 0.01 TRA dermal exposure LEV reduction factor 0.02.

**RCR (all ways):** 0.99

## Identifier: ES11 PROC11

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Manual [CS34]. Spray application [CS10]. Outdoor. [OC9].

**OC and typical RMMs:** Outside. 4 hours. PPE.

**RMM to be implemented:** Make sure the operation is performed outdoors [E69]. Wear a respirator conforming to EN140 with type A filter or better [PPE22].

### **Risk characteristics**

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%. TRA factor RPE half mask.

**Dermal RCR:** 0.28

**RCR (all ways):** 0.97

## Identifier: ES11 PROC13

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Immersion, dipping and pouring [CS4]. Indoor [OC8].

**OC and typical RMMs:** Daily; >4 hours; Environment. Local aspiration on open surfaces. Eliminate leaks as they occur. PPE.

**RMM to be implemented:** Provide extract ventilation in points where emissions occur [E54].

### **Risk characteristics**

**RCR Inhalation:** 0.39 TRA LEV: 80% efficiency.

**Dermal RCR:** 0.00 TRA dermal exposure LEV reduction factor 0.05.

**RCR (all ways):** 0.39

## Identifier: ES11 PROC13

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Immersion, dipping and pouring [CS4]. Outdoor [OC9].

**OC and typical RMMs:** Daily; >4 hours; Environment. Outside. PPE.

**RMM to be implemented:** Make sure the operation is performed outdoors [E69]. Wear suitable respiratory protection (conforming to EN140 with type A filter or better) and gloves (type EN374) if regular skin contact likely [PPE21].

### **Risk characteristics**

**RCR Inhalation:** 0.14 Ventilation dilution effectiveness 30%. TRA factor RPE half mask.

**Dermal RCR:** 0.04

**RCR (all ways):** 0.17

## Identifier: ES11 PROC15

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Laboratory activity [CS36].

**OC and typical RMMs:** Daily; >4 hours; Environment.

**RMM to be implemented:** No specific measures identified [E18].

### **Risk characteristics**

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00

**RCR (all ways):** 0.20

## Identifier: ES11 PROC19

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Hand application - finger paints, pastels, adhesives [CS72]. Indoor [OC8].

**OC and typical RMMs:** Daily; >4 hours. Environment. Inside.

**RMM to be implemented:** Provide a good standard of controlled ventilation (10 to 15 air changes per hour) [E40]. Make sure doors and windows are open [E72].

### **Risk characteristics**

**RCR Inhalation:** 0.59 Ventilation dilution efficiency 70%.

**Dermal RCR:** 0.37

**RCR (all ways):** 0.96

## Identifier: ES11 PROC19

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Hand application - finger paints, pastels, adhesives [CS72]. Outdoor [OC9].

**OC and typical RMMs:** 15 min. Environment. Outside. PPE.

**RMM to be implemented:** Make sure the operation is performed outdoors [E69]. Wear suitable respiratory protection (conforming to EN140 with type A filter or better) and gloves (type EN374) if regular skin contact likely [PPE21].

### **Risk characteristics**

**RCR Inhalation:** 0.14 Ventilation dilution effectiveness 30%. TRA factor RPE half mask.

**Dermal RCR:** 0.37

**RCR (all ways):** 0.51

## Identifier: ES11 PROC8a

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Cleaning and maintenance of equipment [CS39].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Product temp. Collection of line waste in containers. Indoor/Outdoor. Lines included. Retain washes in sealed storage pending disposal or use as a recycled material in subsequent formulations. PPE.

**RMM to be implemented:** Drain down system prior to equipment break-in or maintenance [E65].

### *Risk characteristics*

**RCR Inhalation:** 0.39 Additional exposure modifier: 0.2. Eighty percent LEV efficiency is assumed equivalent to the SOPs for drainage etc. before maintenance. Additional LEV 80%.

**Dermal RCR:** 0.04

**RCR (all ways):** 0.43

## Identifier: ES11 PROC2

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Storage [CS67]. Product sampling [CS137].

**OC and typical RMMs:** Daily; <15 mins; Product at temp. environment. Samples collected at dedicated sample points.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.39

**Dermal RCR:** 0.00

**RCR (all ways):** 0.40

## Identifier: ES15 PROC1

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Material transfers [CS3]. (closed systems) [CS107].

**OC and typical RMMs:** Daily; 1 - 4 hours; Ambient temp. Transfers included. Clean lines before decoupling.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.00

**Dermal RCR:** 0.00

**RCR (all ways):** 0.00

## Identifier: ES15 PROC2

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Material transfers [CS3]. (closed systems) [CS107]. Product sampling [CS137].

**OC and typical RMMs:** Daily; 1 - 4 hours; Room temp. Transfers included. Clean lines before decoupling.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.39

**Dermal RCR:** 0.00

**RCR (all ways):** 0.40

## Identifier: ES15 PROC3

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Material transfers [CS3]. (closed systems) [CS107]. Batch process [CS55].

**OC and typical RMMs:** Daily; 1 - 4 hours; Room temp. Transfers included. Clean lines before decoupling.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.49

**Dermal RCR:** 0.00

**RCR (all ways):** 0.49

## Identifier: ES15 PROC8b

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Drum/batch transfers [CS8]

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Room temp. Pumping from drums to equipment.

**RMM to be implemented:** Transfer materials directly to mixing vessels [E45].

### *Risk characteristics*

**RCR Inhalation:** 0.59 Additional exposure modifier: 0.6. Direct transfers assume to provide a reduction of 0.6x.

**Dermal RCR:** 0.02

**RCR (all ways):** 0.61

## Identifier: ES15 PROC3

### *Operating Conditions and Risk Management Measures*

**Contributing scenario:** Mixing operations (closed systems) [CS29].

**OC and typical RMMs:** Daily; > 4 hours. Mixers included or vented.

**RMM to be implemented:** No specific measures identified [E118].

### *Risk characteristics*

**RCR Inhalation:** 0.49

**Dermal RCR:** 0.00

**RCR (all ways):** 0.49

## Identifier: ES15 PROC4

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Mixing operations (open systems) [CS30].

**OC and typical RMMs:** Daily; > 4 hours.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11].

### **Risk characteristics**

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%.

**Dermal RCR:** 0.02

**RCR (all ways):** 0.70

## Identifier: ES15 PROC14

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Stamping forming [CS31].

**OC and typical RMMs:** Daily; >4 hours; Room temp. PPE.

**RMM to be implemented:** Provide a good standard of controlled ventilation (10 to 15 air changes per hour) [E40].

### **Risk characteristics**

**RCR Inhalation:** 0.59 Ventilation dilution efficiency 70%.

**Dermal RCR:** 0.01

**RCR (all ways):** 0.60

## Identifier: ES15 PROC6

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Casting operations [CS32]. (open systems) [CS108].

**OC and typical RMMs:** Daily; 1 - 4 hours. Temp. high enough to create fumes. Improved general ventilation. PPE.

**RMM to be implemented:** Provide a good standard of controlled ventilation (10 to 15 air changes per hour) [E40].

### **Risk characteristics**

**RCR Inhalation:** 0.59 Ventilation dilution efficiency 70%.

**Dermal RCR:** 0.07

**RCR (all ways):** 0.66

## Identifier: ES15 PROC11

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Manual [CS34]. Spray application [CS10].

**OC and typical RMMs:** Daily; 1 - 4 hours; Room temp. Ventilated environment.

**RMM to be implemented:** Carry out in a vented booth or extracted enclosure [E57]. Provide a good standard of controlled ventilation (10 to 15 air changes per hour) [E40].

### **Risk characteristics**

**RCR Inhalation:** 0.59 Ventilation dilution efficiency 70%. TRA LEV: 80% efficiency.

**Dermal RCR:** 0.01 TRA dermal exposure LEV reduction factor 0.02.

**RCR (all ways):** 0.59

## Identifier: ES15 PROC10

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Manual application by roller or brush [CS13].

**OC and typical RMMs:** Daily; 1 - 4 hours; Room temp. PPE.

**RMM to be implemented:** Provide a good standard of controlled ventilation (10 to 15 air changes per hour) [E40].

### **Risk characteristics**

**RCR Inhalation:** 0.59 Ventilation dilution efficiency 70%.

**Dermal RCR:** 0.07

**RCR (all ways):** 0.66

## Identifier: ES15 PROC11

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Manual [CS34]. Spray application [CS10].

**OC and typical RMMs:** Daily; 1 - 4 hours; Room temp. PPE. Facial mask.

**RMM to be implemented:** Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) [E11]. Wear a respirator conforming to EN140 with type A filter or better [PPE22].

### **Risk characteristics**

**RCR Inhalation:** 0.69 Ventilation dilution effectiveness 30%. TRA factor RPE half mask.

**Dermal RCR:** 0.28

**RCR (all ways):** 0.97

## Identifier: ES15 PROC1

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Storage [CS67].

**OC and typical RMMs:** Daily; 8 hours; Room temp. Samples collected at dedicated sample points.

**RMM to be implemented:** No specific measures identified [E118].

### **Risk characteristics**

**RCR Inhalation:** 0.00

**Dermal RCR:** 0.00

**RCR (all ways):** 0.00

## Identifier: ES15 PROC2

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Storage [CS67]. Product sampling [CS137].

**OC and typical RMMs:** Daily; 8 hours; Room temp. Samples collected at dedicated sample points.

**RMM to be implemented:** No specific measures identified [E118].

**RCR Inhalation:** 0.39

**Dermal RCR:** 0.00

**RCR (all ways):** 0.39

## Identifier: ES17 PROC15

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Laboratory activity [CS36]. On a small scale [CS61]. Handling of small amounts (<1000ml) for more than 4 hours/day - under hood.

**OC and typical RMMs:** Continuous; Daily; >4 hours; Room temp. Under hood or in ventilated glove box. Use disposable gloves.

**RMM to be implemented:** No specific measures identified [E118].

### **Risk characteristics**

**RCR Inhalation:** 0.20

**Dermal RCR:** 0.00 TRA dermal exposure LEV reduction factor 0.01.

**RCR (all ways):** 0.20

## Identifier: ES17 PROC10

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Cleaning [CS47]. Application by roller, brush [CS51]. Cleaning of containers and vessels [CS103]. Cleaning of equipment, glass etc. under general ventilation for 15 min - 1 hour/day.

**OC and typical RMMs:** Continuous; Daily; 15 min - 1 hour/day; Room temp. Controlled general ventilation (10 air changes per hour). Use disposable gloves.

**RMM to be implemented:** Provide a good standard of controlled ventilation (10 to 15 air changes per hour) [E40].

### **Risk characteristics**

**RCR Inhalation:** 0.59 Ventilation dilution efficiency 70%.

**Dermal RCR:** 0.07

**RCR (all ways):** 0.66

## Identifier: ES19 PROC8a

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Drum/Batch Transfers [CS8]. Non-dedicated facility [CS82].

**OC and typical RMMs:** Daily; 15 mins - 1 hour; Room temp. Pumping from drums to equipment.

**RMM to be implemented:** Use drum pumps or carefully pour from container [E64].

### **Risk characteristics**

**RCR Inhalation:** 0.39 Additional exposure modifier: 0.2. Use of drum pumps equals 80% (x0.2).

**Dermal RCR:** 0.04

**RCR (all ways):** 0.43

## Identifier: ES19 PROC9

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Transfer from / pour from containers [CS22].

**OC and typical RMMs:** Daily; >4 hours. Environment. Operations included. Size of openings minimized. LEV at the points of issue.

**RMM to be implemented:** Use drum pumps or carefully pour from container [E64].

### **Risk characteristics**

**RCR Inhalation:** 0.39 Additional exposure modifier: 0.2. Use of drum pumps equals 80% (x0.2).

**Dermal RCR:** 0.02

**RCR (all ways):** 0.41

## Identifier: ES19 PROC9

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Filling of equipment from drums or containers [CS45].

**OC and typical RMMs:** Daily; 1 - 4 hours. Environment. Pumping from drums to item/machinery.

**RMM to be implemented:** Use drum pumps or carefully pour from container [E64].

### **Risk characteristics**

**RCR Inhalation:** 0.39 Additional exposure modifier: 0.2. Use of drum pumps equals 80% (x0.2).

**Dermal RCR:** 0.02

**RCR (all ways):** 0.41



## Identifier: ES19 PROC1

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** General exposures (closed systems) [CS15].

**OC and typical RMMs:** Daily; > 4 hours. Environment.

**RMM to be implemented:** No specific measures identified [EI18].

### **Risk characteristics**

**RCR Inhalation:** 0.00

**Dermal RCR:** 0.00

**RCR (all ways):** 0.00

## Identifier: ES19 PROC2

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** General exposures (closed systems) [CS15]. Product sampling [CS137].

**OC and typical RMMs:** Daily; > 4 hours. Environment.

**RMM to be implemented:** No specific measures identified [EI18].

### **Risk characteristics**

**RCR Inhalation:** 0.39 Handle substance within a predominantly closed system provided with extract ventilation [E49].

**Dermal RCR:** 0.00

**RCR (all ways):** 0.40

## Identifier: ES19 PROC20

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** General exposures (open systems) [CS16]. At high temperatures (product at 80°C).

**OC and typical RMMs:** Daily; >4 hours. Environment. (product at 80°C).

**RMM to be implemented:** Handle substance within a predominantly closed system provided with extract ventilation [E49].

### **Risk characteristics**

**RCR Inhalation:** 0.20 TRA LEV: 80% efficiency.

**Dermal RCR:** 0.00 TRA dermal exposure LEV reduction factor 0.1.

**RCR (all ways):** 0.20

## Identifier: ES19 PROC9

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Remanufacture of reject articles [CS19].

**OC and typical RMMs:** Daily; 1 - 4 hours. Environment. Working methods. Empty before operation. Keep spills.

**RMM to be implemented:** Drain down system prior to equipment break-in or maintenance [E65].

### **Risk characteristics**

**RCR Inhalation:** 0.39 Additional exposure modifier: 0.2. Drainage SOPs are equivalent to a reduction of 80% (x0.2).

**Dermal RCR:** 0.00

**RCR (all ways):** 0.39

## Identifier: ES19 PROC8a

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Equipment Maintenance [CS5]. Non-dedicated facility [CS82].

**OC and typical RMMs:** Daily; 1 -4 hours. Environment. Working methods. Empty before operation. Keep spills. Use gloves.

**RMM to be implemented:** Drain down system prior to equipment break-in or maintenance [E65].

### **Risk characteristics**

**RCR Inhalation:** 0.39 Additional exposure modifier: 0.2. Drainage SOPs are equivalent to a reduction of 80% (x0.2).

**Dermal RCR:** 0.00

**RCR (all ways):** 0.39

## Identifier: ES19 PROC1

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Storage [CS67].

**OC and typical RMMs:** Daily; 8 hours; Room temp. Samples collected at dedicated sample points.

**RMM to be implemented:** No specific provision identified [EI18]

### **Risk characteristics**

**RCR Inhalation:** 0.00

**Dermal RCR:** 0.00

**RCR (all ways):** 0.00

## Identifier: ES19 PROC2

### **Operating Conditions and Risk Management Measures**

**Contributing scenario:** Storage [CS67]. Product sampling [CS137].

**OC and typical RMMs:** Daily; 8 hours; Room temp. Samples collected at dedicated sample points.

**RMM to be implemented:** No specific provision identified [EI18]

### **Risk characteristics**

**RCR Inhalation:** 0.39

**Dermal RCR:** 0.00

**RCR (all ways):** 0.39



# Xylene

## Identification of the exposure scenario

Product name: Xylene

Reach registration number: 01-2119488216-32-XXXX

CAS number: 1330-20-7

EC number: 215-535-7

Review date: 14/02/2022 rev. 3.0

## USE IN COATINGS - INDUSTRIAL USE

### 1. Title of the exposure scenario

**Process purpose:** Includes use in coatings (varnishes, inks, adhesives, etc.), including exposure during application (including material receipt, storage, bulk and semi-bulk preparation and transfer, application by spray, roller, manual spraying, dip, flow, fluid layers in production lines and in film formation) and system cleaning, maintenance and related laboratory activities.

**Main sector:** SU3 Industrial uses

#### Environment

**Environmental Release Categories [ERC]:** ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article).

**Specific Environmental Release Category [SPERC]:** ESVOC SPERC 4.3a.v1

#### Worker

##### Process categories:

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.

PROC 3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions.

PROC4 Production of chemicals with the possibility of exposure.

PROC5 Mixing or blending in batch processes

PROC7 Industrial spraying.

PROC8a Transfer of a substance or preparation (charging/discharging) at non-dedicated facilities.

PROC8a Transfer of substance or mixture (charging/discharging) at non-dedicated facilities.

PROC10 Application with rollers or brushes.

PROC13 Treatment of articles by dipping and pouring.

PROC15 Use as laboratory reagent.

PROC24 High (mechanical) energy work-up of substances bound in/on materials and/or articles.

### 2. Other conditions of use affecting exposure (Industrial - Environment 1)

#### Products features

**Form:** Liquid, vapor pressure 0.5 - 10 kPa at STP

Easily biodegradable.

#### Amounts used:

Annual amount per site: 2500 tonnes

#### Frequency and duration of use

Issue days: 300 days/year

#### Additional operating conditions relating to environmental exposure

##### Emission factor - air

Air release rate produced by the process (initial release prior to risk management measures): 0.98

##### Emission factor - water

Waste water release rate produced by the process (initial release prior to risk management measures): 0.007

##### Emission factor - soil

Soil release rate produced by the process (initial release prior to risk management measures): 0

## ***Environmental factors that are not influenced by risk management***

### **Dilution**

Local fresh water dilution factor: 10

Local seawater dilution factor: 100

### ***Risk management measures***

#### **Sewage Treatment Plant Data (STP)**

Estimated substance removal from waste water via domestic sewage treatment: 95.8%

Assumed domestic sewage treatment plant flow: 2000 m<sup>3</sup>/day

## ***Local technical conditions and measures to reduce and limit discharges and air emissions***

### **Air:**

Treat air emission to provide a typical removal efficiency of > 90%.

### **Water:**

Avoid releasing the undiluted substance into local waste water or recover it on site. The typical on-site purification technique has a removal efficiency of 95.8%.

### **Ground:**

Soil emission controls are not applicable as there is no direct release to soil.

## ***Conditions and measures for external treatment of waste***

### **Sludge treatment:**

Do not spread industrial sludge on natural soils. Sewerage sludge should be burned, stored or regenerated.

### **Waste treatment:**

No waste of the substance is formed during production.

## **2. Other conditions of use affecting exposure (Workers - Health 1)**

### ***Products features***

#### **Form:**

Liquid, vapor pressure 0.5 - 10 kPa at STP

**Concentration information:** Includes concentrations up to 100%, unless otherwise indicated.

### ***Quantities used***

Not applicable.

### ***Frequency and duration of use***

Covers daily exposures up to 8 hours (unless stated differently).

