



## PRF Isooctane + TEL

Version 1.2

Revision Date 2014-09-25

### SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### Product information

Product Name : PRF Isooctane + TEL  
 Material : 1098715, 1098717, 1098712, 1098713, 1098720, 1098714,  
 1098719, 1098716, 1092025, 1091995, 1092012, 1092013,  
 1091997, 1092017, 1092018, 1092019, 1092008, 1095235,  
 1092007, 1094713, 1094712, 1094671, 1094670, 1094669,  
 1094668, 1092023, 1091996, 1091944, 1091945, 1091947,  
 1091948, 1091949, 1091950, 1092009, 1092014, 1091943,  
 1091998, 1092000, 1092001, 1092002, 1092003, 1092004,  
 1091994, 1062407, 1098691, 1097787, 1020579, 1020578,  
 1020576, 1020577, 1105590

#### 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

Relevant Identified Uses : Manufacture  
 Supported : Distribution  
 Formulation  
 Use as a fuel - industrial  
 Use as a fuel – professional  
 Use as a laboratory agent – industrial  
 Use as a laboratory agent – professional  
 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

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

Local : Chevron Phillips Chemicals International N.V.  
 Brusselsesteenweg 355

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B-3090 Overijse  
Belgium

SDS Requests: (800) 852-5530  
Technical Information: (832) 813-4862  
Responsible Party: Product Safety Group  
Email: sds@cpchem.com

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

866.442.9628 (North America)

1.832.813.4984 (International)

**Transport:**

North America: CHEMTREC 800.424.9300 or 703.527.3887

Asia: +800 CHEMCALL (+800 2436 2255) China: +86-21-22157316

EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)

South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

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

**SECTION 2: Hazards identification****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.
Reproductive toxicity, Category 1A	H360: May damage fertility or the unborn child.
Specific target organ systemic toxicity - single exposure, Category 3	H335: May cause respiratory irritation. H336: May cause drowsiness or dizziness.
Aspiration hazard, Category 1	H304: May be fatal if swallowed and enters airways.
Acute aquatic toxicity, Category 1	H400: Very toxic to aquatic life.
Chronic aquatic toxicity, Category 1	H410: Very toxic to aquatic life with long lasting effects.

**Classification (67/548/EEC, 1999/45/EC)**

Highly flammable	R11: Highly flammable.
Toxic to Reproduction Category 1	R61: May cause harm to the unborn child.
Harmful	R65: Harmful: may cause lung damage if swallowed.
Irritant	R38: Irritating to skin.
Dangerous for the environment	R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. R67: Vapors may cause drowsiness and dizziness.

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**Label elements****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.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H360	May damage fertility or the unborn child.
H410	Very toxic to aquatic life with long lasting effects.

Precautionary Statements : **Prevention:**

P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P233	Keep container tightly closed.
P240	Ground/bond container and receiving equipment.
P243	Take precautionary measures against static discharge.
P261	Avoid breathing dust/fume/gas/mist/vapors/spray.
P264	Wash hands thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response:**

P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P303 + P361 + P353	IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P330	Rinse mouth.
P331	Do NOT induce vomiting.
P332 + P313	If skin irritation occurs: Get medical advice/ attention.
P337 + P313	If eye irritation persists: Get medical advice/ attention.
P361	Remove/ Take off immediately all

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P370 + P378

contaminated clothing.  
In case of fire: Use dry sand, dry chemical  
or alcohol-resistant foam for extinction.

**Storage:**

P403 + P235

Store in a well-ventilated place. Keep cool.

**Disposal:**

P501

Dispose of contents/ container to an  
approved waste disposal plant.

Hazardous ingredients which must be listed on the label:

- 540-84-1 2,2,4-Trimethylpentane (Isooctane)
- 78-00-2 Tetraethyl Lead

**Additional Labeling:**

Restricted to professional users.

**SECTION 3: Composition/information on ingredients**

Synonyms : 2,2,4-Trimethylpentane / Tetraethyl Lead

Molecular formula : Mixture

**Mixtures****Hazardous ingredients**

Chemical Name	CAS-No. EC-No. Index No.	Classification (67/548/EEC)	Classification (REGULATION (EC) No 1272/2008)	Concentration [wt%]
<b>2,2,4-Trimethylpentane (Isooctane)</b>	<b>540-84-1</b> <b>208-759-1</b> 601-009-00-8	F; R11 Xn; R65 Xi; R38 R67 N; R50-R53	Asp. Tox. 1; H304 Aquatic Acute 1; H400 Aquatic Chronic 1; H410 Flam. Liq. 2; H225 Skin Irrit. 2; H315 STOT SE 3; H336	99,4 - 100
Tetraethyl Lead	78-00-2 201-075-4	Repr.Cat.1; R61 Repr.Cat.3; R62 Xn; R20/22 R33 N; R50-R53 Repr.Cat.1; R61 Repr.Cat.3; R62 T+; R26/27/28 R33 N; R50-R53	Acute Tox. 2; H300 Acute Tox. 2; H300 Acute Tox. 1; H330 Acute Tox. 1; H330 Acute Tox. 1; H310 Skin Irrit. 2; H315 Eye Irrit. 2; H319 Acute Tox. 1; H330 Repr. 1A; H360Df Repr. 1A; H360Df Acute Tox. 2; H300 STOT RE 2; H373 STOT RE 1; H372 STOT RE 1; H372 Aquatic Acute 1; H400	0,001 - 1

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			Aquatic Acute 1; H400 Aquatic Chronic 1; H410 Aquatic Chronic 1; H410	
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For the full text of the R-phrases mentioned in this Section, see Section 16.

For the full text of the H-Statements mentioned in this Section, see Section 16.

**SECTION 4: First aid measures**

- General advice : Move out of dangerous area. Consult a physician. Show this material safety data sheet to the doctor in attendance. Symptoms of poisoning may appear several hours later. Do not leave the victim unattended.
- If inhaled : Call a physician or poison control center immediately. Move to fresh air. If unconscious place in recovery position and seek medical advice.
- In case of skin contact : Take victim immediately to hospital. If on skin, rinse well with water. If on clothes, remove clothes.
- In case of eye contact : Immediately flush eye(s) with plenty of water. 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. Do NOT induce vomiting. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. Take victim immediately to hospital.

