


**TrusTec™ PRF Octane No. Blends 80-98**

Version 1.13

Revision Date 2022-11-17

According to Regulation (EC) No. 1907/2006, Regulation (EC) No. 2015/830

**SECTION 1: Identification of the substance/mixture and of the company/undertaking**
**1.1 Product identifier**
**Product information**

Product Name : TrusTec™ PRF Octane No. Blends 80-98  
 Material : 1024452, 1024451, 1024450, 1024448, 1024447, 1024446,  
 1024444, 1024443, 1024442, 1024440, 1024439, 1024438,  
 1024436, 1024435, 1024434, 1024432, 1024431, 1024430,  
 1024428, 1024427, 1024426, 1024424, 1024423, 1024422,  
 1024420, 1024419, 1024418, 1024416, 1024415, 1024414,  
 1024412, 1024411, 1024410, 1024408, 1024407, 1024406,  
 1024404, 1024403, 1024402, 1024400, 1024399, 1024398,  
 1024396, 1024395, 1024394, 1024392, 1024391, 1024390,  
 1024388, 1024384, 1024383, 1024382, 1024381, 1024380,  
 1024379, 1024378, 1024341, 1024340, 1024339, 1024386,  
 1024387, 1024453, 1024449, 1024445, 1024441, 1024437,  
 1024433, 1024429, 1024425, 1024421, 1024342, 1024417,  
 1024413, 1024409, 1024405, 1024401, 1024397, 1024393,  
 1024389, 1024385

**EC-No.Registration number**

Chemical name	CAS-No. EC-No. Index No.	Legal Entity Registration number
2,2,4-Trimethylpentane (Isooctane)	540-84-1 208-759-1 601-009-00-8	Chevron Phillips Chemicals International NV 01-2119457965-22-0002
2,2,4-Trimethylpentane (Isooctane)	540-84-1 208-759-1 601-009-00-8	Chevron Phillips Chemical Company LP 01-2119457965-22-0013
n-Heptane	142-82-5 205-563-8 601-008-00-2	Chevron Phillips Chemicals International NV 01-2119457603-38-0002
n-Heptane	142-82-5 205-563-8 601-008-00-2	Chevron Phillips Chemical Company LP 01-2119457603-38-0002

**1.2**
**Relevant identified uses of the substance or mixture and uses advised against**

Relevant Identified Uses : Formulation  
 Supported Use as a fuel - industrial  
 Use as a fuel – professional

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Manufacture  
 Use as a laboratory agent – industrial  
 Use as a laboratory agent – professional  
 Distribution  
 Use in coatings – industrial  
 Use in coatings – professional  
 Use as a cleaning agent – industrial  
 Use as a cleaning agent – professional  
 Use as a cleaning agent – consumer  
 Use in Coatings - Consumer  
 Use as a fuel – consumer

**1.3****Details of the supplier of the safety data sheet**

**Company** : Chevron Phillips Chemical Company LP  
 Specialty Chemicals  
 10001 Six Pines Drive  
 The Woodlands, TX 77380

**Local** : Chevron Phillips Chemicals International N.V.  
 Airport Plaza (Stockholm Building)  
 Leonardo Da Vincilaan 19  
 1831 Diegem  
 Belgium

SDS Requests: (800) 852-5530  
 Responsible Party: Product Safety Group  
 Email:sds@cpchem.com

**1.4****Emergency telephone:****Health:**

866.442.9628 (North America)  
 1.832.813.4984 (International)

**Transport:**

CHEMTREC 800.424.9300 or 703.527.3887(int'l)  
 Asia: CHEMWATCH (+612 9186 1132) China: 0532 8388 9090  
 Mexico CHEMTREC 01-800-681-9531 (24 hours)  
 South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600  
 Argentina: +(54)-1159839431  
 EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)  
 Austria: VIZ +43 1 406 43 43 (24 hours/day, 7 days/week)  
 Belgium: 070 245 245 (24 hours/day, 7 days/week)  
 Bulgaria: +359 2 9154 233  
 Croatia: +3851 2348 342 (24 hours/day, 7 days/week)  
 Cyprus: 1401  
 Czech Republic: Toxicological Information Center +420 224 919 293, +420 224 915 402  
 Denmark: Danish Poison Center (Gifflinjen): +45 8212 1212  
 Estonia: BIG +32.14.584545 (phone) or +32.14583516 (telefax)  
 Finland: 0800 147 111 09 471 977 (24 hours/day)  
 France: ORFILA number (INRS): + 33 (0) 1 45 42 59 59 (24 hours/day, 7 days/week)  
 Germany: BIG +32.14.584545 (phone) or +32.14583516 (telefax)  
 Greece: (0030) 2107793777 (24 hours/day, 7 days/week)  
 Hungary: +36-80-201-199 (24 hours/day, 7 days/week)  
 Iceland: 543 2222 (24 hours/day, 7 days/week)

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Ireland: BIG +32.14.584545 (phone) or +32.14583516 (telefax)  
 Italy: BIG +32.14.584545 (phone) or +32.14583516 (telefax)  
 Latvia: State Fire and Rescue Service, phone number: 112; Toxicology and Sepsis Clinic  
 Poisoning and Drug Information Center, Hipokrāta 2, Riga, Latvia, LV-1038, phone number +371  
 67042473. (24 hours.)  
 Liechtenstein: BIG +32.14.584545 (phone) or +32.14583516 (telefax)  
 Lithuania: +370 (85) 2362052  
 Luxembourg: (+352) 8002 5500 (24 hours/day, 7 days/week)  
 Malta: +356 2395 2000  
 The Netherlands: NVIC: +31 (0)88 755 8000  
 Norway: 22 59 13 00 (24 hours/day, 7 days/week)  
 Poland: BIG +32.14.584545 (phone) or +32.14583516 (telefax)  
 Portugal: CIAV phone number: +351 800 250 250  
 Romania: +40213183606  
 Slovakia: +421 2 5477 4166  
 Slovenia: Phone number: 112  
 Spain: National Emergency Telephone Number of Spanish Poison Centre: +34 91 562 04 20 (24  
 hours/day, 7 days/week)  
 Sweden: 112 – ask for Poisons Information

Responsible Department : Product Safety and Toxicology Group  
 E-mail address : SDS@CPChem.com  
 Website : www.CPChem.com

**SECTION 2: Hazards identification****2.1****Classification of the substance or mixture  
REGULATION (EC) No 1272/2008**

Flammable liquids, Category 2	H225: Highly flammable liquid and vapor.
Skin irritation, Category 2	H315: Causes skin irritation.
Specific target organ toxicity - single exposure, Category 3, Central nervous system	H336: May cause drowsiness or dizziness.
Aspiration hazard, Category 1	H304: May be fatal if swallowed and enters airways.
Short-term (acute) aquatic hazard, Category 1	H400: Very toxic to aquatic life.
Long-term (chronic) aquatic hazard, Category 1	H410: Very toxic to aquatic life with long lasting effects.

**2.2****Labeling (REGULATION (EC) No 1272/2008)**

Hazard pictograms :    

Signal Word : Danger

Hazard Statements : H225 Highly flammable liquid and vapor.  
 H304 May be fatal if swallowed and enters  
 airways.  
 H315 Causes skin irritation.  
 H336 May cause drowsiness or dizziness.

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	H410	Very toxic to aquatic life with long lasting effects.
Precautionary Statements	<b>Prevention:</b>	
	P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
	P273	Avoid release to the environment.
	<b>Response:</b>	
	P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
	P331	Do NOT induce vomiting.
	P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
	P391	Collect spillage.

Hazardous ingredients which must be listed on the label:

- 540-84-1                      2,2,4-Trimethylpentane (Isooctane)
- 142-82-5                      n-Heptane

**2.3****Other hazards**

Results of PBT and vPvB assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

**SECTION 3: Composition/information on ingredients****3.1 - 3.2****Substance or Mixture**

Synonyms : Primary Reference Fuel  
Octane Reference Fuel

Molecular formula : Mixture

**Hazardous ingredients**

Chemical name	CAS-No. EC-No. Index No.	Classification (REGULATION (EC) No 1272/2008)	Concentration [wt%]	Specific Conc. Limits, M-factors and ATEs
<b>2,2,4-Trimethylpentane (Isooctane)</b>	<b>540-84-1</b> <b>208-759-1</b> 601-009-00-8	Flam. Liq. 2; H225 Skin Irrit. 2; H315 STOT SE 3; H336 Asp. Tox. 1; H304 Aquatic Acute 1; H400 Aquatic Chronic 1; H410	80 - 98	
n-Heptane	142-82-5 205-563-8 601-008-00-2	Flam. Liq. 2; H225 Skin Irrit. 2; H315 STOT SE 3; H336 Asp. Tox. 1; H304 Aquatic Acute 1; H400	0 - 20	

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		Aquatic Chronic 1; H410		
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For the full text of the H-Statements mentioned in this Section, see Section 16.

**SECTION 4: First aid measures****4.1****Description of first-aid measures**

- General advice : Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Material may produce a serious, potentially fatal pneumonia if swallowed or vomited.
- If inhaled : Consult a physician after significant exposure. If unconscious, place in recovery position and seek medical advice.
- In case of skin contact : If skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.
- In case of eye contact : Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

**4.2 Most important symptoms and effects, both acute and delayed****Notes to physician**

- Symptoms : No data available.
- Risks : No data available.

**4.3 Indication of any immediate medical attention and special treatment needed**

- Treatment : No data available.

**SECTION 5: Firefighting measures**

- Flash point : -8°C (18°F)  
Method: Tag closed cup

- Autoignition temperature : No data available

**5.1****Extinguishing media**

- Suitable extinguishing media : Alcohol-resistant foam. Carbon dioxide (CO<sub>2</sub>). Dry chemical.
- Unsuitable extinguishing media : High volume water jet.

**5.2****Special hazards arising from the substance or mixture**

- Specific hazards during fire fighting : Do not allow run-off from fire fighting to enter drains or water courses.

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**5.3****Advice for firefighters**

Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.

Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.

Fire and explosion protection : Do not spray on a naked flame or any incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition.

Hazardous decomposition products : Carbon oxides.

**SECTION 6: Accidental release measures****6.1****Personal precautions, protective equipment and emergency procedures**

Personal precautions : Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

**6.2****Environmental precautions**

Environmental precautions : Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.

**6.3****Methods and materials for containment and cleaning up**

Methods for cleaning up : Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

**6.4****Reference to other sections**

For additional details, see the Exposure Scenario in the Annex portion

**SECTION 7: Handling and storage****7.1****Precautions for safe handling  
Handling**

Advice on safe handling : Avoid formation of aerosol. Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see

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section 8. Smoking, eating and drinking should be prohibited in the application area. Take precautionary measures against static discharges. Provide sufficient air exchange and/or exhaust in work rooms. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion : Do not spray on a naked flame or any incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition.

**7.2****Conditions for safe storage, including any incompatibilities****Storage**

Requirements for storage areas and containers : No smoking. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

**SECTION 8: Exposure controls/personal protection****8.1****Control parameters  
Ingredients with workplace control parameters****SK**

Zložky	Podstata	Hodnota	Kontrolné parametre	Poznámka
2,2,4-Trimethylpentane (Isooctane)	SK OEL	NPEL krátkodobý	300 ppm, 1.400 mg/m3	
	SK OEL	NPEL priemerný	200 ppm, 900 mg/m3	
n-heptane	SK OEL	NPEL priemerný	500 ppm, 2.085 mg/m3	

**SI**

Sestavine	Osnova	Vrednost	Parametri nadzora	Pripomba
2,2,4-Trimethylpentane (Isooctane)	SI OEL	MV	500 ppm, 2.400 mg/m3	
	SI OEL	KTV	1.000 ppm, 4.800 mg/m3	
n-heptane	SI OEL	MV	500 ppm, 2.085 mg/m3	
	SI OEL	KTV	500 ppm, 2.085 mg/m3	

**SE**

Bestandsdelar	Grundval	Värde	Kontrollparametrar	Anmärkning
2,2,4-Trimethylpentane (Isooctane)	SE AFS	NGV	200 ppm, 900 mg/m3	
	SE AFS	KGV	300 ppm, 1.400 mg/m3	V.
n-heptane	SE AFS	NGV	200 ppm, 800 mg/m3	
	SE AFS	KGV	300 ppm, 1.200 mg/m3	V.

V Vägledande kortidsgränsvärde ska användas som ett rekommenderat högsta värde som inte bör överskridas

**RS**

Компоненты	Основа	Величина	Параметры контроля	Заметка
н-гептан	RS OEL	GVI	500 ppm, 2.085 mg/m3	EU*,

EU\* Substance mentioned in indicative exposure limit values in Directive 2000/39 / EC (first list)

**RO**

Componente	Sursă	Valoare	Parametri de control	Notă
n-heptane	RO OEL	TWA	500 ppm, 2.085 mg/m3	

**PT**

Componentes	Bases	Valor	Parâmetros de controlo	Nota
n-heptane	PT DL 305/2007	oito horas	500 ppm, 2.085 mg/m3	

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	PT OEL	VLE-MP	400 ppm,	
	PT OEL	VLE_CD	500 ppm,	

## PL

Składniki	Podstawa	Wartość	Parametry dotyczące kontroli	Uwaga
n-heptane	PL NDS	NDS	1.200 mg/m3	
	PL NDS	NDSch	2.000 mg/m3	

## NO

Komponenter	Grunnlag	Verdi	Kontrollparametrer	Nota
n-heptane	FOR-2011-12-06-1358	GV	200 ppm, 800 mg/m3	

## NL

Bestanddelen	Basis	Waarde	Controleparameters	Opmerking
n-heptane	NL WG	TGG-8 uur	1.200 mg/m3	
	NL WG	TGG-15 min	1.600 mg/m3	

## MT

Components	Basis	Value	Control parameters	Note
n-Heptane	MT OEL	TWA	500 ppm, 2.085 mg/m3	

## MK

Съставки	Основа	Стойност	Параметри на контрол	Бележка
2,2,4-Trimethylpentane (Isooctane)	MK OEL	MV	500 ppm, 2.400 mg/m3	
n-heptane	MK OEL	MV	500 ppm, 2.085 mg/m3	

## LV

Sastāvdaļas	Bāze	Vērtība	Pārvaldības parametri	Piezīme
2,2,4-Trimethylpentane (Isooctane)	LV OEL	AER 8 st	100 mg/m3	
	LV OEL	AER īslaicīgā	300 mg/m3	
n-heptane	LV OEL	AER 8 st	85 ppm, 350 mg/m3	
	LV OEL	AER īslaicīgā	500 ppm, 2.085 mg/m3	

## LU

Composants	Base	Valeur	Paramètres de contrôle	Note
n-heptane	LU OEL	TWA	500 ppm, 2.085 mg/m3	

## LT

Komponentai	Šaltinis	Vertė	Kontrolės parametrai	Pastaba
2,2,4-Trimethylpentane (Isooctane)	LT OEL	IPRD	200 ppm, 900 mg/m3	
	LT OEL	TPRD	300 ppm, 1.400 mg/m3	
n-heptane	LT OEL	IPRD	500 ppm, 2.085 mg/m3	
	LT OEL	TPRD	750 ppm, 3.128 mg/m3	

## IT

Componenti	Base	Valore	Parametri di controllo	Nota
n-heptane	IT VLEP	TWA	500 ppm, 2.085 mg/m3	

## IS

Komponenter	Grunnlag	Verdi	Kontrollparametrer	Nota
n-heptane	IS OEL	TWA	200 ppm, 820 mg/m3	

## IE

Components	Basis	Value	Control parameters	Note
n-Heptane	IE OEL	OELV - 8 hrs (TWA)	500 ppm, 2.085 mg/m3	

## HU

Komponensek	Bázis	Érték	Ellenőrzési paraméterek	Megjegyzés
2,2,4-Trimethylpentane (Isooctane)	HU OEL	AK-érték	2.350 mg/m3	R, i,
	HU OEL	CK-érték	4.700 mg/m3	R, i,
n-heptane	HU OEL	AK-érték	2.000 mg/m3	R, EU1,

EU1 2000/39/EK irányelvben közölt érték

i Ingerlő anyag (izgatja a bőrt, nyálkahártyát, szemet vagy mindhármat)

R Azok az anyagok, amelyek egészségkárosító hatása ROVID expozíció hatására jelentkezik. Korrigált AK = AK x 8/a napi óraszám

## HR

Sastojci	Temelj	Vrijednost	Nadzorni parametri	Bilješka
n-heptane	HR OEL	GVI	500 ppm, 2.085 mg/m3	koža,
	HR OEL		500 ppm, 2.000 mg/m3	

koža Razvrstana kao tvar koja nadražuje kožu (H315) ili je takva napomena navedena u direktivama



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## GR

Συστατικά	Βάση	Τιμή	Παράμετροι ελέγχου	Σημείωση
n-heptane	GR OEL	TWA	500 ppm, 2.000 mg/m <sup>3</sup>	
	GR OEL	STEL	500 ppm, 2.000 mg/m <sup>3</sup>	

## GB

Components	Basis	Value	Control parameters	Note
n-Heptane	GB EH40	TWA	500 ppm, 2.085 mg/m <sup>3</sup>	

## FR

Composants	Base	Valeur	Paramètres de contrôle	Note
2,2,4-Trimethylpentane (Isooctane)	FR VLE	VME	1.000 mg/m <sup>3</sup>	Valeurs limites indicatives, Vapeur
	FR VLE	VLCT (VLE)	1.500 mg/m <sup>3</sup>	Valeurs limites indicatives, Vapeur
n-heptane	FR VLE	VME	400 ppm, 1.668 mg/m <sup>3</sup>	VLR contraignantes,
	FR VLE	VLCT (VLE)	500 ppm, 2.085 mg/m <sup>3</sup>	VLR contraignantes,

Valeurs limites indicatives Valeurs limites indicatives  
VLR Valeurs limites réglementaires contraignantes  
contraignantes

## FI

Aineosat	Peruste	Arvo	Valvontaa koskevat muuttujat	Huomautus
2,2,4-Trimethylpentane (Isooctane)	FI OEL	HTP-arvot 8h	300 ppm, 1.400 mg/m <sup>3</sup>	
	FI OEL	HTP-arvot 15 min	380 ppm, 1.800 mg/m <sup>3</sup>	
n-heptane	FI OEL	HTP-arvot 8h	300 ppm, 1.200 mg/m <sup>3</sup>	
	FI OEL	HTP-arvot 15 min	500 ppm, 2.100 mg/m <sup>3</sup>	
	FI OEL	HTP-arvot 8h	300 ppm, 1.200 mg/m <sup>3</sup>	
	FI OEL	HTP-arvot 15 min	500 ppm, 2.100 mg/m <sup>3</sup>	

## ES

Componentes	Base	Valor	Parámetros de control	Nota
2,2,4-Trimethylpentane (Isooctane)	ES VLA	VLA-ED	300 ppm, 1.420 mg/m <sup>3</sup>	
n-heptane	ES VLA	VLA-ED	500 ppm, 2.085 mg/m <sup>3</sup>	

## EE

Komponendid, osad	Alused	Väärtus	Kontrolliparameetrid	Märkused
2,2,4-Trimethylpentane (Isooctane)	EE OEL	Piirnorm	200 ppm, 900 mg/m <sup>3</sup>	
	EE OEL	Lühiajalise kokkupuute piirnorm	300 ppm, 1.400 mg/m <sup>3</sup>	
n-heptane	EE OEL	Piirnorm	500 ppm, 2.085 mg/m <sup>3</sup>	

## DK

Komponenter	Basis	Værdi	Kontrolparametre	Note
n-heptane	DK OEL	GV	200 ppm, 820 mg/m <sup>3</sup>	

## DE

Inhaltsstoffe	Grundlage	Wert	Zu überwachende Parameter	Bemerkung
n-heptane	DE TRGS 900	AGW	500 ppm, 2.100 mg/m <sup>3</sup>	

## CZ

Složky	Základ	Hodnota	Kontrolní parametry	Poznámka
n-heptane	CZ OEL	PEL	1.000 mg/m <sup>3</sup>	I,
	CZ OEL	NPK-P	2.000 mg/m <sup>3</sup>	I,

I dráždí sliznice (oči, dýchací cesty), respektive kůži

## CY

Συστατικά	Βάση	Τιμή	Παράμετροι ελέγχου	Σημείωση
n-heptane	CY OEL	TWA	500 ppm, 2.085 mg/m <sup>3</sup>	

## CH

Inhaltsstoffe	Grundlage	Wert	Zu überwachende Parameter	Bemerkung
2,2,4-Trimethylpentane (Isooctane)	CH SUVA	MAK-Wert	300 ppm, 1.400 mg/m <sup>3</sup>	NIOSH,
	CH SUVA	KZGW	600 ppm, 2.800 mg/m <sup>3</sup>	NIOSH,
	CH SUVA	MAK-Wert	100 ppm, 470 mg/m <sup>3</sup>	
	CH SUVA	KZGW	200 ppm, 940 mg/m <sup>3</sup>	
n-heptane	CH SUVA	KZGW	400 ppm, 1.600 mg/m <sup>3</sup>	NIOSH,
	CH SUVA	MAK-Wert	400 ppm, 1.600 mg/m <sup>3</sup>	NIOSH,

NIOSH National Institute for Occupational Safety and Health

## BG

Съставки	Основа	Стойност	Параметри на	Бележка
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			контрол	
n-heptane	BG OEL	TWA	1.600 mg/m3	

**BE**

Bestanddelen	Basis	Waarde	Controleparameters	Opmerking
n-heptane	BE OEL	TGG 8 hr	400 ppm, 1.664 mg/m3	
	BE OEL	TGG 15 min	500 ppm, 2.085 mg/m3	

**AT**

Inhaltsstoffe	Grundlage	Wert	Zu überwachende Parameter	Bemerkung
2,2,4-Trimethylpentane (Isooctane)	AT OEL	MAK-TMW	300 ppm, 1.400 mg/m3	
	AT OEL	MAK-KZW	1.200 ppm, 5.600 mg/m3	
n-heptane	AT OEL	MAK-TMW	500 ppm, 2.000 mg/m3	
	AT OEL	MAK-KZW	2.000 ppm, 8.000 mg/m3	

DNEL  
n-Heptane :

**8.2**

**Exposure controls**  
**Engineering measures**

Adequate ventilation to control airborne concentrations below the exposure guidelines/limits. Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

**Personal protective equipment**

Respiratory protection : If ventilation or other engineering controls are not adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure, a supplied-air NIOSH approved respirator may be appropriate. If exposure to harmful levels of airborne material may occur, a NIOSH approved respirator that provides protection may be appropriate, such as: Air-Purifying Respirator for Organic Vapors. A positive pressure, air-supplying respirator may be appropriate if there is potential for uncontrolled release, aerosolization, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection : The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Eye protection : Eye wash bottle with pure water. Tightly fitting safety goggles.

Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate: Flame retardant antistatic protective clothing. Workers should wear antistatic footwear.

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Hygiene measures : When using do not eat or drink. When using do not smoke.  
Wash hands before breaks and at the end of workday.