### ***Other operational conditions affecting worker exposure***

**Temperature:** (unless stated differently) assumes use at not more than 20°C above ambient temperature.

**Ventilation Rate:** Ensure a sufficient amount of controlled ventilation (10 to 15 air changes per hour). Assumes a good basic standard of occupational hygiene is implemented.

### ***Technical conditions and process-level (source) measures to prevent releases***

#### **Technical protective measures:**

Handle substance within a closed system. Provide supplementary ventilation to points where emissions occur. Ensure material transfers are managed using closed or air exhaust systems. Drain or remove substance from equipment before opening or servicing PROC7 Industrial spraying: spraying (automatic/robotic) should be carried out in a ventilated booth with laminar air flow.

#### **Risk management measures:**

PROC7 Industrial spraying.

Manual spraying.

Wear respiratory protection in accordance with EN 140 with filter type A or better.

## **3. Verification of exposure (Environment 1)**

### **Environmental exposure:**

Predicted exposures are not expected to exceed the specific risks (listed in chapter 8 of the safety datasheet), when the risk management measures/operational conditions outlined in section 2 are implemented.

Maximum allowable site tonnage (M<sub>safe</sub>), based on release following total waste water treatment removal: 9874 kg/day

### **3. Exposure Verification (Health 1)**

#### **Exposure**

Predicted workplace exposures are not expected to exceed the DNEL when risk identification measures are implemented.

### **4. Guidance to check compliance with the exposure scenario (Environment 1)**

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures.

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

Required removal efficiency for waste water can be achieved using on-site/off-site technologies, either alone or in combination.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

### **4. Guidance to check compliance with the exposure scenario (Health 1)**

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

## USE IN COATINGS - PROFESSIONAL USE

### 1. Title of the exposure scenario

**Process purpose:** Includes use in coatings (varnishes, inks, adhesives, etc.), including exposure during application (including material receipt, storage, bulk and semi-bulk preparation and transfer, application by spray, roller, brush and manual spraying or similar processes and film formation) and system cleaning, maintenance and related laboratory activities.

**Main sector:** SU22 Professional uses

#### **Environment**

##### **Environmental Release Categories [ERC]:**

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor).

ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor).

ERC8c Widespread use leading to inclusion into/onto article (indoor).

ERC8f Widespread use leading to inclusion into/onto article (outdoor).

Specific Environmental Release Category [SPERC]: ESVOC SPERC 8.3b.v1

#### **Worker**

##### **Process categories:**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.

PROC 3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions.

PROC4 Production of chemicals with the possibility of exposure.

PROC5 Mixing or blending in batch processes

PROC8a Transfer of a substance or preparation (charging/discharging) at non-dedicated facilities.

PROC8a Transfer of substance or mixture (charging/discharging) at non-dedicated facilities.

PROC10 Application with rollers or brushes.

PROC11 Non-industrial spray application.

PROC13 Treatment of articles by dipping and pouring.

PROC15 Use as laboratory reagent.

PROC19 Manual activities with direct contact.

PROC24 High (mechanical) energy work-up of substances bound in/on materials and/or articles.

### 2. Other conditions of use affecting exposure (Industrial - Environment 1)

#### **Products features**

**Form:** Liquid, vapor pressure 0.5 - 10 kPa at STP Easily biodegradable.

#### **Quantities used**

Annual amount per site: 10 tonnes

#### **Frequency and duration of use**

Issue days: 365 days/year

#### **Additional operating conditions relating to environmental exposure**

##### **Emission factor - air**

Air release rate produced by the process (initial release prior to risk management measures): 0.98

##### **Emission factor - water**

Waste water release rate produced by the process (initial release prior to risk management measures): 0.01

##### **Emission factor - soil**

Soil release rate produced by the process (initial release prior to risk management measures): 0.01

#### **Environmental factors that are not influenced by risk management**

##### **Dilution**

Local fresh water dilution factor: 10

Local seawater dilution factor: 100

### ***Risk management measures***

Sewage Treatment Plant Data (STP)

Estimated substance removal from waste water via domestic sewage treatment 95.8%

Assumed domestic sewage treatment plant flow: 2000 m<sup>3</sup>/day

### ***Local technical conditions and measures to reduce and limit discharges and air emissions***

Air: Treat air emission to provide a typical removal efficiency of 0%.

Water: The typical on-site purification technique has a removal efficiency of 95.8%.

### ***Conditions and measures for external treatment of waste***

Waste treatment: External treatment and disposal of waste should comply with applicable local and/or national regulations.

## **2. Other conditions of use affecting exposure (Workers - Health 1)**

### ***Products features***

#### **Form:**

Liquid, vapor pressure 0.5 - 10 kPa at STP

#### **Concentration information:**

Includes concentrations up to 100%, unless otherwise indicated.

### ***Quantities used***

Not applicable.

### ***Frequency and duration of use***

Covers daily exposures up to 8 hours (unless stated differently).

### ***Other operational conditions affecting worker exposure***

#### **Temperature:**

(unless stated differently) assumes use at not more than 20°C above ambient temperature.

#### **Ventilation Rate:**

Provide a good standard of controlled ventilation (10 to 15 air changes per hour) or ensure operation is undertaken outdoors.

Assumes a good basic standard of occupational hygiene is implemented.

### ***Technical conditions and process-level (source) measures to prevent releases***

#### **Technical protective measures:**

Handle substance within a closed system. Provide supplementary ventilation to points where emissions occur. Ensure material transfers are managed using closed or air exhaust systems. Clean/flush equipment prior to opening or maintenance. Transport on closed roads. PROC11 Non-industrial spray application. Indoor use. Perform in a laminar flow ventilated booth. PROC15 Use as laboratory reagents handle under fume hood or extract air.

### ***Organizational measures to prevent/limit releases, dispersion and exposure***

#### **Organizational measures**

Avoid activities with an exposure of more than 4 hours.

Hand Application - Finger Paints, Chalks, Stickers:

Limit the amount of substance in the mixture to 5%.

### ***Risk management measures***

Wear protective gloves according to EN 374, resistant to solvents.

PROC10 Application with rollers or brushes.

PROC11 Non-industrial spray application. Outdoor use.

PROC13 Treatment of articles by dipping and pouring. Outdoor use.

Wear respiratory protection in accordance with EN 140 with filter type A or better.

## **3. Verification of exposure (Environment 1)**

### **Environmental exposure**

Predicted exposures are not expected to exceed the specific risks (listed in chapter 8 of the safety datasheet), when the risk management measures/operational conditions outlined in section 2 are implemented.

Maximum allowable site tonnage (Msafe), based on release following total waste water treatment removal: 5969 kg/day

### **3. Exposure Verification (Health 1)**

#### **Exposure**

Predicted workplace exposures are not expected to exceed the DNEL when risk identification measures are implemented.

### **4. Guidance to check compliance with the exposure scenario (Environment 1)**

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures.

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

Required removal efficiency for waste water can be achieved using on-site/off-site technologies, either alone or in combination.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

### **4. Guidance to check compliance with the exposure scenario (Health 1)**

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

# Amines, polyethylenepoly-, triethylenetetramine fraction

## Substance identification

Chemical Name: Amines, polyethylenepoly-, triethylenetetramine fraction

CAS number: 90640-67-8

## INDUSTRIAL APPLICATION OF COATINGS AND PAINTS - INDUSTRIAL USE

### 1. TITLE SECTION

**Exposure scenario name:** Industrial application of coatings and paints

**Date - Version:** 15/07/2020 - 1.0

**Life cycle stage:** Use at industrial sites

**Main user group:** Industrial uses

**Sector(s) of use:** Industrial uses (SU3)

#### **Contributing scenario - Environment**

**CS1 Wet polymerization:** ERC4

#### **Contributing scenario - Worker**

**CS2 Blend Operations:** PROC5

**CS3 Spraying:** PROC7

**CS4 Material Transfers:** PROC8a

**CS5 Material Transfers:** PROC8b

**CS6 Material Transfers:** PROC9

**CS7 Roller and brush application:** PROC10

### 2. CONDITIONS OF USE AFFECTING EXPOSURE

#### **2.1. Contributing Scenario CS1 - Environment: Wet polymerization (ERC4)**

**Environmental release categories:** Use of non-reactive processing aid at industrial site (no inclusion into or onto article). (ERC4)

#### **Product features (article)**

**Physical form of the product:** Liquid

#### **Amount used, frequency and duration of use**

**Amounts used:** Daily quantity per site 2114 kg/day

**Release Type:** Continuous release

**Issue days:** 220 days a year

#### **Measures and technical-organizational conditions**

**Control measures to prevent releases:** No specific measures identified.

#### **Other operational conditions affecting environmental exposure**

**Local fresh water dilution factor:** 1000

## 2.2. CS2 Contributing Scenario - Worker: Mixing Operations (PROC5)

**Process categories:** Mixing or Blending in Batch Processes (PROC5)

### **Product features (article)**

**Physical form of the product:** Liquid

**Vapor pressure:** < 500Pa

**Concentration of the substance in the product:** Includes substance shares in the product up to 25%

### **Amount used, frequency and duration of use/exposure**

**Duration:** Includes use up to 60 min.

### **Measures and technical-organizational conditions**

**Technical organizational measures:** Provide supplementary ventilation to points where emissions occur. Inhalation - minimum 90% efficiency.

### **Conditions and measures related to personal protection, hygiene and health verification**

**Personal protective equipment:** Wear suitable gloves, tested according to EN347.

**Additional conditions for human health:** Assumes a good basic standard of occupational hygiene is implemented.

### **Other operational conditions affecting worker exposure**

Indoor use

**Further information on good practices. The requirements set out in the REACH Regulation Article 37(4) do not apply.**

**Further information on good practices:** Supervise the implementation of risk management measures and compliance with the required operational conditions.

## 2.3. CS3 Contributing Scenario - Worker: Spray (PROC7)

**Process categories:** Industrial spray application (PROC7)

### **Product features (article)**

**Physical form of the product:** Liquid

**Vapor pressure:** < 500Pa

**Concentration of the substance in the product:** Includes concentrations up to 15%.

### **Amount used, frequency and duration of use/exposure**

**Duration:** Covers up to 8 hours of daily exposure.

### **Measures and technical-organizational conditions**

**Technical organizational measures:** Provide supplementary ventilation to points where emissions occur. Inhalation - minimum 90% efficiency.

### **Conditions and measures related to personal protection, hygiene and health verification**

**Personal protective equipment:** Wear suitable gloves, tested according to EN347. Dermal - minimum 95% efficiency. Wear suitable respiratory protection.

**Additional conditions for human health:** Assumes a good basic standard of occupational hygiene is implemented.

### **Other operational conditions affecting worker exposure**

Indoor use

**Further information on good practices. The requirements set out in the REACH Regulation Article 37(4) do not apply.**

**Further information on good practices:** Supervise the implementation of risk management measures and compliance with the required operational conditions.



## 2.4. CS4 Contributing Scenario - Worker: Material transfers (PROC8a)

**Process categories:** Transfer of a substance or a preparation (filling/emptying) at non-dedicated facilities (PROC8a)

### **Product features (article)**

**Physical form of the product:** Liquid

**Vapor pressure:** < 500Pa

**Concentration of the substance in the product:** Includes concentrations up to 25%.

### **Amount used, frequency and duration of use/exposure**

**Duration:** Covers up to 8 hours of daily exposure.

### **Measures and technical-organizational conditions**

**Technical organizational measures:** Provide supplementary ventilation to points where emissions occur. Inhalation - minimum 90% efficiency.

### **Conditions and measures related to personal protection, hygiene and health verification**

**Personal protective equipment:** Wear suitable gloves, tested according to EN347.

**Additional conditions for human health:** Assumes a good basic standard of occupational hygiene is implemented.

### **Other operational conditions affecting worker exposure**

Indoor use

**Further information on good practices. The requirements set out in the REACH Regulation Article 37(4) do not apply.**

**Further information on good practices:** Supervise the implementation of risk management measures and compliance with the required operational conditions.

## 2.5. CS5 Contributing Scenario - Worker: Material transfers (PROC8b)

**Process categories:** Transfer of a substance or a preparation (filling/emptying) at dedicated facilities (PROC8b)

### **Product features (article)**

**Physical form of the product:** Liquid

**Vapor pressure:** < 500Pa

**Concentration of the substance in the product:** Includes concentrations up to 25%.

### **Amount used, frequency and duration of use/exposure**

**Duration:** Covers up to 8 hours of daily exposure.

### **Measures and technical-organizational conditions**

**Technical organizational measures:** Provide supplementary ventilation to points where emissions occur. Inhalation - minimum 90% efficiency.

### **Conditions and measures related to personal protection, hygiene and health verification**

**Personal protective equipment:** Wear suitable gloves, tested according to EN347. Dermal - minimum 90% efficiency. Wear suitable respiratory protection.

**Additional conditions for human health:** Assumes a good basic standard of occupational hygiene is implemented.

### **Other operational conditions affecting worker exposure**

Indoor use

**Further information on good practices. The requirements set out in the REACH Regulation Article 37(4) do not apply.**

**Further information on good practices:** Supervise the implementation of risk management measures and compliance with the required operational conditions.

## 2.6 Contributing Scenario CS6 - Worker: Material transfers (PROC9)

**Process categories:** Transfer of a substance or preparation into small containers (dedicated filling line, including weighing) (PROC9)

### **Product features (article)**

**Physical form of the product:** Liquid

**Vapor pressure:** < 500Pa

**Concentration of the substance in the product:** Includes concentrations up to 15%.

### **Amount used, frequency and duration of use/exposure**

**Duration:** Covers up to 8 hours of daily exposure.

### **Measures and technical-organizational conditions**

**Technical organizational measures:** Provide supplementary ventilation to points where emissions occur. Inhalation - minimum 90% efficiency.

### **Conditions and measures related to personal protection, hygiene and health verification**

**Personal protective equipment:** Wear suitable gloves, tested according to EN347. Dermal - minimum 90% efficiency. Wear suitable respiratory protection.

**Additional conditions for human health:** Assumes a good basic standard of occupational hygiene is implemented.

### **Other operational conditions affecting worker exposure**

Indoor use

**Further information on good practices. The requirements set out in the REACH Regulation Article 37(4) do not apply.**

**Further information on good practices:** Supervise the implementation of risk management measures and compliance with the required operational conditions.

## 2.7 CS7 Contributing Scenario - Worker: Roller and brush application (PROC10)

**Process categories:** Roller and brush application (PROC10)

### **Product features (article)**

**Physical form of the product:** Liquid

**Vapor pressure:** < 500Pa

**Concentration of the substance in the product:** Includes concentrations up to 15%.

### **Amount used, frequency and duration of use/exposure**

**Duration:** Includes use up to 60 min.

**Additional conditions for human health:** Limit the amount of substance in the product to 0.5%

### **Measures and technical-organizational conditions**

**Technical organizational measures:** Provide supplementary ventilation to points where emissions occur. Inhalation - minimum 90% efficiency.

### **Conditions and measures related to personal protection, hygiene and health verification**

**Personal protective equipment:** Wear suitable gloves, tested according to EN347. Dermal - minimum 90% efficiency. Wear suitable respiratory protection.

**Additional conditions for human health:** Assumes a good basic standard of occupational hygiene is implemented.

### **Other operational conditions affecting worker exposure**

Indoor use

**Further information on good practices. The requirements set out in the REACH Regulation Article 37(4) do not apply.**

**Further information on good practices:** Supervise the implementation of risk management measures and compliance with the required operational conditions.

### 3. EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

#### 3.1. Contributing Scenario CS1 - Environment: Wet polymerization (ERC4)

Protection target	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
fresh water	0.00317 mg/l	EUSES	0.017
fresh water sediment	1.6 mg/kg bw/day	EUSES	0.017
sea water	0.00042 mg/l	EUSES	0.008
Marine sediment	0.212 mg/kg bw/day	EUSES	0.008
ground	0.114 mg/kg bw/day	EUSES	0.006

#### 3.2. CS2 Contributing Scenario - Worker: Mixing Operations (PROC5)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
skin contact, systemic, long-term	0.68 mg/kg bw/day	N.d.	0.12
by inhalation, systemic, long-term	0.365 mg/m <sup>3</sup>	N.d.	0.366
by inhalation, systemic, short-term	0.731 mg/m <sup>3</sup>	N.d.	<0.001
combined routes, systemic, long-term	N.d.	N.d.	0.486

#### 3.3. CS3 Contributing Scenario - Worker: Spray (PROC7)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
skin contact, systemic, long-term	0.128 mg/kg bw/day	N.d.	0.226
by inhalation, systemic, long-term	0.457 mg/m <sup>3</sup>	N.d.	0.457
by inhalation, systemic, short-term	0.914 mg/m <sup>3</sup>	N.d.	<0.001
combined routes, systemic, long-term	N.d.	N.d.	0.683

#### 3.4. CS4 Contributing Scenario - Worker: Material transfers (PROC8a)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
skin contact, systemic, long-term	0.041 mg/kg bw/day	N.d.	0.072
by inhalation, systemic, long-term	0.548 mg/m <sup>3</sup>	N.d.	0.548
by inhalation, systemic, short-term	1,097 mg/m <sup>3</sup>	N.d.	<0.001
combined routes, systemic, long-term	N.d.	N.d.	0.621

### 3.5. CS5 Contributing Scenario - Worker: Material transfers (PROC8b)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
skin contact, systemic, long-term	0.034 mg/kg bw/day	N.d.	0.06
by inhalation, systemic, long-term	0.548 mg/m <sup>3</sup>	N.d.	0.548
by inhalation, systemic, short-term	1.096 mg/m <sup>3</sup>	N.d.	<0.001
combined routes, systemic, long-term	N.d.	N.d.	0.609

### 3.6. Contributing Scenario CS6 - Worker: Material transfers (PROC9)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
skin contact, systemic, long-term	0.068 mg/kg bw/day	N.d.	0.12
by inhalation, systemic, long-term	0.365 mg/m <sup>3</sup>	N.d.	0.366
by inhalation, systemic, short-term	1.22 mg/m <sup>3</sup>	N.d.	<0.001
combined routes, systemic, long-term	N.d.	N.d.	0.706

### 3.7. CS7 Contributing Scenario - Worker: Roller and brush application (PROC10)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
skin contact, systemic, long-term	0.082 mg/kg bw/day	N.d.	0.144
by inhalation, systemic, long-term	0.457 mg/m <sup>3</sup>	N.d.	0.229
by inhalation, systemic, short-term	0.914 mg/m <sup>3</sup>	N.d.	<0.001
combined routes, systemic, long-term	N.d.	N.d.	0.373

## 4. GUIDANCE FOR DOWNSTREAM USERS TO ASSESS WHETHER THEY COMPLY WITH THE LIMITS SET BY THE EXPOSURE SCENARIO

**Guidance to check compliance with the exposure scenario:** Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

## USE IN RIGID FOAM, COATINGS, ADHESIVES AND SEALANTS - INDUSTRIAL USE

### 1. TITLE SECTION

**Exposure scenario name:** Use in rigid foam, coatings, adhesives and sealants

**Date - Version:** 03/18/2020 - 1.0

**Life cycle stage:** Use at industrial sites

**Main user group:** Industrial uses

**Sector(s) of use:** Industrial uses (SU3)

#### ***Contributing scenario - Environment***

**CS1 Wet polymerization:** ERC4

#### ***Contributing scenario - Worker***

**CS2 Blend Operations:** PROC5

**CS3 Spraying:** PROC7

**CS4 Material Transfers:** PROC8a

**CS5 Material Transfers:** PROC8b

**CS6 Material Transfers:** PROC9

**CS7 Roller and brush application:** PROC10

### 2. CONDITIONS OF USE AFFECTING EXPOSURE

#### **2.1. Contributing Scenario CS1 - Environment: Wet polymerization (ERC4)**

**Environmental release categories:** Use of non-reactive processing aid at industrial site (no inclusion into or onto article). (ERC4)

##### ***Product features (article)***

**Physical form of the product:** Liquid

##### ***Amount used, frequency and duration of use***

**Amounts used:** Daily quantity per site 2114 kg/day

**Release Type:** Continuous release

**Issue days:** 220 days a year

##### ***Measures and technical-organizational conditions***

**Control measures to prevent releases:** No specific measures identified.

##### ***Other operational conditions affecting environmental exposure***

**Local fresh water dilution factor:** 1000

#### **2.2. CS2 Contributing Scenario - Worker: Mixing Operations (PROC5)**

**Process categories:** Mixing or Blending in Batch Processes (PROC5)

##### ***Product features (article)***

**Physical form of the product:** Liquid

**Vapor pressure:** < 500Pa

**Concentration of the substance in the product:** Includes substance shares in the product up to 25%

##### ***Amount used, frequency and duration of use/exposure***

**Duration:** Includes use up to 60 min.

##### ***Measures and technical-organizational conditions***

**Technical organizational measures:** Provide supplementary ventilation to points where emissions occur. Inhalation - minimum 90% efficiency.