**SECTION 5: Firefighting measures**

- Flash point : -12,22 °C (10,00 °F) estimated
- Autoignition temperature : 411 °C (772 °F)
- Suitable extinguishing media : Dry chemical. Carbon dioxide (CO<sub>2</sub>). Alcohol-resistant foam.
- Unsuitable extinguishing media : High volume water jet.
- Specific hazards during fire fighting : Do not allow run-off from fire fighting to enter drains or water courses.
- Special protective equipment for fire-fighters : Wear self contained breathing apparatus for fire fighting 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

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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 an open flame or any other incandescent material. Use only explosion-proof equipment. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Keep away from open flames, hot surfaces and sources of ignition.

Hazardous decomposition products : Hydrocarbons. Carbon oxides.

**SECTION 6: Accidental release measures**

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.

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.

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).

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

**SECTION 7: Handling and storage****Handling**

Advice on safe handling : Avoid formation of aerosol. Do not breathe vapors/dust. Avoid contact with skin and eyes. For personal protection see section 8. 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 an open flame or any other incandescent material. Use only explosion-proof equipment. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Keep away from open flames, hot surfaces and sources of ignition.

**Storage**

Requirements for storage areas and containers : Prevent unauthorized access. 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

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technological safety standards.

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

Súčasť	Podstata	Hodnota	Kontrolné parametre	Poznámka
Tetraethyl Lead	SK OEL	NPEL priemerný	0,05 mg/m <sup>3</sup>	K,
	SK OEL	NPEL krátkodobý	0,2 mg/m <sup>3</sup>	K,

K Znamená, že faktor môže byť ľahko absorbovaný kožou. Niektoré faktory, ktoré ľahko prenikajú kožou, môžu spôsobovať až smrteľné otravy, často bez varovných príznakov (napr. anilín, nitrobenzén, nitroglykol, fenoly a pod.). Pri látkach s významným prienikom cez kožu, či už v podobe kvapalín alebo pár, je osobitne dôležité zabrániť kožnému kontaktu.

**SI**

Komponente	Osnova	Vrednost	Parametri nadzora	Pripomba
Tetraethyl Lead	SI OEL	MV	0,05 mg/m <sup>3</sup>	K, BAT,

BAT Biološka mejna vrednost - določena je biološka mejna vrednost, ki pomeni opozorilno raven nevarne kemične snovi in njenih metabolitov v tkivih, telesnih tekočinah ali izdihanem zraku, ne glede na to, ali je nevarna kemična snov vnesena v organizem z vdihavanjem, zaužitjem ali skozi kožo

K Lastnost lažjega prehajanja snovi v organizem skozi kožo

**SE**

Beständsdelar	Grundval	Värde	Kontrollparametrar	Anmärkning
Tetraethyl Lead	SE AFS	NGV	0,05 mg/m <sup>3</sup>	H, R,
	SE AFS	KTV	0,2 mg/m <sup>3</sup>	H, R,

H Ämnet kan lätt upptas genom huden.

R Ämnet är reproduktionsstörande.

**PT**

Componentes	Bases	Valor	Parâmetros de controle	Nota
Tetraethyl Lead	PT OEL	VLE-MP	0,1 mg/m <sup>3</sup>	P, A4,

A4 Agente não classificável como carcinogénico no Homem.

P Perigo de absorção cutânea

**PL**

Składniki	Podstawa	Wartość	Parametry dotyczące kontroli	Uwaga
Tetraethyl Lead	PL NDS	NDS	0,05 mg/m <sup>3</sup>	
	PL NDS	NDSch	0,1 mg/m <sup>3</sup>	

**NO**

Komponenter	Grunnlag	Verdi	Kontrollparametere	Nota
Tetraethyl Lead	AN 361	TWA	0,01 ppm, 0,075 mg/m <sup>3</sup>	R, H,

H En del av stoffene kan i stor grad trenge gjennom huden selv om denne er uskadet, og således tas opp i kroppen.

R Stoffer som skal betraktes som reproduksjonsskadelige

**LV**

Sastāvdaļas	Bāze	Vērtība	Pārvaldības parametri	Piezīme
Tetraethyl Lead	LV OEL	AER 8 st	0,005 mg/m <sup>3</sup>	

**LU**

Composants	Base	Valeur	Paramètres de contrôle	Note
Tetraethyl Lead	LU OEL	TWA	0,15 mg/m <sup>3</sup>	

**LT**

Komponentai	Pagrindas, bazė	Vertė	Kontrolės parametrai	Pastaba
Tetraethyl Lead	LT OEL	IPRD	0,05 mg/m <sup>3</sup>	O,
	LT OEL	TPRD	0,2 mg/m <sup>3</sup>	O,

O Oksiduojanti

**IE**

Ingredients	Basis	Value	Control parameters	Note
Tetraethyl Lead	IE OEL	OELV - 8 hrs (TWA)	0,1 mg/m <sup>3</sup>	Sk, Repr 1A,

Repr 1A Repr 1A - Substances which are known human reproductive toxicants

Sk Substances which have the capacity to penetrate intact skin when they come in contact with it, and be absorbed into the body

**HU**

Komponensek	Bázis	Érték	Ellenőrzési paraméterek	Megjegyzés
Tetraethyl Lead	HU OEL	AK-érték	0,05 mg/m <sup>3</sup>	b, i,
	HU OEL	CK-érték	0,2 mg/m <sup>3</sup>	b, i,

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- b Bőrön át is felszívódik. Az ÁK-értékek a veszélyes anyagoknak ezt a tulajdonságát, illetve az ebből származó expozíciót csak a levegőben megengedett koncentrációjuk mértékének megfelelően veszik figyelembe
- i Ingerlő anyag (izgatja a bőrt, nyálkahártyát, szemet vagy mindhármat)

**GR**

Συστατικά	Βάση	Τιμή	Παράμετροι ελέγχου	Σημείωση
Tetraethyl Lead	GR OEL	TWA	0,1 mg/m3	Δ,

Δ Η ένδειξη 'δέρμα' (Δ), η οποία επισημαίνει ορισμένους χημικούς παράγοντες του πίνακα της παρ. 1 του άρθρου 3, υπονοεί την πιθανή συμβολή στην συνολική έκθεση του εργαζόμενου και της ποσότητας αυτών των χημικών παραγόντων που απορροφάται διαμέσου του δέρματος κατά την άμεση επαφή μαζί τους.