For additional details, see the Exposure Scenario in the Annex portion

**SECTION 9: Physical and chemical properties****9.1****Information on basic physical and chemical properties****Appearance**

Physical state : liquid  
Color : Colorless  
Odor : gasoline-like

**Safety data**

Flash point : -8°C (18°F)  
Method: Tag closed cup

Lower explosion limit : 1 %(V)

Upper explosion limit : 7 %(V)

Oxidizing properties : No

Autoignition temperature : No data available

Molecular formula : Mixture

Molecular weight : Not applicable

pH : Not applicable

Freezing point : No data available

Pour point : No data available

Boiling point/boiling range : 96-103°C (205-217°F)

Vapor pressure : 1,70 PSI  
at 37,8°C (100,0°F)

Relative density : 0,693  
at 15,6 °C (60,1 °F)

Water solubility : negligible

Partition coefficient: n-  
octanol/water : No data available

Viscosity, kinematic : No data available

Relative vapor density : 3  
(Air = 1.0)

Evaporation rate : 1

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Percent volatile : > 99 %  
0,04 %

**SECTION 10: Stability and reactivity****10.1**

**Reactivity** : Stable under recommended storage conditions.

**10.2**

**Chemical stability** : This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

**10.3****Possibility of hazardous reactions**

**Hazardous reactions** : Hazardous reactions: Hazardous polymerization does not occur.

Hazardous reactions: Vapors may form explosive mixture with air.

**10.4**

**Conditions to avoid** : Heat, flames and sparks.

**10.5**

**Materials to avoid** : May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

**10.6**

**Hazardous decomposition products** : Carbon oxides

**Other data** : No decomposition if stored and applied as directed.

**SECTION 11: Toxicological information****11.1****Information on toxicological effects****Acute oral toxicity**

2,2,4-Trimethylpentane (Isooctane) : LD50: > 5.000 mg/kg  
Species: Rat  
Sex: male and female  
Method: OECD Test Guideline 401  
Symptoms: Salivation

n-Heptane : LD50: > 5.000 mg/kg  
Species: Rat  
Method: OECD Test Guideline 401  
Information given is based on data obtained from similar

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substances.

**Acute inhalation toxicity**

2,2,4-Trimethylpentane (Isooctane) : LC50: > 33,52 mg/l  
 Exposure time: 4 h  
 Species: Rat  
 Sex: male and female  
 Test atmosphere: vapor  
 Method: OECD Test Guideline 403

**Acute dermal toxicity**

2,2,4-Trimethylpentane (Isooctane) : LD50: > 2.000 mg/kg  
 Species: Rabbit  
 Sex: male and female  
 Method: OECD Test Guideline 402

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**Skin irritation** : Skin irritation  
 largely based on animal evidence.

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**Eye irritation** : Vapors may cause irritation to the eyes, respiratory system and the skin.

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**Sensitization** : Did not cause sensitization on laboratory animals.

**Repeated dose toxicity**

2,2,4-Trimethylpentane (Isooctane) : Species: Rat, Male and female  
 Sex: Male and female  
 Application Route: Inhalation  
 Dose: 0, 668, 2220, 6646 ppm  
 Exposure time: 13 weeks  
 Number of exposures: 6 hr/day 5 d/wk  
 NOEL: 8,117 mg/l 2220 ppm  
 Method: OECD Guideline 413  
 Information given is based on data obtained from similar substances.

n-Heptane : Species: Rat, male  
 Sex: male  
 Application Route: Inhalation  
 Dose: 12.47 mg/l  
 Exposure time: 16 wk  
 Number of exposures: 12 h/d, 7 d/wk  
 NOEL: 12,47 mg/l  
 No adverse effect has been observed in chronic toxicity tests.

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Species: Rat, Male and female  
 Sex: Male and female  
 Application Route: Inhalation  
 Dose: 12.35 mg/l  
 Exposure time: 26 wk  
 Number of exposures: 6 h/d, 5 d/wk  
 Method: OECD Test Guideline 413  
 No adverse effect has been observed in chronic toxicity tests.

**Genotoxicity in vitro**

2,2,4-Trimethylpentane (Isooctane) : Test Type: Ames test  
 Method: Mutagenicity (Escherichia coli - reverse mutation assay)  
 Result: negative

Test Type: Mouse lymphoma assay  
 Method: OECD Guideline 476  
 Result: negative

Test Type: Sister Chromatid Exchange Assay  
 Result: negative

Test Type: Unscheduled DNA synthesis assay  
 Result: negative

n-Heptane : Test Type: Ames test  
 Method: Mutagenicity (Escherichia coli - reverse mutation assay)  
 Result: negative

Test Type: Mammalian cell gene mutation assay  
 Method: OECD Guideline 476  
 Result: negative

Test Type: Chromosome aberration test in vitro  
 Method: OECD Guideline 473  
 Result: negative

Test Type: Mitotic recombination  
 Result: negative

**Genotoxicity in vivo**

2,2,4-Trimethylpentane (Isooctane) : Test Type: Unscheduled DNA synthesis assay  
 Species: Mouse  
 Dose: 500 mg/kg  
 Result: negative

Test Type: Unscheduled DNA synthesis assay  
 Species: Rat  
 Dose: 500 mg/kg  
 Result: negative

**Reproductive toxicity**

2,2,4-Trimethylpentane (Isooctane) : Species: Rat  
 Sex: male and female

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Application Route: Inhalation  
 Dose: 0, 900, 3000, 9000 ppm  
 Number of exposures: 6 h/d 5 d/wk  
 Method: OECD Test Guideline 416  
 NOAEL Parent: 3000 ppm  
 NOAEL F1: 3000 ppm  
 NOAEL F2: 3000 ppm  
 Information given is based on data obtained from similar substances.

n-Heptane

Species: Rat  
 Sex: male and female  
 Application Route: Inhalation  
 Dose: 0, 900, 3000, 9000 ppm  
 Number of exposures: 6 hr/d, 5 d/wk  
 Test period: 13 wk  
 Method: OECD Test Guideline 416  
 NOAEL Parent: 9000 ppm  
 NOAEL F1: 3000 ppm  
 NOAEL F2: 3000 ppm  
 Information given is based on data obtained from similar substances.

**Developmental Toxicity**

2,2,4-Trimethylpentane  
 (Isooctane)

: Species: Rat  
 Application Route: Inhalation  
 Dose: 0, 400, 1200 ppm  
 Number of exposures: 6h/d  
 Test period: GD6-15  
 NOAEL Teratogenicity: 1200 ppm  
 NOAEL Maternal: 1200 ppm  
 Information given is based on data obtained from similar substances.

Species: Rat  
 Application Route: Inhalation  
 Dose: 0, 900, 3000, 9000 ppm  
 Number of exposures: 6h/d  
 Test period: GD6-15  
 Method: OECD Guideline 414  
 NOAEL Teratogenicity: 9000 ppm  
 NOAEL Maternal: 3000 ppm  
 Information given is based on data obtained from similar substances.

n-Heptane

Species: Rat  
 Application Route: Inhalation  
 Dose: 0, 900, 3000, 9000 ppm  
 Exposure time: GD6-15  
 Number of exposures: 6 hrs/d  
 NOAEL Teratogenicity: 9000 ppm  
 NOAEL Maternal: 3000 ppm

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**Aspiration toxicity** : May be fatal if swallowed and enters airways.

**CMR effects**

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2,2,4-Trimethylpentane (Isooctane)	: Mutagenicity: Tests on bacterial or mammalian cell cultures did not show mutagenic effects. Teratogenicity: Animal testing did not show any effects on fetal development. Reproductive toxicity: Animal testing did not show any effects on fertility.
n-Heptane	Mutagenicity: Tests on bacterial or mammalian cell cultures did not show mutagenic effects. Teratogenicity: Animal testing did not show any effects on fetal development. Reproductive toxicity: No toxicity to reproduction

**11.2****Information on other hazards****TrusTec™ PRF Octane No. Blends 80-98**

<b>Further information</b>	: Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Concentrations substantially above the TLV value may cause narcotic effects. Solvents may degrease the skin.
Endocrine disrupting properties	: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

**SECTION 12: Ecological information****12.1****Toxicity****Toxicity to fish**

2,2,4-Trimethylpentane (Isooctane)	: LC50: 0,11 mg/l Exposure time: 96 h Species: Oncorhynchus mykiss (rainbow trout) semi-static test Method: OECD Test Guideline 203 Information given is based on data obtained from similar substances.
n-Heptane	LL50: 5,738 mg/l Exposure time: 96 h Species: Oncorhynchus mykiss (rainbow trout) Method: QSAR modeled data

**Toxicity to daphnia and other aquatic invertebrates**

2,2,4-Trimethylpentane (Isooctane)	: EC50: 0,4 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) static test Information given is based on data obtained from similar substances.
n-Heptane	EC50: 1,5 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea)



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static test Toxic to aquatic organisms.

LC50: 0,1 mg/l

Exposure time: 96 h

Species: Mysisidopsis bahia (mysid shrimp)

semi-static test Very toxic to aquatic organisms.

**Toxicity to algae**

2,2,4-Trimethylpentane (Isooctane) : EL50: 2,943 mg/l  
Exposure time: 72 h  
Method: QSAR modeled data

n-Heptane : EL50: 4,338 mg/l  
Exposure time: 72 h  
Species: Pseudokirchneriella subcapitata (microalgae)  
Method: QSAR

**Toxicity to fish (Chronic toxicity)**

n-Heptane : NOELR: 1,284 mg/l  
Exposure time: 28 d  
Species: Oncorhynchus mykiss (rainbow trout)  
Method: QSAR modeled data

**Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)**

2,2,4-Trimethylpentane (Isooctane) : NOEL: 0,17 mg/l  
Exposure time: 21 d  
Species: Daphnia magna (Water flea)  
Method: OECD Test Guideline 211  
Information given is based on data obtained from similar substances.

**12.2****Persistence and degradability**

## Biodegradability

2,2,4-Trimethylpentane (Isooctane) : Result: Not readily biodegradable.  
Method: OECD Test Guideline 301  
Expected to be inherently biodegradable.  
Information given is based on data obtained from similar substances.

n-Heptane : Result: Readily biodegradable.  
70 %  
Testing period: 10 d

**12.3****Bioaccumulative potential**

## Bioaccumulation

2,2,4-Trimethylpentane (Isooctane) : Bioconcentration factor (BCF): 231  
Method: QSAR modeled data

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This material is not expected to bioaccumulate.

n-Heptane : Bioconcentration factor (BCF): 552  
Method: QSAR modeled data  
This material is not expected to bioaccumulate.

**12.4****Mobility in soil**

Mobility

2,2,4-Trimethylpentane (Isooctane) : Medium: Air  
Method: Calculation, Mackay Level I Fugacity Model  
After release, disperses into the air.

n-Heptane : Medium: Air  
Method: Calculation, Mackay Level I Fugacity Model  
Content: 100 %  
After release, disperses into the air.

**12.5****Results of PBT and vPvB assessment**

Results of PBT assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

**12.6****Endocrine disrupting properties**

Endocrine disrupting properties : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

**12.7****Other adverse effects**

Additional ecological information : Very toxic to aquatic life with long lasting effects.

**12.8****Additional Information****Ecotoxicology Assessment**

Short-term (acute) aquatic hazard

2,2,4-Trimethylpentane (Isooctane) : Very toxic to aquatic life.

n-Heptane : Very toxic to aquatic life.

Long-term (chronic) aquatic hazard

2,2,4-Trimethylpentane (Isooctane) : Very toxic to aquatic life with long lasting effects.

n-Heptane : Very toxic to aquatic life with long lasting effects.

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**SECTION 13: Disposal considerations****13.1****Waste treatment methods**

The information in this SDS pertains only to the product as shipped.

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Product : The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.

For additional details, see the Exposure Scenario in the Annex portion

**SECTION 14: Transport information****14.1 - 14.7****Transport information**

**The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).**

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the SDS and the bill of lading.

**US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)**

UN1268, PETROLEUM DISTILLATES, N.O.S., 3, II, MARINE POLLUTANT, (2,2,4-TRIMETHYLPENTANE (ISOOCTANE), N-HEPTANE)

**IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)**

UN1268, PETROLEUM DISTILLATES, N.O.S., 3, II, (-8 °C c.c.), MARINE POLLUTANT, (2,2,4-TRIMETHYLPENTANE (ISOOCTANE), N-HEPTANE)

**IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)**

UN1268, PETROLEUM DISTILLATES, N.O.S., 3, II

**ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))**

UN1268, PETROLEUM DISTILLATES, N.O.S., 3, II, (D/E), ENVIRONMENTALLY HAZARDOUS, (2,2,4-TRIMETHYLPENTANE (ISOOCTANE), N-HEPTANE)

**RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))**

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33,UN1268,PETROLEUM DISTILLATES, N.O.S., 3, II, ENVIRONMENTALLY HAZARDOUS,  
(2,2,4-TRIMETHYLPENTANE (ISOOCTANE), N-HEPTANE)

**ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)**

UN1268, PETROLEUM DISTILLATES, N.O.S., 3, II, ENVIRONMENTALLY HAZARDOUS, (2,2,4-TRIMETHYLPENTANE (ISOOCTANE), N-HEPTANE)

Maritime transport in bulk according to IMO instruments

**SECTION 15: Regulatory information****15.1****Safety, health and environmental regulations/legislation specific for the substance or mixture**  
**National legislation**

Commission Regulation (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

**Water hazard class (Germany)** : WGK 2 water endangering

**15.2****Chemical Safety Assessment**

**Components** : 2,2,4-trimethylpentane A Chemical Safety Assessment 208-759-1  
has been carried out for this substance.

**Chemical Safety Assessment**

heptane A Chemical Safety Assessment 205-563-8  
has been carried out for this substance.

**Major Accident Hazard Legislation** : 96/82/EC Update: 2003  
Highly flammable  
7b  
Quantity 1: 5.000 t  
Quantity 2: 50.000 t

: 96/82/EC Update: 2003  
Dangerous for the environment  
9a  
Quantity 1: 100 t  
Quantity 2: 200 t

: ZEU\_SEVES3 Update:  
FLAMMABLE LIQUIDS  
P5c  
Quantity 1: 5.000 t  
Quantity 2: 50.000 t

: ZEU\_SEVES3 Update:  
ENVIRONMENTAL HAZARDS

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E1  
 Quantity 1: 100 t  
 Quantity 2: 200 t

**Notification status**

Europe REACH : This product is in full compliance according to REACH regulation 1907/2006/EC.

Switzerland CH INV : On the inventory, or in compliance with the inventory

United States of America (USA) TSCA : On or in compliance with the active portion of the TSCA inventory

Other AIIC : On the inventory, or in compliance with the inventory

New Zealand NZIoC : On the inventory, or in compliance with the inventory

Japan ENCS : On the inventory, or in compliance with the inventory

Korea KECI : All substances in this product were registered, notified to be registered, or exempted from registration by CPChem through an Only Representative according to K-REACH regulations. Importation of this product is permitted if the Korean Importer of Record was included on CPChem's notifications or if the Importer of Record themselves notified the substances.

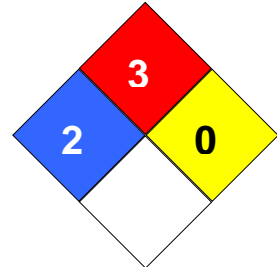
Philippines PICCS : On the inventory, or in compliance with the inventory

Taiwan TCSI : On the inventory, or in compliance with the inventory

China IECSC : On the inventory, or in compliance with the inventory

**SECTION 16: Other information**

**NFPA Classification** : Health Hazard: 2  
 Fire Hazard: 3  
 Reactivity Hazard: 0

**Further information**

Legacy SDS Number : 28440

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this SDS pertains only to the product as shipped.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

**Key or legend to abbreviations and acronyms used in the safety data sheet**

ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level

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DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%	ATE	Acute toxicity estimate

**Full text of H-Statements referred to under sections 2 and 3.**

H225	Highly flammable liquid and vapor.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H336	May cause drowsiness or dizziness.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

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**Annex****1. Short title of Exposure Scenario: Formulation**

Main User Groups	:	<b>SU 3:</b> Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	:	<b>SU 10:</b> Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
Process category	:	<b>PROC1:</b> Use in closed process, no likelihood of exposure <b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure <b>PROC3:</b> Use in closed batch process (synthesis or formulation) <b>PROC4:</b> Use in batch and other process (synthesis) where opportunity for exposure arises <b>PROC5:</b> Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) <b>PROC8a:</b> Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities <b>PROC8b:</b> Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC9:</b> Transfer of substance or preparation into small containers (dedicated filling line, including weighing) <b>PROC14:</b> Production of preparations or articles by tableting, compression, extrusion, pelletization <b>PROC15:</b> Use as laboratory reagent
Environmental release category	:	<b>ERC2:</b> Formulation of preparations
Further information	:	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

**2.1 Contributing scenario controlling environmental exposure for:ERC2: Formulation of preparations**

Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (tonnes/day): (Msafe) : 900 tonnes/day

**Environment factors not influenced by risk management**

Flow rate : 18.000 m3/d  
Dilution Factor (River) : 10  
Dilution Factor (Coastal Areas) : 100

**Other given operational conditions affecting environmental exposure**

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Continuous use/release  
 Number of emission days per year : 300  
 Emission or Release Factor: Air : 2,5 %  
 Emission or Release Factor: Water : 0,002 %  
 Emission or Release Factor: Soil : 0,01 %

**Technical conditions and measures / Organizational measures**

Air : Treat air emission to provide the required removal efficiency of (%) (Effectiveness: 0 %)  
 Water : Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of  $\geq$  (%): (Effectiveness: 61,8 %)  
 Remarks : Risk from environmental exposure is driven by freshwater sediment.  
 Water : If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of  $\geq$  (%): (Effectiveness: 0 %)  
 Remarks : If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.  
 Remarks : Prevent discharge of undissolved substance to or recover from wastewater.  
 Remarks : Do not apply industrial sludge to natural soils.  
 Remarks : Sludge should be incinerated, contained or reclaimed.  
 Remarks : Common practices vary across sites thus conservative process release estimates used.

**Conditions and measures related to municipal sewage treatment plant**

Flow rate of sewage treatment plant effluent : 2.000 m<sup>3</sup>/d  
 Effectiveness (of a measure) : 96,3 %  
 Percentage removed from waste water : 96,3 %  
 Sludge Treatment : No data available  
 Procedures to limit air emissions from Sewage Treatment Plant : No data available

**Conditions and measures related to external treatment of waste for disposal**

Waste treatment : External treatment and disposal of waste should comply with applicable local and/or national regulations.

**Conditions and measures related to external recovery of waste**

Recovery Methods : External recovery and recycling of waste should comply with applicable local and/or national regulations.

**2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure****Product characteristics**

Physical Form (at time of use) : Liquid substance

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient



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temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Handle substance within a closed system., Store substance within a closed system., Transfer via enclosed lines.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**2.2 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)****Product characteristics**

Physical Form (at time of use) : Liquid substance

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Avoid dip sampling., Formulate in enclosed or ventilated mixing vessels., Provide enhanced general ventilation by mechanical means.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**2.2 Contributing scenario controlling worker exposure for: PROC4, PROC15: Use in batch and other process (synthesis) where opportunity for exposure arises, Use as laboratory reagent****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

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**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop., No specific measures identified.

**2.2 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374.

**2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

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Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Provide extraction ventilation at points where emissions occur., Use drum pumps or carefully pour from container.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374.

**2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Provide extraction ventilation at points where emissions occur., Use drum pumps or carefully pour from container.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374.

**2.2 Contributing scenario controlling worker exposure for: PROC9, PROC14: Transfer of substance or preparation into small containers (dedicated filling line, including weighing), Production of preparations or articles by tableting, compression, extrusion, pelletization****Product characteristics**

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Physical Form (at time of use) : Liquid substance  
 Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop., No specific measures identified.

**3. Exposure estimation and reference to its source****Environment**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
ERC2	Hydrocarbon Block Method with Petrorisk		Air		0,5 mg/m3	
			Fresh water		0,0032 mg/L	0,086
			Freshwater sediment		0,14 mg/kg	0,097
			Marine water		0,32 µg/L	0,0085
			Marine sediment		0,014 mg/kg	0,0097
			Agricultural soil		0,0046 mg/kg	0,01

ERC2: Formulation of preparations

**Workers/Consumers**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
PROC1, CS15, CS67	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,05 mg/m3	0,000
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,000
			Worker – long-term – systemic Combined routes		0,000
PROC2, CS67, CS15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	46,72 mg/m3	0,023
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,002
			Worker – long-term – systemic Combined routes		0,025
PROC3, CS2, CS15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	116,79 mg/m3	0,057
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,000

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			Worker – long-term – systemic Combined routes		0,058
PROC3, CS136	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	140,15 mg/m3	0,069
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,000
			Worker – long-term – systemic Combined routes		0,069
PROC4, CS16	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	93,43 mg/m3	0,046
			Worker – dermal, long-term – systemic	6,86 mg/kg/d	0,009
			Worker – long-term – systemic Combined routes		0,055
PROC15, CS36	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	46,72 mg/m3	0,023
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,000
			Worker – long-term – systemic Combined routes		0,023
PROC5, CS30	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long-term – systemic	2,742 mg/kg/d	0,004
			Worker – long-term – systemic Combined routes		0,118
PROC8a, CS34, CS22	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	23,36 mg/m3	0,011
			Worker – dermal, long-term – systemic	0,1371 mg/kg/d	0,000
			Worker – long-term – systemic Combined routes		0,012
PROC8a, CS39	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long-term – systemic	2,742 mg/kg/d	0,004
			Worker – long-term – systemic Combined routes		0,118
PROC8b, CS14	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long-term – systemic	1,372 mg/kg/d	0,002
			Worker – long-term – systemic Combined routes		0,117
PROC8b, CS8	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	7,01 mg/m3	0,003
			Worker – dermal, long-term – systemic	0,686 mg/kg/d	0,001
			Worker – long-term – systemic Combined routes		0,004
PROC9, CS6	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long-term – systemic	6,86 mg/kg/d	0,009
			Worker – long-term – systemic Combined routes		0,124
PROC14, CS100	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long-term – systemic	3,43 mg/kg/d	0,004
			Worker – long-term – systemic Combined		0,119

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routes

PROC1: Use in closed process, no likelihood of exposure  
 CS15: General exposures (closed systems)  
 CS67: Storage

PROC2: Use in closed, continuous process with occasional controlled exposure  
 CS67: Storage  
 CS15: General exposures (closed systems)

PROC3: Use in closed batch process (synthesis or formulation)  
 CS2: Process sampling  
 CS15: General exposures (closed systems)

PROC3: Use in closed batch process (synthesis or formulation)  
 CS136: Batch processes at elevated temperatures

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises  
 CS16: General exposures (open systems)

PROC15: Use as laboratory reagent  
 CS36: Laboratory activities

PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)  
 CS30: Mixing operations (open systems)

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities  
 CS34: Manual  
 CS22: Transfer from/pouring from containers

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities  
 CS39: Equipment cleaning and maintenance

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities  
 CS14: Bulk transfers

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities  
 CS8: Drum/batch transfers

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  
 CS6: Drum and small package filling

PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletization  
 CS100: Production or preparation or articles by tableting, compression, extrusion or pelletization

**4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario**

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Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.  
 Risk Management Measures are based on qualitative risk characterisation.  
 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 wastewater can be achieved using onsite/offsite technologies, either alone or in combination.  
 Required removal efficiency for air can be achieved using on-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>).