##### ***Conditions and measures related to personal protection, hygiene and health verification***

**Personal protective equipment:** Wear suitable gloves, tested according to EN347.

**Additional conditions for human health:** Assumes a good basic standard of occupational hygiene is implemented.

##### ***Other operational conditions affecting worker exposure***

Indoor use

**Further information on good practices. The requirements set out in the REACH Regulation Article 37(4) do not apply.**

**Further information on good practices:** Supervise the implementation of risk management measures and compliance with the required operational conditions.

### 2.3. CS3 Contributing Scenario - Worker: Spray (PROC7)

**Process categories:** Industrial spray application (PROC7)

#### **Product features (article)**

**Physical form of the product:** Liquid

**Vapor pressure:** < 500Pa

**Concentration of the substance in the product:** Includes concentrations up to 15%.

#### **Amount used, frequency and duration of use/exposure**

**Duration:** Covers up to 8 hours of daily exposure.

#### **Measures and technical-organizational conditions**

**Technical organizational measures:** Provide supplementary ventilation to points where emissions occur. Inhalation - minimum 90% efficiency.

#### **Conditions and measures related to personal protection, hygiene and health verification**

**Personal protective equipment:** Wear suitable gloves, tested according to EN347. Dermal - minimum 95% efficiency. Wear suitable respiratory protection.

**Additional conditions for human health:** Assumes a good basic standard of occupational hygiene is implemented.

#### **Other operational conditions affecting worker exposure**

Indoor use

**Further information on good practices. The requirements set out in the REACH Regulation Article 37(4) do not apply.**

**Further information on good practices:** Supervise the implementation of risk management measures and compliance with the required operational conditions.

### 2.4. CS4 Contributing Scenario - Worker: Material transfers (PROC8a)

**Process categories:** Transfer of a substance or a preparation (filling/emptying) at non-dedicated facilities (PROC8a)

#### **Product features (article)**

**Physical form of the product:** Liquid

**Vapor pressure:** < 500Pa

**Concentration of the substance in the product:** Includes concentrations up to 25%.

#### **Amount used, frequency and duration of use/exposure**

**Duration:** Covers up to 8 hours of daily exposure.

#### **Measures and technical-organizational conditions**

**Technical organizational measures:** Provide supplementary ventilation to points where emissions occur. Inhalation - minimum 90% efficiency.

#### **Conditions and measures related to personal protection, hygiene and health verification**

**Personal protective equipment:** Wear suitable gloves, tested according to EN347.

**Additional conditions for human health:** Assumes a good basic standard of occupational hygiene is implemented.

#### **Other operational conditions affecting worker exposure**

Indoor use

**Further information on good practices. The requirements set out in the REACH Regulation Article 37(4) do not apply.**

**Further information on good practices:** Supervise the implementation of risk management measures and compliance with the required operational conditions.

## 2.5. CS5 Contributing Scenario - Worker: Material transfers (PROC8b)

**Process categories:** Transfer of a substance or a preparation (filling/emptying) at dedicated facilities (PROC8b)

### **Product features (article)**

**Physical form of the product:** Liquid

**Vapor pressure:** < 500Pa

**Concentration of the substance in the product:** Includes concentrations up to 25%.

### **Amount used, frequency and duration of use/exposure**

**Duration:** Covers up to 8 hours of daily exposure.

### **Measures and technical-organizational conditions**

**Technical organizational measures:** Provide supplementary ventilation to points where emissions occur. Inhalation - minimum 90% efficiency.

### **Conditions and measures related to personal protection, hygiene and health verification**

**Personal protective equipment:** Wear suitable gloves, tested according to EN347. Dermal - minimum 90% efficiency. Wear suitable respiratory protection.

**Additional conditions for human health:** Assumes a good basic standard of occupational hygiene is implemented.

### **Other operational conditions affecting worker exposure**

Indoor use

### **Further information on good practices. The requirements set out in the REACH Regulation Article 37(4) do not apply.**

**Further information on good practices:** Supervise the implementation of risk management measures and compliance with the required operational conditions.

## 2.6. Contributing Scenario CS6 - Worker: Material transfers (PROC9)

**Process categories:** Transfer of a substance or preparation into small containers (dedicated filling line, including weighing) (PROC9)

### **Product features (article)**

**Physical form of the product:** Liquid

**Vapor pressure:** < 500Pa

**Concentration of the substance in the product:** Includes concentrations up to 15%.

### **Amount used, frequency and duration of use/exposure**

**Duration:** Covers up to 8 hours of daily exposure.

### **Measures and technical-organizational conditions**

**Technical organizational measures:** Provide supplementary ventilation to points where emissions occur. Inhalation - minimum 90% efficiency.

### **Conditions and measures related to personal protection, hygiene and health verification**

**Personal protective equipment:** Wear suitable gloves, tested according to EN347. Dermal - minimum 90% efficiency. Wear suitable respiratory protection.

**Additional conditions for human health:** Assumes a good basic standard of occupational hygiene is implemented.

### **Other operational conditions affecting worker exposure**

Indoor use

### **Further information on good practices. The requirements set out in the REACH Regulation Article 37(4) do not apply.**

**Further information on good practices:** Supervise the implementation of risk management measures and compliance with the required operational conditions.



## 2.7. CS7 Contributing Scenario - Worker: Roller and brush application (PROC10)

**Process categories:** Roller and brush application (PROC10)

### ***Product features (article)***

**Physical form of the product:** Liquid

**Vapor pressure:** < 500Pa

**Concentration of the substance in the product:** Includes concentrations up to 5%.

### ***Amount used, frequency and duration of use/exposure***

**Duration:** Covers up to 8 hours of daily exposure.

**Additional conditions for human health:** Limit the amount of substance in the product to 0.5%

### ***Measures and technical-organizational conditions***

**Technical organizational measures:** Provide supplementary ventilation to points where emissions occur. Inhalation - minimum 90% efficiency.

### ***Conditions and measures related to personal protection, hygiene and health verification***

**Personal protective equipment:** -Wear suitable gloves, tested according to EN347. Dermal - minimum 90% efficiency. Wear suitable respiratory protection.

**Additional conditions for human health:** Assumes a good basic standard of occupational hygiene is implemented.

### ***Other operational conditions affecting worker exposure***

Indoor use

***Further information on good practices. The requirements set out in the REACH Regulation Article 37(4) do not apply.***

**Further information on good practices:** Supervise the implementation of risk management measures and compliance with the required operational conditions.



### 3. EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

#### 3.1. Contributing Scenario CS1 - Environment: Wet polymerization (ERC4)

Protection target	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
fresh water	0.00317 mg/l	EUSES	0.017
fresh water sediment	1.6 mg/kg bw/day	EUSES	0.017
sea water	0.00042 mg/l	EUSES	0.008
Marine sediment	0.212 mg/kg bw/day	EUSES	0.008
ground	0.114 mg/kg bw/day	EUSES	0.006

#### 3.2. CS2 Contributing Scenario - Worker: Mixing Operations (PROC5)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
skin contact, systemic, long-term	0.68 mg/kg bw/day	N.d.	0.12
by inhalation, systemic, long-term	0.365 mg/m <sup>3</sup>	N.d.	0.366
by inhalation, systemic, short-term	0.731 mg/m <sup>3</sup>	N.d.	<0.001
combined routes, systemic, long-term	N.d.	N.d.	0.486

#### 3.3. CS3 Contributing Scenario - Worker: Spray (PROC7)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
skin contact, systemic, long-term	0.128 mg/kg bw/day	N.d.	0.226
by inhalation, systemic, long-term	0.457 mg/m <sup>3</sup>	N.d.	0.457
by inhalation, systemic, short-term	0.914 mg/m <sup>3</sup>	N.d.	<0.001
combined routes, systemic, long-term	N.d.	N.d.	0.683

#### 3.4. CS4 Contributing Scenario - Worker: Material transfers (PROC8a)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
skin contact, systemic, long-term	0.041 mg/kg bw/day	N.d.	0.072
by inhalation, systemic, long-term	0.548 mg/m <sup>3</sup>	N.d.	0.548
by inhalation, systemic, short-term	1.097 mg/m <sup>3</sup>	N.d.	<0.001
combined routes, systemic, long-term	N.d.	N.d.	0.621

### 3.5. CS5 Contributing Scenario - Worker: Material transfers (PROC8b)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
skin contact, systemic, long-term	0.034 mg/kg bw/day	N.d.	0.06
by inhalation, systemic, long-term	0.548 mg/m <sup>3</sup>	N.d.	0.548
by inhalation, systemic, short-term	1.096 mg/m <sup>3</sup>	N.d.	<0.001
combined routes, systemic, long-term	N.d.	N.d.	0.609

### 3.6. Contributing Scenario CS6 - Worker: Material transfers (PROC9)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
skin contact, systemic, long-term	0.068 mg/kg bw/day	N.d.	0.12
by inhalation, systemic, long-term	0.365 mg/m <sup>3</sup>	N.d.	0.366
by inhalation, systemic, short-term	1.22mg/m <sup>3</sup>	N.d.	<0.001
combined routes, systemic, long-term	N.d.	N.d.	0.706

### 3.7. CS7 Contributing Scenario - Worker: Roller and brush application (PROC10)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
skin contact, systemic, long-term	0.082 mg/kg bw/day	N.d.	0.144
by inhalation, systemic, long-term	0.457 mg/m <sup>3</sup>	N.d.	0.229
by inhalation, systemic, short-term	0.914 mg/m <sup>3</sup>	N.d.	<0.001
combined routes, systemic, long-term	N.d.	N.d.	0.373

## 4. GUIDANCE FOR DOWNSTREAM USERS TO ASSESS WHETHER THEY COMPLY WITH THE LIMITS SET BY THE EXPOSURE SCENARIO

**Guidance to check compliance with the exposure scenario:** Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

## - INDUSTRIAL APPLICATION OF COATINGS AND PAINTS - PROFESSIONAL USE

### 1. TITLE SECTION

**Exposure scenario name:** Industrial application of coatings and paints

**Date - Version:** 03/18/2020 - 1.0

**Life cycle stage:** Generalized use by professional operators

**Main user group:** Professional uses

**Sector(s) of use:** Professional uses (SU22)

#### **Contributing scenario - Environment**

**CS1 Wet polymerization:** ERC8a - ERC8d

#### **Contributing scenario - Worker**

**CS2 Blend Operations:** PROC5

**CS3 Material Transfers:** PROC8a

**CS4 Material Transfers:** PROC8b

**CS5 Material Transfers:** PROC9

**CS6 Roller and brush application:** PROC10

### 2. CONDITIONS OF USE AFFECTING EXPOSURE

#### 2.1. Contributing Scenario CS1 - Environment: Wet polymerization (ERC4)

**Environmental release categories:** Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor). (ERC8a, ERC8d)

##### **Product features (article)**

**Physical form of the product:** Liquid

##### **Amount used, frequency and duration of use**

**Amounts used:** Daily quantity per site 15500kg/day

**Release Type:** Continuous release

**Issue days:** 300 days/year

##### **Measures and technical-organizational conditions**

**Control measures to prevent releases:** Preventive treatment of wastewater by neutralization. No other specific measures identified.

##### **Other operational conditions affecting environmental exposure**

**Local fresh water dilution factor:** 1000

#### 2.2. CS2 Contributing Scenario - Worker: Mixing Operations (PROC5)

**Process categories:** Mixing or Blending in Batch Processes (PROC5)

##### **Product features (article)**

**Physical form of the product:** Liquid

**Vapor pressure:** < 500Pa

**Concentration of the substance in the product:** Includes substance shares in the product up to 25%

##### **Amount used, frequency and duration of use/exposure**

**Duration:** Includes use up to 60 min.

##### **Measures and technical-organizational conditions**

**Technical organizational measures:** Provide supplementary ventilation to points where emissions occur. Inhalation - minimum 90% efficiency.

##### **Conditions and measures related to personal protection, hygiene and health verification**

**Personal protective equipment:** Wear suitable gloves, tested according to EN347.

**Additional conditions for human health:** Assumes a good basic standard of occupational hygiene is implemented.

##### **Other operational conditions affecting worker exposure**

Indoor use

**Further information on good practices. The requirements set out in the REACH Regulation Article 37(4) do not apply.**

**Further information on good practices:** Supervise the implementation of risk management measures and compliance with the required operational conditions.

### 2.3. CS3 Contributing Scenario - Worker: Material transfers (PROC8a)

**Process categories:** Transfer of a substance or a preparation (filling/emptying) at non-dedicated facilities (PROC8a)

#### **Product features (article)**

**Physical form of the product:** Liquid

**Vapor pressure:** < 500Pa

**Concentration of the substance in the product:** Includes substance shares in the product up to 25%

#### **Amount used, frequency and duration of use/exposure**

**Duration:** Includes use up to 15 min.

#### **Measures and technical-organizational conditions**

**Technical organizational measures:** Provide supplementary ventilation to points where emissions occur. Inhalation - minimum 90% efficiency.

#### **Conditions and measures related to personal protection, hygiene and health verification**

**Personal protective equipment:** Wear suitable gloves, tested according to EN347. Inhalation - minimum 95% efficiency. Wear suitable respiratory protection.

**Additional conditions for human health:** Assumes a good basic standard of occupational hygiene is implemented.

#### **Other operational conditions affecting worker exposure**

Indoor use

**Further information on good practices. The requirements set out in the REACH Regulation Article 37(4) do not apply.**

**Further information on good practices:** Supervise the implementation of risk management measures and compliance with the required operational conditions.

### 2.4. CS4 Contributing Scenario - Worker: Material transfers (PROC8b)

**Process categories:** Transfer of a substance or a preparation (filling/emptying) at dedicated facilities (PROC8b)

#### **Product features (article)**

**Physical form of the product:** Liquid

**Vapor pressure:** < 500Pa

**Concentration of the substance in the product:** Includes substance shares in the product up to 5%.

#### **Amount used, frequency and duration of use/exposure**

**Duration:** Covers up to 8 hours of daily exposure.

#### **Measures and technical-organizational conditions**

**Technical organizational measures:** Provide supplementary ventilation to points where emissions occur. Inhalation - minimum 90% efficiency.

#### **Conditions and measures related to personal protection, hygiene and health verification**

**Personal protective equipment:** Wear suitable gloves, tested according to EN347. Dermal - minimum 90% efficiency. Wear suitable respiratory protection.

**Additional conditions for human health:** Assumes a good basic standard of occupational hygiene is implemented.

#### **Other operational conditions affecting worker exposure**

Indoor use

**Further information on good practices. The requirements set out in the REACH Regulation Article 37(4) do not apply.**

**Further information on good practices:** Supervise the implementation of risk management measures and compliance with the required operational conditions.

## 2.5. CS5 Contributing Scenario - Worker: Material transfers (PROC9)

**Process categories:** Transfer of a substance or preparation into small containers (dedicated filling line, including weighing) (PROC9)

### **Product features (article)**

**Physical form of the product:** Liquid

**Vapor pressure:** < 500Pa

**Concentration of the substance in the product:** Includes concentrations up to 25%.

### **Amount used, frequency and duration of use/exposure**

**Duration:** Covers up to 8 hours of daily exposure.

### **Measures and technical-organizational conditions**

**Technical organizational measures:** Provide supplementary ventilation to points where emissions occur. Inhalation - minimum 90% efficiency.

### **Conditions and measures related to personal protection, hygiene and health verification**

**Personal protective equipment:** Wear suitable gloves, tested according to EN347. Dermal - minimum 90% efficiency. Wear suitable respiratory protection.

**Additional conditions for human health:** Assumes a good basic standard of occupational hygiene is implemented.

### **Other operational conditions affecting worker exposure**

Indoor use

**Further information on good practices. The requirements set out in the REACH Regulation Article 37(4) do not apply.**

**Further information on good practices:** Supervise the implementation of risk management measures and compliance with the required operational conditions.

## 2.6. Contributing Scenario CS6 - Worker: Roller and brush application (PROC10)

**Process categories:** Roller and brush application (PROC10)

### **Product features (article)**

**Physical form of the product:** Liquid

**Vapor pressure:** < 500Pa

**Concentration of the substance in the product:** Includes concentrations up to 5%.

### **Amount used, frequency and duration of use/exposure**

**Duration:** Covers up to 8 hours of daily exposure.

**Additional conditions for human health:** Limit the amount of substance in the product to 2%

### **Measures and technical-organizational conditions**

**Technical organizational measures:** Provide supplementary ventilation to points where emissions occur. Inhalation - minimum 90% efficiency.

### **Conditions and measures related to personal protection, hygiene and health verification**

**Personal protective equipment:** Wear suitable gloves, tested according to EN347. Dermal - minimum 90% efficiency. Wear suitable respiratory protection.