**FR**

Composants	Base	Valeur	Paramètres de contrôle	Note
Tetraethyl Lead	FR VLE	VME	0,1 mg/m3	R1A, *, normal,

\* Risque de pénétration percutanée  
normal Valeurs limites indicatives  
R1A Substances que l'on sait être toxiques pour la reproduction chez l'homme

**FI**

Aineosat	Peruste	Arvo	Valvontaa koskevat muuttujat	Huomautus
2,2,4-Trimethylpentane (Isooctane)	FI OEL	HTP-arvot 8h	300 ppm, 1.400 mg/m3	
	FI OEL	HTP-arvot 15 min	380 ppm, 1.800 mg/m3	
Tetraethyl Lead	FI OEL	HTP-arvot 8h	0,075 mg/m3	iho,
	FI OEL	HTP-arvot 15 min	0,23 mg/m3	iho,

iho Ihon läpi imeytyvien aineiden elimistöön joutuvia määriä ja elimistöön joutuneesta aineesta aiheutuvaa vaaraa ei voida näin ollen arvioida pelkästään ilmapitoisuuksien avulla. Tämän vuoksi näiden aineiden HTP-arvojen yhteyteen on huomautussarakkeeseen otettu ihon läpi imeytymisen osoittamiseksi merkintä 'iho'. Monet aineet, varsinkin voimakkaat hapot tai emäkset, voivat aiheuttaa iholle jouduttuaan ihon ärsyntyntymistä tai syöpymistä.

**ES**

Componentes	Base	Valor	Parámetros de control	Nota
Tetraethyl Lead	ES VLA	VLA-ED	0,1 mg/m3	TR1A, vía dérmica,

TR1A Sustancias de las que se sabe o se supone que son tóxicas para la reproducción humana. Las pruebas utilizadas para la clasificación procedan principalmente de datos en humanos  
vía dérmica Vía dérmica

**EE**

Komponendid, osad	Alused	Väärtus	Kontrolliparameetrid	Märkused
Tetraethyl Lead	EE OEL	Piirnorm	0,05 mg/m3	A, R,
	EE OEL	Lühiajalise kokkupuute piirnorm	0,2 mg/m3	A, R,

A Naha kaudu kergesti absorbeeruvad ained  
R Reproduktiivset funktsiooni kahjustavad ained

**DK**

Komponenter	Basis	Værdi	Kontrolparametre	Note
Tetraethyl Lead	DK OEL	GV	0,007 ppm, 0,05 mg/m3	H,

H Betyder, at stoffet kan optages gennem huden.

**DE**

Inhaltsstoffe	Grundlage	Wert	Zu überwachende Parameter	Bemerkung
Tetraethyl Lead	DE TRGS 900	AGW	0,05 mg/m3	DFG, 10, H,
	DE TRGS 900	AGW	0,05 mg/m3	DFG, 10, H, Z,

10 Der Arbeitsplatzgrenzwert bezieht sich auf den Elementgehalt des entsprechenden Metalls.  
DFG Senatskommission zur Prüfung gesundheitsschädlicher Arbeitsstoffe der DFG (MAK-Kommission)  
H Hautresorptiv  
Z Ein Risiko der Fruchtschädigung kann auch bei Einhaltung des AGW und des BGW nicht ausgeschlossen werden

**CZ**

Složky	Základ	Hodnota	Kontrolní parametry	Poznámka
Tetraethyl Lead	CZ OEL	PEL	0,05 mg/m3	D, P*,
	CZ OEL	NPK-P	0,1 mg/m3	D, P*,

D Při expozici se významně uplatňuje pronikání látky kůží  
P\* Pro hodnocení expozice je rozhodující výsledek vyšetření plumbemie

**CH**

Inhaltsstoffe	Grundlage	Wert	Zu überwachende Parameter	Bemerkung
Tetraethyl Lead	CH SUVA	MAK-wert	0,05 mg/m3	H, SSb,
	CH SUVA	STEL	0,1 mg/m3	H, SSb,

H Vergiftung durch Hautresorption möglich; Bei Stoffen, welche die Haut leicht zu durchdringen vermögen, kann durch die zusätzliche Hautresorption die innere Belastung wesentlich höher werden als bei alleiniger Aufnahme durch die Atemwege.  
SSb Eine Schädigung der Leibesfrucht kann auch bei Einhaltung des MAK-Wertes nicht ausgeschlossen werden.

**BE**

Bestanddelen	Basis	Waarde	Controleparameters	Opmerking
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Tetraethyl Lead	BE OEL	TGG 8 hr	0,1 mg/m <sup>3</sup>	D.
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D Opname van het agens via de huid, de slijmvliezen of de ogen vormt een belangrijk deel van de totale blootstelling. Deze opname kan het gevolg zijn van zowel direct contact als zijn aanwezigheid in de lucht.

**AT**

Inhaltsstoffe	Grundlage	Wert	Zu überwachende Parameter	Bemerkung
Tetraethyl Lead	AT OEL	TMW	0,05 mg/m <sup>3</sup>	H.
	AT OEL	KZW	0,2 mg/m <sup>3</sup>	H.

H Besondere Gefahr der Hautresorption

**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 : Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as:. Organic Vapor Cartridges.
- 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. Suggested materials for protective gloves include:. Viton.
- Eye protection : Eye wash bottle with pure water. Tightly fitting safety goggles.
- Skin and body protection : Choose body protection according to the amount and concentration of the dangerous substance at the work place. Wear as appropriate:. Flame retardant antistatic protective clothing. Workers should wear antistatic footwear.
- Hygiene measures : Avoid contact with skin, eyes and clothing. When using do not eat or drink. When using do not smoke. Wash hands before breaks and immediately after handling the product.

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

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

- Form : Liquid
- Physical state : Liquid
- Color : Colorless

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Odor : Mild

**Safety data**Flash point : -12,22 °C (10,00 °F)  
estimated

Lower explosion limit : 1 %(V)

Upper explosion limit : 7 %(V)

Oxidizing properties : no

Autoignition temperature : 411 °C (772 °F)

Thermal decomposition : No data available

Molecular formula : Mixture

Molecular weight : Not applicable

pH : Not applicable

pour point : No data available

Boiling point/boiling range : 99 °C (210 °F)

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

Relative density : 0,7, 15,6 °C(60,1 °F)

Water solubility : Negligible

Partition coefficient: n-  
octanol/water : No data availableViscosity, kinematic : 0,503 cSt  
at 20 °C (68 °F)Relative vapor density : 3  
(Air = 1.0)

Evaporation rate : 1

Percent volatile : &gt; 99 %

**SECTION 10: Stability and reactivity**

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

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**Possibility of hazardous reactions**

Conditions to avoid	: No data available.
Materials to avoid	: May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Thermal decomposition	: No data available
Hazardous decomposition products	: Hydrocarbons Carbon oxides
Other data	: No decomposition if stored and applied as directed.