**1. Short title of Exposure Scenario: Use as a fuel - industrial**

Main User Groups	:	<b>SU 3:</b> Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	:	<b>SU3:</b> Industrial Manufacturing (all)
Process category	:	<b>PROC1:</b> Use in closed process, no likelihood of exposure <b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure <b>PROC3:</b> Use in closed batch process (synthesis or formulation) <b>PROC8a:</b> Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities <b>PROC8b:</b> Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC16:</b> Using material as fuel sources, limited exposure to unburned product to be expected
Environmental release category	:	<b>ERC7, ERC8b:</b> Industrial use of substances in closed systems, Wide dispersive indoor use of reactive substances in open systems
Further information	:	Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

**2.1 Contributing scenario controlling environmental exposure for:ERC7, ERC8b: Industrial use of substances in closed systems, Wide dispersive indoor use of reactive substances in open systems**

(Msafe) : 1.800 tonnes/day

**Environment factors not influenced by risk management**

Flow rate : 18.000 m<sup>3</sup>/d  
 Dilution Factor (River) : 10  
 Dilution Factor (Coastal Areas) : 100

**Other given operational conditions affecting environmental exposure**

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Number of emission days per year : 300  
 Emission or Release Factor: Air : 5 %  
 Emission or Release Factor: Water : 0,001 %  
 Emission or Release Factor: Soil : 0 %

**Technical conditions and measures / Organizational measures**

Air : Treat air emission to provide a typical removal efficiency of (%) (Effectiveness: 95 %)  
 Water : Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): (Effectiveness: 23,4 %)  
 Remarks : Risk from environmental exposure is driven by freshwater sediment.  
 Water : If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%): (Effectiveness: 0 %)  
 Remarks : Do not apply industrial sludge to natural soils.  
 Remarks : Sludge should be incinerated, contained or reclaimed.  
 Remarks : Common practices vary across sites thus conservative process release estimates used.  
 Remarks : If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.

**Conditions and measures related to municipal sewage treatment plant**

Flow rate of sewage treatment plant effluent : 2.000 m<sup>3</sup>/d  
 Effectiveness (of a measure) : 96,3 %  
 Percentage removed from waste water : 96,3 %  
 Sludge Treatment : No data available  
 Procedures to limit air emissions from Sewage Treatment Plant : No data available

**Conditions and measures related to external treatment of waste for disposal**

Remarks : Combustion emissions limited by required exhaust emission controls.  
 Combustion emissions considered in regional exposure assessment.

**Conditions and measures related to external recovery of waste**

Recovery Methods : This substance is consumed during use and no waste of the substance is generated.

**2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure****Product characteristics**

Physical Form (at time of use) : Liquid substance  
 Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is



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implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Handle substance within a closed system., Store substance within a closed system.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**2.2 Contributing scenario controlling worker exposure for: PROC2: Use in closed, continuous process with occasional controlled exposure****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Handle substance within a closed system., Transfer via enclosed lines., Store substance within a closed system.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**2.2 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

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Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Handle substance within a closed system.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop., No specific measures identified.

**2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Drain down and flush system prior to equipment opening or maintenance.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop., Apply vessel entry procedures including use of forced supplied air.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable coveralls to prevent exposure to the skin., Wear suitable gloves tested to EN374.

**2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

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**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Handle substance within a closed system.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374.

**2.2 Contributing scenario controlling worker exposure for: PROC16: Using material as fuel sources, limited exposure to unburned product to be expected****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Handle substance within a closed system.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**3. Exposure estimation and reference to its source****Environment**

Contributing Scenario	Exposure Assessment	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization
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	Method				ratio (PEC/PNEC):
ERC7, ERC8b	Hydrocarbon Block Method with Petrorisk		Air		0,05 mg/m3
			Freshwater		0,0016 mg/L
			Freshwater sediment		0,07 mg/kg
			Marine water		0,16 µg/L
			Marine sediment		0,007 mg/kg
			Agricultural soil		0,46 µg/kg

ERC7: Industrial use of substances in closed systems

ERC8b: Wide dispersive indoor use of reactive substances in open systems

**Workers/Consumers**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
PROC1, CS15, CS37, CS67	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,05 mg/m3	0,000
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,000
			Worker – long-term – systemic Combined routes		0,000
PROC2, CS15, CS37, CS67	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	46,72 mg/m3	0,023
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,002
			Worker – long-term – systemic Combined routes		0,025
PROC3, CS15, CS37, CS107	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	116,79 mg/m3	0,057
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,000
			Worker – long-term – systemic Combined routes		0,058
PROC8a, CS39	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long-term – systemic	2,742 mg/kg/d	0,004
			Worker – long-term – systemic Combined routes		0,118
PROC8a, CS103	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	23,36 mg/m3	0,011
			Worker – dermal, long-term – systemic	2,742 mg/kg/d	0,004
			Worker – long-term – systemic Combined routes		0,015
PROC8b, CS8, CS14	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long-term – systemic	1,372 mg/kg/d	0,002
			Worker – long-term – systemic Combined routes		0,117
PROC16, CS15, CS107	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	23,36 mg/m3	0,011
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,000
			Worker – long-term – systemic Combined routes		0,012

PROC1: Use in closed process, no likelihood of exposure

CS15: General exposures (closed systems)

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CS37: Use in contained batch processes

CS67: Storage

PROC2: Use in closed, continuous process with occasional controlled exposure

CS15: General exposures (closed systems)

CS37: Use in contained batch processes

CS67: Storage

PROC3: Use in closed batch process (synthesis or formulation)

CS15: General exposures (closed systems)

CS37: Use in contained batch processes

CS107: (closed systems)

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

CS39: Equipment cleaning and maintenance

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

CS103: Vessel and container cleaning

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

CS8: Drum/batch transfers

CS14: Bulk transfers

PROC16: Using material as fuel sources, limited exposure to unburned product to be expected

CS15: General exposures (closed systems)

CS107: (closed systems)

**4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario**

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.

Risk Management Measures are based on qualitative risk characterisation.

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 wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Required removal efficiency for air can be achieved using on-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>).

**1. Short title of Exposure Scenario: Use as a fuel – professional**

Main User Groups	: <b>SU 22:</b> Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sector of use	: <b>SU 22:</b> Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process category	: <b>PROC1:</b> Use in closed process, no likelihood of exposure <b>PROC2:</b> Use in closed, continuous process with occasional

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	controlled exposure <b>PROC3:</b> Use in closed batch process (synthesis or formulation) <b>PROC8a:</b> Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities <b>PROC8b:</b> Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC16:</b> Using material as fuel sources, limited exposure to unburned product to be expected
Environmental release category	: <b>ERC8b, ERC8e, ERC9a, ERC9b:</b> Wide dispersive indoor use of reactive substances in open systems, Wide dispersive outdoor use of reactive substances in open systems, Wide dispersive indoor use of substances in closed systems, Wide dispersive outdoor use of substances in closed systems
Further information	: Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

**2.1 Contributing scenario controlling environmental exposure for:ERC8b, ERC8e, ERC9a, ERC9b: Wide dispersive indoor use of reactive substances in open systems, Wide dispersive outdoor use of reactive substances in open systems, Wide dispersive indoor use of substances in closed systems, Wide dispersive outdoor use of substances in closed systems**

(Msafe) : 240 tonnes/day

**Environment factors not influenced by risk management**

Flow rate : 18.000 m3/d  
Dilution Factor (River) : 10  
Dilution Factor (Coastal Areas) : 100

**Other given operational conditions affecting environmental exposure**

Number of emission days per year : 365  
Emission or Release Factor: Air : 0,1 %  
Emission or Release Factor: Water : 0,001 %  
Emission or Release Factor: Soil : 0,001 %

**Technical conditions and measures / Organizational measures**

Water : Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of  $\geq$  (%):  
(Effectiveness: 0 %)

Remarks : Risk from environmental exposure is driven by freshwater.

Water : If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of  $\geq$  (%):  
(Effectiveness: 0 %)

Remarks : Common practices vary across sites thus conservative process release estimates used.

Remarks : No wastewater treatment required.

**Conditions and measures related to municipal sewage treatment plant**

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Flow rate of sewage treatment plant effluent : 2.000 m3/d  
 Effectiveness (of a measure) : 96,3 %  
 Percentage removed from waste water : 96,3 %  
 Sludge Treatment : No data available  
 Procedures to limit air emissions from Sewage Treatment Plant : No data available

**Conditions and measures related to external treatment of waste for disposal**

Remarks : Combustion emissions limited by required exhaust emission controls.  
 Combustion emissions considered in regional exposure assessment.

**Conditions and measures related to external recovery of waste**

Recovery Methods : This substance is consumed during use and no waste of the substance is generated.

**2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure****Product characteristics**

Physical Form (at time of use) : Liquid substance  
 Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Handle substance within a closed system., Store substance within a closed system.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**2.2 Contributing scenario controlling worker exposure for: PROC2: Use in closed, continuous process with occasional controlled exposure****Product characteristics**

Physical Form (at time of use) : Liquid substance  
 Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

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Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Handle substance within a closed system.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**2.2 Contributing scenario controlling worker exposure for: PROC3, PROC16: Use in closed batch process (synthesis or formulation), Using material as fuel sources, limited exposure to unburned product to be expected****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Handle substance within a closed system.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit



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**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Drain down system prior to equipment opening or maintenance.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop., Apply vessel entry procedures including use of forced supplied air.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374., Wear suitable coveralls to prevent exposure to the skin.

**2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Handle substance within a closed system., Use drum pumps or carefully pour from container., Ensure operation is undertaken outdoors., Clear transfer lines prior to de-coupling.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374.

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**3. Exposure estimation and reference to its source****Environment**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
ERC8b, ERC8e, ERC9a, ERC9b	Hydrocarbon Block Method with Petrorisk		Air		0,074 µg/m3	
			Freshwater		0,0058 µg/L	0,00015
			Freshwater sediment		0,0001 mg/kg	0,000073
			Marine water		0,066 ng/L	< 0,000017
			Marine sediment		0,0028 µg/kg	0,000002
			Agricultural soil		0,012 µg/kg	0,000021

ERC8b: Wide dispersive indoor use of reactive substances in open systems

ERC8e: Wide dispersive outdoor use of reactive substances in open systems

ERC9a: Wide dispersive indoor use of substances in closed systems

ERC9b: Wide dispersive outdoor use of substances in closed systems

**Workers/Consumers**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
PROC1, CS15, CS67	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,05 mg/m3	0,000
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,000
			Worker – long-term – systemic Combined routes		0,000
PROC2, CS15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	93,43 mg/m3	0,046
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,002
			Worker – long-term – systemic Combined routes		0,048
PROC3, CS15, CS107	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	116,79 mg/m3	0,057
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,000
			Worker – long-term – systemic Combined routes		0,058
PROC16, CS15, CS107	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	46,72 mg/m3	0,023
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,000
			Worker – long-term – systemic Combined routes		0,023
PROC8a, CS39, CS103	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	93,43 mg/m3	0,046
			Worker – dermal, long-term – systemic	2,742 mg/kg/d	0,004
			Worker – long-term – systemic Combined routes		0,049
PROC8b, CS1, CS8	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	46,72 mg/m3	0,023
			Worker – dermal, long-term – systemic	1,372 mg/kg/d	0,002
			Worker – long-term – systemic Combined routes		0,025

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PROC8b, CS14	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	163,51 mg/m <sup>3</sup>	0,080
			Worker – dermal, long-term – systemic	1,372 mg/kg/d	0,002
			Worker – long-term – systemic Combined routes		0,082

PROC1: Use in closed process, no likelihood of exposure

CS15: General exposures (closed systems)

CS67: Storage

PROC2: Use in closed, continuous process with occasional controlled exposure

CS15: General exposures (closed systems)

PROC3: Use in closed batch process (synthesis or formulation)

CS15: General exposures (closed systems)

CS107: (closed systems)

PROC16: Using material as fuel sources, limited exposure to unburned product to be expected

CS15: General exposures (closed systems)

CS107: (closed systems)

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

CS39: Equipment cleaning and maintenance

CS103: Vessel and container cleaning

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

CS1: General exposures

CS8: Drum/batch transfers

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

CS14: Bulk transfers

#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.

Risk Management Measures are based on qualitative risk characterisation.

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 wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Required removal efficiency for air can be achieved using on-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>).

#### 1. Short title of Exposure Scenario: **Manufacture**

Main User Groups : **SU 3:** Industrial uses: Uses of substances as such or in

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Sector of use	: preparations at industrial sites <b>SU3, SU8, SU9:</b> Industrial Manufacturing (all), Manufacture of bulk, large scale chemicals (including petroleum products), Manufacture of fine chemicals
Process category	: <b>PROC1:</b> Use in closed process, no likelihood of exposure <b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure <b>PROC3:</b> Use in closed batch process (synthesis or formulation) <b>PROC4:</b> Use in batch and other process (synthesis) where opportunity for exposure arises <b>PROC8a:</b> Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities <b>PROC8b:</b> Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC15:</b> Use as laboratory reagent
Environmental release category	: <b>ERC1, ERC4:</b> Manufacture of substances, Industrial use of processing aids in processes and products, not becoming part of articles
Further information	: Manufacture of the substance or use as an intermediate or process chemical or extraction agent. Includes recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

**2.1 Contributing scenario controlling environmental exposure for:ERC1, ERC4:  
Manufacture of substances, Industrial use of processing aids in processes and products, not becoming part of articles**

(Msafe) : 3.000 tonnes/day

**Environment factors not influenced by risk management**

Flow rate : 18.000 m3/d  
Dilution Factor (River) : 10  
Dilution Factor (Coastal Areas) : 100

**Other given operational conditions affecting environmental exposure**

Continuous use/release  
Number of emission days per year : 300  
Emission or Release Factor: Air : 5 %  
Emission or Release Factor: Water : 0,003 %  
Emission or Release Factor: Soil : 0,01 %

**Technical conditions and measures / Organizational measures**

Air : Treat air emission to provide the required removal efficiency of (%): (Effectiveness: 90 %)  
Water : Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): (Effectiveness: 0 %)  
Remarks : Risk from environmental exposure is driven by freshwater

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Water : sediment.  
 : If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of  $\geq$  (%):  
 (Effectiveness: 0 %)

Remarks : No wastewater treatment required.

Remarks : Prevent discharge of undissolved substance to or recover from onsite wastewater.

Remarks : Common practices vary across sites thus conservative process release estimates used.

**Conditions and measures related to municipal sewage treatment plant**

Flow rate of sewage treatment plant effluent : 10.000 m<sup>3</sup>/d

Effectiveness (of a measure) : 96,3 %

Percentage removed from waste water : 96,3 %

Sludge Treatment : No data available

Procedures to limit air emissions from Sewage Treatment Plant : No data available

**Conditions and measures related to external treatment of waste for disposal**

Waste treatment : During manufacturing no waste of the substance is generated.

**Conditions and measures related to external recovery of waste**

Recovery Methods : During manufacturing no waste of the substance is generated.

**2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure****Product characteristics**

Physical Form (at time of use) : Liquid substance

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Store substance within a closed system.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop., No specific measures identified.

**2.2 Contributing scenario controlling worker exposure for: PROC2: Use in closed, continuous process with occasional controlled exposure****Product characteristics**

Physical Form (at time of use) : Liquid substance

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**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Handle substance within a closed system., Store substance within a closed system.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**2.2 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)****Product characteristics**

Physical Form (at time of use) : Liquid substance

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Handle substance within a closed system.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**2.2 Contributing scenario controlling worker exposure for: PROC4, PROC15: Use in batch and other process (synthesis) where opportunity for exposure arises, Use as laboratory reagent****Product characteristics**

Physical Form (at time of use) : Liquid substance

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**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Handle substance within a closed system., Store substance within a closed system.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities****Product characteristics**

Physical Form (at time of use) : Liquid substance

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374.

**2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities****Product characteristics**

Physical Form (at time of use) : Liquid substance

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**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Handle substance within a closed system.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop., No specific measures identified.

**3. Exposure estimation and reference to its source****Environment**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
ERC1, ERC4	Hydrocarbon Block Method with Petrorisk		Air		0,1 mg/m3	
			Fresh water		0,001 mg/L	0,026
			Freshwater sediment		0,043 mg/kg	0,03
			Marine water		0,0001 mg/L	0,0026
			Marine sediment		0,0043 mg/kg	0,003
			Agricultural soil		0,95 µg/kg	0,0021

ERC1: Manufacture of substances

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

**Workers/Consumers**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
PROC1, CS15, CS67	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,05 mg/m3	0,000
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,000
			Worker – long-term – systemic Combined routes		0,000
PROC2, CS15, CS67	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	46,72 mg/m3	0,023
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,002
			Worker – long-term – systemic Combined routes		0,025
PROC3, CS15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	116,79 mg/m3	0,057
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,000



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			term – systemic		
			Worker – long-term – systemic Combined routes		0,058
PROC4, CS16	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	93,43 mg/m3	0,046
			Worker – dermal, long-term – systemic	6,86 mg/kg/d	0,009
			Worker – long-term – systemic Combined routes		0,055
PROC15, CS36	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	46,72 mg/m3	0,023
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,000
			Worker – long-term – systemic Combined routes		0,023
PROC8a, CS39	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long-term – systemic	2,742 mg/kg/d	0,004
			Worker – long-term – systemic Combined routes		0,118
PROC8b, CS2, CS14, CS107, CS108	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long-term – systemic	6,86 mg/kg/d	0,009
			Worker – long-term – systemic Combined routes		0,124

PROC1: Use in closed process, no likelihood of exposure

CS15: General exposures (closed systems)

CS67: Storage

PROC2: Use in closed, continuous process with occasional controlled exposure

CS15: General exposures (closed systems)

CS67: Storage

PROC3: Use in closed batch process (synthesis or formulation)

CS15: General exposures (closed systems)

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

CS16: General exposures (open systems)

PROC15: Use as laboratory reagent

CS36: Laboratory activities

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

CS39: Equipment cleaning and maintenance

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

CS2: Process sampling

CS14: Bulk transfers

CS107: (closed systems)

CS108: (open systems)

#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.  
 Risk Management Measures are based on qualitative risk characterisation.  
 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 wastewater can be achieved using onsite/offsite technologies, either alone or in combination.  
 Required removal efficiency for air can be achieved using on-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>).

Scaled local assessments for EU refineries have been performed using site-specific data and are attached in PETRORISK file – “Site-Specific Production” worksheet.

**1. Short title of Exposure Scenario: Use as a laboratory agent – industrial**

Main User Groups	:	<b>SU 3:</b> Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	:	<b>SU3:</b> Industrial Manufacturing (all)
Process category	:	<b>PROC1:</b> Use in closed process, no likelihood of exposure <b>PROC10:</b> Roller application or brushing <b>PROC15:</b> Use as laboratory reagent
Environmental release category	:	<b>ERC2, ERC4:</b> Formulation of preparations, Industrial use of processing aids in processes and products, not becoming part of articles
Further information	:	Use of the substance within laboratory settings, including material transfers and equipment cleaning.

**2.1 Contributing scenario controlling environmental exposure for:ERC2, ERC4: Formulation of preparations, Industrial use of processing aids in processes and products, not becoming part of articles**

Maximum allowable site tonnage : 900  
 (MSafe) based on release  
 following total wastewater  
 treatment removal (kg/d):(Msafe)

**Environment factors not influenced by risk management**

Flow rate : 18.000 m<sup>3</sup>/d  
 Dilution Factor (River) : 10  
 Dilution Factor (Coastal Areas) : 100

**Other given operational conditions affecting environmental exposure**

Continuous use/release  
 Number of emission days per year : 20  
 Emission or Release Factor: Air : 2,5 %  
 Emission or Release Factor: Water : 2,0 %

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Emission or Release Factor: Soil : 0,01 %

**Technical conditions and measures / Organizational measures**

Air : Treat air emission to provide the required removal efficiency of (%): (Effectiveness: 0 %)

Water : Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of  $\geq$  (%): (Effectiveness: 66,5 %)

Remarks : Risk from environmental exposure is driven by freshwater sediment.

Water : If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of  $\geq$  (%): (Effectiveness: 0 %)

Remarks : If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.

Remarks : Do not apply industrial sludge to natural soils.

Remarks : Sludge should be incinerated, contained or reclaimed.

**Conditions and measures related to municipal sewage treatment plant**

Type of Sewage Treatment Plant : Municipal sewage treatment plant

Flow rate of sewage treatment plant effluent : 2.000 m3/d

Effectiveness (of a measure) : 96,3 %

Percentage removed from waste water : 96,3 %

Sludge Treatment : No data available

Procedures to limit air emissions from Sewage Treatment Plant : No data available

**Conditions and measures related to external treatment of waste for disposal**

Waste treatment : External treatment and disposal of waste should comply with applicable local and/or national regulations.

**Conditions and measures related to external recovery of waste**

Recovery Methods : External recovery and recycling of waste should comply with applicable local and/or national regulations.

**2.2 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing****Product characteristics**

Physical Form (at time of use) : Liquid substance

Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent /

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minimise exposures and to report any skin problems that may develop.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374.

**2.2 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop., No specific measures identified.

**3. Exposure estimation and reference to its source****Environment**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
ERC2, ERC4	Hydrocarbon Block Method with Petrorisk		Air		0,13 µg/m3	
			Freshwater		0,0037 mg/L	0,098
			Freshwater sediment		0,16 mg/kg	0,11
			Marine water		0,37 µg/L	0,0098
			Marine sediment		0,016 mg/kg	0,011
			Agricultural soil		0,0019 µg/kg	< 0,000002

ERC2: Formulation of preparations

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

**Workers/Consumers**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
PROC10, CS47	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long-term – systemic	5,486 mg/kg/d	0,007

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			Worker – long-term – systemic Combined routes		0,122
PROC15, CS36	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	46,72 mg/m3	0,023
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,000
			Worker – long-term – systemic Combined routes		0,023

PROC10: Roller application or brushing  
CS47: Cleaning

PROC15: Use as laboratory reagent  
CS36: Laboratory activities

#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterisation. 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 wastewater can be achieved using onsite/offsite technologies, either alone or in combination.  
Required removal efficiency for air can be achieved using on-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>).

#### 1. Short title of Exposure Scenario: **Use as a laboratory agent – professional**

Main User Groups : **SU 22:** Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Sector of use : **SU 22:** Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Process category : **PROC10:** Roller application or brushing  
**PROC15:** Use as laboratory reagent

Environmental release category : **ERC8a:** Wide dispersive indoor use of processing aids in open systems

Further information :  
Use of the substance within laboratory settings, including material transfers and equipment cleaning.

#### 2.1 Contributing scenario controlling environmental exposure for: **ERC8a: Wide dispersive indoor use of processing aids in open systems**

Maximum allowable site tonnage : 14  
(MSafe) based on release

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following total wastewater  
treatment removal (kg/d):(Msafe)

**Environment factors not influenced by risk management**

Flow rate : 18.000 m3/d  
Dilution Factor (River) : 10  
Dilution Factor (Coastal Areas) : 100

**Other given operational conditions affecting environmental exposure**

Continuous use/release  
Number of emission days per year : 365  
Emission or Release Factor: Air : 50 %  
Emission or Release Factor: Water : 50 %  
Emission or Release Factor: Soil : 0 %

**Technical conditions and measures / Organizational measures**

Air : Treat air emission to provide the required removal efficiency of (%): (Effectiveness: 0 %)  
Water : Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of  $\geq$  (%): (Effectiveness: 0 %)  
Remarks : Risk from environmental exposure is driven by freshwater.  
Water : If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of  $\geq$  (%): (Effectiveness: 0 %)  
Remarks : No wastewater treatment required.