**Additional conditions for human health:** Assumes a good basic standard of occupational hygiene is implemented.

### **Other operational conditions affecting worker exposure**

Indoor use

**Further information on good practices. The requirements set out in the REACH Regulation Article 37(4) do not apply.**

**Further information on good practices:** Supervise the implementation of risk management measures and compliance with the required operational conditions.

### 3. EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

#### 3.1. Contributing Scenario CS1 - Environment: Wet polymerization (ERC8a, ERC8d)

Protection target	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
fresh water	0.0037 mg/l	EUSES	N.d.
fresh water sediment	1.6 mg/kg bw/day	EUSES	N.d.
sea water	0.00042 mg/l	EUSES	N.d.
Marine sediment	0.212 mg/kg bw/day	EUSES	N.d.
ground	0.114 mg/kg bw/day	EUSES	N.d.

#### 3.2. CS2 Contributing Scenario - Worker: Mixing Operations (PROC5)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
skin contact, systemic, long-term	0.68 mg/kg bw/day	N.d.	0.12
by inhalation, systemic, long-term	0.365 mg/m <sup>3</sup>	N.d.	0.366
by inhalation, systemic, short-term	0.731 mg/m <sup>3</sup>	N.d.	<0.001
combined routes, systemic, long-term	N.d.	N.d.	0.486

#### 3.3. CS3 Contributing Scenario - Worker: Material transfers (PROC8a)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
skin contact, systemic, long-term	0.09 mg/kg bw/day	N.d.	0.15
by inhalation, systemic, long-term	0.61 mg/m <sup>3</sup>	N.d.	0.609
by inhalation, systemic, short-term	1.22mg/m <sup>3</sup>	N.d.	<0.001
combined routes, systemic, long-term	N.d.	N.d.	0.76

#### 3.4. CS4 Contributing Scenario - Worker: Material transfers (PROC8b)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
skin contact, systemic, long-term	0.14 mg/kg bw/day	N.d.	0.248
by inhalation, systemic, long-term	0.76 mg/m <sup>3</sup>	N.d.	0.076
by inhalation, systemic, short-term	1.52 mg/m <sup>3</sup>	N.d.	<0.001
combined routes, systemic, long-term	N.d.	N.d.	0.324

### 3.5. CS5 Contributing Scenario - Worker: Material transfers (PROC9)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
skin contact, systemic, long-term	0.14 mg/kg bw/day	N.d.	0.248
by inhalation, systemic, long-term	0.76 mg/m <sup>3</sup>	N.d.	0.076
by inhalation, systemic, short-term	1.52 mg/m <sup>3</sup>	N.d.	<0.001
combined routes, systemic, long-term	N.d.	N.d.	0.324

### 3.6. Contributing Scenario CS6 - Worker: Roller and brush application (PROC10)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
skin contact, systemic, long-term	0.14 mg/kg bw/day	N.d.	0.248
by inhalation, systemic, long-term	0.76 mg/m <sup>3</sup>	N.d.	0.076
by inhalation, systemic, short-term	0.243 mg/m <sup>3</sup>	N.d.	<0.001
combined routes, systemic, long-term	N.d.	N.d.	0.498

## 4. GUIDANCE FOR DOWNSTREAM USERS TO ASSESS WHETHER THEY COMPLY WITH THE LIMITS SET BY THE EXPOSURE SCENARIO

**Guidance to check compliance with the exposure scenario:** Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



# USE IN RIGID FOAM, COATINGS, ADHESIVES AND SEALANTS - PROFESSIONAL USE

## 1. TITLE SECTION

**Exposure scenario name:** Industrial application of coatings and paints

**Date - Version:** 03/18/2020 - 1.0

**Life cycle stage:** Use in rigid foam, coatings, adhesives and sealants

**Main user group:** Professional uses

**Sector(s) of use:** Professional uses (SU22)

### **Contributing scenario - Environment**

**CS1 Wet polymerization:** ERC8a - ERC8d

### **Contributing scenario - Worker**

**CS2 Blend Operations:** PROC5

**CS3 Material Transfers:** PROC8a

**CS4 Material Transfers:** PROC8b

**CS5 Material Transfers:** PROC9

**CS6 Roller and brush application:** PROC10

## 2. CONDITIONS OF USE AFFECTING EXPOSURE

### 2.1. Contributing Scenario CS1 - Environment: Wet polymerization (ERC4)

**Environmental release categories:** Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor). (ERC8a, ERC8d)

#### **Product features (article)**

**Physical form of the product:** Liquid

#### **Amount used, frequency and duration of use**

**Amounts used:** Daily quantity per site 15500kg/day

**Release Type:** Continuous release

**Issue days:** 300 days/year

#### **Measures and technical-organizational conditions**

**Control measures to prevent releases:** Preventive treatment of wastewater by neutralization. No other specific measures identified.

#### **Other operational conditions affecting environmental exposure**

**Local fresh water dilution factor:** 1000

### 2.2. CS2 Contributing Scenario - Worker: Mixing Operations (PROC5)

**Process categories:** Mixing or Blending in Batch Processes (PROC5)

#### **Product features (article)**

**Physical form of the product:** Liquid

**Vapor pressure:** < 500Pa

**Concentration of the substance in the product:** Includes substance shares in the product up to 25%

#### **Amount used, frequency and duration of use/exposure**

**Duration:** Includes use up to 60 min.

#### **Measures and technical-organizational conditions**

**Technical organizational measures:** Provide supplementary ventilation to points where emissions occur. Inhalation - minimum 90% efficiency.

#### **Conditions and measures related to personal protection, hygiene and health verification**

**Personal protective equipment:** Wear suitable gloves, tested according to EN347.

**Additional conditions for human health:** Assumes a good basic standard of occupational hygiene is implemented.

#### **Other operational conditions affecting worker exposure**

Indoor use



**Further information on good practices. The requirements set out in the REACH Regulation Article 37(4) do not apply.**

**Further information on good practices:** Supervise the implementation of risk management measures and compliance with the required operational conditions.

### 2.3. CS3 Contributing Scenario - Worker: Material transfers (PROC8a)

**Process categories:** Transfer of a substance or a preparation (filling/emptying) at non-dedicated facilities (PROC8a)

#### **Product features (article)**

**Physical form of the product:** Liquid

**Vapor pressure:** < 500Pa

**Concentration of the substance in the product:** Includes substance shares in the product up to 25%

#### **Amount used, frequency and duration of use/exposure**

**Duration:** Includes use up to 15 min.

#### **Measures and technical-organizational conditions**

**Technical organizational measures:** Provide supplementary ventilation to points where emissions occur. Inhalation - minimum 90% efficiency.

#### **Conditions and measures related to personal protection, hygiene and health verification**

**Personal protective equipment:** Wear suitable gloves, tested according to EN347. Inhalation - minimum 95% efficiency. Wear suitable respiratory protection.

**Additional conditions for human health:** Assumes a good basic standard of occupational hygiene is implemented.

#### **Other operational conditions affecting worker exposure**

Indoor use

**Further information on good practices. The requirements set out in the REACH Regulation Article 37(4) do not apply.**

**Further information on good practices:** Supervise the implementation of risk management measures and compliance with the required operational conditions.

### 2.4. CS4 Contributing Scenario - Worker: Material transfers (PROC8b)

**Process categories:** Transfer of a substance or a preparation (filling/emptying) at dedicated facilities (PROC8b)

#### **Product features (article)**

**Physical form of the product:** Liquid

**Vapor pressure:** < 500Pa

**Concentration of the substance in the product:** Includes concentrations up to 0.5 %

#### **Amount used, frequency and duration of use/exposure**

**Duration:** Covers up to 8 hours of daily exposure.

#### **Measures and technical-organizational conditions**

**Technical organizational measures:** No specific measures identified.

#### **Conditions and measures related to personal protection, hygiene and health verification**

**Personal protective equipment:** Wear suitable gloves, tested according to EN347.

**Additional conditions for human health:** Assumes a good basic standard of occupational hygiene is implemented.

#### **Other operational conditions affecting worker exposure**

Indoor use

**Further information on good practices. The requirements set out in the REACH Regulation Article 37(4) do not apply.**

**Further information on good practices:** Supervise the implementation of risk management measures and compliance with the required operational conditions.

## 2.5. CS5 Contributing Scenario - Worker: Material transfers (PROC9)

**Process categories:** Transfer of a substance or preparation into small containers (dedicated filling line, including weighing) (PROC9)

### **Product features (article)**

**Physical form of the product:** Liquid

**Vapor pressure:** < 500Pa

**Concentration of the substance in the product:** Includes substance shares in the product up to 5%.

### **Amount used, frequency and duration of use/exposure**

**Duration:** Covers up to 8 hours of daily exposure.

### **Measures and technical-organizational conditions**

**Technical organizational measures:** Provide supplementary ventilation to points where emissions occur. Inhalation - minimum 90% efficiency.

### **Conditions and measures related to personal protection, hygiene and health verification**

**Personal protective equipment:** Wear suitable gloves, tested according to EN347. Dermal - minimum 90% efficiency. Wear suitable respiratory protection.

**Additional conditions for human health:** Assumes a good basic standard of occupational hygiene is implemented.

### **Other operational conditions affecting worker exposure**

Indoor use

**Further information on good practices. The requirements set out in the REACH Regulation Article 37(4) do not apply.**

**Further information on good practices:** Supervise the implementation of risk management measures and compliance with the required operational conditions.

## 2.6. Contributing Scenario CS6 - Worker: Roller and brush application (PROC10)

**Process categories:** Roller and brush application (PROC10)

### **Product features (article)**

**Physical form of the product:** Liquid

**Vapor pressure:** < 500Pa

**Concentration of the substance in the product:** Includes concentrations up to 5%.

### **Amount used, frequency and duration of use/exposure**

**Duration:** Covers up to 8 hours of daily exposure.

### **Measures and technical-organizational conditions**

**Technical organizational measures:** Provide supplementary ventilation to points where emissions occur. Inhalation - minimum 90% efficiency.

### **Conditions and measures related to personal protection, hygiene and health verification**

**Personal protective equipment:** Wear suitable gloves, tested according to EN347. Dermal - minimum 90% efficiency. Wear suitable respiratory protection.

**Additional conditions for human health:** Assumes a good basic standard of occupational hygiene is implemented.

### **Other operational conditions affecting worker exposure**

Indoor use

**Further information on good practices. The requirements set out in the REACH Regulation Article 37(4) do not apply.**

**Further information on good practices:** Supervise the implementation of risk management measures and compliance with the required operational conditions.

### 3. EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

#### 3.1. Contributing Scenario CS1 - Environment: Wet polymerization (ERC8a, ERC8d)

Protection target	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
fresh water	0.0037 mg/l	EUSES	N.d.
fresh water sediment	1.6 mg/kg bw/day	EUSES	N.d.
sea water	0.00042 mg/l	EUSES	N.d.
Marine sediment	0.212 mg/kg bw/day	EUSES	N.d.
ground	0.114 mg/kg bw/day	EUSES	N.d.

#### 3.2. CS2 Contributing Scenario - Worker: Mixing Operations (PROC5)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
skin contact, systemic, long-term	0.68 mg/kg bw/day	N.d.	0.12
by inhalation, systemic, long-term	0.365 mg/m <sup>3</sup>	N.d.	0.366
by inhalation, systemic, short-term	0.731 mg/m <sup>3</sup>	N.d.	<0.001
combined routes, systemic, long-term	N.d.	N.d.	0.486

#### 3.3. CS3 Contributing Scenario - Worker: Material transfers (PROC8a)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
skin contact, systemic, long-term	0.09 mg/kg bw/day	N.d.	0.15
by inhalation, systemic, long-term	0.61 mg/m <sup>3</sup>	N.d.	0.609
by inhalation, systemic, short-term	1.22mg/m <sup>3</sup>	N.d.	<0.001
combined routes, systemic, long-term	N.d.	N.d.	0.76

#### 3.4. CS4 Contributing Scenario - Worker: Material transfers (PROC8b)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
skin contact, systemic, long-term	0.14 mg/kg bw/day	N.d.	0.248
by inhalation, systemic, long-term	0.76 mg/m <sup>3</sup>	N.d.	0.076
by inhalation, systemic, short-term	1.52 mg/m <sup>3</sup>	N.d.	<0.001
combined routes, systemic, long-term	N.d.	N.d.	0.324

### 3.5. CS5 Contributing Scenario - Worker: Material transfers (PROC9)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
skin contact, systemic, long-term	0.14 mg/kg bw/day	N.d.	0.248
by inhalation, systemic, long-term	0.76 mg/m <sup>3</sup>	N.d.	0.076
by inhalation, systemic, short-term	1.52 mg/m <sup>3</sup>	N.d.	<0.001
combined routes, systemic, long-term	N.d.	N.d.	0.324

### 3.6. Contributing Scenario CS6 - Worker: Roller and brush application (PROC10)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
skin contact, systemic, long-term	0.14 mg/kg bw/day	N.d.	0.248
by inhalation, systemic, long-term	0.76 mg/m <sup>3</sup>	N.d.	0.076
by inhalation, systemic, short-term	1.52 mg/m <sup>3</sup>	N.d.	<0.001
combined routes, systemic, long-term	N.d.	N.d.	0.373

## 4. GUIDANCE FOR DOWNSTREAM USERS TO ASSESS WHETHER THEY COMPLY WITH THE LIMITS SET BY THE EXPOSURE SCENARIO

**Guidance to check compliance with the exposure scenario:** Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

# Benzyl alcohol

## Substance identification

Chemical Name: Benzyl alcohol

CAS number: 100-51-6

Date: 07/12/2012

## INDUSTRIAL USE

**Exposure scenario for industrial use in adhesives, sealants, coatings and paints, fillers, finger paints, metallic and non-metallic surface treatment products, inks and toners (PC1, PC9a, PC9b, PC9c, PC14, PC15, PC18)**

### 1. TITLE

**Systematic title based on the use descriptor:** SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

#### **Processes, activities covered:**

Mixing or dilution in batch processes

Processing by compression/pelletisation, calendaring or use during foam production

Transfer operations from/to large or small containers

Treatment of objects by brush/roller application, spraying or immersion/pouring

Lubrication at high energy conditions

Use as a laboratory agent

Handling of substances bound in materials/articles

#### **Evaluation method:**

ECETOC TRA (April 2010), EUSES (v.2.1)

### 2. OPERATING CONDITIONS AND RISK MANAGEMENT MEASURES

Process categories for human health and environmental release categories for exposure assessment:

**PC1:** PROC5, 7, 8a, 8b, 9, 10, 12, 13, 14 spERC ESVO 5 (related to ERC4)

**PC9a/b/c:** PROC5, 7, 8a, 8b, 9, 10, 13 spERC ESVO 5 (related to ERC4)

**PC14:** PROC5, 8a, 8b, 9, 15, 23, 24, 25 spERC ESVO 5 (related to ERC4)

**PC15:** PROC5, 8a, 8b, 9, 15 spERC ESVO 5 (related to ERC4)

**PC18:** PROC7, 8a, 8b, 9, 10, 13 spERC ESVO 5 (related to ERC4)

### 2.1 EXPOSURE SCENARIO CONTROLLING WORKER EXPOSURE FOR PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14, PROC15

#### **Product features**

Concentration ≤ 40%

Physical state: liquid

#### **Quantity used**

Not applicable

#### **Frequency and duration of use/exposure**

Duration of exposure per day: 8h (full shift, indoors)

Duration of exposure per year: 230 days

#### **Human factors not influenced by risk management**

Breathing volume in the conditions of use: 10 m<sup>3</sup>/8h-day (light activity)

Body weight: 70kg (worker)

#### **Other operational conditions affecting worker exposure**

Internal use

Use at room temperature

**Technical conditions and measures to control dispersion from source to the worker**

Local vapor ventilation (efficiency > 90 %) or other adequate ventilation required

**Organizational measures to prevent/limit releases, dispersion and exposure**

Only properly trained and authorized personnel can handle the substance. Substance handling procedures must be well documented and controlled.

**Conditions and measures related to personal protection, hygiene and health evaluation**

PROC7:

Respiratory protection recommended (95% efficiency) as described in section 8.

Wear safety goggles as described in section 8.

Wear protective clothing as described in section 8.

**2.2 EXPOSURE SCENARIO CONTROLLING WORKER EXPOSURE FOR PROC23, PROC24, PROC25**

**Product features**

Concentration ≤ 40%

Physical state: liquid

**Quantity used**

Not applicable

**Frequency and duration of use/exposure**

Duration of exposure per day: 8h (full shift, indoors and outdoors)

Duration of exposure per year: 230 days

**Human factors not influenced by risk management**

Breathing volume in the conditions of use: 10 m<sup>3</sup>/8h-day (light activity)

Body weight: 70kg (worker)

**Other operational conditions affecting worker exposure**

Indoor use.

Use at room temperature

**Technical conditions and measures to control dispersion from source to the worker**

Local vapor ventilation (efficiency > 90 %) or other adequate ventilation required.

**Organizational measures to prevent/limit releases, dispersion and exposure**

Only properly trained and authorized personnel can handle the substance. Substance handling procedures must be well documented and controlled.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear safety goggles as described in section 8.

Wear protective clothing as described in section 8.

**2.3 EXPOSURE SCENARIO CONTROLLING ENVIRONMENTAL EXPOSURE FOR SPERC ESVOC 5 - RELATED TO ERC4**

**Product features**

Not relevant

**Quantity used**

Number of sites: > 1

Yearly amount used in the region: PC 1, 9a, 9b, 9c, 14, 15, 18: 412 to: 570 to (10 % rule applies)

**Frequency and duration of use**

spERC ESVOC 5 (related to ERC4): 300 days/year

**Environmental factors not influenced by risk management**

Local fresh water dilution factor: 10

Receiving surface water flow: 18,000 m<sup>3</sup>/d

Local seawater dilution factor 100

### **Other operational conditions affecting environmental exposure**

Indoor and outdoor use

### **Technical conditions and measures at process level (source) to prevent release**

spERC ESVOC 5 (related to ERC4):

Fraction of tonnage released to air: 9,8 %

Fraction of tonnage released to wastewater: 2 %

Fraction of tonnage released into industrial ground: 0 %

### **Local technical conditions and measures to reduce and limit discharges, atmospheric emissions and soil release**

Waste water must be sent to a dedicated treatment plant or treated with other suitable techniques. Floors should be waterproof and resistant to liquids.

### **Organizational measures to prevent/limit release from site**

Only properly trained and authorized personnel can handle the substance. Substance handling procedures must be well documented and controlled.

### **Conditions and measures for the domestic sewage treatment plant**

Dimensions of wastewater treatment plant: 2000 m<sup>3</sup>/d (removal rate: 87.4 %)

### **Conditions and measures for external treatment of waste for disposal**

No specific measures. For general conditions and measures, see section 13.

### **Conditions and measures for external recovery of waste**

No specific measures. For general conditions and measures, see section 13.