**SECTION 11: Toxicological information****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
Tetraethyl Lead	: LD50: 14,2 mg/kg Species: rat Sex: male and female

**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
Tetraethyl Lead	: LC50: 0,425 mg/l Exposure time: 4 h Species: rat Test atmosphere: vapor

**Acute dermal toxicity**

2,2,4-Trimethylpentane (Isooctane)	: LD50: > 2.000 mg/kg Species: rabbit Sex: male and female Method: OECD Test Guideline 402
Tetraethyl Lead	: LD50 Dermal: 990 mg/kg This information is not available.

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Skin irritation**

: Irritating to skin.

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**PRF Isooctane + TEL****Eye irritation** : May cause eye irritation.**PRF Isooctane + TEL****Sensitization** : Does not cause skin sensitization.**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.

**Tetraethyl Lead**

Species: Monkey, Male and female  
Sex: Male and female  
Application Route: oral gavage  
Dose: 0.009 mg TEL/kg/bw/day  
Exposure time: 6 months  
Number of exposures: Once per day, 7 d/wk  
NOEL: 0,009 mg/kg

Species: rat, male  
Sex: male  
Application Route: oral gavage  
Dose: 0, 0.2, 2.0 mg/kg/bw  
Exposure time: 13 wk  
Number of exposures: Once per day. 5 d/wk  
Lowest observable effect level: 0,2 mg/kg  
Target Organs: Nervous system, Blood

**Reproductive toxicity**

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

**Developmental Toxicity**

2,2,4-Trimethylpentane (Isooctane) : Species: rat  
Application Route: Inhalation  
Dose: 0, 400, 1200 ppm

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	<p>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.</p> <p>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.</p>
Tetraethyl Lead	<p>Species: rat  Application Route: oral gavage  Dose: 0, 0.01, 0.1, 1, 10 mg/kg  Test period: GD 6-16  NOAEL Teratogenicity: 0,1 mg/kg  NOAEL Maternal: 0,1 mg/kg</p>
<b>PRF Isooctane + TEL</b> <b>Aspiration toxicity</b>	<p>: May be fatal if swallowed and enters airways.  Substances known to cause human aspiration toxicity hazards or to be regarded as if they cause human aspiration toxicity hazard.</p>
<b>CMR effects</b>	
2,2,4-Trimethylpentane (Isooctane)	<p>: Carcinogenicity: Not available  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.</p>
Tetraethyl Lead	<p>Reproductive toxicity: Positive evidence of adverse effects on sexual function, fertility and/or development from human epidemiological studies.</p>
<b>PRF Isooctane + TEL</b> <b>Further information</b>	<p>: Concentrations substantially above the TLV value may cause narcotic effects. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.  Solvents may degrease the skin. Lead compounds may be absorbed by ingestion, by inhalation and through the skin.</p>

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

2,2,4-Trimethylpentane : LC50: 0,11 mg/l

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(Isooctane) 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.

Tetraethyl Lead LC50: 0,2 mg/l  
 Exposure time: 96 h  
 Species: Lepomis macrochirus (Bluegill sunfish)

**Toxicity to daphnia and other aquatic invertebrates**

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

**Toxicity to algae**

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

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

2,2,4-Trimethylpentane : NOEC: 0,17 mg/l  
 (Isooctane) Exposure time: 21 d  
 Species: Daphnia magna (Water flea)

Elimination information (persistence and degradability)

Biodegradability : Expected to be ultimately biodegradable

**Ecotoxicology Assessment**

Acute aquatic toxicity  
 2,2,4-Trimethylpentane : Very toxic to aquatic life.  
 (Isooctane)  
 Tetraethyl Lead : Very toxic to aquatic life.

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

Results of PBT assessment  
 2,2,4-Trimethylpentane : Non-classified PBT substance, Non-classified vPvB substance  
 (Isooctane)  
 Additional ecological : Very toxic to aquatic life with long lasting effects.  
 information

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**SECTION 13: Disposal considerations**

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**

**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)**

UN1262, OCTANES, 3, II, RQ (2,2,4-TRIMETHYLPENTANE (ISOOCTANE))

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

UN1262, OCTANES, 3, II, (-12,22 °C), MARINE POLLUTANT, (2,2,4-TRIMETHYLPENTANE (ISOOCTANE))

**IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)**

UN1262, OCTANES, 3, II

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

UN1262, OCTANES, 3, II, (D/E), ENVIRONMENTALLY HAZARDOUS

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

UN1262, OCTANES, 3, II, ENVIRONMENTALLY HAZARDOUS

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

UN1262, OCTANES, 3, II, ENVIRONMENTALLY HAZARDOUS

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Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

**SECTION 15: Regulatory information****National legislation**

**Major Accident Hazard Legislation**

: 96/82/EC	Update: 2003
Very toxic	
1	
Quantity 1: 5 t	
Quantity 2: 20 t	
: 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	

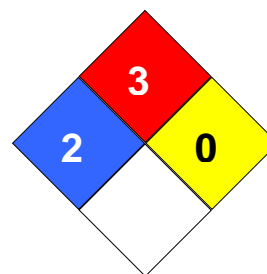
**Notification status**

Europe REACH	: On the inventory, or in compliance with the inventory
United States of America TSCA	: On the inventory, or in compliance with the inventory
Canada DSL	: On the inventory, or in compliance with the inventory
Australia AICS	: On the inventory, or in compliance with the inventory
New Zealand NZIoC	: On the inventory, or in compliance with the inventory
Japan ENCS	: Not in compliance with the inventory
Korea KECI	: On the inventory, or in compliance with the inventory
Philippines PICCS	: 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





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**Further information**

Legacy SDS Number : 38510

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 Material 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
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%		

**Full text of R-phrases referred to under sections 2 and 3**

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R11	Highly flammable.
R20/22	Harmful by inhalation and if swallowed.
R26/27/28	Very toxic by inhalation, in contact with skin and if swallowed.
R33	Danger of cumulative effects.
R38	Irritating to skin.
R50	Very toxic to aquatic organisms.
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R53	May cause long-term adverse effects in the aquatic environment.
R61	May cause harm to the unborn child.
R62	Possible risk of impaired fertility.
R65	Harmful: may cause lung damage if swallowed.
R67	Vapors may cause drowsiness and dizziness.