**Conditions and measures related to municipal sewage treatment plant**

Type of Sewage Treatment Plant : Municipal sewage treatment plant  
Flow rate of sewage treatment plant effluent : 2.000 m3/d  
Effectiveness (of a measure) : 96,3 %  
Percentage removed from waste water : 96,3 %

**Conditions and measures related to external treatment of waste for disposal**

Waste treatment : External treatment and disposal of waste should comply with applicable local and/or national regulations.

**Conditions and measures related to external recovery of waste**

Recovery Methods : External recovery and recycling of waste should comply with applicable local and/or national regulations.

**2.2 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient

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temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Handle in a fume cupboard or under extract ventilation.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**2.2 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent****Product characteristics**

Physical Form (at time of use) : Liquid substance

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Handle in a fume cupboard or under extract ventilation.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**3. Exposure estimation and reference to its source****Environment**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
ERC8a	Hydrocarbon Block Method with Petrorisk		Air		0,074 µg/m <sup>3</sup>	
			Freshwater		0,0077 µg/L	0,0002
			Freshwater sediment		0,00011 mg/kg	0,000076
			Marine water		0,00025 µg/L	< 0,000007
			Marine sediment		0,000011 mg/kg	< 0,000008
			Agricultural soil		0,047 µg/kg	0,00008

ERC8a: Wide dispersive indoor use of processing aids in open systems

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**Workers/Consumers**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
PROC10, CS47	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	93,43 mg/m <sup>3</sup>	0,046
			Worker – dermal, long-term – systemic	1,3715 mg/kg/d	0,002
			Worker – long-term – systemic Combined routes		0,048
PROC15, CS36	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	46,72 mg/m <sup>3</sup>	0,023
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,000
			Worker – long-term – systemic Combined routes		0,023

PROC10: Roller application or brushing  
CS47: Cleaning

PROC15: Use as laboratory reagent  
CS36: Laboratory activities

**4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario**

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.  
Risk Management Measures are based on qualitative risk characterisation.  
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 wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Required removal efficiency for air can be achieved using on-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>).

**1. Short title of Exposure Scenario: Distribution**

Main User Groups : **SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites

Sector of use : **SU3:** Industrial Manufacturing (all)

Process category : **PROC1:** Use in closed process, no likelihood of exposure  
**PROC2:** Use in closed, continuous process with occasional controlled exposure  
**PROC3:** Use in closed batch process (synthesis or formulation)  
**PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises  
**PROC8a:** Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at



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	non-dedicated facilities <b>PROC8b:</b> Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC9:</b> Transfer of substance or preparation into small containers (dedicated filling line, including weighing) <b>PROC15:</b> Use as laboratory reagent
Environmental release category	: <b>ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7:</b> Manufacture of substances, Formulation of preparations, Formulation in materials, Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in inclusion into or onto a matrix, Industrial use resulting in manufacture of another substance (use of intermediates), Industrial use of reactive processing aids, Industrial use of monomers for manufacture of thermoplastics, Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers, Industrial use of substances in closed systems
Further information	: Bulk loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading, maintenance and associated laboratory activities. Excludes emissions during transport.

**2.1 Contributing scenario controlling environmental exposure for:ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7: Manufacture of substances, Formulation of preparations, Formulation in materials, Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in inclusion into or onto a matrix, Industrial use resulting in manufacture of another substance (use of intermediates), Industrial use of reactive processing aids, Industrial use of monomers for manufacture of thermoplastics, Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers, Industrial use of substances in closed systems**

Maximum allowable site tonnage : 97.000  
(MSafe) based on release  
following total wastewater  
treatment removal (kg/d):(Msafe)

**Environment factors not influenced by risk management**

Flow rate : 18.000 m3/d  
Dilution Factor (River) : 10  
Dilution Factor (Coastal Areas) : 100

**Other given operational conditions affecting environmental exposure**

Continuous use/release  
Number of emission days per year : 20  
Emission or Release Factor: Air : 0,1 %  
Emission or Release Factor: Soil : 0,001 %  
Remarks : Emission or Release Factor: Water : < 0.001 %

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**Technical conditions and measures / Organizational measures**

Water	:	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of $\geq$ (%): (Effectiveness: 0 %)
Remarks	:	Risk from environmental exposure is driven by freshwater.
Remarks	:	Common practices vary across sites thus conservative process release estimates used.
Remarks	:	No wastewater treatment required.
Air	:	Treat air emission to provide the required removal efficiency of (%): (Effectiveness: 90 %)
Water	:	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of $\geq$ (%): (Effectiveness: 0 %)

**Conditions and measures related to municipal sewage treatment plant**

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2.000 m3/d
Effectiveness (of a measure)	:	96,3 %
Percentage removed from waste water	:	96,3 %
Sludge Treatment	:	No data available
Procedures to limit air emissions from Sewage Treatment Plant	:	No data available

**Conditions and measures related to external treatment of waste for disposal**

Remarks	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
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**Conditions and measures related to external recovery of waste**

Recovery Methods	:	External recovery and recycling of waste should comply with applicable local and/or national regulations.
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**2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure****Product characteristics**

Physical Form (at time of use)	:	Liquid substance
Vapor pressure	:	2,8 kPa

**Amount used**

Remarks	:	No limit
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**Frequency and duration of use**

Remarks	:	Covers daily exposures up to 8 hours (unless stated differently)
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**Other operational conditions affecting workers exposure**

Remarks	:	Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.
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**Technical conditions and measures**

Handle substance within a closed system.  
Transfer via enclosed lines.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent /

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minimise exposures and to report any skin problems that may develop.

**2.2 Contributing scenario controlling worker exposure for: PROC2: Use in closed, continuous process with occasional controlled exposure****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Store substance within a closed system., Transfer via enclosed lines.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**2.2 Contributing scenario controlling worker exposure for: PROC3, PROC9, PROC15: Use in closed batch process (synthesis or formulation), Transfer of substance or preparation into small containers (dedicated filling line, including weighing), Use as laboratory reagent****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent /

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minimise exposures and to report any skin problems that may develop., No specific measures identified.

**2.2 Contributing scenario controlling worker exposure for: PROC4, PROC8b: Use in batch and other process (synthesis) where opportunity for exposure arises, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**

**Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374.

**2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities**

**Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent /

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minimise exposures and to report any skin problems that may develop., Apply vessel entry procedures including use of forced supplied air.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374., Wear suitable coveralls to prevent exposure to the skin., Wear rubber boots.

**3. Exposure estimation and reference to its source****Environment**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7	Hydrocarbon Block Method with Petrorisk		Air		74 ng/m3	
			Fresh water		5,1 ng/L	0,00013
			Fresh water sediment		0,000075 mg/kg	0,000054
			Marine water		0,019 ng/L	< 0,000044
			Marine sediment		0,26 ng/kg	< 0,000002
			Agricultural soil		1,2 ng/kg	< 0,000034

ERC1: Manufacture of substances

ERC2: Formulation of preparations

ERC3: Formulation in materials

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

ERC5: Industrial use resulting in inclusion into or onto a matrix

ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)

ERC6b: Industrial use of reactive processing aids

ERC6c: Industrial use of monomers for manufacture of thermoplastics

ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

ERC7: Industrial use of substances in closed systems

**Workers/Consumers**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
PROC1, CS15, CS67	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,05 mg/m3	0,000
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,000
			Worker – long-term – systemic Combined routes		0,000
PROC2, CS15, CS67	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	46,72 mg/m3	0,023
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,002
			Worker – long-term – systemic Combined routes		0,025
PROC3, CS15, CS2	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	116,79 mg/m3	0,057
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,000
			Worker – long-term – systemic Combined routes		0,058

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PROC9, CS6	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/kg/d	0,115
			Worker – dermal, long-term – systemic	6,86 mg/kg/d	0,009
			Worker – long-term – systemic Combined routes		0,124
PROC15, CS36	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	46,72 mg/kg/d	0,023
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,000
			Worker – long-term – systemic Combined routes		0,023
PROC4, CS16	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	93,43 mg/m3	0,046
			Worker – dermal, long-term – systemic	1,372 mg/kg/d	0,002
			Worker – long-term – systemic Combined routes		0,048
PROC8b, CS14, CS107, CS108	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long-term – systemic	1,372 mg/kg/d	0,002
			Worker – long-term – systemic Combined routes		0,117
PROC8a, CS39	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long-term – systemic	2,742 mg/kg/d	0,004
			Worker – long-term – systemic Combined routes		0,118

PROC1: Use in closed process, no likelihood of exposure

CS15: General exposures (closed systems)

CS67: Storage

PROC2: Use in closed, continuous process with occasional controlled exposure

CS15: General exposures (closed systems)

CS67: Storage

PROC3: Use in closed batch process (synthesis or formulation)

CS15: General exposures (closed systems)

CS2: Process sampling

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

CS6: Drum and small package filling

PROC15: Use as laboratory reagent

CS36: Laboratory activities

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

CS16: General exposures (open systems)

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

CS14: Bulk transfers

CS107: (closed systems)

CS108: (open systems)

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

CS39: Equipment cleaning and maintenance

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**4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario**

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.  
 Risk Management Measures are based on qualitative risk characterisation.  
 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 wastewater can be achieved using onsite/offsite technologies, either alone or in combination.  
 Required removal efficiency for air can be achieved using on-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>).

**1. Short title of Exposure Scenario: Use in coatings – industrial**

Main User Groups	:	<b>SU 3:</b> Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	:	<b>SU3:</b> Industrial Manufacturing (all)
Process category	:	<b>PROC1:</b> Use in closed process, no likelihood of exposure <b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure <b>PROC3:</b> Use in closed batch process (synthesis or formulation) <b>PROC4:</b> Use in batch and other process (synthesis) where opportunity for exposure arises <b>PROC5:</b> Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) <b>PROC7:</b> Industrial spraying <b>PROC8a:</b> Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities <b>PROC8b:</b> Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC9:</b> Transfer of substance or preparation into small containers (dedicated filling line, including weighing) <b>PROC10:</b> Roller application or brushing <b>PROC13:</b> Treatment of articles by dipping and pouring <b>PROC14:</b> Production of preparations or articles by tableting, compression, extrusion, pelletization <b>PROC15:</b> Use as laboratory reagent
Environmental release category	:	<b>ERC4:</b> Industrial use of processing aids in processes and products, not becoming part of articles
Further information	:	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk,

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application by spray, roller, spreader, dip, flow, fluidised bed on production lines and film formation) and equipment cleaning, maintenance and associated laboratory activities.

**2.1 Contributing scenario controlling environmental exposure for:ERC4: Industrial use of processing aids in processes and products, not becoming part of articles**

Maximum allowable site tonnage : 260.000  
(MSafe) based on release  
following total wastewater  
treatment removal (kg/d):(Msafe)

**Environment factors not influenced by risk management**

Flow rate : 18.000 m3/d  
Dilution Factor (River) : 10  
Dilution Factor (Coastal Areas) : 100

**Other given operational conditions affecting environmental exposure**

Continuous use/release  
Number of emission days per year : 20  
Emission or Release Factor: Air : 98 %  
Emission or Release Factor: Water : 0,007 %  
Emission or Release Factor: Soil : 0 %

**Technical conditions and measures / Organizational measures**

Air : Treat air emission to provide the required removal efficiency of (%): (Effectiveness: 90 %)  
Water : Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of  $\geq$  (%): (Effectiveness: 4,3 %)  
Water : If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of  $\geq$  (%): (Effectiveness: 0 %)  
Remarks : Common practices vary across sites thus conservative process release estimates used.  
Remarks : Prevent discharge of undissolved substance to or recover from onsite wastewater.  
Remarks : Risk from environmental exposure is driven by freshwater sediment.  
Remarks : If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.  
Remarks : Do not apply industrial sludge to natural soils.  
Remarks : Sludge should be incinerated, contained or reclaimed.

**Conditions and measures related to municipal sewage treatment plant**

Type of Sewage Treatment Plant : Municipal sewage treatment plant  
Flow rate of sewage treatment plant effluent : 2.000 m3/d  
Effectiveness (of a measure) : 96,3 %  
Percentage removed from waste water : 96,3 %  
Sludge Treatment : No data available  
Procedures to limit air emissions from Sewage Treatment Plant : No data available

**Conditions and measures related to external treatment of waste for disposal**



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Remarks : External treatment and disposal of waste should comply with applicable local and/or national regulations.

**Conditions and measures related to external recovery of waste**

Recovery Methods : External recovery and recycling of waste should comply with applicable local and/or national regulations.

**2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure, Use in closed batch process (synthesis or formulation)**

**Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Handle substance within a closed system.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**2.2 Contributing scenario controlling worker exposure for: PROC4, PROC9, PROC15: Use in batch and other process (synthesis) where opportunity for exposure arises, Transfer of substance or preparation into small containers (dedicated filling line, including weighing), Use as laboratory reagent**

**Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Organizational measures to prevent /limit releases, dispersion and exposure**

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Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop., No specific measures identified.

**2.2 Contributing scenario controlling worker exposure for: PROC5, PROC10, PROC14: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact), Roller application or brushing, Production of preparations or articles by tableting, compression, extrusion, pelletization**

**Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374.

**2.2 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying**

**Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Carry out in a vented booth provided with laminar airflow., Provide enhanced general ventilation by mechanical means.

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**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

**2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Clear transfer lines prior to de-coupling.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374.

**2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

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**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Clear transfer lines prior to de-coupling.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**2.2 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop., Avoid manual contact with wet work pieces.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374.

**3. Exposure estimation and reference to its source****Environment**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
ERC4	Hydrocarbon Block Method with Petrorisk		Air		0,015 mg/m3	
			Fresh water		0,0013 mg/L	0,034
			Fresh water sediment		0,056 mg/kg	0,039
			Marine water		0,13 µg/L	0,0034

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		Marine sediment	0,0056 mg/kg	0,0039
		Agricultural soil	0,14 µg/kg	0,0003

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

**Workers/Consumers**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
PROC1, CS15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,05 mg/m3	0,000
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,000
			Worker – long-term – systemic Combined routes		
PROC2, CS15, CS56, CS38	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	46,72 mg/m3	0,023
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,002
			Worker – long-term – systemic Combined routes		0,025
PROC2, CS94	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,002
			Worker – long-term – systemic Combined routes		0,117
PROC3, CS29, CS15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	116,79 mg/m3	0,057
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,000
			Worker – long-term – systemic Combined routes		0,058
PROC4, CS95	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	93,43 mg/m3	0,046
			Worker – dermal, long-term – systemic	6,86 mg/kg/d	0,009
			Worker – long-term – systemic Combined routes		0,055
PROC9, CS3, CS8, CS22	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long-term – systemic	6,86 mg/kg/d	0,009
			Worker – long-term – systemic Combined routes		0,124
PROC15, CS36	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	46,72 mg/m3	0,023
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,000
			Worker – long-term – systemic Combined routes		0,023
PROC5, CS96, CS30	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long-term – systemic	2,742 mg/kg/d	0,004
			Worker – long-term – systemic Combined routes		0,118
PROC10, CS98	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long-term – systemic	5,486 mg/kg/d	0,007
			Worker – long-term –		0,122

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			systemic Combined routes		
PROC14, CS100	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long-term – systemic	0,686 mg/kg/d	0,001
			Worker – long-term – systemic Combined routes		0,116
PROC7, CS97	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	58,39 mg/m3	0,029
			Worker – dermal, long-term – systemic	2,143 mg/kg/d	0,003
			Worker – long-term – systemic Combined routes		0,031
PROC7, CS34, CS10	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	350,37 mg/m3	0,172
			Worker – dermal, long-term – systemic	4,286 mg/kg/d	0,006
			Worker – long-term – systemic Combined routes		0,178
PROC8a, CS3	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long-term – systemic	2,742 mg/kg/d	0,004
			Worker – long-term – systemic Combined routes		0,118
PROC8b, CS3	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long-term – systemic	6,86 mg/kg/d	0,009
			Worker – long-term – systemic Combined routes		0,124
PROC13, CS4	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long-term – systemic	2,742 mg/kg/d	0,004
			Worker – long-term – systemic Combined routes		0,118

PROC1: Use in closed process, no likelihood of exposure

CS15: General exposures (closed systems)

PROC2: Use in closed, continuous process with occasional controlled exposure

CS15: General exposures (closed systems)

CS56: with sample collection

CS38: Use in contained systems

PROC2: Use in closed, continuous process with occasional controlled exposure

CS94: Film formation - force drying (50 - 100°C). Stoving (>100°C). UV/EB radiation curing

PROC3: Use in closed batch process (synthesis or formulation)

CS29: Mixing operations (closed systems)

CS15: General exposures (closed systems)

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

CS95: Film formation - air drying

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

CS3: Material transfers

CS8: Drum/batch transfers

CS22: Transfer from/pouring from containers

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PROC15: Use as laboratory reagent  
CS36: Laboratory activities

PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)  
CS96: Preparation of material for application  
CS30: Mixing operations (open systems)

PROC10: Roller application or brushing  
CS98: Roller, spreader, flow application

PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletization  
CS100: Production or preparation or articles by tableting, compression, extrusion or pelletization

PROC7: Industrial spraying  
CS97: Spraying (automatic/robotic)

PROC7: Industrial spraying  
CS34: Manual  
CS10: Spraying

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities  
CS3: Material transfers

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities  
CS3: Material transfers

PROC13: Treatment of articles by dipping and pouring  
CS4: Dipping, immersion and pouring

**4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario**

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.  
Risk Management Measures are based on qualitative risk characterisation.  
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 wastewater can be achieved using onsite/offsite technologies, either alone or in combination.  
Required removal efficiency for air can be achieved using on-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>).

**1. Short title of Exposure Scenario: Use in coatings – professional**

Main User Groups : **SU 22:** Professional uses: Public domain (administration, education, entertainment, services, craftsmen)  
Sector of use : **SU 22:** Professional uses: Public domain (administration,

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Process category	: education, entertainment, services, craftsmen) <b>PROC1:</b> Use in closed process, no likelihood of exposure <b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure <b>PROC3:</b> Use in closed batch process (synthesis or formulation) <b>PROC4:</b> Use in batch and other process (synthesis) where opportunity for exposure arises <b>PROC5:</b> Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) <b>PROC8a:</b> Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities <b>PROC8b:</b> Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC10:</b> Roller application or brushing <b>PROC11:</b> Non industrial spraying <b>PROC13:</b> Treatment of articles by dipping and pouring <b>PROC15:</b> Use as laboratory reagent <b>PROC19:</b> Hand-mixing with intimate contact and only PPE available
Environmental release category	: <b>ERC8a, ERC8d:</b> Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems
Further information	: Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip, flow, fluidised bed on production lines and film formation) and equipment cleaning, maintenance and associated laboratory activities.

**2.1 Contributing scenario controlling environmental exposure for:ERC8a, ERC8d: Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems**

(Msafe) : 1.000

**Environment factors not influenced by risk management**

Flow rate : 18.000 m3/d  
Dilution Factor (River) : 10  
Dilution Factor (Coastal Areas) : 100

**Other given operational conditions affecting environmental exposure**

Continuous use/release  
Number of emission days per year : 365  
Emission or Release Factor: Air : 98 %  
Emission or Release Factor: Water : 1 %  
Emission or Release Factor: Soil : 1 %

**Technical conditions and measures / Organizational measures**

Water : Treat onsite wastewater (prior to receiving water discharge) to



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Water	: provide the required removal efficiency of $\geq$ (%): (Effectiveness: 0 %)
	: If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of $\geq$ (%): (Effectiveness: 0 %)
Remarks	: No wastewater treatment required.
Remarks	: Common practices vary across sites thus conservative process release estimates used.
Remarks	: Risk from environmental exposure is driven by freshwater.
Air	: Treat air emission to provide a typical removal efficiency of (%):
Remarks	: Not applicable

**Conditions and measures related to municipal sewage treatment plant**

Type of Sewage Treatment Plant	: Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	: 2.000 m3/d
Effectiveness (of a measure)	: 96,3 %
Percentage removed from waste water	: 96,3 %
Sludge Treatment	: No data available
Procedures to limit air emissions from Sewage Treatment Plant	: No data available

**Conditions and measures related to external treatment of waste for disposal**

Remarks	: External treatment and disposal of waste should comply with applicable local and/or national regulations.
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**Conditions and measures related to external recovery of waste**

Recovery Methods	: External recovery and recycling of waste should comply with applicable local and/or national regulations.
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**2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure****Product characteristics**

Physical Form (at time of use)	: Liquid substance
Vapor pressure	: 2,8 kPa

**Amount used**

Remarks	: No limit
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**Frequency and duration of use**

Remarks	: Covers daily exposures up to 8 hours (unless stated differently)
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**Other operational conditions affecting workers exposure**

Remarks	: Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.
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**Technical conditions and measures**

Handle substance within a closed system.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

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**2.2 Contributing scenario controlling worker exposure for: PROC3, PROC8b, PROC15: Use in closed batch process (synthesis or formulation), Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities, Use as laboratory reagent****Product characteristics**

Physical Form (at time of use) : Liquid substance  
 Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop., No specific measures identified.

**2.2 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises****Product characteristics**

Physical Form (at time of use) : Liquid substance  
 Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Ensure operation is undertaken outdoors.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop., No specific measures identified.

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**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374.

**2.2 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)****Product characteristics**

Physical Form (at time of use) : Liquid substance  
 Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Provide enhanced general ventilation by mechanical means., Ensure operation is undertaken outdoors.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374.

**2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities****Product characteristics**

Physical Form (at time of use) : Liquid substance  
 Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

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Provide enhanced general ventilation by mechanical means.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374.

**2.2 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Provide enhanced general ventilation by mechanical means., Ensure operation is undertaken outdoors.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

**2.2 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

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**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Carry out in a vented booth or extracted enclosure., Ensure operation is undertaken outdoors.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop., Avoid carrying out operation for more than 1 hour., Limit the substance content in the product to 25%

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training., Wear chemically resistant gloves (tested to EN374) in combination with specific activity training., Wear a respirator conforming to EN140 with Type A filter or better.

**2.2 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Provide extraction ventilation at points where emissions occur., Ensure operation is undertaken outdoors.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop., Avoid manual contact with wet work pieces.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374.

**2.2 Contributing scenario controlling worker exposure for: PROC19: Hand-mixing with intimate contact and only PPE available**

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**Product characteristics**

Physical Form (at time of use) : Liquid substance  
 Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Ensure operation is undertaken outdoors., Ensure doors and windows are opened

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop., Avoid carrying out operation for more than 4 hours.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls., Wear a respirator conforming to EN140 with Type A filter or better.