## **3. EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE**

### **Workers**

#### **Exposure assessment (human):**

**ECETOC TRA model (April 2010 version).** Dermal exposure estimates of ECETOC TRA have been corrected for concentration.

#### **Exposure estimation:**

Individual and combined (skin and inhalation) exposure values are below the DNELs (RCR ratios < 1).

### **Environment**

#### **Exposure assessment (environment):**

EUSES 2.1: ERC4 modified with ESVOC 5 (ESVOC SPERC 4.3a.v1)

#### **Exposure estimation:**

The predicted exposure concentrations for air, water and soil are lower than the derived PNECs, giving an RCR < 1.

## **4. GUIDANCE FOR DOWNSTREAM USERS TO ASSESS WHETHER THEY COMPLY WITH THE LIMITS SET BY THE EXPOSURE SCENARIO**

### **Environment:**

**Under the conditions listed above the process is considered safe.** Direct release to water and soil should be avoided, air emissions should be minimised. Other conditions should be considered only when adequate measurements or calculations demonstrate that the RCR remains < 1.

### **Health:**

**Under the conditions listed above the process is considered safe.** Other conditions should be considered only when adequate measurements or calculations demonstrate that the RCR remains < 1.

### **Further good practice advice beyond the REACH CSA**

**Environment:** Not applicable

**Health:** On possible contact with the product (sampling, use, spills, product leaks, cleaning): wear protective clothing. Wear protective gloves and safety goggles. See section 8 for information on appropriate personal protective equipment.



## PROFESSIONAL USE

**Exposure scenario for professional uses of benzyl alcohol consisting of mixing/loading and charging/discharging, roller, brush, spray or dip application (PC0, PC1, PC09a, 9b, 9c, PC14, PC15, PC18, PC21, PC26, PC31, PC32).**

### 1. TITLE

**Systematic title based on the use descriptor:** SU22 - Professional uses: Generalized use

***Processes, activities covered:***

Mixing or dilution in batch processes BY HAND

Transfer operations from/to large or small containers

Treatment of objects by brush/roller application, spraying or immersion/pouring

Hand mixing with intimate contact and only PSD available

Handling of substances bound in materials/articles

***Evaluation method:***

ECETOC TRA (April 2010), EUSES (v.2.1)

### 2. OPERATING CONDITIONS AND RISK MANAGEMENT MEASURES

Process categories for human health and environmental release categories for exposure assessment:

**PC0:** PROC5, 8a, 8b, 9, 10, 11, 13, 19 - ERC8a, 8d

**PC1:** PROC5, 8a, 8b, 9, 10, 11, 13, 19 - ERC8a, 8d

**PC9a, 9b, 9c:** PROC5, 8a, 8b, 9, 10, 11, 13, 19 - ERC8a, 8d

**PC14:** PROC8a, 8b, 9, 10, 11, 13, 19, 23, 24, 25 - ERC8a, 8d

**PC15:** PROC8a, 8b, 9, 10, 11, 13, 19 - ERC8a, 8d

**PC18:** PROC5, 8a, 8b, 10, 11, 13, 19 - ERC8a, 8d

**PC21:** PROC8a, 8b, 15 - ERC8a, 8d

**PC26:** PROC5, 6, 8a, 8b, 11, 13, 14, 19, 21 - ERC8a, 8d

**PC30:** PROC8a, 8b - ERC8a, 8d

**PC31:** PROC8b, 10, 11 - ERC8a, 8d

**PC32:** PROC8a, 8b, 9, 10, 11 - ERC8a, 8d

Number of sites: > 1

#### 2.1 EXPOSURE SCENARIO CONTROLLING WORKER EXPOSURE FOR PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC14, PROC15

***Product features***

Concentration ≤ 40%

Physical state: liquid

***Quantity used***

Not applicable

***Frequency and duration of use/exposure***

Duration of exposure per day: 8h (full shift, indoors and outdoors)

Duration of exposure per year: 230 days

***Human factors not influenced by risk management***

Breathing volume in the conditions of use: 10 m<sup>3</sup>/8h-day (light activity)

Body weight: 70kg (worker)

***Other operational conditions affecting worker exposure***

Internal use

Use at room temperature

***Technical conditions and measures to control dispersion from source to the worker***

No special measures are required.



### **Organizational measures to prevent/limit releases, dispersion and exposure**

Only properly trained and authorized personnel can handle the substance. Substance handling procedures must be well documented and controlled.

### **Conditions and measures related to personal protection, hygiene and health evaluation**

Personal protection:

PROC8b, PROC9, PROC14, PROC15: concentration  $\leq 40$  %: no RMM required.

PROC5, PROC8a, PROC13:  $> 25$  % -  $\leq 40$  %: gloves (90 % efficiency) are required as described in section 8.

PROC6:  $> 5$  % -  $\leq 40$  %: gloves (90 % efficiency) are required as described in section 8.

PROC10:  $< 5$  % (indoor and outdoor environment): No RMMs required.

$> 5$  -  $\leq 40$  % (indoor and outdoor environment): gloves (90 % efficiency) are required as described in point 8.

Wear safety goggles as described in section 8.

Wear protective clothing as described in section 8.

## **2.2 EXPOSURE SCENARIO CONTROLLING WORKER EXPOSURE FOR PROC11**

### **Product features**

Concentration  $\leq 40$  %

Physical state: liquid

### **Quantity used**

Not applicable

### **Frequency and duration of use/exposure**

Duration of exposure per day: 8h (full shift, indoors and outdoors)

Duration of exposure per year: 230 days

### **Human factors not influenced by risk management**

Breathing volume in the conditions of use: 10 m<sup>3</sup>/8h-day (light activity)

Body weight: 70kg (worker)

### **Other operational conditions affecting worker exposure**

Indoor and outdoor use

Use at room temperature

### **Technical conditions and measures to control dispersion from source to the worker**

No special measures are required.

### **Organizational measures to prevent/limit releases, dispersion and exposure**

Only properly trained and authorized personnel can handle the substance. Substance handling procedures must be well documented and controlled.

### **Conditions and measures related to personal protection, hygiene and health evaluation**

Personal protection:

$\leq 5$  % (indoor and outdoor environment): Respiratory protection (95 % efficiency) required as described in section 8.

$> 5$  %  $\leq 40$  % (indoor and outdoor environment): Respiratory protection (95 % efficiency) and gloves (90 % efficiency) required as described in section 8.

Wear safety goggles as described in section 8.

Wear protective clothing as described in section 8.

## **2.3 EXPOSURE SCENARIO CONTROLLING WORKER EXPOSURE FOR PROC19**

### **Product features**

Concentration  $\leq 40$  %

Physical state: liquid

### **Quantity used**

Not applicable

### **Frequency and duration of use/exposure**

Duration of exposure per day (concentration  $\leq 25$  %): 8 hours (indoors and outdoors)

Duration of exposure per day (concentration  $>25\% \leq 40\%$ ): 4 hours (indoors and outdoors)

Duration of exposure per year: 230 days

### **Human factors not influenced by risk management**

Breathing volume in the conditions of use: 10 m<sup>3</sup>/8h-day (light activity)

Body weight: 70kg (worker)

### **Other operational conditions affecting worker exposure**

Indoor and outdoor use

Use at room temperature

### **Technical conditions and measures to control dispersion from source to the worker**

No special measures are required.

### **Organizational measures to prevent/limit releases, dispersion and exposure**

Only properly trained and authorized personnel can handle the substance. Substance handling procedures must be well documented and controlled.

### **Conditions and measures related to personal protection, hygiene and health evaluation**

Personal protection:

> 1 % (indoor): gloves (90 % efficiency) are required as described in section 8.

> 5% - 40% (outdoors): gloves (90 % efficiency) are required as described in section 8.

Wear safety goggles as described in section 8.

Wear protective clothing as described in section 8.

## **2.4 EXPOSURE SCENARIO CONTROLLING ENVIRONMENTAL EXPOSURE FOR ERC8a, ERC8d**

### **Product features**

Not relevant

### **Quantity used**

Yearly amount used in the region: the 10% rule applies

ERC8a PC0, 1, 9a, 9b, 9c, 14, 15, 18, 21, 26, 30, 31, 32, 34, 35: 1,785t

ERC8d PC0, 1, 9a, 9b, 9c, 14, 15, 18, 21, 26, 31, 32, 34, 35: 1,775t

Fraction of main local source: 0.002 (default)

Issue days per site: 365 days/year (default)

### **Frequency and duration of use**

Continuous release: 365 days/year

### **Environmental factors not influenced by risk management**

Local fresh water dilution factor: 10

Receiving surface water flow: 18,000 m<sup>3</sup>/d

Local seawater dilution factor local: 100

### **Other operational conditions affecting environmental exposure**

Indoor / outdoor environment

### **Technical conditions and measures at process level (source) to prevent release**

No special measures are required.

### **Local technical conditions and measures to reduce and limit discharges, atmospheric emissions and soil release**

Waste water must be sent to a dedicated treatment plant or treated with other suitable techniques.

### **Organizational measures to prevent release from site**

Only properly trained and authorized personnel can handle the substance. Substance handling procedures must be well documented and controlled.

### **Conditions and measures for the domestic sewage treatment plant**

Dimensions of wastewater treatment plant: 2000 m<sup>3</sup>/d (removal rate: 87.4 %)

### **Conditions and measures for external treatment of waste for disposal**

No specific measures. For general conditions and measures, see section 13.

### **Conditions and measures for external recovery of waste**

No specific measures. For general conditions and measures, see section 13.

### 3. EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

#### **Workers**

**PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC19**

#### **Exposure assessment (human):**

PROC5, PROC6, PROC8b, PROC9, PROC11, PROC13, PROC14, PROC15

**ECETOC TRA model (April 2010 version).** Dermal exposure estimates of ECETOC TRA have been linearly corrected for concentration.

PROC8a, PROC10

**ECETOC TRA model (April 2010 version).** Dermal exposure estimates of ECETOC TRA have been linearly corrected for concentration. Local and systemic exposure via inhalation of ECETOC TRA has been linearly scaled based on the concentration.

PROC19

**ECETOC TRA model (April 2010 version).** The dermal exposure estimates of ECETOC TRA have been linearly corrected for the concentration and according to the EMFs of CEFIC for the duration of exposure. Local exposure via inhalation of ECETOC TRA has been linearly scaled based on the concentration and in accordance with the CEFIC EMFs for the duration of exposure. Systemic exposure via inhalation has been linearly scaled for the duration of exposure.

#### **Exposure estimation:**

Individual and combined (skin and inhalation) exposure values are below the DNELs (RCR ratios < 1).

#### **Environment**

ERC8a, ERC8d

#### **Exposure assessment (environment):**

EUSES 2.1.

#### **Exposure estimation:**

The predicted exposure concentrations for air, water and soil are lower than the derived PNECs, giving an RCR < 1.

### 4. GUIDANCE FOR DOWNSTREAM USERS TO ASSESS WHETHER THEY COMPLY WITH THE LIMITS SET BY THE EXPOSURE SCENARIO

#### **Environment:**

**Under the conditions listed above the process is considered safe.** Direct release to water and soil should be avoided, air emissions should be minimised. Other conditions should be considered only when adequate measurements or calculations demonstrate that the RCR remains < 1.

#### **Health:**

**Under the conditions listed above the process is considered safe.** Other conditions should be considered only when adequate measurements or calculations demonstrate that the RCR remains < 1.

#### **Further good practice advice beyond the REACH CSA**

**Environment:** Not applicable

**Health:** On possible contact with the product (sampling, use, spills, product leaks, cleaning): wear protective clothing. Wear protective gloves and safety goggles. See section 8 for information on appropriate personal protective equipment.

## PROFESSIONAL USE

### Exposure scenario for professional use in photochemicals (PC30)

#### 1. TITLE

**Systematic title based on the use descriptor:** SU22 - Professional uses: Generalized use

**Processes, activities covered:**

Transfer operations from/to large or small containers

**Evaluation method:**

ECETOC TRA (April 2010), EUSES (v.2.1)

#### 2. OPERATING CONDITIONS AND RISK MANAGEMENT MEASURES

Human Health Exposure/Environmental Exposure:

**PC30:** PROC8a, 8b - ERC8a, 8d

Number of sites: > 1

#### 2.1 EXPOSURE SCENARIO CONTROLLING WORKER EXPOSURE FOR PROC8a E PROC8b

**Product features**

Concentration  $\leq 40\%$

Physical state: liquid

**Quantity used**

Not applicable

**Frequency and duration of use/exposure**

Duration of exposure per day: 8h (full shift, indoors and outdoors)

Duration of exposure per year: 230 days

**Human factors not influenced by risk management**

Breathing volume in the conditions of use: 10 m<sup>3</sup>/8h-day (light activity)

Body weight: 70kg (worker)

**Other operational conditions affecting worker exposure**

Internal use

Use at room temperature

**Technical conditions and measures to control dispersion from source to the worker**

No special measures are required.

**Organizational measures to prevent/limit releases, dispersion and exposure**

Only properly trained and authorized personnel can handle the substance. Substance handling procedures must be well documented and controlled.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Personal protection:

PROC8b: concentration  $\leq 40\%$ : no RMM required.

PROC8a: > 25 % -  $\leq 40\%$ : gloves (90 % efficiency) are required as described in section 8.

Wear safety goggles as described in section 8.

Wear protective clothing as described in section 8.

## 2.2 EXPOSURE SCENARIO CONTROLLING ENVIRONMENTAL EXPOSURE FOR ERC8a, ERC8b

### **Product features**

Not relevant

### **Quantity used**

Yearly amount used in the region: the 10% rule applies

ERC8a PC30: 1.785 t

ERC8d PC30: 190 t

Fraction of main local source: 0.002 (default)

Issue days per site: 365 days/year (default)

### **Frequency and duration of use**

Continuous release: 365 days/year

### **Environmental factors not influenced by risk management**

Local fresh water dilution factor: 10

Receiving surface water flow: 18,000 m<sup>3</sup>/d

Local seawater dilution factor local: 100

### **Other operational conditions affecting environmental exposure**

No special measures are required.

### **Technical conditions and measures at process level (source) to prevent release**

No special measures are required.

### **Local technical conditions and measures to reduce and limit discharges, atmospheric emissions and soil release**

Waste water must be sent to a dedicated treatment plant or treated with other suitable techniques.

### **Organizational measures to prevent release from site**

Only properly trained and authorized personnel can handle the substance. Substance handling procedures must be well documented and controlled.

### **Conditions and measures for the domestic sewage treatment plant**

Dimensions of wastewater treatment plant: 2000 m<sup>3</sup>/d (removal rate: 87.4 %)

### **Conditions and measures for external treatment of waste for disposal**

No specific measures. For general conditions and measures, see section 13.

### **Conditions and measures for external recovery of waste**

No specific measures. For general conditions and measures, see section 13.

## 3. EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

### **Workers**

PROC8a, PROC8b

#### **Exposure assessment (human):**

PROC8a

**ECETOC TRA model (April 2010 version).** Dermal exposure estimates of ECETOC TRA have been linearly corrected for concentration. Local and systemic exposure via inhalation of ECETOC TRA has been linearly scaled based on the concentration.

PROC8b

**ECETOC TRA model (April 2010 version).** Dermal exposure estimates of ECETOC TRA have been linearly corrected for concentration.

#### **Exposure estimation:**

Individual and combined (skin and inhalation) exposure values are below the DNELs (RCR ratios < 1).

## **Environment**

ERC8a, ERC8b

### **Exposure assessment (environment):**

EUSES 2.1.

### **Exposure estimation:**

The predicted exposure concentrations for air, water and soil are lower than the derived PNECs, giving an RCR < 1.

## **4. GUIDANCE FOR DOWNSTREAM USERS TO ASSESS WHETHER THEY COMPLY WITH THE LIMITS SET BY THE EXPOSURE SCENARIO**

### **Environment:**

**Under the conditions listed above the process is considered safe.** Direct release to water and soil should be avoided, air emissions should be minimised. Other conditions should be considered only when adequate measurements or calculations demonstrate that the RCR remains < 1.

### **Health:**

**Under the conditions listed above the process is considered safe.** Other conditions should be considered only when adequate measurements or calculations demonstrate that the RCR remains < 1.

### **Further good practice advice beyond the REACH CSA**

**Environment:** Not applicable

**Health:** On possible contact with the product (sampling, use, spills, product leaks, cleaning): wear protective clothing. Wear protective gloves and safety goggles. See section 8 for information on appropriate personal protective equipment.

## PROFESSIONAL USE

### Exposure scenario for professional use in washing and cleaning products, cosmetics and personal care products (PC35, PC39)

#### 1. TITLE

**Systematic title based on the use descriptor:** SU22 - Professional uses: Generalized use

***Processes, activities covered:***

Transfer operations from/to large or small containers  
Treatment of objects by roller/brush, spray or dip/pour application  
Mixing or dilution in batch processes or by hand

***Evaluation method:***

ECETOC TRA (April 2010), EUSES (v.2.1)

#### 2. OPERATING CONDITIONS AND RISK MANAGEMENT MEASURES

Human Health Exposure/Environmental Exposure:

**PC35:** PROC8a, 8b, 9, 10, 11, 13, 19 - ERC8a, 8b, 8d, 8e

**PC39:** PROC13 - ERC8a, 8b, 8d, 8e

Number of sites: > 1

#### 2.1 EXPOSURE SCENARIO CONTROLLING WORKER EXPOSURE FOR PROC8a, PROC8b, PROC9, PROC10, PROC13

***Product features***

Concentration ≤ 40%  
Physical state: liquid

***Quantity used***

Not applicable

***Frequency and duration of use/exposure***

Duration of exposure per day: 8h (full shift, indoors and outdoors)  
Duration of exposure per year: 230 days

***Human factors not influenced by risk management***

Breathing volume in the conditions of use: 10 m<sup>3</sup>/8h-day (light activity)  
Body weight: 70kg (worker)

***Other operational conditions affecting worker exposure***

Internal use  
Use at room temperature

***Technical conditions and measures to control dispersion from source to the worker***

No special measures are required.

***Organizational measures to prevent/limit releases, dispersion and exposure***

Only properly trained and authorized personnel can handle the substance. Substance handling procedures must be well documented and controlled.

***Conditions and measures related to personal protection, hygiene and health evaluation***

Personal protection:

PROC8b, PROC9: concentration ≤ 40 %: no RMM required.

PROC8a, PROC13: > 25 % - ≤ 40 %: gloves (90 % efficiency) are required as described in section 8.

PROC10: < 5 % (indoor and outdoor environment): No RMMs required

> 5 - ≤ 40 % (indoor and outdoor environment): gloves (90 % efficiency) are required as described in section 8.

Wear safety goggles as described in section 8.

Wear protective clothing as described in section 8.