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

H225	Highly flammable liquid and vapor.
H300	Fatal if swallowed.
H304	May be fatal if swallowed and enters airways.
H310	Fatal in contact with skin.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H360	May damage fertility or the unborn child.
H360Df	May damage the unborn child. Suspected of damaging fertility.
H372	Causes damage to organs through prolonged or repeated exposure.
H373	May cause damage to organs through prolonged or repeated exposure.
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: Manufacture**

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, 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**

Concentration of the Substance in Mixture/Article : 100%

(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 %

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**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: 0 %)
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	: 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.
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**Conditions and measures related to external recovery of waste**

Recovery Methods	: During manufacturing no waste of the substance is generated.
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**2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure****Product characteristics**

Concentration of the Substance in Mixture/Article	: 100%
Physical Form (at time of use)	: Liquid substance

**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**

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

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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**

Concentration of the Substance in Mixture/Article : 100%

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., 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**

Concentration of the Substance in Mixture/Article : 100%

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.

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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.

**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**

Concentration of the Substance in Mixture/Article : 100%

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

Concentration of the Substance in Mixture/Article : 100%

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**

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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**

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**

Concentration of the Substance in Mixture/Article : 100%

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.

**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
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

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			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
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
			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
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
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



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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

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)

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

CS39: Equipment cleaning and maintenance

**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>).

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: Distribution**

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

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- PROC8b:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities  
**PROC9:** Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  
**PROC15:** Use as laboratory reagent
- Environmental release category : **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
- Further information : Distribution of Substance: loading (including marine vessel/barge, rail/road car IBC loading), and repacking including drums and small packs of substance, including its distribution and associated laboratory activities.

**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**

Concentration of the Substance in Mixture/Article : 100%

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

**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 : 20  
Emission or Release Factor: Air : 0,1 %  
Emission or Release Factor: Soil : 0,001 %  
Remarks : Emission or Release Factor: Water : < 0.001 %

**Technical conditions and measures / Organizational measures**

Water : If discharging to domestic sewage treatment plant, provide the

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Remarks : 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 : 2.000 m3/d  
plant effluent

Effectiveness (of a measure) : 96,3 %

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 : 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: Use in closed process, no likelihood of exposure****Product characteristics**

Concentration of the Substance in : 100%  
Mixture/Article

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**

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

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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**

Concentration of the Substance in Mixture/Article : 100%

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**

Concentration of the Substance in Mixture/Article : 100%

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.

**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, 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**

Concentration of the Substance in Mixture/Article : 100%

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**

Concentration of the Substance in Mixture/Article : 100%

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 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., 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
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
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 –		0,000

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			systemic Combined routes		
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
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

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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

#### 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: **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>SU3, SU 10:</b> Industrial Manufacturing (all), 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 mixtures and articles (multistage and/or significant contact) Industrial setting; <b>PROC9:</b> Transfer of substance or preparation into small containers (dedicated filling line, including weighing) <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

**PROC14:** Production of mixtures or articles by tableting, compression, extrusion, pelletization; Industrial setting;**PROC15:** Use as laboratory reagentEnvironmental release category : **ERC2:** 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, large and small scale packing, maintenance and associated laboratory activities.

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

Concentration of the Substance in Mixture/Article : 100 %

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**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**

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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**

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**

Concentration of the Substance in Mixture/Article : 100 %

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., 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**

Concentration of the Substance in Mixture/Article : 100%

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**

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**

Concentration of the Substance in Mixture/Article : 100%

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: PROC5: Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) Industrial setting;****Product characteristics**

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Concentration of the Substance in Mixture/Article : 100%

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**

Concentration of the Substance in Mixture/Article : 100%

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 /

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

Concentration of the Substance in Mixture/Article : 100%

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 mixtures or articles by tableting, compression, extrusion, pelletization; Industrial setting;****Product characteristics**

Concentration of the Substance in Mixture/Article : 100%

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 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
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
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
			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

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			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 routes		0,119

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

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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 mixtures and articles (multistage and/or significant contact) Industrial setting;

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 mixtures or articles by tableting, compression, extrusion, pelletization; Industrial setting;

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**

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.



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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**

Concentration of the Substance in Mixture/Article : 100%

(Msafe) : 1.800 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 : 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

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- Water : (%) (Effectiveness: 95 %)  
 : Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of  $\geq$  (%):  
 (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  $\geq$  (%):  
 (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 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**

- Concentration of the Substance in Mixture/Article : 100%
- 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.

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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.

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

Concentration of the Substance in Mixture/Article : 100%

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**

Concentration of the Substance in Mixture/Article : 100%

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 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**

Concentration of the Substance in Mixture/Article : 100%

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**

Concentration of the Substance in : 100%

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Mixture/Article

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.

**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**

Concentration of the Substance in : 100%

Mixture/Article

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 /

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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
ERC7, ERC8b	Hydrocarbon Block Method with Petrorisk		Air		0,05 mg/m3	
			Freshwater		0,0016 mg/L	0,043
			Freshwater sediment		0,07 mg/kg	0,048
			Marine water		0,16 µg/L	0,0043
			Marine sediment		0,007 mg/kg	0,0048
			Agricultural soil		0,46 µg/kg	0,001

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
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 –		0,117

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			systemic Combined routes		
PROC16, CS15, CS107	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	23,36 mg/m <sup>3</sup>	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)

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.

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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 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**

Concentration of the Substance in Mixture/Article	: 100%
(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 %



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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**

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**

Concentration of the Substance in Mixture/Article : 100%

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.

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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.

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

Concentration of the Substance in Mixture/Article : 100%

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: 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**

Concentration of the Substance in Mixture/Article : 100%

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.

**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**

Concentration of the Substance in Mixture/Article : 100%

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 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**

Concentration of the Substance in Mixture/Article : 100%

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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 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.

**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
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
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 –		0,000

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			systemic Combined routes		
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
PROC8b, CS14	ECETOC TRA Modified		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

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

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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: 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**

Concentration of the Substance in Mixture/Article : 100%

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

**Environment factors not influenced by risk management**

Flow rate : 18.000 m3/d

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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 %  
 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**

Concentration of the Substance in Mixture/Article : 100%  
 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)

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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: PROC15: Use as laboratory reagent****Product characteristics**

Concentration of the Substance in Mixture/Article : 100%

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
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

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		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
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
			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	: <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>PROC10:</b> Roller application or brushing <b>PROC15:</b> Use as laboratory reagent

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- 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**

Concentration of the Substance in Mixture/Article : 100%

Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):(Msafe) : 14

**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**

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**Product characteristics**

Concentration of the Substance in Mixture/Article : 100%

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**

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**

Concentration of the Substance in Mixture/Article : 100%

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.