**3. Exposure estimation and reference to its source****Environment**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
ERC8a, ERC8d	Hydrocarbon Block Method with Petrorisk		Air		0,000074 mg/m3	
			Fresh water		10 ng/L	0,00027
			Freshwater sediment		220 ng/kg	0,00015
			Marine water		0,51 ng/L	0,000013
			Marine sediment		22 ng/kg	0,000015
			Agricultural soil		93 ng/kg	0,00016

ERC8a: Wide dispersive indoor use of processing aids in open systems

ERC8d: Wide dispersive outdoor use of processing aids in open systems

**Workers/Consumers**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
PROC1, CS15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,05 mg/m3	0,000
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,000
			Worker – long-term – systemic Combined		0,000

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			routes		
PROC2, CS15, CS38, CS45	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	93,43 mg/m3	0,046
			Worker – long-term – systemic Combined routes	1,37 mg/kg/d	0,002
			Worker – inhalation, long-term – systemic		0,048
PROC3, CS96	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	116,79 mg/m3	0,057
			Worker – dermal, long- term – systemic	0,34 mg/kg/d	0,000
			Worker – long-term – systemic Combined routes		0,058
PROC8b, CS3, CS8	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long- term – systemic	6,86 mg/kg/d	0,009
			Worker – long-term – systemic Combined routes		0,124
PROC15, CS36	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	46,72 mg/m3	0,023
			Worker – dermal, long- term – systemic	0,34 mg/kg/d	0,000
			Worker – long-term – systemic Combined routes		0,023
PROC4, CS95	ECETOC TRA Modified	Outdoor	Worker – inhalation, long-term – systemic	163,51 mg/m3	0,080
			Worker – dermal, long- term – systemic	1,372 mg/kg/d	0,002
			Worker – long-term – systemic Combined routes		0,082
PROC4, CS95	ECETOC TRA Modified	Indoor	Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long- term – systemic	6,86 mg/kg/d	0,009
			Worker – long-term – systemic Combined routes		0,124
PROC5, CS96	ECETOC TRA Modified	Indoor	Worker – inhalation, long-term – systemic	140,15 mg/m3	0,069
			Worker – dermal, long- term – systemic	2,742 mg/kg/d	0,004
			Worker – long-term – systemic Combined routes		0,072
PROC5, CS96	ECETOC TRA Modified	Outdoor	Worker – inhalation, long-term – systemic	327,01 mg/m3	0,161
			Worker – dermal, long- term – systemic	2,742 mg/kg/d	0,004
			Worker – long-term – systemic Combined routes		0,164
PROC8a, CS3, CS8	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	140,15 mg/m3	0,069
			Worker – dermal, long- term – systemic	2,742 mg/kg/d	0,004
			Worker – long-term – systemic Combined routes		0,072
PROC10, CS98	ECETOC TRA Modified	Indoor	Worker – inhalation, long-term – systemic	140,15 mg/m3	0,069
			Worker – dermal, long- term – systemic	2,743 mg/kg/d	0,004
			Worker – long-term – systemic Combined routes		0,072
PROC10, CS98	ECETOC TRA	Outdoor	Worker – inhalation,	327,01 mg/m3	0,161

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	Modified		long-term – systemic		
			Worker – dermal, long-term – systemic	2,743 mg/kg/d	0,004
			Worker – long-term – systemic Combined routes		0,164
PROC11, CS10, CS34	ECETOC TRA Modified	Indoor	Worker – inhalation, long-term – systemic	280,29 mg/m3	0,138
			Worker – dermal, long-term – systemic	1,2859 mg/kg/d	0,002
			Worker – long-term – systemic Combined routes		0,139
PROC11, CS10, CS34	ECETOC TRA Modified	Outdoor	Worker – inhalation, long-term – systemic	196,21 mg/m3	0,096
			Worker – dermal, long-term – systemic	6,4284 mg/kg/d	0,008
			Worker – long-term – systemic Combined routes		0,105
PROC11, CS10, CS34	ECETOC TRA Modified	Outdoor	Worker – inhalation, long-term – systemic	163,51 mg/m3	0,080
			Worker – dermal, long-term – systemic	5,357 mg/kg/d	0,007
			Worker – inhalation, long-term – systemic		0,087
PROC13, CS4	ECETOC TRA Modified	Indoor	Worker – inhalation, long-term – systemic	93,43 mg/m3	0,046
			Worker – dermal, long-term – systemic	0,6855 mg/kg/d	0,001
			Worker – long-term – systemic Combined routes		0,047
PROC13, CS4	ECETOC TRA Modified	Outdoor	Worker – inhalation, long-term – systemic	327,01 mg/m3	0,161
			Worker – dermal, long-term – systemic	2,742 mg/kg/d	0,004
			Worker – long-term – systemic Combined routes		0,164
PROC19, CS72	ECETOC TRA Modified	Indoor	Worker – inhalation, long-term – systemic	140,15 mg/m3	0,069
			Worker – dermal, long-term – systemic	2,8286 mg/kg/d	0,004
			Worker – long-term – systemic Combined routes		0,073
PROC19, CS72	ECETOC TRA Modified	Outdoor	Worker – inhalation, long-term – systemic	196,21 mg/m3	0,096
			Worker – dermal, long-term – systemic	2,8286 mg/kg/d	0,004
			Worker – long-term – systemic Combined routes		0,100
PROC19, CS72	ECETOC TRA Modified	Outdoor	Worker – inhalation, long-term – systemic	32,70 mg/m3	0,016
			Worker – dermal, long-term – systemic	2,8286 mg/kg/d	0,004
			Worker – long-term – systemic Combined routes		0,020

PROC1: Use in closed process, no likelihood of exposure

CS15: General exposures (closed systems)

PROC2: Use in closed, continuous process with occasional controlled exposure

CS15: General exposures (closed systems)

CS38: Use in contained systems

CS45: Filling/ preparation of equipment from drums or containers.

PROC3: Use in closed batch process (synthesis or formulation)



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CS96: Preparation of material for application

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

CS3: Material transfers

CS8: Drum/batch transfers

PROC15: Use as laboratory reagent

CS36: Laboratory activities

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

CS95: Film formation - air drying

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

CS95: Film formation - air drying

PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)

CS96: Preparation of material for application

PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)

CS96: Preparation of material for application

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

CS3: Material transfers

CS8: Drum/batch transfers

PROC10: Roller application or brushing

CS98: Roller, spreader, flow application

PROC10: Roller application or brushing

CS98: Roller, spreader, flow application

PROC11: Non industrial spraying

CS10: Spraying

CS34: Manual

PROC11: Non industrial spraying

CS10: Spraying

CS34: Manual

PROC11: Non industrial spraying

CS10: Spraying

CS34: Manual

PROC13: Treatment of articles by dipping and pouring

CS4: Dipping, immersion and pouring

PROC13: Treatment of articles by dipping and pouring

CS4: Dipping, immersion and pouring

PROC19: Hand-mixing with intimate contact and only PPE available

CS72: Hand application - finger-paints, pastels, adhesives

PROC19: Hand-mixing with intimate contact and only PPE available

CS72: Hand application - finger-paints, pastels, adhesives

PROC19: Hand-mixing with intimate contact and only PPE available

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CS72: Hand application - finger-paints, pastels, adhesives

**4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario**

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.

Risk Management Measures are based on qualitative risk characterisation.

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 wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Required removal efficiency for air can be achieved using on-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>).

**1. Short title of Exposure Scenario: Use as a cleaning agent – industrial**

Main User Groups	:	<b>SU 3:</b> Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	:	<b>SU3:</b> Industrial Manufacturing (all)
Process category	:	<b>PROC1:</b> Use in closed process, no likelihood of exposure <b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure <b>PROC3:</b> Use in closed batch process (synthesis or formulation) <b>PROC4:</b> Use in batch and other process (synthesis) where opportunity for exposure arises <b>PROC7:</b> Industrial spraying <b>PROC8a:</b> Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities <b>PROC8b:</b> Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC10:</b> Roller application or brushing <b>PROC13:</b> Treatment of articles by dipping and pouring
Environmental release category	:	<b>ERC4:</b> Industrial use of processing aids in processes and products, not becoming part of articles
Further information	:	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.

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**2.1 Contributing scenario controlling environmental exposure for:ERC4: Industrial use of processing aids in processes and products, not becoming part of articles**

Maximum allowable site tonnage : 6.800 tonnes/day  
(MSafe) based on release  
following total wastewater  
treatment removal (tonnes/day):  
(Msafe)

**Environment factors not influenced by risk management**

Flow rate : 18.000 m3/d  
Dilution Factor (River) : 10  
Dilution Factor (Coastal Areas) : 100

**Other given operational conditions affecting environmental exposure**

Continuous use/release  
Number of emission days per year : 20  
Emission or Release Factor: Air : 100 %  
Emission or Release Factor: Soil : 0 %  
Remarks : Emission or Release Factor: Water : < 0.001 %

**Technical conditions and measures / Organizational measures**

Air : Treat air emission to provide a typical removal efficiency of (%) (Effectiveness: 70 %)  
Water : Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): (Effectiveness: 0 %)  
Water : If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%): (Effectiveness: 0 %)  
Remarks : Common practices vary across sites thus conservative process release estimates used.  
Remarks : Prevent discharge of undissolved substance to or recover from onsite wastewater.  
Remarks : Risk from environmental exposure is driven by freshwater.  
Remarks : No wastewater treatment required.

**Conditions and measures related to municipal sewage treatment plant**

Type of Sewage Treatment Plant : Municipal sewage treatment plant  
Flow rate of sewage treatment plant effluent : 2.000 m3/d  
Effectiveness (of a measure) : 96,3 %  
Percentage removed from waste water : 96,3 %

**Conditions and measures related to external treatment of waste for disposal**

Remarks : External treatment and disposal of waste should comply with applicable local and/or national regulations.

**Conditions and measures related to external recovery of waste**

Recovery Methods : External recovery and recycling of waste should comply with applicable local and/or national regulations.

**2.2 Contributing scenario controlling worker exposure for: PROC2, PROC3: Use in closed, continuous process with occasional controlled exposure, Use in closed batch process (synthesis or formulation)****Product characteristics**

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Physical Form (at time of use) : Liquid substance  
 Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop., No specific measures identified.

**2.2 Contributing scenario controlling worker exposure for: PROC4, PROC13: Use in batch and other process (synthesis) where opportunity for exposure arises, Treatment of articles by dipping and pouring****Product characteristics**

Physical Form (at time of use) : Liquid substance  
 Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Provide extraction ventilation at points where emissions occur.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**2.2 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying****Product characteristics**

Physical Form (at time of use) : Liquid substance  
 Vapor pressure : 2,8 kPa

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**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Technical conditions and measures**

Provide enhanced general ventilation by mechanical means.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop., Avoid carrying out operation for more than 4 hours.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training., Wear a respirator conforming to EN140 with Type A filter or better.

**2.2 Contributing scenario controlling worker exposure for: PROC8a, PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**
**Product characteristics**

Physical Form (at time of use) : Liquid substance  
 Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374.

**2.2 Contributing scenario controlling worker exposure for: PROC10: Roller application or**

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**brushing****Product characteristics**

Physical Form (at time of use) : Liquid substance  
 Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

**3. Exposure estimation and reference to its source****Environment**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
ERC4	Hydrocarbon Block Method with Petrorisk		Air		4,6 µg/m3	
			Fresh water		5,7 ng/L	0,00015
			Freshwater sediment		99 ng/kg	0,00007
			Marine water		0,000056 µg/L	< 0,000015
			Marine sediment		2,4 ng/kg	< 0,000017
			Agricultural soil		42 ng/kg	< 0,000091

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

**Workers/Consumers**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
PROC2, CS93, CS38	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	46,72 mg/m3	0,023
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,002
			Worker – long-term – systemic Combined routes		0,025
PROC3, CS8, CS93, CS101	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	116,79 mg/m3	0,057
			Worker – dermal, long-	0,34 mg/kg/d	0,000

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			term – systemic		
			Worker – long-term – systemic Combined routes		0,058
PROC4, CS37	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	9,34 mg/m3	0,005
			Worker – dermal, long-term – systemic	0,686 mg/kg/d	0,001
			Worker – long-term – systemic Combined routes		0,005
PROC13, CS41	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	23,86 mg/m3	0,011
			Worker – dermal, long-term – systemic	0,6855 mg/kg/d	0,001
			Worker – long-term – systemic Combined routes		0,0012
PROC7, CS44	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	210,22 mg/m3	0,103
			Worker – dermal, long-term – systemic	4,286 mg/kg/d	0,006
			Worker – long-term – systemic Combined routes		0,109
PROC7, CS44	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	35,04 mg/m3	0,017
			Worker – dermal, long-term – systemic	4,286 mg/kg/d	0,006
			Worker – long-term – systemic Combined routes		0,023
PROC8b, CS14	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long-term – systemic	2,742 mg/kg/d	0,004
			Worker – long-term – systemic Combined routes		0,118
PROC8b, CS45	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long-term – systemic	1,372 mg/kg/d	0,002
			Worker – long-term – systemic Combined routes		0,117
PROC10, CS34, CS42, CS48, CS47	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long-term – systemic	2,743 mg/kg/d	0,004
			Worker – long-term – systemic Combined routes		0,118

PROC2: Use in closed, continuous process with occasional controlled exposure

CS93: Automated process with (semi) closed systems.

CS38: Use in contained systems

PROC3: Use in closed batch process (synthesis or formulation)

CS8: Drum/batch transfers

CS93: Automated process with (semi) closed systems.

CS101: Application of cleaning products in closed systems

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

CS37: Use in contained batch processes

PROC13: Treatment of articles by dipping and pouring

CS41: Degreasing small objects in cleaning station

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PROC7: Industrial spraying  
CS44: Cleaning with high pressure washers

PROC7: Industrial spraying  
CS44: Cleaning with high pressure washers

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities  
CS14: Bulk transfers

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities  
CS45: Filling/ preparation of equipment from drums or containers.

PROC10: Roller application or brushing  
CS34: Manual  
CS42: Cleaning with low-pressure washers  
CS48: Surfaces  
CS47: Cleaning

**4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario**

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.  
Risk Management Measures are based on qualitative risk characterisation.  
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 wastewater can be achieved using onsite/offsite technologies, either alone or in combination.  
Required removal efficiency for air can be achieved using on-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>).

**1. Short title of Exposure Scenario: Use as a cleaning agent – professional**

Main User Groups	: <b>SU 22:</b> Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sector of use	: <b>SU 22:</b> Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process category	: <b>PROC1:</b> Use in closed process, no likelihood of exposure <b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure <b>PROC3:</b> Use in closed batch process (synthesis or formulation) <b>PROC4:</b> Use in batch and other process (synthesis) where opportunity for exposure arises <b>PROC8a:</b> Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities <b>PROC8b:</b> Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated



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	facilities
	<b>PROC10:</b> Roller application or brushing
	<b>PROC11:</b> Non industrial spraying
	<b>PROC13:</b> Treatment of articles by dipping and pouring
Environmental release category	: <b>ERC8a, ERC8d:</b> Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems
Further information	: Covers the use as a component of cleaning products including pouring/unloading from drums or containers; and exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping automated and by hand).

### 2.1 Contributing scenario controlling environmental exposure for:ERC8a, ERC8d: Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems

Maximum allowable site tonnage : 210  
(MSafe) based on release  
following total wastewater  
treatment removal (kg/d):(Msafe)

#### Environment factors not influenced by risk management

Flow rate : 18.000 m3/d  
Dilution Factor (River) : 10  
Dilution Factor (Coastal Areas) : 100

#### Other given operational conditions affecting environmental exposure

Continuous use/release  
Number of emission days per year : 365  
Emission or Release Factor: Air : 2 %  
Emission or Release Factor: Soil : 0 %  
Remarks : Emission or Release Factor: Water : < 0.001 %

#### Technical conditions and measures / Organizational measures

Air : Treat air emission to provide a typical removal efficiency of (%):  
Remarks : Not applicable  
Water : Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%):  
(Effectiveness: 0 %)  
Water : If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%):  
(Effectiveness: 0 %)  
Remarks : Common practices vary across sites thus conservative process release estimates used.

#### Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant : Municipal sewage treatment plant  
Flow rate of sewage treatment plant effluent : 2.000 m3/d  
Effectiveness (of a measure) : 96,3 %  
Percentage removed from waste : 96,3 %

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water  
 Sludge Treatment : No data available  
 Procedures to limit air emissions : No data available  
 from Sewage Treatment Plant

**Conditions and measures related to external treatment of waste for disposal**

Remarks : External treatment and disposal of waste should comply with applicable local and/or national regulations.

**Conditions and measures related to external recovery of waste**

Recovery Methods : External recovery and recycling of waste should comply with applicable local and/or national regulations.

**2.2 Contributing scenario controlling worker exposure for: PROC2, PROC3: Use in closed, continuous process with occasional controlled exposure, Use in closed batch process (synthesis or formulation)****Product characteristics**

Physical Form (at time of use) : Liquid substance  
 Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop., No specific measures identified.

**2.2 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises****Product characteristics**

Physical Form (at time of use) : Liquid substance  
 Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

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**Technical conditions and measures**

Provide enhanced general ventilation by mechanical means., Ensure operation is undertaken outdoors.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374.

**2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Ensure operation is undertaken outdoors.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374.

**2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

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Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374.

**2.2 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing****Product characteristics**

Physical Form (at time of use) : Liquid substance  
Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Ensure doors and windows are opened, Provide enhanced general ventilation by mechanical means., Provide extraction ventilation at points where emissions occur.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop., Limit the substance content in the product to 25%

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374., Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

**2.2 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying****Product characteristics**

Physical Form (at time of use) : Liquid substance

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Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Provide enhanced general ventilation by mechanical means., Ensure operation is undertaken outdoors.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop., Limit the substance content in the product to 1%, Limit the substance content in the product to 5%

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374.

**2.2 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring****Product characteristics**

Physical Form (at time of use) : Liquid substance

Vapor pressure : 2,8 kPa

**Amount used**

Remarks : No limit

**Frequency and duration of use**

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

**Other operational conditions affecting workers exposure**

Remarks : Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Provide enhanced general ventilation by mechanical means.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Wear suitable gloves tested to EN374.

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**3. Exposure estimation and reference to its source****Environment**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
ERC8a, ERC8d	Hydrocarbon Block Method with Petrorisk		Air		74 ng/m3	
			Fresh water		5,1 ng/L	0,00013
			Fresh water sediment		75 ng/kg	0,000053
			Marine water		0,017 ng/L	< 0,000033
			Marine sediment		0,16 ng/kg	< 0,000012
			Agricultural soil		1,2 ng/kg	< 0,000034

ERC8a: Wide dispersive indoor use of processing aids in open systems

ERC8d: Wide dispersive outdoor use of processing aids in open systems

**Workers/Consumers**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
PROC2, CS93, CS38	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	93,43 mg/m3	0,046
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,002
			Worker – long-term – systemic Combined routes		0,048
PROC3, CS8, CS38, CS93	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	116,79 mg/m3	0,057
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,000
			Worker – long-term – systemic Combined routes		0,058
PROC4, CS76	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	70,07 mg/m3	0,034
			Worker – dermal, long-term – systemic	1,372 mg/kg/d	0,002
			Worker – long-term – systemic Combined routes		0,036
PROC4, CS101	ECETOC TRA Modified	Outdoor	Worker – inhalation, long-term – systemic	163,51 mg/m3	0,080
			Worker – dermal, long-term – systemic	1,372 mg/kg/d	0,002
			Worker – long-term – systemic Combined routes		0,082
PROC4, CS74	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long-term – systemic	6,86 mg/kg/d	0,009
			Worker – long-term – systemic Combined routes		0,124
PROC8a, CS45	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	327,01 mg/m3	0,161
			Worker – dermal, long-term – systemic	2,742 mg/kg/d	0,004
			Worker – long-term – systemic Combined routes		0,164

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PROC8b, CS45	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	233,58 mg/m3	0,115
			Worker – dermal, long-term – systemic	1,372 mg/kg/d	0,002
			Worker – long-term – systemic Combined routes		0,117
PROC10, CS42, CS51, CS60	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	140,15 mg/m3	0,069
			Worker – dermal, long-term – systemic	5,486 mg/kg/d	0,007
			Worker – long-term – systemic Combined routes		0,076
PROC10, CS10, CS34, CS47, CS48	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	140,15 mg/m3	0,069
			Worker – dermal, long-term – systemic	2,743 mg/kg/d	0,004
			Worker – long-term – systemic Combined routes		0,072
PROC10, CS27, CS51	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	56,06 mg/m3	0,028
			Worker – dermal, long-term – systemic	0,8229 mg/kg/d	0,001
			Worker – long-term – systemic Combined routes		0,142
PROC10, CS27, CS51	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	280,29 mg/m3	0,138
			Worker – dermal, long-term – systemic	3,2916 mg/kg/d	0,004
			Worker – inhalation, long-term – systemic		0,142
PROC11, CS44, CS10	ECETOC TRA Modified	Indoor	Worker – inhalation, long-term – systemic	140,15 mg/m3	0,069
			Worker – dermal, long-term – systemic	4,2856 mg/kg/d	0,006
			Worker – long-term – systemic Combined routes		0,074
PROC11, CS44, CS10	ECETOC TRA Modified	Outdoor	Worker – inhalation, long-term – systemic	163,51 mg/m3	0,080
			Worker – dermal, long-term – systemic	2,1428 mg/kg/d	0,003
			Worker – long-term – systemic Combined routes		0,083
PROC11, CS10, CS44	ECETOC TRA Modified	Outdoor	Worker – inhalation, long-term – systemic	327,01 mg/m3	0,161
			Worker – dermal, long-term – systemic	4,2856 mg/kg/d	0,006
			Worker – long-term – systemic Combined routes		0,166
PROC13, CS4, CS34, CS47, CS48	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	140,15 mg/m3	0,069
			Worker – dermal, long-term – systemic	2,742 mg/kg/d	0,004
			Worker – long-term – systemic Combined routes		0,072

PROC2: Use in closed, continuous process with occasional controlled exposure

CS93: Automated process with (semi) closed systems.

CS38: Use in contained systems

PROC3: Use in closed batch process (synthesis or formulation)

CS8: Drum/batch transfers

CS38: Use in contained systems

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CS93: Automated process with (semi) closed systems.

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

CS76: Semi Automated process. (e.g.: Semi automatic application of floor care and maintenance products)

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

CS101: Application of cleaning products in closed systems

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

CS74: Cleaning of medical devices

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

CS45: Filling/ preparation of equipment from drums or containers.

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

CS45: Filling/ preparation of equipment from drums or containers.

PROC10: Roller application or brushing

CS42: Cleaning with low-pressure washers

CS51: Rolling, Brushing

CS60: no spraying

PROC10: Roller application or brushing

CS10: Spraying

CS34: Manual

CS47: Cleaning

CS48: Surfaces

PROC10: Roller application or brushing

CS27: Ad hoc manual application via trigger sprays, dipping, etc.

CS51: Rolling, Brushing

PROC10: Roller application or brushing

CS27: Ad hoc manual application via trigger sprays, dipping, etc.

CS51: Rolling, Brushing

PROC11: Non industrial spraying

CS44: Cleaning with high pressure washers

CS10: Spraying

PROC11: Non industrial spraying

CS44: Cleaning with high pressure washers

CS10: Spraying

PROC11: Non industrial spraying

CS10: Spraying

CS44: Cleaning with high pressure washers

PROC13: Treatment of articles by dipping and pouring

CS4: Dipping, immersion and pouring

CS34: Manual

CS47: Cleaning

CS48: Surfaces



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**4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario**

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.  
 Risk Management Measures are based on qualitative risk characterisation.  
 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 wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Required removal efficiency for air can be achieved using on-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>).