## 2.2 EXPOSURE SCENARIO CONTROLLING WORKER EXPOSURE FOR PROC11

### **Product features**

Concentration  $\leq 40\%$

Physical state: liquid

### **Quantity used**

Not applicable

### **Frequency and duration of use/exposure**

Duration of exposure per day: 8h (full shift, indoors and outdoors)

Duration of exposure per year: 230 days

### **Human factors not influenced by risk management**

Breathing volume in the conditions of use: 10 m<sup>3</sup>/8h-day (light activity)

Body weight: 70kg (worker)

### **Other operational conditions affecting worker exposure**

Internal use

Use at room temperature

### **Technical conditions and measures to control dispersion from source to the worker**

No special measures are required.

### **Organizational measures to prevent/limit releases, dispersion and exposure**

Only properly trained and authorized personnel can handle the substance. Substance handling procedures must be well documented and controlled.

### **Conditions and measures related to personal protection, hygiene and health evaluation**

Personal protection:

$\leq 5\%$  (indoor and outdoor environment): Respiratory protection (95 % efficiency) required as described in section 8.

$> 5\% - \leq 40\%$  (indoor and outdoor environment): Respiratory protection (95 % efficiency) and gloves (90 % efficiency) required as described in section 8.

Wear safety goggles as described in section 8.

Wear protective clothing as described in section 8.

## 2.3 EXPOSURE SCENARIO CONTROLLING WORKER EXPOSURE FOR PROC19

### **Product features**

Concentration  $\leq 40\%$

Physical state: liquid

### **Quantity used**

Not applicable

### **Frequency and duration of use/exposure**

Duration of exposure per day (concentration  $\leq 25\%$ ): 8 h (indoor and outdoor)

Duration of exposure per day (concentration  $>25\% - \leq 40\%$ ): 4 hours (indoors and outdoors)

Duration of exposure per year: 230 days

### **Human factors not influenced by risk management**

Breathing volume in the conditions of use: 10 m<sup>3</sup>/8h-day (light activity)

Body weight: 70kg (worker)

### **Other operational conditions affecting worker exposure**

Internal use

Use at room temperature

### **Technical conditions and measures to control dispersion from source to the worker**

No special measures are required.

### **Organizational measures to prevent/limit releases, dispersion and exposure**

Only properly trained and authorized personnel can handle the substance. Substance handling procedures must be well documented and controlled.



## ***Conditions and measures related to personal protection, hygiene and health evaluation***

Personal protection:

> 1 % (indoor): gloves (90 % efficiency) are required as described in section 8.

> 5% - 40% (outdoors): gloves (90 % efficiency) are required as described in section 8..

Wear safety goggles as described in section 8.

Wear protective clothing as described in section 8.

## **2.4 EXPOSURE SCENARIO CONTROLLING ENVIRONMENTAL EXPOSURE FOR ERC8a, ERC8b, ERC8d, ERC8e**

### ***Product features***

Not relevant

### ***Quantity used***

Yearly amount used in the region: the 10% rule applies

ERC8a PC35/PC39: 1,785 t

ERC8b PC35/PC39: 190 t

ERC8d PC35/PC39: 1,775 t

ERC8e PC35/PC39: 190 t

Fraction of main local source: 0.002 (default)

Issue days per site: 365 days/year (default)

### ***Frequency and duration of use***

Continuous release: 365 days/year

### ***Environmental factors not influenced by risk management***

Local fresh water dilution factor: 10

Receiving surface water flow: 18,000 m<sup>3</sup>/d

Local seawater dilution factor local: 100

### ***Other operational conditions affecting environmental exposure***

No special measures are required.

### ***Technical conditions and measures at process level (source) to prevent release***

No special measures are required.

### ***Local technical conditions and measures to reduce and limit discharges, atmospheric emissions and soil release***

Waste water must be sent to a dedicated treatment plant or treated with other suitable techniques.

### ***Organizational measures to prevent release from site***

Only properly trained and authorized personnel can handle the substance. Substance handling procedures must be well documented and controlled.

### ***Conditions and measures for the domestic sewage treatment plant***

Dimensions of wastewater treatment plant: 2000 m<sup>3</sup>/d (removal rate: 87.4 %)

### ***Conditions and measures for external treatment of waste for disposal***

No specific measures. For general conditions and measures, see section 13.

### ***Conditions and measures for external recovery of waste***

No specific measures. For general conditions and measures, see section 13.

### 3. EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

#### **Workers**

##### **Exposure assessment (human):**

PROC8b, PROC9, PROC11, PROC13

**ECETOC TRA model (April 2010 version).** Dermal exposure estimates of ECETOC TRA have been corrected for concentration.

PROC8a, PROC10

**ECETOC TRA model (April 2010 version).** Dermal exposure estimates of ECETOC TRA have been linearly corrected for concentration. Local and systemic exposure via inhalation of ECETOC TRA has been linearly scaled based on the concentration.

PROC19

**ECETOC TRA model (April 2010 version).** The dermal exposure estimates of ECETOC TRA have been linearly corrected for the concentration and according to the EMFs of CEFIC for the duration of exposure. Local exposure via inhalation of ECETOC TRA has been linearly scaled based on the concentration and in accordance with the CEFIC EMFs for the duration of exposure. Systemic exposure via inhalation has been linearly scaled for the duration of exposure.

##### **Exposure estimation:**

Individual and combined (skin and inhalation) exposure values are below the DNELs (RCR ratios < 1).

#### **Environment**

ERC8a, ERC8b, ERC8d, ERC8e

##### **Exposure assessment (environment):**

EUSES 2.1.

##### **Exposure estimation:**

The predicted exposure concentrations for air, water and soil are lower than the derived PNECs, giving an RCR < 1.

### 4. GUIDANCE FOR DOWNSTREAM USERS TO ASSESS WHETHER THEY COMPLY WITH THE LIMITS SET BY THE EXPOSURE SCENARIO

#### **Environment:**

**Under the conditions listed above the process is considered safe.** Direct release to water and soil should be avoided, air emissions should be minimised. Other conditions should be considered only when adequate measurements or calculations demonstrate that the RCR remains < 1.

#### **Health:**

**Under the conditions listed above the process is considered safe.** Other conditions should be considered only when adequate measurements or calculations demonstrate that the RCR remains < 1.

#### **Further good practice advice beyond the REACH CSA**

**Environment:** Not applicable

**Health:** On possible contact with the product (sampling, use, spills, product leaks, cleaning): wear protective clothing. Wear protective gloves and safety goggles. See section 8 for information on appropriate personal protective equipment.

# Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine

## Substance identification

Chemical Name: Fatty acids, C18-unsatd., dimers, oligomeric reaction products with tall-oil fatty acids and triethylenetetramine  
CAS number: 68082-29-1

## USE AT INDUSTRIAL USES

### 1. TITLE SECTION

**Exposure scenario name:** Industrial production of varnishes and enamels - Industrial application of coatings and paints - Use in rigid foam, coatings, adhesives and sealants - Use in composite and foundry materials

**Date - Version:** 03/12/2020 - 1.0

**Life cycle stage:** Use at industrial sites

**Main user group:** Industrial uses

**Sector(s) of use:** Industrial uses (SU3)

#### *Contributing scenario - Environment*

**CS1 Wet polymerization:** ERC5

#### *Contributing scenario - Worker*

**CS2 Hardening:** PROC4

**CS3 Spraying - Dermal Exposure Assessment:** PROC7

**CS4 Spraying - Dermal Exposure Assessment:** PROC7

**CS5 Material transfers:** PROC8b

**CS6 Material Transfers:** PROC9

### 2. CONDITIONS OF USE AFFECTING EXPOSURE

#### 2.1. CS1 Environment Contributing Scenario: Wet Polymerization (ERC5)

**Environmental release categories:** Industrial use leading to inclusion into/onto an article (ERC5)

#### *Product features (article)*

**Physical form of the product:** Liquid

#### *Amount used, frequency and duration of use*

**Amounts used:** Daily quantity per site 3.33 tons/day - Yearly amount per site 999 tons/year

**Release Type:** Continuous release

**Issue days:** 300 days/year

#### *Conditions and measures for the municipal sewage treatment plant*

**Type of sewage treatment plant (STP):** Municipal STP - Water: minimum efficiency of 91.34%

**STP effluent (m<sup>3</sup>/day):** 2000

#### *Conditions and measures for waste treatment (including the product waste)*

**Waste treatment:** No specific measures identified.

#### *Other operational conditions affecting environmental exposure*

**Flow rate of receiving surface water:** 18000 m<sup>3</sup>/day

## 2.2. Contributing Scenario CS2 - Worker: Curing (PROC4)

**Process categories:** Chemical production where opportunity for exposure arises (PROC4)

### **Product features (article)**

**Physical form of the product:** Liquid

**Concentration of the substance in the product:** Includes substance shares in the product up to 25%

### **Amount used, frequency and duration of use/exposure**

**Duration:** Covers a daily exposure up to 8 hours.

### **Measures and technical-organizational conditions**

#### **Technical organizational measures:**

Provide a good standard of general ventilation (up to 3 air changes per hour).

Ensure personnel are trained to minimize exposure.

Dermal - minimum efficiency 90%

Inhalation - minimum efficiency 90%

### **Conditions and measures for personal protection, hygiene and health verification**

#### **Personal protective equipment:**

Wear an appropriate apron to avoid skin exposure.

Wear suitable gloves, tested according to EN347.

Dermal - minimum efficiency 95%

### **Other operational conditions affecting worker exposure**

Indoor use

**Temperature:** A process temperature of up to 40°C is assumed

**Ventilation Rate:** Provide a basic level of general ventilation (1 to 3 air changes per hour). 90%

**Body parts exposed:** Possible skin contact is believed to be limited to the hands.

## 2.3. Contributing Scenario CS3 - Spraying: Dermal Exposure Assessment (PROC7)

**Process categories:** Industrial spray application (PROC7)

### **Product features (article)**

**Physical form of the product:** Liquid

**Concentration of the substance in the product:** Includes substance shares in the product up to 25%

### **Amount used, frequency and duration of use/exposure**

**Duration:** Covers a daily exposure up to 8 hours.

### **Measures and technical-organizational conditions**

#### **Technical organizational measures:**

Provide a good standard of general ventilation (up to 3 air changes per hour).

Ensure personnel are trained to minimize exposure.

Dermal - minimum efficiency 95%

Inhalation - minimum efficiency 90%

### **Conditions and measures for personal protection, hygiene and health verification**

#### **Personal protective equipment:**

Wear an appropriate apron to avoid skin exposure.

Wear suitable gloves, tested according to EN347.

Dermal - minimum efficiency 95%

### **Other operational conditions affecting worker exposure**

Indoor use

**Temperature:** A process temperature of up to 40°C is assumed

**Ventilation Rate:** Provide a basic level of general ventilation (1 to 3 air changes per hour). 90%

**Body parts exposed:** Possible skin contact is believed to be limited to the hands and forearms.

## 2.4. Contributing Scenario CS4 - Spraying: Inhalation Exposure Assessment (PROC7)

**Process categories:** Industrial spray application (PROC7)

### **Product features (article)**

**Physical form of the product:** Liquid

**Vapor pressure:** 7.9E-08 Pa

**Concentration of the substance in the product:** Includes substance shares in the product up to 25%

### **Amount used, frequency and duration of use/exposure**

**Duration:** For each application, avoid using for a duration exceeding 480 min.

### **Conditions and measures for personal protection, hygiene and health verification**

**Personal protective equipment:** Wear suitable respiratory protection. Inhalation - minimum efficiency 95%

### **Other operational conditions affecting worker exposure**

Indoor use

**Room size:** Covers use in a room size of 300m<sup>2</sup>.

**Temperature:** Includes use at room temperature.

**Ventilation Rate:** Provide a basic level of general ventilation (1 to 3 air changes per hour). 90%

**Body parts exposed:** Possible skin contact is believed to be limited to the hands and forearms.

**Additional conditions for human health:** Moderate amount used (0.3-3 l/minute)

**Learn more about good practices. The obligations set out in the REACH Regulation in Article 37(4) do not apply.**

**Further information on good practices:** Use a splash guard. For further data, see section 8 of the safety data sheet. Wear suitable respiratory protection.

## 2.5. Contributing Scenario CS5 - Worker: Material Transfers (PROC8b)

**Process categories:** Transfer of a substance or a preparation (filling/emptying) at dedicated facilities (PROC8b)

### **Product features (article)**

**Physical form of the product:** Liquid

**Concentration of the substance in the product:** Includes substance shares in the product up to 25%

### **Amount used, frequency and duration of use/exposure**

**Duration:** Covers a daily exposure up to 8 hours.

### **Measures and technical-organizational conditions**

**Technical organizational measures:**

Provide a good standard of general ventilation (up to 3 air changes per hour).

Ensure personnel are trained to minimize exposure.

Dermal - minimum efficiency 95%

Inhalation - minimum efficiency 95%

### **Conditions and measures for personal protection, hygiene and health verification**

**Personal protective equipment:**

Wear an appropriate apron to avoid skin exposure.

Wear suitable gloves, tested according to EN347.

Dermal - minimum efficiency 95 %

### **Other operational conditions affecting worker exposure**

Indoor use

**Temperature:** A process temperature of up to 40°C is assumed

**Ventilation Rate:** Provide a basic level of general ventilation (1 to 3 air changes per hour). 90%

**Body parts exposed:** Possible skin contact is believed to be limited to the hands and forearms.

## 2.6. Contributing Scenario CS6 - Worker: Material Transfers (PROC9)

**Process categories:** Transfer of a substance or preparation (filling/emptying) (dedicated filling line, including weighing) (PROC9)

### **Product features (article)**

**Physical form of the product:** Liquid

**Concentration of the substance in the product:** Includes substance shares in the product up to 25%

### **Amount used, frequency and duration of use/exposure**

**Duration:** Covers a daily exposure up to 8 hours.

### **Measures and technical-organizational conditions**

**Technical organizational measures:**

Provide a good standard of general ventilation (up to 3 air changes per hour).

Ensure personnel are trained to minimize exposure.

Dermal - minimum efficiency 90%

Inhalation - minimum efficiency 90%

### **Conditions and measures for personal protection, hygiene and health verification**

**Personal protective equipment:**

Wear an appropriate apron to avoid skin exposure.

Wear suitable gloves, tested according to EN347.

Dermal - minimum efficiency 95 %

### **Other operational conditions affecting worker exposure**

Indoor use

**Temperature:** A process temperature of up to 40°C is assumed

**Ventilation Rate:** Provide a basic level of general ventilation (1 to 3 air changes per hour). 90%

**Body parts exposed:** Possible skin contact is believed to be limited to the hands.

## 3. EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

### 3.1. CS1 Environment Contributing Scenario: Wet Polymerization (ERC5)

Release route	Release rate	Release evaluation method
Water	0.666 kg/day	spERC
Air	8.325 kg/day	spERC
Ground	0.01 %	spERC

Protection target	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
fresh water	0.001 mg/l	N.d.	0.279
fresh water sediment	121.3 mg/kg dry weight	N.d.	0.279
sea water	0.0001251 mg/l	N.d.	0.288
Marine sediment	12.51 mg/kg dry weight	N.d.	0.288
agricultural land	7.992 mg/kg dry weight	N.d.	0.292
environmentally exposed people - Inhalation	0.002 mg/m <sup>3</sup>	N.d.	< 0.01
environmentally exposed people - Oral	208.8 mg/kg bw/day	N.d.	372.8
All ways	N.d.	N.d.	372.8

### 3.2. Contributing Scenario CS2 - Worker: Curing (PROC4)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
by inhalation, systemic, long-term	0.17 mg/m <sup>3</sup>	ECETOC TRA worker v2.0	0.044
skin contact, systemic, long-term	0.009 mg/kg bw/day	ECETOC TRA worker v2.0	0.008
combined routes, systemic, long-term	N.d.	ECETOC TRA worker v2.0	0.051

### 3.3. Contributing Scenario CS3 - Spraying: Dermal Exposure Assessment (PROC7)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
by inhalation, systemic, long-term	0.21 mg/m <sup>3</sup>	ECETOC TRA worker v2.0	0.054
skin contact, systemic, long-term	0.027 mg/kg bw/day	ECETOC TRA worker v2.0	0.024
combined routes, systemic, long-term	N.d.	ECETOC TRA worker v2.0	0.078

### 3.4. Contributing Scenario CS4 - Spraying: Inhalation Exposure Assessment (PROC7)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
by inhalation, systemic, long-term	0.21 mg/m <sup>3</sup>	ECETOC TRA worker v2.0	0.054
skin contact, systemic, long-term	0.027 mg/kg bw/day	ECETOC TRA worker v2.0	0.024
combined routes, systemic, long-term	N.d.	ECETOC TRA worker v2.0	0.078

### 3.5. Contributing Scenario CS5 - Worker: Material Transfers (PROC8b)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
by inhalation, systemic, long-term	0.085 mg/m <sup>3</sup>	ECETOC TRA worker v2.0	0.022
skin contact, systemic, long-term	0.009 mg/kg bw/day	ECETOC TRA worker v2.0	0.008
combined routes, systemic, long-term	N.d.	ECETOC TRA worker v2.0	0.03

### 3.6. Contributing Scenario CS6 - Worker: Material Transfers (PROC9)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
by inhalation, systemic, long-term	0.17 mg/m <sup>3</sup>	ECETOC TRA worker v2.0	0.044
skin contact, systemic, long-term	0.009 mg/kg bw/day	ECETOC TRA worker v2.0	0.008
combined routes, systemic, long-term	N.d.	ECETOC TRA worker v2.0	0.051

## 4. GUIDANCE FOR DOWNSTREAM USERS TO ASSESS WHETHER THEY COMPLY WITH THE LIMITS SET BY THE EXPOSURE SCENARIO

**Guidance to check compliance with the exposure scenario:** Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



## GENERALIZED USE BY PROFESSIONAL OPERATORS

### 1. TITLE SECTION

**Exposure scenario name:** Industrial production of varnishes and enamels - Industrial application of coatings and paints - Use in rigid foam, coatings, adhesives and sealants - Use in composite and foundry materials

**Date - Version:** 03/12/2020 - 1.0

**Life cycle stage:** Use at industrial sites

**Main user group:** Generalized use by professional traders

**Sector(s) of use:** Professional uses (SU22)

#### ***Contributing scenario - Environment***

**CS1 Wet polymerization:** ERC8C

#### ***Contributing scenario - Worker***

**CS2 Blend Operations:** PROC5

**CS3 Material Transfers:** PROC8b

**CS4 Material Transfers:** PROC9

### 2. CONDITIONS OF USE AFFECTING EXPOSURE

#### 2.1. CS1 Environment Contributing Scenario: Wet Polymerization (ERC8c)

**Environmental release categories:** Widespread use resulting in an inclusion into or onto the surface of an article (indoor use) (ERC8c)

##### ***Product features (article)***

**Physical form of the product:** Liquid

##### ***Amount used, frequency and duration of use***

**Amounts used:** Daily quantity at site 0.0005494 tons/day

##### ***Conditions and measures for the municipal sewage treatment plant***

**Type of sewage treatment plant (STP):** Municipal STP - Water: minimum efficiency of 91.34%

**STP effluent (m³/day):** 2000

##### ***Conditions and measures for waste treatment (including the product waste)***

**Waste treatment:** No specific measures identified.

##### ***Other operational conditions affecting environmental exposure***

**Flow rate of receiving surface water:** 18000 m³/day

#### 2.2. Contributing Scenario CS2 - Worker: Blending Operations (PROC5)

**Process categories:** Mixing or Blending in Batch Processes (PROC5)

##### ***Product features (article)***

**Physical form of the product:** Liquid

**Concentration of the substance in the product:** Includes substance shares in the product up to 25%

##### ***Amount used, frequency and duration of use/exposure***

**Duration:** Covers a daily exposure up to 4 hours.

##### ***Measures and technical-organizational conditions***

**Technical organizational measures:**

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Ensure personnel are trained to minimize exposure.