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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
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

**Workers/Consumers**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio
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: CleaningPROC15: 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.

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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 mixtures and articles (multistage and/or significant contact) Industrial setting; <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 mixtures or articles by tableting, compression, extrusion, pelletization; Industrial setting; <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, 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**

Concentration of the Substance in Mixture/Article : 100%

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

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**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 : 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 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 : 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**

Concentration of the Substance in Mixture/Article : 100%

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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 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**

Concentration of the Substance in Mixture/Article : 100%

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: PROC5, PROC10, PROC14:  
 Mixing or blending in batch processes for formulation of mixtures and articles**

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**(multistage and/or significant contact) Industrial setting;; Roller application or brushing, Production of mixtures or articles by tableting, compression, extrusion, pelletization; Industrial setting;**

**Product characteristics**

Concentration of the Substance in Mixture/Article : 100%

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**

Concentration of the Substance in Mixture/Article : 100%

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**

Concentration of the Substance in Mixture/Article : 100%

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**

Concentration of the Substance in Mixture/Article : 100%

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

**Amount used**

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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.

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

Concentration of the Substance in Mixture/Article : 100%

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**

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Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio
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
			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
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,	ECETOC TRA		Worker – inhalation,	233,58 mg/m3	0,115

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CS30	Modified		long-term – systemic		
			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 – systemic Combined routes		0,122
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 (&gt;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)

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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

PROC15: Use as laboratory reagent

CS36: Laboratory activities

PROC5: Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) Industrial setting;

CS96: Preparation of material for application

CS30: Mixing operations (open systems)

PROC10: Roller application or brushing

CS98: Roller, spreader, flow application

PROC14: Production of mixtures or articles by tableting, compression, extrusion, pelletization; Industrial setting;

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.

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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	: <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>PROC5:</b> Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) Industrial setting; <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**

Concentration of the Substance in : 100%  
 Mixture/Article

(Msafe) : 1.000

**Environment factors not influenced by risk management**

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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 provide the required removal efficiency of  $\geq$  (%):  
 (Effectiveness: 0 %)  
 Water : 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.

**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**

Concentration of the Substance in Mixture/Article : 100%  
 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.

**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, 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**

Concentration of the Substance in Mixture/Article : 100%

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**

Concentration of the Substance in Mixture/Article : 100%

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 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.

**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 mixtures and articles (multistage and/or significant contact) Industrial setting;**
**Product characteristics**

Concentration of the Substance in Mixture/Article : 100%

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**

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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**

Concentration of the Substance in Mixture/Article : 100%

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.

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

Concentration of the Substance in Mixture/Article : 100%

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**

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**

Concentration of the Substance in Mixture/Article : 100%

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 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**

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Concentration of the Substance in Mixture/Article : 100%

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****Product characteristics**

Concentration of the Substance in Mixture/Article : 100%

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**

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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., 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
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
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		0,000
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

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			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 Modified	Outdoor	Worker – inhalation, long-term – systemic	327,01 mg/m3	0,161
			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

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			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)

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 mixtures and articles (multistage and/or significant contact) Industrial setting;

CS96: Preparation of material for application

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PROC5: Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) Industrial setting;  
 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  
 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.



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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.

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

Concentration of the Substance in Mixture/Article : 100%

Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (tonnes/day): (MSafe) : 6.800 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 : 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  $\geq$  (%): (Effectiveness: 0 %)  
 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.  
 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**

Concentration of the Substance in Mixture/Article : 100%  
 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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**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**

Concentration of the Substance in Mixture/Article : 100%

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**

Concentration of the Substance in Mixture/Article : 100%

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**

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**

Concentration of the Substance in Mixture/Article : 100%

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 brushing**
**Product characteristics**

Concentration of the Substance in : 100%

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**Mixture/Article**

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
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
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-term – systemic	0,34 mg/kg/d	0,000
			Worker – long-term –		0,058

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			systemic Combined routes		
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

PROC7: Industrial spraying

CS44: Cleaning with high pressure washers

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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 facilities <b>PROC10:</b> Roller application or brushing

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	<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**

Concentration of the Substance in Mixture/Article : 100%

Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):(Msafe) : 210

**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  $\geq$  (%): (Effectiveness: 0 %)  
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.

**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



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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.

**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**

Concentration of the Substance in Mixture/Article : 100%

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**

Concentration of the Substance in Mixture/Article : 100%

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 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**

Concentration of the Substance in Mixture/Article : 100%

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**

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Concentration of the Substance in Mixture/Article : 100%

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: PROC10: Roller application or brushing****Product characteristics**

Concentration of the Substance in Mixture/Article : 100%

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

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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**

Concentration of the Substance in Mixture/Article : 100%

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., 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**

Concentration of the Substance in Mixture/Article : 100%

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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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.

**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
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
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 –		0,036

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			systemic Combined routes		
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
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

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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

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

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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

#### 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



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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**

Concentration of the Substance in Mixture/Article : 100 %  
Remarks

Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): (Msafe) : 160

**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 : 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 plant effluent : 2.000 m3/d  
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.

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**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**

Concentration of the Substance in : 100 %  
Mixture/Article  
Remarks

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**

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: PC3: Air care products****Product characteristics**

Concentration of the Substance in : 50 %  
Mixture/Article  
Remarks

Air care, instant action (aerosol sprays)

Concentration of the Substance in : 10%  
Mixture/Article  
Remarks

Air care, continuous action (solid and liquid)

**Amount used**

: 0,1 g  
Remarks : Air care, instant action (aerosol sprays)  
: 0,48 g  
Remarks : Air care, continuous action (solid and liquid)

**Frequency and duration of use**

Exposure duration : 0,25 h  
Frequency of use : 4 times/day

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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 cm<sup>2</sup>  
 Remarks : Air care, continuous action (solid and liquid)

**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 : Air care, instant action (aerosol sprays)  
 Outdoor / Indoor : Indoor activities  
 Room size : 20 M<sup>3</sup>  
 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)**

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 : 1%  
 Remarks : Washing car window  
 Concentration of the Substance in Mixture/Article : 10%  
 Remarks : Pouring into radiator  
 Concentration of the Substance in Mixture/Article : 50%  
 Remarks : Lock de- icer

**Amount used**

Remarks : 0,5 g  
 : Washing car window  
 : 2000 g  
 Remarks : Pouring into radiator  
 : 4 g  
 Remarks : Lock de- icer

**Frequency and duration of use**

Exposure duration : 0,02 h  
 Frequency of use : 1 times/day

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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

**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 : 5%  
 Remarks : Laundry and dish washing products  
  
 Concentration of the Substance in Mixture/Article : 5%  
 Remarks : Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)  
  
 Concentration of the Substance in Mixture/Article : 15%  
 Remarks : Cleaners, trigger sprays (all purpose cleaners, sanitary

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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 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)

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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.