**1. Short title of Exposure Scenario: Use as a cleaning agent – consumer**

Main User Groups	:	<b>SU 21:</b> Consumer uses: Private households (= general public = consumers)
Sector of use	:	<b>SU 21:</b> Consumer uses: Private households (= general public = consumers)
Product category	:	<b>PC3:</b> Air care products <b>PC4:</b> Anti-Freeze and de-icing products <b>PC8:</b> Biocidal products (e.g. Disinfectants, pest control) <b>PC9a:</b> Coatings and paints, thinners, paint removers <b>PC9b:</b> Fillers, putties, plasters, modelling clay <b>PC9c:</b> Finger paints <b>PC24:</b> Lubricants, greases, release products <b>PC35:</b> Washing and cleaning products (including solvent based products) <b>PC38:</b> Welding and soldering products (with flux coatings or flux cores.), flux products
Environmental release category	:	<b>ERC8a, ERC8d:</b> Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems
Further information	:	Covers general exposures to consumers arising from the use of household products sold as washing and cleaning products, aerosols, coatings, de-icers, lubricants and air care products.

**2.1 Contributing scenario controlling environmental exposure for:ERC8a, ERC8d: Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems****Product characteristics**

Maximum allowable site tonnage : 160  
 (MSafe) based on release

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following total wastewater  
treatment removal (kg/d): (Msafe)

**Environment factors not influenced by risk management**

Flow rate : 18.000 m<sup>3</sup>/d  
Dilution Factor (River) : 10  
Dilution Factor (Coastal Areas) : 100

**Other given operational conditions affecting environmental exposure**

Continuous use/release  
Number of emission days per year : 365  
Emission or Release Factor: Air : 95 %  
Emission or Release Factor: Water : 2,5 %  
Emission or Release Factor: Soil : 2,5 %

**Technical conditions and measures / Organizational measures**

Remarks : Not applicable

**Conditions and measures related to municipal sewage treatment plant**

Type of Sewage Treatment Plant : Municipal sewage treatment plant  
Flow rate of sewage treatment : 2.000 m<sup>3</sup>/d  
plant effluent  
Percentage removed from waste : 96,3 %  
water  
Sludge Treatment : No data available  
Procedures to limit air emissions : No data available  
from Sewage Treatment Plant

**Conditions and measures related to external treatment of waste for disposal**

Waste treatment : External treatment and disposal of waste should comply with applicable local and/or national regulations.

**Conditions and measures related to external recovery of waste**

Recovery Methods : External recovery and recycling of waste should comply with applicable local and/or national regulations.

**2.2 Contributing scenario controlling consumer exposure for: PC3, PC4, PC8, PC9, PC24, PC35, PC38: Air care products, Anti-Freeze and de-icing products, Biocidal products (e.g. Disinfectants, pest control), Coatings and Paints, Fillers, Putties, Thinners, Lubricants, greases, release products, Washing and cleaning products (including solvent based products), Welding and soldering products (with flux coatings or flux cores.), flux products**

**Product characteristics**

Physical Form (at time of use) : Liquid substance

**Amount used**

: 13800 g

**Frequency and duration of use**

Exposure duration : 8 h  
Frequency of use : 4 times/day

**Human factors not influenced by risk management**

Exposed skin area : Skin  
: 857,5 cm<sup>2</sup>

**Other given operational conditions affecting consumers exposure**

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Room size : 20 M3  
 Remarks : Unless otherwise stated assumes use at ambient temperatures, Assumes use with typical ventilation.

**Conditions and measures related to protection of consumer (e.g. behavioral advice, personal protection and hygiene)**

Remarks : No specific Risk Management Measures identified beyond those Operational Conditions stated.

**2.2 Contributing scenario controlling consumer exposure for: PC3: Air care products****Product characteristics**

Concentration of the Substance in Mixture/Article :  
 Remarks : Air care, instant action (aerosol sprays)

Concentration of the Substance in Mixture/Article :  
 Remarks : Air care, continuous action (solid and liquid)

**Amount used**

Remarks : 0,1 g  
 : Air care, instant action (aerosol sprays)  
 Remarks : 0,48 g  
 : Air care, continuous action (solid and liquid)

**Frequency and duration of use**

Exposure duration : 0,25 h  
 Frequency of use : 4 times/day  
 Remarks : Air care, instant action (aerosol sprays)  
 Exposure duration : 8 h  
 Frequency of use : 1 times/day  
 Remarks : Air care, continuous action (solid and liquid)

**Human factors not influenced by risk management**

Exposed skin area : Skin  
 : 35,70 cm2  
 Remarks : Air care, continuous action (solid and liquid)

**Other given operational conditions affecting consumers exposure**

Outdoor / Indoor : Indoor activities  
 Room size : 20 M3  
 Ventilation rate per hour : 0,6  
 Remarks : Air care, instant action (aerosol sprays)

Outdoor / Indoor : Indoor activities  
 Room size : 20 M3  
 Ventilation rate per hour : 0,6  
 Remarks : Air care, instant action (aerosol sprays)

Use frequency : 365 days/year  
 Remarks : Air care, instant action (aerosol sprays)  
 Use frequency : 365 days/year  
 Remarks : Air care, continuous action (solid and liquid)

**Conditions and measures related to protection of consumer (e.g. behavioral advice, personal protection and hygiene)**

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Remarks : No specific Risk Management Measures identified beyond those Operational Conditions stated.

**2.2 Contributing scenario controlling consumer exposure for: PC4: Anti-Freeze and de-icing products****Product characteristics**

Concentration of the Substance in Mixture/Article :  
 Remarks : Washing car window

Concentration of the Substance in Mixture/Article :  
 Remarks : Pouring into radiator

Concentration of the Substance in Mixture/Article :  
 Remarks : Lock de- icer

**Amount used**

Remarks : 0,5 g  
 : Washing car window

Remarks : 2000 g  
 : Pouring into radiator

Remarks : 4 g  
 : Lock de- icer

**Frequency and duration of use**

Exposure duration : 0,02 h  
 Frequency of use : 1 times/day  
 Remarks : Washing car window

Exposure duration : 0,17 h  
 Frequency of use : 1 times/day  
 Remarks : Pouring into radiator

Exposure duration : 0,25 h  
 Frequency of use : 1 times/day  
 Remarks : Lock de- icer

**Human factors not influenced by risk management**

Exposed skin area : Skin  
 : 428,00 cm2  
 Remarks : Pouring into radiator

Exposed skin area : Skin  
 : 214,40 cm2  
 Remarks : Lock de- icer

**Other given operational conditions affecting consumers exposure**

Outdoor / Indoor : Garage  
 Room size : 34 M3  
 Ventilation rate per hour : 1,5  
 Remarks : Washing car window

Outdoor / Indoor : Garage  
 Room size : 34 M3  
 Ventilation rate per hour : 1,5  
 Remarks : Pouring into radiator

Outdoor / Indoor : Garage  
 Room size : 34 M3

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Ventilation rate per hour : 1,5  
 Remarks : Lock de- icer

Use frequency : 365 days/year  
 Remarks : Washing car window

Use frequency : 365 days/year  
 Remarks : Pouring into radiator

Use frequency : 365 days/year  
 Remarks : Lock de- icer

**Conditions and measures related to protection of consumer (e.g. behavioral advice, personal protection and hygiene)**

Remarks : No specific Risk Management Measures identified beyond those Operational Conditions stated.

**2.2 Contributing scenario controlling consumer exposure for: PC8: Biocidal products (e.g. Disinfectants, pest control)****Product characteristics**

Concentration of the Substance in Mixture/Article :  
 Remarks : Laundry and dish washing products

Concentration of the Substance in Mixture/Article :  
 Remarks : Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)

Concentration of the Substance in Mixture/Article :  
 Remarks : Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

**Amount used**

Remarks : 15 g  
 : Laundry and dish washing products

Remarks : 27 g  
 : Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)

Remarks : 35 g  
 : Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

**Frequency and duration of use**

Exposure duration : 0,50 h  
 Frequency of use : 1 times/day  
 Remarks : Laundry and dish washing products

Exposure duration : 0,33 h  
 Frequency of use : 1 times/day  
 Remarks : Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)

Exposure duration : 0,17 h  
 Frequency of use : 1 times/day  
 Remarks : Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

**Human factors not influenced by risk management**

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Exposed skin area	:	Skin
	:	857,50 cm2
Remarks	:	Laundry and dish washing products
Exposed skin area	:	Skin
	:	857,50 cm2
Remarks	:	Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)
Exposed skin area	:	Skin
	:	428,00 cm2
Remarks	:	Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

**Other given operational conditions affecting consumers exposure**

Outdoor / Indoor	:	Indoor activities
Room size	:	20 M3
Ventilation rate per hour	:	0,6
Remarks	:	Laundry and dish washing products
Outdoor / Indoor	:	Indoor activities
Room size	:	20 M3
Ventilation rate per hour	:	0,6
Remarks	:	Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)
Outdoor / Indoor	:	Indoor activities
Room size	:	20 M3
Ventilation rate per hour	:	0,6
Remarks	:	Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)
Use frequency	:	365 days/year
Remarks	:	Laundry and dish washing products
Use frequency	:	128 days/year
Remarks	:	Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)
Use frequency	:	128 days/year
Remarks	:	Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

**Conditions and measures related to protection of consumer (e.g. behavioral advice, personal protection and hygiene)**

Remarks	:	No specific Risk Management Measures identified beyond those Operational Conditions stated.
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**2.2 Contributing scenario controlling consumer exposure for: PC9a: Coatings and paints, thinners, paint removers****Product characteristics**

Concentration of the Substance in Mixture/Article	:	
Remarks	:	Waterborne latex wall paint
Concentration of the Substance in Mixture/Article	:	
Remarks	:	Solvent rich, high solid, water borne paint
Concentration of the Substance in Mixture/Article	:	
Remarks	:	Aerosol spray can

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Concentration of the Substance in Mixture/Article :  
 Remarks : Removers (paint-, glue-, wall paper-, sealant-remover)

**Amount used**

Remarks : 2760 g  
 : Waterborne latex wall paint  
 Remarks : 744 g  
 : Solvent rich, high solid, water borne paint  
 Remarks : 215 g  
 : Aerosol spray can  
 Remarks : 491 g  
 : Removers (paint-, glue-, wall paper-, sealant-remover)

**Frequency and duration of use**

Exposure duration : 2,20 h  
 Frequency of use : 1 times/day  
 Remarks : Waterborne latex wall paint  
 Exposure duration : 2,20 h  
 Frequency of use : 1 times/day  
 Remarks : Solvent rich, high solid, water borne paint  
 Exposure duration : 0,33 h  
 Frequency of use : 1 times/day  
 Remarks : Aerosol spray can  
 Exposure duration : 2,00 h  
 Frequency of use : 1 times/day  
 Remarks : Removers (paint-, glue-, wall paper-, sealant-remover)

**Human factors not influenced by risk management**

Exposed skin area : Skin  
 : 428,75 cm2  
 Remarks : Waterborne latex wall paint  
 Exposed skin area : Skin  
 : 428,75 cm2  
 Remarks : Solvent rich, high solid, water borne paint  
 Exposed skin area : Skin  
 : 857,50 cm2  
 Remarks : Removers (paint-, glue-, wall paper-, sealant-remover)

**Other given operational conditions affecting consumers exposure**

Outdoor / Indoor : Indoor activities  
 Room size : 20 M3  
 Ventilation rate per hour : 0,6  
 Remarks : Waterborne latex wall paint  
 Outdoor / Indoor : Indoor activities  
 Room size : 20 M3  
 Ventilation rate per hour : 0,6  
 Remarks : Solvent rich, high solid, water borne paint  
 Outdoor / Indoor : Garage  
 Room size : 34 M3  
 Ventilation rate per hour : 1,5  
 Remarks : Aerosol spray can  
 Outdoor / Indoor : Indoor activities  
 Room size : 20 M3  
 Ventilation rate per hour : 0,6  
 Remarks : Removers (paint-, glue-, wall paper-, sealant-remover)  
 Use frequency : 4 days/year  
 Remarks : Waterborne latex wall paint

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Use frequency	:	6 days/year
Remarks	:	Solvent rich, high solid, water borne paint
Use frequency	:	2 days/year
Remarks	:	Aerosol spray can
Use frequency	:	3 days/year
Remarks	:	Removers (paint-, glue-, wall paper-, sealant-remover)

**Conditions and measures related to protection of consumer (e.g. behavioral advice, personal protection and hygiene)**

Remarks	:	No specific Risk Management Measures identified beyond those Operational Conditions stated.
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**2.2 Contributing scenario controlling consumer exposure for: PC9b, PC9c: Fillers, putties, plasters, modelling clay, Finger paints****Product characteristics**

Concentration of the Substance in Mixture/Article	:	
Remarks	:	Fillers and putty
Concentration of the Substance in Mixture/Article	:	
Remarks	:	Plasters and floor equalizers
Concentration of the Substance in Mixture/Article	:	
Remarks	:	Modeling Clay
Concentration of the Substance in Mixture/Article	:	
Remarks	:	Finger paints

**Amount used**

Remarks	:	85 g
Remarks	:	Fillers and putty
Remarks	:	13800 g
Remarks	:	Plasters and floor equalizers
Remarks	:	1 g
Remarks	:	Modeling Clay
Remarks	:	1,35 g
Remarks	:	Finger paints

**Frequency and duration of use**

Exposure duration	:	4,00 h
Frequency of use	:	1 times/day
Remarks	:	Fillers and putty
Exposure duration	:	2,00 h
Frequency of use	:	1 times/day
Remarks	:	Plasters and floor equalizers

**Human factors not influenced by risk management**

Exposed skin area	:	Skin
Remarks	:	35,73 cm <sup>2</sup>
Exposed skin area	:	Skin
Remarks	:	857,50 cm <sup>2</sup>
Remarks	:	Plasters and floor equalizers



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Exposed skin area : Skin  
 : 254,40 cm<sup>2</sup>  
 Remarks : Modeling Clay  
 Exposed skin area : Skin  
 : 254,40 cm<sup>2</sup>  
 Remarks : Finger paints

**Other given operational conditions affecting consumers exposure**

Outdoor / Indoor : Indoor activities  
 Room size : 20 M<sup>3</sup>  
 Ventilation rate per hour : 0,6  
 Remarks : Fillers and putty  
 Outdoor / Indoor : Indoor activities  
 Room size : 20 M<sup>3</sup>  
 Ventilation rate per hour : 0,6  
 Remarks : Plasters and floor equalizers

Use frequency : 12 days/year  
 Remarks : Fillers and putty  
 Use frequency : 12 days/year  
 Remarks : Plasters and floor equalizers  
 Use frequency : 365 days/year  
 Remarks : Modeling Clay  
 Use frequency : 365 days/year  
 Remarks : Finger paints

**Conditions and measures related to protection of consumer (e.g. behavioral advice, personal protection and hygiene)**

Remarks : No specific Risk Management Measures identified beyond those Operational Conditions stated.

**2.2 Contributing scenario controlling consumer exposure for: PC24: Lubricants, greases, release products****Product characteristics**

Concentration of the Substance in :  
 Mixture/Article  
 Remarks : Liquid  
 Concentration of the Substance in :  
 Mixture/Article  
 Remarks : Paste  
 Concentration of the Substance in :  
 Mixture/Article  
 Remarks : Sprays

**Amount used**

Remarks : 2200 g  
 : Liquid  
 : 34 g  
 Remarks : Paste  
 : 73 g  
 Remarks : Sprays

**Frequency and duration of use**

Exposure duration : 0,17 h

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Frequency of use : 1 times/day  
 Remarks : Liquid  
 Frequency of use : 1 times/day  
 Remarks : Paste  
 Exposure duration : 0,17 h  
 Frequency of use : 1 times/day  
 Remarks : Sprays

**Human factors not influenced by risk management**

Exposed skin area : Skin  
 : 468 cm2  
 Remarks : Liquid  
 Exposed skin area : Skin  
 : 468 cm2  
 Remarks : Paste  
 Exposed skin area : Skin  
 : 428,75 cm2  
 Remarks : Sprays

**Other given operational conditions affecting consumers exposure**

Outdoor / Indoor : Indoor activities  
 Room size : 34 M3  
 Ventilation rate per hour : 0,6  
 Remarks : Liquid  
 Outdoor / Indoor : Indoor activities  
 Room size : 20 M3  
 Ventilation rate per hour : 0,6  
 Remarks : Sprays  
 Use frequency : 4 days/year  
 Remarks : Liquid  
 Use frequency : 10 days/year  
 Remarks : Paste  
 Use frequency : 6 days/year  
 Remarks : Sprays

**Conditions and measures related to protection of consumer (e.g. behavioral advice, personal protection and hygiene)**

Remarks : No specific Risk Management Measures identified beyond those Operational Conditions stated.

**2.2 Contributing scenario controlling consumer exposure for: PC35, PC38: Washing and cleaning products (including solvent based products), Welding and soldering products (with flux coatings or flux cores.), flux products****Product characteristics**

Concentration of the Substance in :  
 Mixture/Article  
 Remarks Laundry and dish washing products  
 Concentration of the Substance in :  
 Mixture/Article  
 Remarks Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)  
 Concentration of the Substance in :  
 Mixture/Article  
 Remarks Cleaners, trigger sprays (all purpose cleaners, sanitary

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products, glass cleaners)

Concentration of the Substance in Mixture/Article :  
 Remarks : Welding and soldering products (with flux coatings or flux cores.), flux products

**Amount used**

Remarks : 15 g  
 : Laundry and dish washing products

Remarks : 27 g  
 : Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)

Remarks : 35 g  
 : Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

Remarks : 12 g  
 : Welding and soldering products (with flux coatings or flux cores.), flux products

**Frequency and duration of use**

Exposure duration : 0,50 h  
 Frequency of use : 1 times/day  
 Remarks : Laundry and dish washing products

Exposure duration : 0,33 h  
 Frequency of use : 1 times/day  
 Remarks : Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)

Exposure duration : 0,17 h  
 Frequency of use : 1 times/day  
 Remarks : Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

Exposure duration : 1 h  
 Frequency of use : 1 times/day  
 Remarks : Welding and soldering products (with flux coatings or flux cores.), flux products

**Human factors not influenced by risk management**

Exposed skin area : Skin  
 : 857,50 cm2  
 Remarks : Laundry and dish washing products

Exposed skin area : Skin  
 : 857,50 cm2  
 Remarks : Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)

Exposed skin area : Skin  
 : 428,00 cm2  
 Remarks : Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

**Other given operational conditions affecting consumers exposure**

Outdoor / Indoor : Indoor activities  
 Room size : 20 M3  
 Ventilation rate per hour : 0,6  
 Remarks : Laundry and dish washing products

Outdoor / Indoor : Indoor activities  
 Room size : 20 M3  
 Ventilation rate per hour : 0,6  
 Remarks : Cleaners, liquids (all purpose cleaners, sanitary products, floor

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Outdoor / Indoor	:	cleaners, glass cleaners, carpet cleaners, metal cleaners)
Room size	:	Indoor activities
Ventilation rate per hour	:	20 M3
Remarks	:	0,6
Outdoor / Indoor	:	Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)
Room size	:	Indoor activities
Ventilation rate per hour	:	20 M3
Remarks	:	0,6
Use frequency	:	365 days/year
Remarks	:	Laundry and dish washing products
Use frequency	:	128 days/year
Remarks	:	Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)
Use frequency	:	128 days/year
Remarks	:	Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)
Use frequency	:	365 days/year
Remarks	:	Washing and cleaning products (including solvent based products)

**Conditions and measures related to protection of consumer (e.g. behavioral advice, personal protection and hygiene)**

Remarks : No specific Risk Management Measures identified beyond those Operational Conditions stated.

**3. Exposure estimation and reference to its source****Environment**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
ERC8a, ERC8d	Hydrocarbon Block Method with Petrorisk		Air		0,000074 mg/m3	
			Freshwater		0,0000064 mg/L	0,00017
			Freshwater sediment		0,00013 mg/kg	0,000091
			Marine water		0,0000001 mg/L	0,000003
			Marine sediment		0,0000055 mg/kg	0,000004
			Agricultural soil		0,000023 mg/kg	0,00004

ERC8a: Wide dispersive indoor use of processing aids in open systems

ERC8d: Wide dispersive outdoor use of processing aids in open systems

**Workers/Consumers**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
PC3, PC3_1	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – oral, long-	0,00 mg/kg/d	0,00

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			term – systemic		
			Consumer – inhalation, long-term – systemic	0,10 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,00
PC3, PC3_2	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – oral, long- term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	0,02 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,00
PC4, PC4_1	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – oral, long- term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	0,00 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,00
PC4, PC4_2	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	7,13 mg/kg/d	0,01
			Consumer – oral, long- term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	0,18 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,01
PC4, PC4_3	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	17,87 mg/kg/d	0,03
			Consumer – oral, long- term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	0,51 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,03
PC8, PC8_1	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	0,07 mg/kg/d	0,00
			Consumer – oral, long- term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	0,07 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,00
PC8, PC8_2	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	7,15 mg/kg/d	0,01
			Consumer – oral, long- term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	0,08 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,01
PC8, PC8_3	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	10,70 mg/kg/d	0,02
			Consumer – oral, long- term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term –	1,77 mg/m3	0,00

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			systemic		
			Consumer – long-term – systemic Combined routes		0,02
PC9a, PC9a_1	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	1,07 mg/kg/d	0,00
			Consumer – oral, long- term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	10,53 mg/m3	0,02
			Consumer – long-term – systemic Combined routes		0,02
PC9a, PC9a_2	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	19,65 mg/kg/d	0,03
			Consumer – oral, long- term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	52,06 mg/m3	0,09
			Consumer – long-term – systemic Combined routes		0,11
PC9a, PC9a_3	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – oral, long- term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	34,29 mg/m3	0,06
			Consumer – long-term – systemic Combined routes		0,06
PC9a, PC9a_4	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	71,46 mg/kg/d	0,10
			Consumer – oral, long- term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	59,57 mg/m3	0,10
			Consumer – long-term – systemic Combined routes		0,20
PC9b, PC9b_1	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	0,12 mg/kg/d	0,00
			Consumer – oral, long- term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	0,54 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,00
PC9b, PC9b_2	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	2,86 mg/kg/d	0,00
			Consumer – oral, long- term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	66,97 mg/m3	0,11
			Consumer – long-term – systemic Combined routes		0,11
PC9b, PC9b_3	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	2,54 mg/kg/d	0,00
			Consumer – oral, long- term – systemic	1,00 mg/kg/d	0,00
			Consumer – long-term – systemic Combined routes		0,01
PC9c	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	127,20 mg/kg/d	0,18

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			Consumer – oral, long-term – systemic	67,50 mg/kg/d	0,10
			Consumer – long-term – systemic Combined routes		0,28
PC24, PC24_1	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	78,00 mg/kg/d	0,11
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	0,40 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,11
PC24, PC24_2	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	15,60 mg/kg/d	0,02
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – long-term – systemic Combined routes		0,02
PC24, PC24_3	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	35,73 mg/kg/d	0,05
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	12,29 mg/m3	0,02
			Consumer – long-term – systemic Combined routes		0,07
PC35, PC35_1	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	0,07 mg/kg/d	0,00
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	0,07 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,00
PC35, PC35_2	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	7,15 mg/kg/d	0,01
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	0,08 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,01
PC35, PC35_3	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	10,70 mg/kg/d	0,02
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	1,77 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,02
PC38	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	0,38 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,00

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PC3: Air care products  
PC3\_1: Air care, instant action (aerosol sprays)

PC3: Air care products  
PC3\_2: Air care, continuous action (solid and liquid)

PC4: Anti-Freeze and de-icing products  
PC4\_1: Washing car window

PC4: Anti-Freeze and de-icing products  
PC4\_2: Pouring into radiator

PC4: Anti-Freeze and de-icing products  
PC4\_3: Lock de- icer

PC8: Biocidal products (e.g. Disinfectants, pest control)  
PC8\_1: Laundry and dish washing products

PC8: Biocidal products (e.g. Disinfectants, pest control)  
PC8\_2: Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)

PC8: Biocidal products (e.g. Disinfectants, pest control)  
PC8\_3: Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

PC9a: Coatings and paints, thinners, paint removers  
PC9a\_1: Waterborne latex wall paint

PC9a: Coatings and paints, thinners, paint removers  
PC9a\_2: Solvent rich, high solid, water borne paint

PC9a: Coatings and paints, thinners, paint removers  
PC9a\_3: Aerosol spray can

PC9a: Coatings and paints, thinners, paint removers  
PC9a\_4: Removers (paint-, glue-, wall paper-, sealant-remover)

PC9b: Fillers, putties, plasters, modelling clay  
PC9b\_1: Fillers and putty

PC9b: Fillers, putties, plasters, modelling clay  
PC9b\_2: Plasters and floor equalizers

PC9b: Fillers, putties, plasters, modelling clay  
PC9b\_3: Modeling Clay

PC9c: Finger paints

PC24: Lubricants, greases, release products  
PC24\_1: Liquid

PC24: Lubricants, greases, release products  
PC24\_2: Paste

PC24: Lubricants, greases, release products  
PC24\_3: Sprays

PC35: Washing and cleaning products (including solvent based products)  
PC35\_1: Laundry and dish washing products



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PC35: Washing and cleaning products (including solvent based products)  
 PC35\_2: Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)

PC35: Washing and cleaning products (including solvent based products)  
 PC35\_3: Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

PC38: Welding and soldering products (with flux coatings or flux cores.), flux products

**4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario**

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.  
 Risk Management Measures are based on qualitative risk characterisation.  
 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.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

**1. Short title of Exposure Scenario: Use in Coatings - Consumer**

Main User Groups	:	<b>SU 21:</b> Consumer uses: Private households (= general public = consumers)
Sector of use	:	<b>SU 21:</b> Consumer uses: Private households (= general public = consumers)
Product category	:	<b>PC1:</b> Adhesives, sealants <b>PC4:</b> Anti-Freeze and de-icing products <b>PC8:</b> Biocidal products (e.g. Disinfectants, pest control) <b>PC9a:</b> Coatings and paints, thinners, paint removers <b>PC9b:</b> Fillers, putties, plasters, modelling clay <b>PC9c:</b> Finger paints <b>PC15:</b> Non-metal-surface treatment products <b>PC18:</b> Ink and toners <b>PC23:</b> Leather tanning, dye, finishing, impregnation and care products <b>PC24:</b> Lubricants, greases, release products <b>PC31:</b> Polishes and wax blends <b>PC34:</b> Textile dyes, finishing and impregnating products; including bleaches and other processing aids
Environmental release category	:	<b>ERC8a, ERC8d:</b> Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems
Further information	:	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including product transfer and preparation, application by brush, spray by hand or similar methods) and equipment cleaning.