##### ***Conditions and measures for personal protection, hygiene and health verification***

**Personal protective equipment:**

Wear an appropriate apron to avoid skin exposure.

Wear suitable gloves, tested according to EN347.

Dermal - minimum efficiency 95 %

### ***Other operational conditions affecting worker exposure***

Indoor use

**Temperature:** A process temperature of up to 40°C is assumed

**Body parts exposed:** Possible skin contact is believed to be limited to the hands.

## **2.3. CS3 Worker Contributing Scenario: Material Transfers (PROC8a)**

**Process categories:** Transfer of a substance or a preparation (filling/emptying) at non-dedicated facilities (PROC8a)

### ***Product features (article)***

**Physical form of the product:** Liquid

**Concentration of the substance in the product:** Includes substance shares in the product up to 25%

### ***Amount used, frequency and duration of use/exposure***

**Duration:** Covers a daily exposure up to 4 hours.

### ***Measures and technical-organizational conditions***

**Technical organizational measures:**

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Ensure personnel are trained to minimize exposure.

### ***Conditions and measures for personal protection, hygiene and health verification***

**Personal protective equipment:**

Wear an appropriate apron to avoid skin exposure.

Wear suitable gloves, tested according to EN347.

Dermal - minimum efficiency 95 %

### ***Other operational conditions affecting worker exposure***

Indoor use

**Temperature:** A process temperature of up to 40°C is assumed

**Body parts exposed:** Possible skin contact is believed to be limited to the hands and forearms.

## **2.4. CS4 Worker Contributing Scenario: Material Transfers (PROC8b)**

**Process categories:** Transfer of a substance or a preparation (filling/emptying) at dedicated facilities (PROC8b)

### ***Product features (article)***

**Physical form of the product:** Liquid

**Concentration of the substance in the product:** Includes substance shares in the product up to 25%

### ***Amount used, frequency and duration of use/exposure***

**Duration:** Covers a daily exposure up to 4 hours.

### ***Measures and technical-organizational conditions***

**Technical organizational measures:**

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Ensure personnel are trained to minimize exposure.

### ***Conditions and measures for personal protection, hygiene and health verification***

**Personal protective equipment:**

Wear an appropriate apron to avoid skin exposure.

Wear suitable gloves, tested according to EN347.

Dermal - minimum efficiency 95 %

### ***Other operational conditions affecting worker exposure***

Indoor use

**Temperature:** A process temperature of up to 40°C is assumed

**Body parts exposed:** Possible skin contact is believed to be limited to the hands and forearms.

### 3. EXPOSURE ESTIMATION AND REFERENCE TO ITS SOURCE

#### 3.1. CS1 Environment Contributing Scenario: Wet Polymerization (ERC8c)

Release route	Release rate	Release evaluation method
Water	0.008 kg/day	spERC
Air	0 %	spERC
Ground	0 %	spERC

Protection target	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
fresh water	7.3E-05 mg/l	N.d.	0.017
fresh water sediment	7.301 mg/kg dry weight	N.d.	0.017
sea water	1.113E-05 mg/l	N.d.	0.026
Marine sediment	1.113 mg/kg dry weight	N.d.	0.026
agricultural land	7.318 mg/kg dry weight	N.d.	0.084
environmentally exposed people - Inhalation	9.158E-07 mg/m <sup>3</sup>	N.d.	< 0.01
environmentally exposed people - Oral	190.8 mg/kg bw/day	N.d.	340.7
All ways	N.d.	N.d.	340.7

#### 3.2. Contributing Scenario CS2 - Worker: Blending Operations (PROC5)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
by inhalation, systemic, long-term	0.714 mg/m <sup>3</sup>	ECETOC TRA worker v2.0	0.183
skin contact, systemic, long-term	0.171 mg/kg bw/day	ECETOC TRA worker v2.0	0.156
combined routes, systemic, long-term	N.d.	ECETOC TRA worker v2.0	0.339

#### 3.3. CS3 Worker Contributing Scenario: Material Transfers (PROC8a)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
by inhalation, systemic, long-term	0.714 mg/m <sup>3</sup>	ECETOC TRA worker v2.0	0.183
skin contact, systemic, long-term	0.171 mg/kg bw/day	ECETOC TRA worker v2.0	0.156
combined routes, systemic, long-term	N.d.	ECETOC TRA worker v2.0	0.339

### 3.4. CS4 orker Contributing Scenario: Material Transfers (PROC8b)

Route of Exposure, Impact on Health, Exposure Indicator	Degree of exposure	Calculation method	Risk characterization ratio (RCR)
by inhalation, systemic, long-term	0.714 mg/m <sup>3</sup>	ECETOC TRA worker v2.0	0.183
skin contact, systemic, long-term	0.171 mg/kg bw/day	ECETOC TRA worker v2.0	0.156
combined routes, systemic, long-term	N.d.	ECETOC TRA worker v2.0	0.339

## 4 GUIDANCE FOR DOWNSTREAM USERS TO ASSESS WHETHER THEY COMPLY WITH THE LIMITS SET BY THE EXPOSURE SCENARIO

**Guidance to check compliance with the exposure scenario:** Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

## 2-methoxy-1-methylethyl acetate

### Substance identification

Chemical Name: 2-methoxy-1-methylethyl acetate

CAS number: 108-65-6

Date - Version: 02/08/2021 18.0

## 4. USE IN COATINGS. - USE IN INDUSTRIAL PLANTS

**Short title of the exposure scenario:** Use in coatings. - Use in industrial plants

SU3; ERC4; PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15

## EXPOSURE CONTROL AND RISK MANAGEMENT MEASURES

### EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: ERC4: Industrial use of processing aids not becoming part of articles.

#### *Operating conditions*

Yearly amount used in EU: 63,050,000 kg

Daily amount per site: 105.087 kg

Minimum continuous emission days per year: 300

Emission factor to air: 27%

Emission factor in water: 2%

Emission factor in soil: 0.1%

Releases based on A&B tables from TGD 2003

Freshwater dilution factor: 10

Marine water dilution factor: 100

#### *Risk management measures*

Treat air emissions to provide a typical removal efficiency of 70%.

Prevent discharge of undissolved substance, or recover from wastewater.

Type of treatment plant: Municipal sewage treatment plant.

Total removal efficiency of the substance from the wastewater after Risk Management Measures and treatment in the treatment plant (5): 87.3%

Assumed treatment plant flow: 2,000 m<sup>3</sup>/day

#### *Measures relative to the waste*

Dispose of waste cans and containers according to local regulations.

#### *Exposure estimation and reference to its source*

Risk Characterization Ratio (RCR): 0.1338

Risk from environmental exposure is driven by freshwater and marine water.

Maximum safe use amount: 79,180 kg/day

### EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC1: Use in closed process, no likelihood of exposure.

Area of use: Industrial

#### *Operating conditions*

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤100%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 0.04 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.0001

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 0.34 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.01

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC2: Use in closed, continuous process with occasional controlled exposure.  
**General exposure.** Continuous process (closed system) with sample collection.

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤100%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 1.37 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.03

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC2: Use in closed, continuous process with occasional controlled exposure.  
**Film formation - Fast drying.**

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤100%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Operation is carried out at elevated temperature (> 20°C above ambient temperature).

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 187.71 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.5

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 1.37 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.03

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC3: Use in batch process (synthesis or formulation). Mixing operations. General exposure (closed system).

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 93.85 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.25

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 0.34 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.01

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC4: Use in batch process (synthesis) where opportunity for exposure arises. Film formation - Air drying.

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 75.08 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.2

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 6.86 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.14

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC5: Mixing in batch processes for formulation of preparations and articles (multistage and/or significant contact). Preparation of material for application. Mixing operations (open systems).

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 187.71 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.51

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 13.71 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.27

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC7: Industrial spray application. Spraying (automatic/robotic).**

**Area of use: Industrial**

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤100%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Carry out in a vented booth or extracted enclosure. Effectiveness: 95%.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 46.93 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.13

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 2.14 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.04

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC7: Industrial spray application. Spraying (manual).**

**Area of use: Industrial**

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤100%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Effectiveness: 70%.

Wear suitable gloves compliant with EN ISO 374-1. Effectiveness: 80%.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 281.56 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.76

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 8.57 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.17

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>



## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities. Material transfers. Non-dedicated system.

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 187.71 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.51

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 13.71 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.27

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Material transfers. Dedicated plant.

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 187.71 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.51

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 6.86 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.14

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Material transfers. Drum/batch transfers. Transfer from containers. Dedicated plant.

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 187.71 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.51

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 6.86 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.14

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC10: Application with rollers or brushes. Roller, spatula, jet application.**

**Area of use: Industrial**

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤100%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Wear suitable gloves compliant with EN ISO 374-1. Effectiveness: 80%

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 187.71 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.51

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 5.49 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.11

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC13: Treatment of articles by dipping, pouring, enamelling.**

**Area of use: Industrial**

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤100%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 187.71 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.51

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 13.71 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.27

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC14: Production of preparations or articles by tableting, compression, extrusion or pelletising. Production or preparation of articles by tableting, compression, extrusion.

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 187.71 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.51

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 3.43 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.07

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC15: Use as laboratory reagent. Laboratory activities.

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 0.34 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.01

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## 5. USE IN COATINGS. - USE IN INDUSTRIAL PLANTS

**Short title of the exposure scenario:** Use in coatings. - Use in industrial plants

SU3; ERC4; PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15

### EXPOSURE CONTROL AND RISK MANAGEMENT MEASURES

#### EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** ERC4: Industrial use of processing aids not becoming part of articles.

##### *Operating conditions*

Yearly amount used in EU: 2,600,000 kgs

Daily amount per site: 430kg

Minimum continuous emission days per year: 300

Emission factor to air: 80%

Emission factor in water: 10%

Emission factor in soil: 0.1%

Releases based on A&B tables from TGD 2003

Freshwater dilution factor: 10

Marine water dilution factor: 100

##### *Risk management measures*

Prevent discharge of undissolved substance, or recover from wastewater.

Type of treatment plant: Municipal sewage treatment plant.

Total removal efficiency of the substance from the wastewater after Risk Management Measures and treatment in the treatment plant (5): 87.3%

Assumed treatment plant flow: 2,000 m<sup>3</sup>/day

##### *Measures relative to the waste*

Dispose of waste cans and containers according to local regulations.

##### *Exposure estimation and reference to its source*

Risk Characterization Ratio (RCR): 0.029

Risk from environmental exposure is driven by freshwater and marine water.

Maximum safe use amount: 140.104 kg/day

#### EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC1: Use in closed process, no likelihood of exposure (closed system). General exposure.

**Area of use:** Industrial

##### *Operating conditions*

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤5%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

##### *Exposure estimation and reference to its source*

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure.

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

##### *Guidance for downstream users*

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

#### EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC2: Use in closed, continuous process with occasional controlled exposure. General exposure. Continuous process (closed system) with sample collection.

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 7.51 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.02

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 1.37 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.03

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC2: Use in closed, continuous process with occasional controlled exposure.  
**Film formation - Fast drying.**

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Operation is carried out at elevated temperature ( $> 20^\circ\text{C}$  above ambient temperature).

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 1.37 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.03

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC3: Use in batch process (synthesis or formulation). Mixing operations.  
**General exposure (closed system).**

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 18.77 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.05

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 0.34 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.01

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC4: Use in batch process (synthesis) where opportunity for exposure arises. Film formation - Air drying.

Area of use: Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 15.02 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.04

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 6.86 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.14

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC5: Mixing in batch processes for formulation of preparations and articles (multistage and/or significant contact). Preparation of material for application. Mixing operations (open systems).

Area of use: Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 13.71 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.27

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC7: Industrial spray application. Spraying (automatic/robotic). Spraying (manual)

Area of use: Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Wear suitable gloves compliant with EN ISO 374-1. Effectiveness: 80%.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 187.71 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.51

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 8.57 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.17

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC7: Industrial spray application. Spraying (manual).**

**Area of use: Industrial**

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤5%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Wear suitable gloves compliant with EN ISO 374-1.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities. Material transfers. Non-dedicated system.**

**Area of use: Industrial**

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤5%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 13.71 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.27

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Material transfers. Dedicated plant.**

**Area of use: Industrial**



### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 6.86 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.14

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Material transfers. Drum/batch transfers. Transfer from containers. Dedicated plant.

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 6.86 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.14

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC10: Application with rollers or brushes. Roller, spatula, jet application.

**Area of use:** Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 27.43 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.54

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>



## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC13: Treatment of articles by dipping, pouring, enamelling.

Area of use: Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 13.71 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.27

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC14: Production of preparations or articles by tableting, compression, extrusion or pelletising. Production or preparation of articles by tableting, compression, extrusion.

Area of use: Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 3.43 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.07

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC15: Use as laboratory reagent. Laboratory activities.

Area of use: Industrial

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

**Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 7.51 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.02

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 0.34 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.01

**Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## 7 USE IN COATINGS. - USE IN INDUSTRIAL PLANTS

**Short title of the exposure scenario:** Use in coatings. - Use in professional installations

SU22; ERC8a, ERC8d; PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC19

### EXPOSURE CONTROL AND RISK MANAGEMENT MEASURES

#### EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** ERC8a: Wide dispersive indoor use of processing aids in open systems.

##### *Operating conditions*

Yearly amount used in EU: 2,600,000 kgs

Daily amount per site: 433 kg

Minimum continuous emission days per year: 300

Emission factor to air: 80%

Emission factor in water: 10%

Emission factor in soil: 0.1%

Releases based on A&B tables from TGD 2003

Freshwater dilution factor: 10

Marine water dilution factor: 100

##### *Risk management measures*

Prevent discharge of undissolved substance, or recover from wastewater.

Type of treatment plant: Municipal sewage treatment plant.

Total removal efficiency of the substance from the wastewater after Risk Management Measures and treatment in the treatment plant (5): 87.3%

Assumed treatment plant flow: 2,000 m<sup>3</sup>/day

##### *Measures relative to the waste*

Dispose of waste cans and containers according to local regulations.

##### *Exposure estimation and reference to its source*

Risk Characterization Ratio (RCR): 0.029

Risk from environmental exposure is driven by freshwater and marine water.

Maximum safe use amount: 15,141 kg/day

#### EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** ERC8d: Wide dispersive outdoor use of processing aids in open systems.

##### *Operating conditions*

Yearly amount used in EU: 2,600,000 kgs

Daily amount per site: 433 kg

Minimum continuous emission days per year: 300

Emission factor to air: 80%

Emission factor in water: 10%

Emission factor in soil: 0.1%

Releases based on A&B tables from TGD 2003

Freshwater dilution factor: 10

Marine water dilution factor: 100

##### *Risk management measures*

Prevent discharge of undissolved substance, or recover from wastewater.

Type of treatment plant: Municipal sewage treatment plant.

Total removal efficiency of the substance from the wastewater after Risk Management Measures and treatment in the treatment plant (5): 87.3%

Assumed treatment plant flow: 2,000 m<sup>3</sup>/day

### **Measures relative to the waste**

Dispose of waste cans and containers according to local regulations.

### **Exposure estimation and reference to its source**

Risk Characterization Ratio (RCR): 0.029

Risk from environmental exposure is driven by freshwater and marine water.

Maximum safe use amount: 15,141 kg/day

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC1: Use in closed process, no likelihood of exposure.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 0.04 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.0001

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 0.34 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.01

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC2: Use in closed, continuous process with occasional controlled exposure.

**Filling/Preparation of equipment required for drums and containers.**

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure.

The use has been assessed as safe.

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC2: Use in closed, continuous process with occasional controlled exposure.

**General exposure. Use in confined systems (closed system). Filling/Preparation of equipment required for drums and containers.**

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Operation is carried out at elevated temperature ( $> 20^\circ\text{C}$  above ambient temperature).

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 75.08 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.2

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 1.37 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.03

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC3: Use in batch process (synthesis or formulation). Preparation of material for application

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤100%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 93.85 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.25

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 0.34 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.01

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC4: Use in batch process (synthesis) where opportunity for exposure arises. Film formation - Air drying.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤100%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 187.71 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.51

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 6.86 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.14

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC4: Use in batch and other processes (synthesis) where opportunity for exposure arises. Film formation - Air drying.

Area of use: Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure.

The use has been assessed as safe.

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC5: Mixing in batch processes for formulation of preparations and articles (multistage and/or significant contact). Preparation of material for application.

Area of use: Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Effectiveness: 30%.

Alternatively: Ensure that operations are carried out externally.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 269.79 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.71

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 13.71 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.27

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC5: Mixing in batch processes for formulation of preparations and articles (multistage and/or significant contact). Preparation of material for application.

Area of use: Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### ***Risk management measures***

Ensure that operations are carried out externally.

### ***Exposure estimation and reference to its source***

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

### ***Guidance for downstream users***

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities. Material transfers. Drum/batch transfers. Non-dedicated system.**

**Area of use: Professional**

### ***Operating conditions***

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### ***Risk management measures***

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Effectiveness: 30%.

### ***Exposure estimation and reference to its source***

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 262.79 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.71

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 13.71 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.27

### ***Guidance for downstream users***

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Material transfers. Drum/batch transfers Dedicated plant.**

**Area of use: Professional**

### ***Operating conditions***

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### ***Exposure estimation and reference to its source***

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 187.71 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.51

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 6.86 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.14

### ***Guidance for downstream users***

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC10: Application with rollers or brushes. Roller, spatula, jet application.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Effectiveness: 30%.

Wear suitable gloves compliant with EN ISO 374-1. Effectiveness: 80%

If there is no general ventilation, ensure that operations are carried out outdoors.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 262.79 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.71

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 5.49 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.11

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC10: Application with rollers or brushes. Roller, spatula, jet application.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Ensure that operations are carried out externally.

Wear suitable gloves compliant with EN ISO 374-1.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC11: Non-industrial spray application. Spraying (manual).

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Carry out in a vented booth or extracted enclosure. Effectiveness: 80%.