**2.2 Contributing scenario controlling consumer exposure for: PC9a: Coatings and paints, thinners, paint removers****Product characteristics**

Concentration of the Substance in Mixture/Article : 1.5%  
 Remarks : Waterborne latex wall paint

Concentration of the Substance in Mixture/Article : 27.5%  
 Remarks : Solvent rich, high solid, water borne paint

Concentration of the Substance in Mixture/Article : 50%  
 Remarks : Aerosol spray can

Concentration of the Substance in Mixture/Article : 50%  
 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

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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
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	:	2%
Remarks	:	Fillers and putty
Concentration of the Substance in Mixture/Article	:	2%
Remarks	:	Plasters and floor equalizers
Concentration of the Substance in Mixture/Article	:	1%
Remarks	:	Modeling Clay
Concentration of the Substance in Mixture/Article	:	50%
Remarks	:	Finger paints

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**Amount used**

	: 85 g
Remarks	: Fillers and putty
	: 13800 g
Remarks	: Plasters and floor equalizers
	: 1 g
Remarks	: Modeling Clay
	: 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
	: 35,73 cm2
Remarks	: Fillers and putty
Exposed skin area	: Skin
	: 857,50 cm2
Remarks	: Plasters and floor equalizers
Exposed skin area	: Skin
	: 254,40 cm2
Remarks	: Modeling Clay
Exposed skin area	: Skin
	: 254,40 cm2
Remarks	: Finger paints

**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: PC24: Lubricants, greases, release products****Product characteristics**

Concentration of the Substance in Mixture/Article	: 100%
Remarks	Liquid
Concentration of the Substance in Mixture/Article	: 20%
Remarks	Paste
Concentration of the Substance in Mixture/Article	: 50%
Remarks	Sprays

**Amount used**

Remarks	: 2200 g
Remarks	: Liquid
Remarks	: 34 g
Remarks	: Paste
Remarks	: 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 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

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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 : 5%  
 Remarks : Laundry and dish washing products

Concentration of the Substance in Mixture/Article : 5%  
 Remarks : Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)

Concentration of the Substance in Mixture/Article : 15%  
 Remarks : Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

Concentration of the Substance in Mixture/Article : 20%  
 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

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Exposure duration : products, glass cleaners)  
 : 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  
 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)  
 Outdoor / Indoor : Indoor activities  
 Room size : 20 M3  
 Ventilation rate per hour : 0,6  
 Remarks : Welding and soldering products (with flux coatings or flux  
 cores.), flux products  
 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**

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**Environment**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio
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
PC3, PC3_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	0,10 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

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			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
			Consumer –	59,57 mg/m3	0,10

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			inhalation, long-term – systemic		
			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
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

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			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

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

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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

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 : **SU 21:** Consumer uses: Private households (= general public = consumers)

Sector of use : **SU 21:** Consumer uses: Private households (= general public = consumers)

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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.

## 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

Concentration of the Substance in Mixture/Article : 100%  
Remarks

Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): (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 : 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 plant effluent : 2.000 m3/d

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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 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**

Concentration of the Substance in Mixture/Article : 100%  
 Remarks

Physical Form (at time of use) : Liquid substance

**Amount used**

: 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 : 30%

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Remarks	Glues, hobby use
Concentration of the Substance in Mixture/Article	: 30%
Remarks	Glues DIY -use (carpet glue, tile glue, wood parquet glue)
Concentration of the Substance in Mixture/Article	: 30%
Remarks	Glue from spray
Concentration of the Substance in Mixture/Article	: 30%
Remarks	Sealants

**Amount used**

Remarks	: 9 g
Remarks	: Glues, hobby use
Remarks	: 6390 g
Remarks	: Glues DIY -use (carpet glue, tile glue, wood parquet glue)
Remarks	: 85,05 g
Remarks	: Glue from spray
Remarks	: 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)
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
Remarks	: 35,73 cm2
Exposed skin area	: Glues, hobby use
Remarks	: Skin
Exposed skin area	: 110,00 cm2
Remarks	: Glues DIY -use (carpet glue, tile glue, wood parquet glue)
Exposed skin area	: Skin
Remarks	: 35,73 cm2
Exposed skin area	: Glue from spray
Remarks	: Skin
Exposed skin area	: 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

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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.
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**2.2 Contributing scenario controlling consumer exposure for: PC4: Anti-Freeze and de-icing products****Product characteristics**

Concentration of the Substance in Mixture/Article	: 1%
Remarks	Washing car window
Concentration of the Substance in Mixture/Article	: 10%
Remarks	Pouring into radiator
Concentration of the Substance in Mixture/Article	: 50%
Remarks	Lock de- icer

**Amount used**

Remarks	: 0,5 g
Remarks	: Washing car window
Remarks	: 2000 g
Remarks	: Pouring into radiator
Remarks	: 4 g
Remarks	: 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

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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

**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 : 5%  
 Mixture/Article  
 Remarks : Laundry and dish washing products

Concentration of the Substance in : 5%  
 Mixture/Article  
 Remarks : Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)

Concentration of the Substance in : 15%  
 Mixture/Article  
 Remarks : Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

**Amount used**

: 15 g

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Remarks : Laundry and dish washing products  
: 27 g

Remarks : Cleaners, liquids (all purpose cleaners, sanitary products, floor  
cleaners, glass cleaners, carpet cleaners, metal cleaners)  
: 35 g

Remarks : 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)

**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 : Laundry and dish washing products

Outdoor / Indoor : Indoor activities  
Room size : 20 M<sup>3</sup>  
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 M<sup>3</sup>  
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)

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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: PC9a: Coatings and paints, thinners, paint removers****Product characteristics**

Concentration of the Substance in Mixture/Article : 1.5%  
 Remarks Waterborne latex wall paint