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**2.1 Contributing scenario controlling environmental exposure for:ERC8a, ERC8d: Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems****Product characteristics**

Maximum allowable site tonnage : 1.000  
(MSafe) based on release  
following total wastewater  
treatment removal (kg/d): (Msafe)

**Environment factors not influenced by risk management**

Flow rate : 18.000 m3/d  
Dilution Factor (River) : 10  
Dilution Factor (Coastal Areas) : 100

**Other given operational conditions affecting environmental exposure**

Continuous use/release  
Number of emission days per year : 365  
Emission or Release Factor: Air : 99 %  
Emission or Release Factor: Water : 1 %  
Emission or Release Factor: Soil : 6 %

**Technical conditions and measures / Organizational measures**

Remarks : Not applicable

**Conditions and measures related to municipal sewage treatment plant**

Type of Sewage Treatment Plant : Municipal sewage treatment plant  
Flow rate of sewage treatment : 2.000 m3/d  
plant effluent  
Percentage removed from waste : 96,3 %  
water  
Sludge Treatment : No data available  
Procedures to limit air emissions : No data available  
from Sewage Treatment Plant

**Conditions and measures related to external treatment of waste for disposal**

Waste treatment : External treatment and disposal of waste should comply with applicable local and/or national regulations.

**Conditions and measures related to external recovery of waste**

Recovery Methods : External recovery and recycling of waste should comply with applicable local and/or national regulations.

**2.2 Contributing scenario controlling consumer exposure for: PC1, PC4, PC8, PC9a, PC9b, PC15, PC9c, PC18, PC23, PC24, PC31, PC34: Adhesives, sealants, Anti-Freeze and de-icing products, Biocidal products (e.g. Disinfectants, pest control), Coatings and paints, thinners, paint removers, Fillers, putties, plasters, modelling clay, Non-metal-surface treatment products, Finger paints, Ink and toners, Leather tanning, dye, finishing, impregnation and care products, Lubricants, greases, release products, Polishes and wax blends, Textile dyes, finishing and impregnating products; including bleaches and other processing aids****Product characteristics**

Physical Form (at time of use) : Liquid substance

**Amount used**

SDS Number:100000014260

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: 13800 g

**Frequency and duration of use**

Exposure duration : 6 h  
 Frequency of use : 1 times/day

**Human factors not influenced by risk management**

Exposed skin area : Skin  
 : 857,5 cm<sup>2</sup>

**Other given operational conditions affecting consumers exposure**

Room size : 20 M<sup>3</sup>  
 Remarks : Unless otherwise stated assumes use at ambient temperatures, Assumes use with typical ventilation.

**Conditions and measures related to protection of consumer (e.g. behavioral advice, personal protection and hygiene)**

Remarks : No specific Risk Management Measures identified beyond those Operational Conditions stated.

**2.2 Contributing scenario controlling consumer exposure for: PC1: Adhesives, sealants****Product characteristics**

Concentration of the Substance in Mixture/Article :  
 Remarks : Glues, hobby use

Concentration of the Substance in Mixture/Article :  
 Remarks : Glues DIY -use (carpet glue, tile glue, wood parquet glue)

Concentration of the Substance in Mixture/Article :  
 Remarks : Glue from spray

Concentration of the Substance in Mixture/Article :  
 Remarks : Sealants

**Amount used**

Remarks : 9 g  
 : Glues, hobby use  
 : 6390 g

Remarks : Glues DIY -use (carpet glue, tile glue, wood parquet glue)  
 : 85,05 g

Remarks : Glue from spray  
 : 75 g

Remarks : Sealants

**Frequency and duration of use**

Exposure duration : 4,00 h  
 Frequency of use : 1 times/day  
 Remarks : Glues, hobby use

Exposure duration : 6,00 h  
 Frequency of use : 1 times/day  
 Remarks : Glues DIY -use (carpet glue, tile glue, wood parquet glue)

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Exposure duration : 4,00 h  
 Frequency of use : 1 times/day  
 Remarks : Glue from spray  
 Exposure duration : 1,00 h  
 Frequency of use : 1 times/day  
 Remarks : Sealants

**Human factors not influenced by risk management**

Exposed skin area : Skin  
 : 35,73 cm2  
 Remarks : Glues, hobby use  
 Exposed skin area : Skin  
 : 110,00 cm2  
 Remarks : Glues DIY -use (carpet glue, tile glue, wood parquet glue)  
 Exposed skin area : Skin  
 : 35,73 cm2  
 Remarks : Glue from spray  
 Exposed skin area : Skin  
 : 35,73 cm2  
 Remarks : Sealants

**Other given operational conditions affecting consumers exposure**

Outdoor / Indoor : Indoor activities  
 Room size : 20 M3  
 Ventilation rate per hour : 0,6  
 Remarks : Glues, hobby use  
 Outdoor / Indoor : Indoor activities  
 Room size : 20 M3  
 Ventilation rate per hour : 0,6  
 Remarks : Glues DIY -use (carpet glue, tile glue, wood parquet glue)  
 Outdoor / Indoor : Indoor activities  
 Room size : 20 M3  
 Ventilation rate per hour : 0,6  
 Remarks : Glue from spray  
 Outdoor / Indoor : Indoor activities  
 Room size : 20 M3  
 Ventilation rate per hour : 0,6  
 Remarks : Sealants  
 Use frequency : 365 days/year  
 Remarks : Glues, hobby use  
 Use frequency : 1 days/year  
 Remarks : Glues DIY -use (carpet glue, tile glue, wood parquet glue)  
 Use frequency : 6 days/year  
 Remarks : Glue from spray  
 Use frequency : 365 days/year  
 Remarks : Sealants

**Conditions and measures related to protection of consumer (e.g. behavioral advice, personal protection and hygiene)**

Remarks : No specific Risk Management Measures identified beyond those Operational Conditions stated.

**2.2 Contributing scenario controlling consumer exposure for: PC4: Anti-Freeze and de-icing products****Product characteristics**

Concentration of the Substance in :

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Mixture/Article  
Remarks : Washing car window

Concentration of the Substance in :  
Mixture/Article  
Remarks : Pouring into radiator

Concentration of the Substance in :  
Mixture/Article  
Remarks : Lock de- icer

**Amount used**

Remarks : 0,5 g  
: Washing car window  
Remarks : 2000 g  
: Pouring into radiator  
Remarks : 4 g  
: Lock de- icer

**Frequency and duration of use**

Exposure duration : 0,02 h  
Frequency of use : 1 times/day  
Remarks : Washing car window  
Exposure duration : 0,17 h  
Frequency of use : 1 times/day  
Remarks : Pouring into radiator  
Exposure duration : 0,25 h  
Frequency of use : 1 times/day  
Remarks : Lock de- icer

**Human factors not influenced by risk management**

Exposed skin area : Skin  
: 428,00 cm2  
Remarks : Pouring into radiator  
Exposed skin area : Skin  
: 214,40 cm2  
Remarks : Lock de- icer

**Other given operational conditions affecting consumers exposure**

Outdoor / Indoor : Garage  
Room size : 34 M3  
Ventilation rate per hour : 1,5  
Remarks : Washing car window  
Outdoor / Indoor : Garage  
Room size : 34 M3  
Ventilation rate per hour : 1,5  
Remarks : Pouring into radiator  
Outdoor / Indoor : Garage  
Room size : 34 M3  
Ventilation rate per hour : 1,5  
Remarks : Lock de- icer  
  
Use frequency : 365 days/year  
Remarks : Washing car window  
Use frequency : 365 days/year  
Remarks : Pouring into radiator  
Use frequency : 365 days/year  
Remarks : Lock de- icer

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**Conditions and measures related to protection of consumer (e.g. behavioral advice, personal protection and hygiene)**

Remarks : No specific Risk Management Measures identified beyond those Operational Conditions stated.

**2.2 Contributing scenario controlling consumer exposure for: PC8: Biocidal products (e.g. Disinfectants, pest control)****Product characteristics**

Concentration of the Substance in Mixture/Article :

Remarks : Laundry and dish washing products

Concentration of the Substance in Mixture/Article :

Remarks : Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)

Concentration of the Substance in Mixture/Article :

Remarks : Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

**Amount used**

Remarks : 15 g  
: Laundry and dish washing products

Remarks : 27 g  
: Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)

Remarks : 35 g  
: Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

**Frequency and duration of use**

Exposure duration : 0,50 h  
Frequency of use : 1 times/day  
Remarks : Laundry and dish washing products

Exposure duration : 0,33 h  
Frequency of use : 1 times/day  
Remarks : Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)

Exposure duration : 0,17 h  
Frequency of use : 1 times/day  
Remarks : Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

**Human factors not influenced by risk management**

Exposed skin area : Skin  
: 857,50 cm<sup>2</sup>  
Remarks : Laundry and dish washing products

Exposed skin area : Skin  
: 857,50 cm<sup>2</sup>  
Remarks : Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)

Exposed skin area : Skin  
: 428,00 cm<sup>2</sup>  
Remarks : Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

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products, glass cleaners)

**Other given operational conditions affecting consumers exposure**

Outdoor / Indoor	:	Indoor activities
Room size	:	20 M3
Ventilation rate per hour	:	0,6
Remarks	:	Laundry and dish washing products
Outdoor / Indoor	:	Indoor activities
Room size	:	20 M3
Ventilation rate per hour	:	0,6
Remarks	:	Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)
Outdoor / Indoor	:	Indoor activities
Room size	:	20 M3
Ventilation rate per hour	:	0,6
Remarks	:	Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)
Use frequency	:	365 days/year
Remarks	:	Laundry and dish washing products
Use frequency	:	128 days/year
Remarks	:	Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)
Use frequency	:	128 days/year
Remarks	:	Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

**Conditions and measures related to protection of consumer (e.g. behavioral advice, personal protection and hygiene)**

Remarks	:	No specific Risk Management Measures identified beyond those Operational Conditions stated.
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**2.2 Contributing scenario controlling consumer exposure for: PC9a: Coatings and paints, thinners, paint removers****Product characteristics**

Concentration of the Substance in Mixture/Article	:	
Remarks	:	Waterborne latex wall paint
Concentration of the Substance in Mixture/Article	:	
Remarks	:	Solvent rich, high solid, water borne paint
Concentration of the Substance in Mixture/Article	:	
Remarks	:	Aerosol spray can
Concentration of the Substance in Mixture/Article	:	
Remarks	:	Removers (paint-, glue-, wall paper-, sealant-remover)

**Amount used**

Remarks	:	2760 g
Remarks	:	Waterborne latex wall paint
Remarks	:	744 g
Remarks	:	Solvent rich, high solid, water borne paint

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Remarks : 215 g  
 : Aerosol spray can  
 : 491 g  
 Remarks : Removers (paint-, glue-, wall paper-, sealant-remover)

**Frequency and duration of use**

Exposure duration : 2,20 h  
 Frequency of use : 1 times/day  
 Remarks : Waterborne latex wall paint  
 Exposure duration : 2,20 h  
 Frequency of use : 1 times/day  
 Remarks : Solvent rich, high solid, water borne paint  
 Exposure duration : 0,33 h  
 Frequency of use : 1 times/day  
 Remarks : Aerosol spray can  
 Exposure duration : 2,00 h  
 Frequency of use : 1 times/day  
 Remarks : Removers (paint-, glue-, wall paper-, sealant-remover)

**Human factors not influenced by risk management**

Exposed skin area : Skin  
 : 428,75 cm2  
 Remarks : Waterborne latex wall paint  
 Exposed skin area : Skin  
 : 428,75 cm2  
 Remarks : Solvent rich, high solid, water borne paint  
 Exposed skin area : Skin  
 : 857,50 cm2  
 Remarks : Aerosol spray can

**Other given operational conditions affecting consumers exposure**

Outdoor / Indoor : Indoor activities  
 Room size : 20 M3  
 Ventilation rate per hour : 0,6  
 Remarks : Waterborne latex wall paint  
 Outdoor / Indoor : Indoor activities  
 Room size : 20 M3  
 Ventilation rate per hour : 0,6  
 Remarks : Solvent rich, high solid, water borne paint  
 Outdoor / Indoor : Garage  
 Room size : 34 M3  
 Ventilation rate per hour : 1,5  
 Remarks : Aerosol spray can  
 Outdoor / Indoor : Indoor activities  
 Room size : 20 M3  
 Ventilation rate per hour : 0,6  
 Remarks : Removers (paint-, glue-, wall paper-, sealant-remover)

Use frequency : 4 days/year  
 Remarks : Waterborne latex wall paint  
 Use frequency : 6 days/year  
 Remarks : Solvent rich, high solid, water borne paint  
 Use frequency : 2 days/year  
 Remarks : Aerosol spray can  
 Use frequency : 3 days/year  
 Remarks : Removers (paint-, glue-, wall paper-, sealant-remover)

**Conditions and measures related to protection of consumer (e.g. behavioral advice, personal protection and hygiene)**

Remarks : No specific Risk Management Measures identified beyond



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those Operational Conditions stated.

**2.2 Contributing scenario controlling consumer exposure for: PC9b, PC9c: Fillers, putties, plasters, modelling clay, Finger paints****Product characteristics**

Concentration of the Substance in Mixture/Article	:	
Remarks	:	Fillers and putty
Concentration of the Substance in Mixture/Article	:	
Remarks	:	Plasters and floor equalizers
Concentration of the Substance in Mixture/Article	:	
Remarks	:	Modeling Clay
Concentration of the Substance in Mixture/Article	:	
Remarks	:	Finger paints

**Amount used**

Remarks	:	85 g
Remarks	:	Fillers and putty
Remarks	:	13800 g
Remarks	:	Plasters and floor equalizers
Remarks	:	1 g
Remarks	:	Modeling Clay
Remarks	:	1,35 g
Remarks	:	Finger paints

**Frequency and duration of use**

Exposure duration	:	4,00 h
Frequency of use	:	1 times/day
Remarks	:	Fillers and putty
Exposure duration	:	2,00 h
Frequency of use	:	1 times/day
Remarks	:	Plasters and floor equalizers
Frequency of use	:	1 times/day
Remarks	:	Modeling Clay
Frequency of use	:	1 times/day
Remarks	:	Finger paints

**Human factors not influenced by risk management**

Exposed skin area	:	Skin
Remarks	:	35,73 cm2
Exposed skin area	:	Skin
Remarks	:	857,50 cm2
Exposed skin area	:	Skin
Remarks	:	Plasters and floor equalizers
Exposed skin area	:	Skin
Remarks	:	254,40 cm2
Exposed skin area	:	Skin
Remarks	:	Modeling Clay
Exposed skin area	:	Skin
Remarks	:	254,40 cm2
Exposed skin area	:	Skin
Remarks	:	Finger paints

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**Other given operational conditions affecting consumers exposure**

Outdoor / Indoor	:	Indoor activities
Room size	:	20 M3
Ventilation rate per hour	:	0,6
Remarks	:	Fillers and putty
Outdoor / Indoor	:	Indoor activities
Room size	:	20 M3
Ventilation rate per hour	:	0,6
Remarks	:	Plasters and floor equalizers
Use frequency	:	12 days/year
Remarks	:	Fillers and putty
Use frequency	:	12 days/year
Remarks	:	Plasters and floor equalizers
Use frequency	:	365 days/year
Remarks	:	Modeling Clay
Use frequency	:	365 days/year
Remarks	:	Finger paints

**Conditions and measures related to protection of consumer (e.g. behavioral advice, personal protection and hygiene)**

Remarks	:	No specific Risk Management Measures identified beyond those Operational Conditions stated.
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**2.2 Contributing scenario controlling consumer exposure for: PC15: Non-metal-surface treatment products****Product characteristics**

Concentration of the Substance in Mixture/Article	:	
Remarks	:	Waterborne latex wall paint
Concentration of the Substance in Mixture/Article	:	
Remarks	:	Solvent rich, high solid, water borne paint
Concentration of the Substance in Mixture/Article	:	
Remarks	:	Aerosol spray can
Concentration of the Substance in Mixture/Article	:	
Remarks	:	Removers (paint-, glue-, wall paper-, sealant-remover)

**Amount used**

Remarks	:	2760 g
Remarks	:	Waterborne latex wall paint
Remarks	:	744 g
Remarks	:	Solvent rich, high solid, water borne paint
Remarks	:	215 g
Remarks	:	Aerosol spray can
Remarks	:	491 g
Remarks	:	Removers (paint-, glue-, wall paper-, sealant-remover)

**Frequency and duration of use**

Exposure duration	:	2,20 h
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Frequency of use	: 1 times/day
Remarks	: Waterborne latex wall paint
Exposure duration	: 2,20 h
Frequency of use	: 1 times/day
Remarks	: Solvent rich, high solid, water borne paint
Exposure duration	: 0,33 h
Frequency of use	: 1 times/day
Remarks	: Aerosol spray can
Exposure duration	: 2,00 h
Frequency of use	: 1 times/day
Remarks	: Removers (paint-, glue-, wall paper-, sealant-remover)

**Human factors not influenced by risk management**

Exposed skin area	: Skin
	: 428,75 cm <sup>2</sup>
Remarks	: Waterborne latex wall paint
Exposed skin area	: Skin
	: 428,75 cm <sup>2</sup>
Remarks	: Solvent rich, high solid, water borne paint
Exposed skin area	: Skin
	: 857,50 cm <sup>2</sup>
Remarks	: Removers (paint-, glue-, wall paper-, sealant-remover)

**Other given operational conditions affecting consumers exposure**

Outdoor / Indoor	: Indoor activities
Room size	: 20 M <sup>3</sup>
Ventilation rate per hour	: 0,6
Remarks	: Waterborne latex wall paint
Outdoor / Indoor	: Indoor activities
Room size	: 20 M <sup>3</sup>
Ventilation rate per hour	: 0,6
Remarks	: Solvent rich, high solid, water borne paint
Outdoor / Indoor	: Garage
Room size	: 34 M <sup>3</sup>
Ventilation rate per hour	: 1,5
Remarks	: Aerosol spray can
Outdoor / Indoor	: Indoor activities
Room size	: 20 M <sup>3</sup>
Ventilation rate per hour	: 0,6
Remarks	: Removers (paint-, glue-, wall paper-, sealant-remover)
Use frequency	: 4 days/year
Remarks	: Waterborne latex wall paint
Use frequency	: 6 days/year
Remarks	: Solvent rich, high solid, water borne paint
Use frequency	: 2 days/year
Remarks	: Aerosol spray can
Use frequency	: 3 days/year
Remarks	: Removers (paint-, glue-, wall paper-, sealant-remover)

**Conditions and measures related to protection of consumer (e.g. behavioral advice, personal protection and hygiene)**

Remarks	: No specific Risk Management Measures identified beyond those Operational Conditions stated.
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**2.2 Contributing scenario controlling consumer exposure for: PC18, PC23: Ink and toners, Leather tanning, dye, finishing, impregnation and care products**

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**Product characteristics**

Concentration of the Substance in Mixture/Article :  
 Remarks : Ink and toners

Concentration of the Substance in Mixture/Article :  
 Remarks : Polishes, wax / cream (floor, furniture, shoes)

Concentration of the Substance in Mixture/Article :  
 Remarks : Polishes, spray (furniture, shoes)

**Amount used**

Remarks : 40 g  
 : Ink and toners

Remarks : 56 g  
 : Polishes, wax / cream (floor, furniture, shoes)

Remarks : 56 g  
 : Polishes, spray (furniture, shoes)

**Frequency and duration of use**

Exposure duration : 2,20 h  
 Frequency of use : 1 times/day  
 Remarks : Ink and toners

Exposure duration : 1,23 h  
 Frequency of use : 1 times/day  
 Remarks : Polishes, wax / cream (floor, furniture, shoes)

Exposure duration : 0,33 h  
 Frequency of use : 1 times/day  
 Remarks : Polishes, spray (furniture, shoes)

**Human factors not influenced by risk management**

Exposed skin area : Skin  
 : 71,40 cm2  
 Remarks : Ink and toners

Exposed skin area : Skin  
 : 430,00 cm2  
 Remarks : Polishes, wax / cream (floor, furniture, shoes)

Exposed skin area : Skin  
 : 430,00 cm2  
 Remarks : Polishes, spray (furniture, shoes)

**Other given operational conditions affecting consumers exposure**

Outdoor / Indoor : Indoor activities  
 Room size : 20 M3  
 Ventilation rate per hour : 0,6  
 Remarks : Ink and toners

Outdoor / Indoor : Indoor activities  
 Room size : 20 M3  
 Ventilation rate per hour : 0,6  
 Remarks : Polishes, wax / cream (floor, furniture, shoes)

Outdoor / Indoor : Indoor activities  
 Room size : 20 M3  
 Ventilation rate per hour : 0,6  
 Remarks : Polishes, spray (furniture, shoes)

Use frequency : 365 days/year  
 Remarks : Ink and toners

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Use frequency : 29 days/year  
 Remarks : Polishes, wax / cream (floor, furniture, shoes)  
 Use frequency : 8 days/year  
 Remarks : Polishes, spray (furniture, shoes)

**Conditions and measures related to protection of consumer (e.g. behavioral advice, personal protection and hygiene)**

Remarks : No specific Risk Management Measures identified beyond those Operational Conditions stated.