Wear a respirator conforming to EN140 with type A filter or better. Effectiveness: 90%.



### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 2.14 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.04

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC11: Non-industrial spray application. Spraying (manual).**

**Area of use: Professional**

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤100%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Ensure that operations are carried out externally. Effectiveness: 30%.

Wear a respirator conforming to EN140 with type A filter or better. Effectiveness: 90%.

Wear suitable gloves compliant with EN ISO 374-1. Effectiveness: 80%.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 131.4 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.36

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 21.43 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.42

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC13: Treatment of articles by dipping, pouring, enamelling.**

**Area of use: Professional**

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤100%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Effectiveness: 30%.

Alternatively: Ensure that operations are carried out externally.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 262.79 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.71

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 13.71 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.27

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC13: Treatment of articles by dipping, pouring, enamelling.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Ensure that operations are carried out externally.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC15: Use as laboratory reagent. Laboratory activities.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 0.34 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.01

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC19: Manual mixing with direct contact using only personal protective equipment. Hand application - fingerpaints, pastels, adhesives.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 100\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Effectiveness: 30%.

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%.

If there is no general ventilation, ensure that operations are carried out outdoors.

### ***Exposure estimation and reference to its source***

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 262.79 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.71

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 14.14 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.28

### ***Guidance for downstream users***

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC19: Manual mixing with direct contact using only personal protective equipment. Hand application - fingerpaints, pastels, adhesives.

**Area of use:** Professional

### ***Operating conditions***

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤100%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### ***Risk management measures***

Ensure that operations are carried out externally.

Wear chemically resistant gloves in combination with "basic" employee training.

### ***Exposure estimation and reference to its source***

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

### ***Guidance for downstream users***

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## 8. USE IN COATINGS. - USE IN INDUSTRIAL PLANTS

**Short title of the exposure scenario:** Use in coatings. - Use in professional installations

SU22; ERC8a, ERC8d; PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC19

### EXPOSURE CONTROL AND RISK MANAGEMENT MEASURES

#### EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** ERC8a: Wide dispersive indoor use of processing aids in open systems.

##### *Operating conditions*

Yearly amount used in EU: 2,600,000 kgs

Daily amount per site: 433 kg

Minimum continuous emission days per year: 300

Emission factor to air: 80%

Emission factor in water: 10%

Emission factor in soil: 0.1%

Releases based on A&B tables from TGD 2003

Freshwater dilution factor: 10

Marine water dilution factor: 100

##### *Risk management measures*

Prevent discharge of undissolved substance, or recover from wastewater.

Type of treatment plant: Municipal sewage treatment plant.

Total removal efficiency of the substance from the wastewater after Risk Management Measures and treatment in the treatment plant (5): 87.3%

Assumed treatment plant flow: 2,000 m<sup>3</sup>/day

##### *Measures relative to the waste*

Dispose of waste cans and containers according to local regulations.

##### *Exposure estimation and reference to its source*

Risk Characterization Ratio (RCR): 0.029

Risk from environmental exposure is driven by freshwater and marine water.

Maximum safe use amount: 15,141 kg/day

#### EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** ERC8d: Wide dispersive outdoor use of processing aids in open systems.

##### *Operating conditions*

Yearly amount used in EU: 2,600,000 kgs

Daily amount per site: 433 kg

Minimum continuous emission days per year: 300

Emission factor to air: 80%

Emission factor in water: 10%

Emission factor in soil: 0.1%

Releases based on A&B tables from TGD 2003

Freshwater dilution factor: 10

Marine water dilution factor: 100

##### *Risk management measures*

Prevent discharge of undissolved substance, or recover from wastewater.

Type of treatment plant: Municipal sewage treatment plant.

Total removal efficiency of the substance from the wastewater after Risk Management Measures and treatment in the treatment plant (5): 87.3%

Assumed treatment plant flow: 2,000 m<sup>3</sup>/day

### **Measures relative to the waste**

Dispose of waste cans and containers according to local regulations.

### **Exposure estimation and reference to its source**

Risk Characterization Ratio (RCR): 0.029

Risk from environmental exposure is driven by freshwater and marine water.

Maximum safe use amount: 15,141 kg/day

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC1: Use in closed process, no likelihood of exposure. General exposure (closed system).

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC2: Use in closed, continuous process with occasional controlled exposure. Filling/Preparation of equipment required for drums and containers.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC2: Use in closed, continuous process with occasional controlled exposure. General exposure. Use in confined systems (closed system). Filling/Preparation of equipment required for drums and containers.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Operation is carried out at elevated temperature ( $> 20^\circ\text{C}$  above ambient temperature).

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 15.02 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.4

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 1.37 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.03

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC3: Use in batch process (synthesis or formulation). Preparation of material for application

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤5%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 18.77 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.05

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 0.34 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.01

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors:** PROC4: Use in batch and other processes (synthesis) where opportunity for exposure arises. Film formation - Air drying.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤5%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 6.86 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.14

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC4: Use in batch and other processes (synthesis) where opportunity for exposure arises. Film formation - Air drying.

Area of use: Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Indoor use.

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC5: Mixing in batch processes for formulation of preparations and articles (multistage and/or significant contact). Preparation of material for application.

Area of use: Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 75.08 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.2

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 13.71 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.27

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC5: Mixing in batch processes for formulation of preparations and articles (multistage and/or significant contact). Preparation of material for application.

Area of use: Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Ensure that operations are carried out externally.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>



## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities. Material transfers. Drum/batch transfers. Non-dedicated system.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 75.08 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.2

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 13.71 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.27

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Material transfers. Drum/batch transfers Dedicated plant.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 37.54 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.1

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 6.86 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.14

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

**Covered use descriptors:** PROC10: Application with rollers or brushes. Roller, spatula, jet application.

**Area of use:** Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.



### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 75.08 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.2

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 27.43 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.54

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC10: Application with rollers or brushes. Roller, spatula, jet application.**

**Area of use: Professional**

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤5%

Indoor/Outdoor: Outdoor use.

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## **EXPOSURE SCENARIO CONSIDERED**

**Covered use descriptors: PROC11: Non-industrial spray application. Spraying (manual).**

**Area of use: Professional**

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content: ≥0 - ≤5%

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Effectiveness: 30%.

Wear chemically resistant gloves in combination with "basic" employee training. Effectiveness: 90%.

If there is no general ventilation, ensure that operations are carried out outdoors.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 262.79 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.71

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 10.71 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.21

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC11: Non-industrial spray application. Spraying (manual).

Area of use: Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Ensure that operations are carried out externally.

Wear chemically resistant gloves in combination with "basic" employee training.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC13: Treatment of articles by dipping, pouring, enamelling.

Area of use: Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 75.08 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.2

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 13.71 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.27

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC13: Treatment of articles by dipping, pouring, enamelling.

Area of use: Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Indoor use.

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Ensure that operations are carried out externally.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC15: Use as laboratory reagent. Laboratory activities.

Area of use: Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 7.51 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.02

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 0.34 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.01

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC19: Manual mixing with direct contact using only personal protective equipment. Hand application - fingerpaints, pastels, adhesives.

Area of use: Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Wear suitable gloves compliant with EN ISO 374-1. Effectiveness: 80%.

### **Exposure estimation and reference to its source**

Evaluation method: ESIG GES tool, Operator. Worker - inhalation, long-term - systemic.

Exposure estimation: 75.08 mg/m<sup>3</sup>

Risk Characterization Ratio (RCR): 0.2

Evaluation method: ESIG GES tool, Operator. Worker - dermal, long-term - systemic.

Exposure estimation: 28.29 mg/kg/day (body weight)

Risk Characterization Ratio (RCR): 0.56

### **Guidance for downstream users**

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

## EXPOSURE SCENARIO CONSIDERED

Covered use descriptors: PROC19: Manual mixing with direct contact using only personal protective equipment. Hand application - fingerpaints, pastels, adhesives.

Area of use: Professional

### **Operating conditions**

Substance concentration: 1-methoxy-2-propanol content:  $\geq 0$  -  $\leq 5\%$

Physical state: liquid, medium volatility

Duration and frequency of application: 480 mins. 5 days a week

Indoor/Outdoor: Outdoor use.

Assumes use at not more than 20°C above ambient temperature.

### **Risk management measures**

Wear suitable gloves compliant with EN ISO 374-1.

### ***Exposure estimation and reference to its source***

Evaluation method: ESIG GES tool, Operator. Workers - all relevant routes of exposure

If the operating conditions identified and risk management measures are applied, the use has been assessed as safe.

### ***Guidance for downstream users***

<http://www.esig.org/en/regulatory-information/reach/ges-library/ges-library-3>

# Xylene

## Identification of the exposure scenario

Product name: Xylene

Reach registration number: 01-2119488216-32-XXXX

CAS number: 1330-20-7

EC number: 215-535-7

Review date: 14/02/2022 rev. 3.0

## USE IN COATINGS - INDUSTRIAL USE

### 1. Title of the exposure scenario

**Process purpose:** Includes use in coatings (varnishes, inks, adhesives, etc.), including exposure during application (including material receipt, storage, bulk and semi-bulk preparation and transfer, application by spray, roller, manual spraying, dip, flow, fluid layers in production lines and in film formation) and system cleaning, maintenance and related laboratory activities.

**Main sector:** SU3 Industrial uses

#### Environment

**Environmental Release Categories [ERC]:** ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article).

**Specific Environmental Release Category [SPERC]:** ESVOC SPERC 4.3a.v1

#### Worker

##### Process categories:

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.

PROC 3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions.

PROC4 Production of chemicals with the possibility of exposure.

PROC5 Mixing or blending in batch processes

PROC7 Industrial spraying.

PROC8a Transfer of a substance or preparation (charging/discharging) at non-dedicated facilities.

PROC8a Transfer of substance or mixture (charging/discharging) at non-dedicated facilities.

PROC10 Application with rollers or brushes.

PROC13 Treatment of articles by dipping and pouring.

PROC15 Use as laboratory reagent.

PROC24 High (mechanical) energy work-up of substances bound in/on materials and/or articles.

### 2. Other conditions of use affecting exposure (Industrial - Environment 1)

#### Products features

**Form:** Liquid, vapor pressure 0.5 - 10 kPa at STP

Easily biodegradable.

#### Amounts used:

Annual amount per site: 2500 tonnes

#### Frequency and duration of use

Issue days: 300 days/year

#### Additional operating conditions relating to environmental exposure

##### Emission factor - air

Air release rate produced by the process (initial release prior to risk management measures): 0.98

##### Emission factor - water

Waste water release rate produced by the process (initial release prior to risk management measures): 0.007

##### Emission factor - soil

Soil release rate produced by the process (initial release prior to risk management measures): 0

## ***Environmental factors that are not influenced by risk management***

### **Dilution**

Local fresh water dilution factor: 10

Local seawater dilution factor: 100

### ***Risk management measures***

#### **Sewage Treatment Plant Data (STP)**

Estimated substance removal from waste water via domestic sewage treatment: 95.8%

Assumed domestic sewage treatment plant flow: 2000 m<sup>3</sup>/day

## ***Local technical conditions and measures to reduce and limit discharges and air emissions***

### **Air:**

Treat air emission to provide a typical removal efficiency of > 90%.

### **Water:**

Avoid releasing the undiluted substance into local waste water or recover it on site. The typical on-site purification technique has a removal efficiency of 95.8%.

### **Ground:**

Soil emission controls are not applicable as there is no direct release to soil.

## ***Conditions and measures for external treatment of waste***

### **Sludge treatment:**

Do not spread industrial sludge on natural soils. Sewerage sludge should be burned, stored or regenerated.

### **Waste treatment:**

No waste of the substance is formed during production.

## **2. Other conditions of use affecting exposure (Workers - Health 1)**

### ***Products features***

#### **Form:**

Liquid, vapor pressure 0.5 - 10 kPa at STP

**Concentration information:** Includes concentrations up to 100%, unless otherwise indicated.

### ***Quantities used***

Not applicable.

### ***Frequency and duration of use***

Covers daily exposures up to 8 hours (unless stated differently).

### ***Other operational conditions affecting worker exposure***

**Temperature:** (unless stated differently) assumes use at not more than 20°C above ambient temperature.

**Ventilation Rate:** Ensure a sufficient amount of controlled ventilation (10 to 15 air changes per hour). Assumes a good basic standard of occupational hygiene is implemented.

### ***Technical conditions and process-level (source) measures to prevent releases***

#### **Technical protective measures:**

Handle substance within a closed system. Provide supplementary ventilation to points where emissions occur. Ensure material transfers are managed using closed or air exhaust systems. Drain or remove substance from equipment before opening or servicing PROC7 Industrial spraying: spraying (automatic/robotic) should be carried out in a ventilated booth with laminar air flow.

#### **Risk management measures:**

PROC7 Industrial spraying.

Manual spraying.

Wear respiratory protection in accordance with EN 140 with filter type A or better.

## **3. Verification of exposure (Environment 1)**

### **Environmental exposure:**

Predicted exposures are not expected to exceed the specific risks (listed in chapter 8 of the safety datasheet), when the risk management measures/operational conditions outlined in section 2 are implemented.

Maximum allowable site tonnage (M<sub>safe</sub>), based on release following total waste water treatment removal: 9874 kg/day

### **3. Exposure Verification (Health 1)**

#### **Exposure**

Predicted workplace exposures are not expected to exceed the DNEL when risk identification measures are implemented.

### **4. Guidance to check compliance with the exposure scenario (Environment 1)**

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures.

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

Required removal efficiency for waste water can be achieved using on-site/off-site technologies, either alone or in combination.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

### **4. Guidance to check compliance with the exposure scenario (Health 1)**

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

## USE IN COATINGS - PROFESSIONAL USE

### 1. Title of the exposure scenario

**Process purpose:** Includes use in coatings (varnishes, inks, adhesives, etc.), including exposure during application (including material receipt, storage, bulk and semi-bulk preparation and transfer, application by spray, roller, brush and manual spraying or similar processes and film formation) and system cleaning, maintenance and related laboratory activities.

**Main sector:** SU22 Professional uses

#### **Environment**

##### **Environmental Release Categories [ERC]:**

ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor).

ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor).

ERC8c Widespread use leading to inclusion into/onto article (indoor).

ERC8f Widespread use leading to inclusion into/onto article (outdoor).

Specific Environmental Release Category [SPERC]: ESVOC SPERC 8.3b.v1

#### **Worker**

##### **Process categories:**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.

PROC 3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions.

PROC4 Production of chemicals with the possibility of exposure.

PROC5 Mixing or blending in batch processes

PROC8a Transfer of a substance or preparation (charging/discharging) at non-dedicated facilities.

PROC8a Transfer of substance or mixture (charging/discharging) at non-dedicated facilities.

PROC10 Application with rollers or brushes.

PROC11 Non-industrial spray application.

PROC13 Treatment of articles by dipping and pouring.

PROC15 Use as laboratory reagent.

PROC19 Manual activities with direct contact.

PROC24 High (mechanical) energy work-up of substances bound in/on materials and/or articles.

### 2. Other conditions of use affecting exposure (Industrial - Environment 1)

#### **Products features**

**Form:** Liquid, vapor pressure 0.5 - 10 kPa at STP Easily biodegradable.

#### **Quantities used**

Annual amount per site: 10 tonnes

#### **Frequency and duration of use**

Issue days: 365 days/year

#### **Additional operating conditions relating to environmental exposure**

##### **Emission factor - air**

Air release rate produced by the process (initial release prior to risk management measures): 0.98

##### **Emission factor - water**

Waste water release rate produced by the process (initial release prior to risk management measures): 0.01

##### **Emission factor - soil**

Soil release rate produced by the process (initial release prior to risk management measures): 0.01

#### **Environmental factors that are not influenced by risk management**

##### **Dilution**

Local fresh water dilution factor: 10

Local seawater dilution factor: 100



### ***Risk management measures***

Sewage Treatment Plant Data (STP)

Estimated substance removal from waste water via domestic sewage treatment 95.8%

Assumed domestic sewage treatment plant flow: 2000 m<sup>3</sup>/day

### ***Local technical conditions and measures to reduce and limit discharges and air emissions***

Air: Treat air emission to provide a typical removal efficiency of 0%.

Water: The typical on-site purification technique has a removal efficiency of 95.8%.

### ***Conditions and measures for external treatment of waste***

Waste treatment: External treatment and disposal of waste should comply with applicable local and/or national regulations.

## **2. Other conditions of use affecting exposure (Workers - Health 1)**

### ***Products features***

#### **Form:**

Liquid, vapor pressure 0.5 - 10 kPa at STP

#### **Concentration information:**

Includes concentrations up to 100%, unless otherwise indicated.

### ***Quantities used***

Not applicable.

### ***Frequency and duration of use***

Covers daily exposures up to 8 hours (unless stated differently).

### ***Other operational conditions affecting worker exposure***

#### **Temperature:**

(unless stated differently) assumes use at not more than 20°C above ambient temperature.

#### **Ventilation Rate:**

Provide a good standard of controlled ventilation (10 to 15 air changes per hour) or ensure operation is undertaken outdoors.

Assumes a good basic standard of occupational hygiene is implemented.

### ***Technical conditions and process-level (source) measures to prevent releases***

#### **Technical protective measures:**

Handle substance within a closed system. Provide supplementary ventilation to points where emissions occur. Ensure material transfers are managed using closed or air exhaust systems. Clean/flush equipment prior to opening or maintenance. Transport on closed roads. PROC11 Non-industrial spray application. Indoor use. Perform in a laminar flow ventilated booth. PROC15 Use as laboratory reagents handle under fume hood or extract air.

### ***Organizational measures to prevent/limit releases, dispersion and exposure***

#### **Organizational measures**

Avoid activities with an exposure of more than 4 hours.

Hand Application - Finger Paints, Chalks, Stickers:

Limit the amount of substance in the mixture to 5%.

### ***Risk management measures***

Wear protective gloves according to EN 374, resistant to solvents.

PROC10 Application with rollers or brushes.

PROC11 Non-industrial spray application. Outdoor use.

PROC13 Treatment of articles by dipping and pouring. Outdoor use.

Wear respiratory protection in accordance with EN 140 with filter type A or better.

## **3. Verification of exposure (Environment 1)**

### **Environmental exposure**

Predicted exposures are not expected to exceed the specific risks (listed in chapter 8 of the safety datasheet), when the risk management measures/operational conditions outlined in section 2 are implemented.

Maximum allowable site tonnage (Msafe), based on release following total waste water treatment removal: 5969 kg/day

### **3. Exposure Verification (Health 1)**

#### **Exposure**

Predicted workplace exposures are not expected to exceed the DNEL when risk identification measures are implemented.

### **4. Guidance to check compliance with the exposure scenario (Environment 1)**

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures.

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

Required removal efficiency for waste water can be achieved using on-site/off-site technologies, either alone or in combination.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

### **4. Guidance to check compliance with the exposure scenario (Health 1)**

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.