Concentration of the Substance in Mixture/Article : 27.5%  
 Remarks Solvent rich, high solid, water borne paint

Concentration of the Substance in Mixture/Article : 50%  
 Remarks Aerosol spray can

Concentration of the Substance in Mixture/Article : 50%  
 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

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Remarks : 857,50 cm<sup>2</sup>  
: Aerosol spray can

**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.

**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 : 2%  
Remarks : Fillers and putty

Concentration of the Substance in Mixture/Article : 2%  
Remarks : Plasters and floor equalizers

Concentration of the Substance in Mixture/Article : 1%  
Remarks : Modeling Clay

Concentration of the Substance in Mixture/Article : 50%  
Remarks : Finger paints

**Amount used**

: 85 g



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Remarks : Fillers and putty  
 : 13800 g  
 Remarks : Plasters and floor equalizers  
 : 1 g  
 Remarks : Modeling Clay  
 : 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  
 : 35,73 cm2  
 Remarks : Fillers and putty  
 Exposed skin area : Skin  
 : 857,50 cm2  
 Remarks : Plasters and floor equalizers  
 Exposed skin area : Skin  
 : 254,40 cm2  
 Remarks : Modeling Clay  
 Exposed skin area : Skin  
 : 254,40 cm2  
 Remarks : Finger paints

**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	: 1.5%
Remarks	Waterborne latex wall paint
Concentration of the Substance in Mixture/Article	: 27.5%
Remarks	Solvent rich, high solid, water borne paint
Concentration of the Substance in Mixture/Article	: 50%
Remarks	Aerosol spray can
Concentration of the Substance in Mixture/Article	: 50%
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
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

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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 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****Product characteristics**

Concentration of the Substance in Mixture/Article	: 10%
Remarks	Ink and toners
Concentration of the Substance in Mixture/Article	: 50%
Remarks	Polishes, wax / cream (floor, furniture, shoes)
Concentration of the Substance in Mixture/Article	: 50%
Remarks	Polishes, spray (furniture, shoes)

**Amount used**

Remarks	: 40 g
Remarks	: Ink and toners
Remarks	: 56 g
Remarks	: Polishes, wax / cream (floor, furniture, shoes)
Remarks	: 56 g
Remarks	: Polishes, spray (furniture, shoes)

**Frequency and duration of use**

Exposure duration	: 2,20 h
Frequency of use	: 1 times/day
Remarks	: Ink and toners

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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
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.
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**2.2 Contributing scenario controlling consumer exposure for: PC24: Lubricants, greases, release products****Product characteristics**

Concentration of the Substance in Mixture/Article	:	100%
Remarks	:	Liquid
Concentration of the Substance in Mixture/Article	:	20%
Remarks	:	Paste
Concentration of the Substance in Mixture/Article	:	50%

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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 cm<sup>2</sup>  
 Remarks : Liquid  
 Exposed skin area : Skin  
 : 468,00 cm<sup>2</sup>  
 Remarks : Paste  
 Exposed skin area : Skin  
 : 428,75 cm<sup>2</sup>  
 Remarks : Sprays

**Other given operational conditions affecting consumers exposure**

Outdoor / Indoor : Garage  
 Room size : 34 M<sup>3</sup>  
 Ventilation rate per hour : 1,5  
 Remarks : Liquid  
 Outdoor / Indoor : Indoor activities  
 Room size : 20 M<sup>3</sup>  
 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: PC31, PC34: Polishes and wax blends, Textile dyes, finishing and impregnating products; including bleaches and other processing aids**

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**Product characteristics**

Concentration of the Substance in Mixture/Article	: 50%
Remarks	Polishes, wax / cream (floor, furniture, shoes)
Concentration of the Substance in Mixture/Article	: 50%
Remarks	Polishes, spray (furniture, shoes)
Concentration of the Substance in Mixture/Article	: 10%
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 bleaches and other processing aids

**Human factors not influenced by risk management**

Exposed skin area	: Skin
Remarks	: 430,00 cm2
Exposed skin area	: Polishes, wax / cream (floor, furniture, shoes)
Remarks	: Skin
Exposed skin area	: 430,00 cm2
Remarks	: Polishes, spray (furniture, shoes)
Exposed skin area	: Skin
Remarks	: 857,50 cm2
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 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)
Outdoor / Indoor	: Indoor activities
Room size	: 20 M3
Ventilation rate per hour	: 0,6

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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
ERC8a, ERC8d	Hydrocarbon Block Method with Petrorisk		Air		0,000074 mg/m3	
			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 mg/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
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

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			Consumer – oral, long-term – systemic	0,00 mg/kg/d	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
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 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



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			term – systemic		
			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
			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		0,01

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			routes		
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
			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

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			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 routes		0,07
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

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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)

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

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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**

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 : **SU 21:** Consumer uses: Private households (= general public = consumers)

Sector of use : **SU 21:** Consumer uses: Private households (= general public = consumers)

Product category : **PC13:** Fuels

Environmental release category : **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

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,**

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**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 : 100 %  
Remarks

Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): (Msafe) : 240.000

**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 : 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

**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  
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 consumer exposure for: PC13: Fuels- Liquid****Product characteristics**

Concentration of the Substance in Mixture/Article : 100 %  
Remarks

Physical Form (at time of use) : Liquid substance

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**Amount used**

: 37500 g

**Frequency and duration of use**

Exposure duration : 2 h

Frequency of use : &gt; 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 : 100%

Mixture/Article

Remarks Automotive Refuelling

Concentration of the Substance in : 100%

Mixture/Article

Remarks Scooter Refuelling

Concentration of the Substance in : 100%

Mixture/Article

Remarks Garden Equipment- Use

Concentration of the Substance in : 100%

Mixture/Article

Remarks Garden Equipment- Refueling

Concentration of the Substance in : 100%

Mixture/Article

Remarks Lamp Oil

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**2.2 Contributing scenario controlling consumer exposure for: PC13: Fuels- Liquid****Product characteristics**

Concentration of the Substance in Mixture/Article	: 100%
Remarks	Automotive Refuelling
Concentration of the Substance in Mixture/Article	: 100%
Remarks	Scooter Refuelling
Concentration of the Substance in Mixture/Article	: 100%
Remarks	Garden Equipment- Use
Concentration of the Substance in Mixture/Article	: 100%
Remarks	Garden Equipment- Refueling
Concentration of the Substance in Mixture/Article	: 100%
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
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



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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  
 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
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

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			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
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
			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

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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.

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