**2.2 Contributing scenario controlling consumer exposure for: PC24: Lubricants, greases, release products****Product characteristics**

Concentration of the Substance in Mixture/Article :  
 Remarks : Liquid  
 Concentration of the Substance in Mixture/Article :  
 Remarks : Paste  
 Concentration of the Substance in Mixture/Article :  
 Remarks : Sprays

**Amount used**

Remarks : 2200 g  
 : Liquid  
 : 34 g  
 Remarks : Paste  
 : 73 g  
 Remarks : Sprays

**Frequency and duration of use**

Exposure duration : 0,17 h  
 Frequency of use : 1 times/day  
 Remarks : Liquid  
 Frequency of use : 1 times/day  
 Remarks : Paste  
 Exposure duration : 0,17 h  
 Frequency of use : 1 times/day  
 Remarks : Sprays

**Human factors not influenced by risk management**

Exposed skin area : Skin  
 : 468,00 cm2  
 Remarks : Liquid  
 Exposed skin area : Skin  
 : 468,00 cm2  
 Remarks : Paste  
 Exposed skin area : Skin  
 : 428,75 cm2  
 Remarks : Sprays

**Other given operational conditions affecting consumers exposure**

Outdoor / Indoor : Garage

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Room size	:	34 M3
Ventilation rate per hour	:	1,5
Remarks	:	Liquid
Outdoor / Indoor	:	Indoor activities
Room size	:	20 M3
Ventilation rate per hour	:	0,6
Remarks	:	Sprays
Use frequency	:	4 days/year
Remarks	:	Liquid
Use frequency	:	10 days/year
Remarks	:	Paste
Use frequency	:	6 days/year
Remarks	:	Sprays

**Conditions and measures related to protection of consumer (e.g. behavioral advice, personal protection and hygiene)**

Remarks	:	No specific Risk Management Measures identified beyond those Operational Conditions stated.
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**2.2 Contributing scenario controlling consumer exposure for: PC31, PC34: Polishes and wax blends, Textile dyes, finishing and impregnating products; including bleaches and other processing aids****Product characteristics**

Concentration of the Substance in Mixture/Article	:	
Remarks	:	Polishes, wax / cream (floor, furniture, shoes)
Concentration of the Substance in Mixture/Article	:	
Remarks	:	Polishes, spray (furniture, shoes)
Concentration of the Substance in Mixture/Article	:	
Remarks	:	Textile dyes, finishing and impregnating products; including bleaches and other processing aids

**Amount used**

Remarks	:	142 g
Remarks	:	Polishes, wax / cream (floor, furniture, shoes)
Remarks	:	35 g
Remarks	:	Polishes, spray (furniture, shoes)
Remarks	:	115 g
Remarks	:	Textile dyes, finishing and impregnating products; including bleaches and other processing aids

**Frequency and duration of use**

Exposure duration	:	1,23 h
Frequency of use	:	1 times/day
Remarks	:	Polishes, wax / cream (floor, furniture, shoes)
Exposure duration	:	0,33 h
Frequency of use	:	1 times/day
Remarks	:	Polishes, spray (furniture, shoes)
Exposure duration	:	1,00 h
Frequency of use	:	1 times/day
Remarks	:	Textile dyes, finishing and impregnating products; including

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bleaches and other processing aids

**Human factors not influenced by risk management**

Exposed skin area : Skin  
: 430,00 cm<sup>2</sup>

Remarks : Polishes, wax / cream (floor, furniture, shoes)

Exposed skin area : Skin  
: 430,00 cm<sup>2</sup>

Remarks : Polishes, spray (furniture, shoes)

Exposed skin area : Skin  
: 857,50 cm<sup>2</sup>

Remarks : Textile dyes, finishing and impregnating products; including bleaches and other processing aids

**Other given operational conditions affecting consumers exposure**

Outdoor / Indoor : Indoor activities

Room size : 20 M<sup>3</sup>

Ventilation rate per hour : 0,6

Remarks : Polishes, wax / cream (floor, furniture, shoes)

Outdoor / Indoor : Indoor activities

Room size : 20 M<sup>3</sup>

Ventilation rate per hour : 0,6

Remarks : Polishes, spray (furniture, shoes)

Outdoor / Indoor : Indoor activities

Room size : 20 M<sup>3</sup>

Ventilation rate per hour : 0,6

Remarks : Textile dyes, finishing and impregnating products; including bleaches and other processing aids

Use frequency : 29 days/year

Remarks : Polishes, wax / cream (floor, furniture, shoes)

Use frequency : 8 days/year

Remarks : Polishes, spray (furniture, shoes)

Use frequency : 365 days/year

Remarks : Textile dyes, finishing and impregnating products; including bleaches and other processing aids

**Conditions and measures related to protection of consumer (e.g. behavioral advice, personal protection and hygiene)**

Remarks : No specific Risk Management Measures identified beyond those Operational Conditions stated.

**3. Exposure estimation and reference to its source****Environment**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
ERC8a, ERC8d	Hydrocarbon Block Method with Petrorisk		Air		0,000074 mg/m <sup>3</sup>	
			Freshwater		0,00001 mg/L	0,00027
			Freshwater sediment		0,00022 mg/kg	0,00015
			Marine water		0,0000005 mg/L	0,000013
			Marine sediment		0,000022 mg/kg	0,000015
			Agricultural soil		0,000093	0,00016

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mg/kg

ERC8a: Wide dispersive indoor use of processing aids in open systems  
 ERC8d: Wide dispersive outdoor use of processing aids in open systems

**Workers/Consumers**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
PC1, PC1_1	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	1,79 mg/kg/d	0,00
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	0,85 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,00
PC1, PC1_2	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	0,01 mg/kg/d	0,00
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	1,75 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,00
PC1, PC1_3	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	1,79 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	80,56 mg/m3	0,13
			Consumer – long-term – systemic Combined routes		0,14
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
PC1, PC1_4	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	1,79 mg/kg/d	0,00
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	3,52 mg/m3	0,01
			Consumer – long-term – systemic Combined routes		0,01
PC4, PC4_1	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	0,00 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,00
PC4, PC4_2	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	7,13 mg/kg/d	0,01
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	0,18 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,01
PC4, PC4_3	ECETOC TRA		Consumer – dermal,	17,87 mg/kg/d	0,03



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	Modified		long-term – systemic		
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	0,51 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,03
PC8, PC8_1	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	0,07 mg/kg/d	0,00
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	0,07 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,00
PC8, PC8_2	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	7,15 mg/kg/d	0,01
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	0,08 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,01
PC8, PC8_3	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	10,70 mg/kg/d	0,02
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	1,77 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,02
PC9a, PC9a_1	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	1,07 mg/kg/d	0,00
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	10,53 mg/m3	0,02
			Consumer – long-term – systemic Combined routes		0,02
PC9a, PC9a_2	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	19,65 mg/kg/d	0,03
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	52,06 mg/m3	0,09
			Consumer – long-term – systemic Combined routes		0,11
PC9a, PC9a_3	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	34,29 mg/m3	0,06
			Consumer – long-term – systemic Combined routes		0,06
PC9a, PC9a_4	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	71,46 mg/kg/d	0,10
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00

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			Consumer – inhalation, long-term – systemic	59,57 mg/m3	0,10
			Consumer – long-term – systemic Combined routes		0,20
PC9b, PC9b_1	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	0,12 mg/kg/d	0,00
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	0,54 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,00
PC9b, PC9b_2	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	2,86 mg/kg/d	0,00
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	66,97 mg/m3	0,11
			Consumer – long-term – systemic Combined routes		0,11
PC9b, PC9b_3	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	2,54 mg/kg/d	0,00
			Consumer – oral, long-term – systemic	1,00 mg/kg/d	0,00
			Consumer – long-term – systemic Combined routes		0,01
PC9c	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	127,20 mg/kg/d	0,18
			Consumer – oral, long-term – systemic	67,50 mg/kg/d	0,10
			Consumer – long-term – systemic Combined routes		0,28
PC15, PC15_1	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	1,07 mg/kg/d	0,00
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	10,53 mg/m3	0,02
			Consumer – long-term – systemic Combined routes		0,02
PC15, PC15_2	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	19,65 mg/kg/d	0,03
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	52,06 mg/m3	0,09
			Consumer – long-term – systemic Combined routes		0,11
PC15, PC15_3	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	34,29 mg/m3	0,06
			Consumer – long-term – systemic Combined routes		0,06
PC15, PC15_4	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	71,46 mg/kg/d	0,10
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00

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			term – systemic		
			Consumer – inhalation, long-term – systemic	59,57 mg/m3	0,10
			Consumer – long-term – systemic Combined routes		0,20
PC18	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	1,19 mg/kg/d	0,00
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	1,02 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,00
PC23, PC23_1	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	35,83 mg/kg/d	0,05
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	5,07 mg/m3	0,01
			Consumer – long-term – systemic Combined routes		0,06
PC23, PC23_2	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	35,83 mg/kg/d	0,05
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	17,46 mg/m3	0,03
			Consumer – long-term – systemic Combined routes		0,08
PC24, PC24_1	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	78,00 mg/kg/d	0,11
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	0,40 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,11
PC24, PC24_2	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	15,60 mg/kg/d	0,02
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – long-term – systemic Combined routes		0,02
PC24, PC24_3	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	35,73 mg/kg/d	0,05
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	12,29 mg/m3	0,02
			Consumer – long-term – systemic Combined routes		0,07
PC31, PC31_1	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	35,83 mg/kg/d	0,05
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	12,87 mg/m3	0,02
			Consumer – long-term – systemic Combined		0,07

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			routes		
PC31, PC31_2	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	35,83 mg/kg/d	0,05
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	10,92 mg/m3	0,02
			Consumer – long-term – systemic Combined routes		0,07
PC34	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	0,14 mg/kg/d	0,00
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	1,80 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,00

PC1: Adhesives, sealants  
PC1\_1: Glues, hobby use

PC1: Adhesives, sealants  
PC1\_2: Glues DIY -use (carpet glue, tile glue, wood parquet glue)

PC1: Adhesives, sealants  
PC1\_3: Glue from spray

PC1: Adhesives, sealants  
PC1\_4: Sealants

PC4: Anti-Freeze and de-icing products  
PC4\_1: Washing car window

PC4: Anti-Freeze and de-icing products  
PC4\_2: Pouring into radiator

PC4: Anti-Freeze and de-icing products  
PC4\_3: Lock de- icer

PC8: Biocidal products (e.g. Disinfectants, pest control)  
PC8\_1: Laundry and dish washing products

PC8: Biocidal products (e.g. Disinfectants, pest control)  
PC8\_2: Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)

PC8: Biocidal products (e.g. Disinfectants, pest control)  
PC8\_3: Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

PC9a: Coatings and paints, thinners, paint removers  
PC9a\_1: Waterborne latex wall paint

PC9a: Coatings and paints, thinners, paint removers  
PC9a\_2: Solvent rich, high solid, water borne paint

PC9a: Coatings and paints, thinners, paint removers  
PC9a\_3: Aerosol spray can

PC9a: Coatings and paints, thinners, paint removers  
PC9a\_4: Removers (paint-, glue-, wall paper-, sealant-remover)

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PC9b: Fillers, putties, plasters, modelling clay  
 PC9b\_1: Fillers and putty

PC9b: Fillers, putties, plasters, modelling clay  
 PC9b\_2: Plasters and floor equalizers

PC9b: Fillers, putties, plasters, modelling clay  
 PC9b\_3: Modeling Clay

PC9c: Finger paints

PC15: Non-metal-surface treatment products  
 PC15\_1: Waterborne latex wall paint

PC15: Non-metal-surface treatment products  
 PC15\_2: Solvent rich, high solid, water borne paint

PC15: Non-metal-surface treatment products  
 PC15\_3: Aerosol spray can

PC15: Non-metal-surface treatment products  
 PC15\_4: Removers (paint-, glue-, wall paper-, sealant-remover)

PC18: Ink and toners

PC23: Leather tanning, dye, finishing, impregnation and care products  
 PC23\_1: Polishes, wax / cream (floor, furniture, shoes)

PC23: Leather tanning, dye, finishing, impregnation and care products  
 PC23\_2: Polishes, spray (furniture, shoes)

PC24: Lubricants, greases, release products  
 PC24\_1: Liquid

PC24: Lubricants, greases, release products  
 PC24\_2: Paste

PC24: Lubricants, greases, release products  
 PC24\_3: Sprays

PC31: Polishes and wax blends  
 PC31\_1: Polishes, wax / cream (floor, furniture, shoes)

PC31: Polishes and wax blends  
 PC31\_2: Polishes, spray (furniture, shoes)

PC34: Textile dyes, finishing and impregnating products; including bleaches and other processing aids

#### **4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario**

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Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.  
 Risk Management Measures are based on qualitative risk characterisation.  
 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.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

**1. Short title of Exposure Scenario: Use as a fuel – consumer**

Main User Groups	:	<b>SU 21:</b> Consumer uses: Private households (= general public = consumers)
Sector of use	:	<b>SU 21:</b> Consumer uses: Private households (= general public = consumers)
Product category	:	<b>PC13:</b> Fuels
Environmental release category	:	<b>ERC8b, ERC8e, ERC9a, ERC9b:</b> Wide dispersive indoor use of reactive substances in open systems, Wide dispersive outdoor use of reactive substances in open systems, Wide dispersive indoor use of substances in closed systems, Wide dispersive outdoor use of substances in closed systems
Further information	:	Covers consumer uses in liquid fuels.

**2.1 Contributing scenario controlling environmental exposure for:ERC8b, ERC8e, ERC9a, ERC9b: Wide dispersive indoor use of reactive substances in open systems, Wide dispersive outdoor use of reactive substances in open systems, Wide dispersive indoor use of substances in closed systems, Wide dispersive outdoor use of substances in closed systems**

**Product characteristics**

Maximum allowable site tonnage : 240.000  
 (MSafe) based on release following total wastewater treatment removal (kg/d): (Msafe)

**Environment factors not influenced by risk management**

Flow rate : 18.000 m3/d  
 Dilution Factor (River) : 10  
 Dilution Factor (Coastal Areas) : 100

**Other given operational conditions affecting environmental exposure**

Continuous use/release  
 Number of emission days per year : 365  
 Emission or Release Factor: Air : 0,1 %  
 Emission or Release Factor: Water : 0,001 %  
 Emission or Release Factor: Soil : 0,001 %

**Technical conditions and measures / Organizational measures**

Remarks : Not applicable

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**Conditions and measures related to municipal sewage treatment plant**

Type of Sewage Treatment Plant : Municipal sewage treatment plant  
 Flow rate of sewage treatment : 2.000 m3/d  
 plant effluent  
 Percentage removed from waste : 96,3 %  
 water  
 Sludge Treatment : No data available  
 Procedures to limit air emissions : No data available  
 from Sewage Treatment Plant

**Conditions and measures related to external treatment of waste for disposal**

Remarks : Combustion emissions limited by required exhaust emission controls.  
 Combustion emissions considered in regional exposure assessment.

**Conditions and measures related to external recovery of waste**

Recovery Methods : This substance is consumed during use and no waste of the substance is generated.

**2.2 Contributing scenario controlling consumer exposure for: PC13: Fuels- Liquid****Product characteristics**

Physical Form (at time of use) : Liquid substance

**Amount used**

: 37500 g

**Frequency and duration of use**

Exposure duration : 2 h  
 Frequency of use : > 1 times/day

**Human factors not influenced by risk management**

Exposed skin area : Skin  
 : 420 cm2

**Other given operational conditions affecting consumers exposure**

Room size : 20 M3  
 Remarks : Unless otherwise stated assumes use at ambient temperatures, Assumes use with typical ventilation.

**Conditions and measures related to protection of consumer (e.g. behavioral advice, personal protection and hygiene)**

Remarks : No specific Risk Management Measures identified beyond those Operational Conditions stated.

**2.1 Contributing scenario controlling environmental exposure for:ERC8b, ERC8e, ERC9a, ERC9b: Wide dispersive indoor use of reactive substances in open systems, Wide dispersive outdoor use of reactive substances in open systems, Wide dispersive indoor use of substances in closed systems, Wide dispersive outdoor use of substances in closed systems****Product characteristics**

Concentration of the Substance in :  
 Mixture/Article  
 Remarks Automotive Refuelling

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Concentration of the Substance in Mixture/Article	:	
Remarks		Scooter Refuelling
Concentration of the Substance in Mixture/Article	:	
Remarks		Garden Equipment- Use
Concentration of the Substance in Mixture/Article	:	
Remarks		Garden Equipment- Refueling
Concentration of the Substance in Mixture/Article	:	
Remarks		Lamp Oil

**2.2 Contributing scenario controlling consumer exposure for: PC13: Fuels- Liquid****Product characteristics**

Concentration of the Substance in Mixture/Article	:	
Remarks		Automotive Refuelling
Concentration of the Substance in Mixture/Article	:	
Remarks		Scooter Refuelling
Concentration of the Substance in Mixture/Article	:	
Remarks		Garden Equipment- Use
Concentration of the Substance in Mixture/Article	:	
Remarks		Garden Equipment- Refueling
Concentration of the Substance in Mixture/Article	:	
Remarks		Lamp Oil

**Amount used**

Remarks	:	37500 g
Remarks	:	Automotive Refuelling
Remarks	:	3750 g
Remarks	:	Scooter Refuelling
Remarks	:	750 g
Remarks	:	Garden Equipment- Use
Remarks	:	750 g
Remarks	:	Garden Equipment- Refueling
Remarks	:	100 g



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Remarks : Lamp Oil

**Frequency and duration of use**

Exposure duration : 0,05 h  
 Frequency of use : 1 times/day  
 Remarks : Automotive Refuelling  
 Exposure duration : 0,03 h  
 Frequency of use : 1 times/day  
 Remarks : Scooter Refuelling  
 Exposure duration : 2,00 h  
 Frequency of use : 1 times/day  
 Remarks : Garden Equipment- Use  
 Exposure duration : 0,03 h  
 Frequency of use : 1 times/day  
 Remarks : Garden Equipment- Refueling  
 Exposure duration : 0,01 h  
 Frequency of use : 1 times/day  
 Remarks : Lamp Oil

**Human factors not influenced by risk management**

Exposed skin area : Skin  
 : 210,00 cm2  
 Remarks : Automotive Refuelling  
 Exposed skin area : Skin  
 : 210,00 cm2  
 Remarks : Scooter Refuelling  
 Exposed skin area : Skin  
 : 420,00 cm2  
 Remarks : Garden Equipment- Refueling  
 Exposed skin area : Skin  
 : 210,00 cm2  
 Remarks : Lamp Oil

**Other given operational conditions affecting consumers exposure**

Outdoor / Indoor : Outdoor Activities  
 Room size : 100 M3  
 Ventilation rate per hour : 0,6  
 Remarks : Automotive Refuelling  
 Outdoor / Indoor : Outdoor Activities  
 Room size : 100 M3  
 Ventilation rate per hour : 0,6  
 Remarks : Scooter Refuelling  
 Outdoor / Indoor : Outdoor Activities  
 Room size : 100 M3  
 Ventilation rate per hour : 0,6  
 Remarks : Garden Equipment- Use  
 Outdoor / Indoor : Garage  
 Room size : 34 M3  
 Ventilation rate per hour : 1,5  
 Remarks : Garden Equipment- Refueling  
 Outdoor / Indoor : Indoor activities  
 Room size : 20 M3  
 Ventilation rate per hour : 0,6  
 Remarks : Lamp Oil

Use frequency : 52 days/year  
 Remarks : Automotive Refuelling  
 Use frequency : 52 days/year  
 Remarks : Scooter Refuelling  
 Use frequency : 26 days/year

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Remarks : Garden Equipment- Use  
 Use frequency : 26 days/year  
 Remarks : Garden Equipment- Refueling  
 Use frequency : 52 days/year  
 Remarks : Lamp Oil

**Conditions and measures related to protection of consumer (e.g. behavioral advice, personal protection and hygiene)**

Remarks : No specific Risk Management Measures identified beyond those Operational Conditions stated.

**3. Exposure estimation and reference to its source****Environment**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
ERC8b, ERC8e, ERC9a, ERC9b	Hydrocarbon Block Method with Petrorisk		Air		0,000074 mg/m3	
			Freshwater		0,0000058 mg/L	0,00015
			Freshwater sediment		0,0001 mg/kg	0,000073
			Marine water		0,000066 µg/L	0,000002
			Marine sediment		0,0000028 mg/kg	0,000002
			Agricultural soil		0,000012 mg/kg	0,000021

ERC8b: Wide dispersive indoor use of reactive substances in open systems  
 ERC8e: Wide dispersive outdoor use of reactive substances in open systems  
 ERC9a: Wide dispersive indoor use of substances in closed systems  
 ERC9b: Wide dispersive outdoor use of substances in closed systems

**Workers/Consumers**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
PC13, PC13_1	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	35,00 mg/kg/d	0,05
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	0,15 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,05
PC13, PC13_2	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	35,00 mg/kg/d	0,05
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	0,10 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,05
PC13, PC13_3	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00

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			Consumer – inhalation, long-term – systemic	0,73 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,00
PC13, PC13_4	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	70,00 mg/kg/d	0,10
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	0,08 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,10
PC13, PC13_5	ECETOC TRA Modified		Consumer – dermal, long-term – systemic	35,00 mg/kg/d	0,05
			Consumer – oral, long-term – systemic	0,00 mg/kg/d	0,00
			Consumer – inhalation, long-term – systemic	0,01 mg/m3	0,00
			Consumer – long-term – systemic Combined routes		0,05

PC13: Fuels- Liquid  
PC13\_1: Automotive Refuelling

PC13: Fuels- Liquid  
PC13\_2: Scooter Refuelling

PC13: Fuels- Liquid  
PC13\_3: Garden Equipment- Use

PC13: Fuels  
PC13\_4: Garden Equipment- Refueling

PC13: Fuels  
PC13\_5: Lamp Oil

#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.

Risk Management Measures are based on qualitative risk characterisation.

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.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).