n-Heptane (Pure Grade)

Version 3.8 Revision Date 2017-02-13

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

Product information

Product Name : n-Heptane (Pure Grade)
Material : 1119723, 1099971, 1016082, 1099970, 1084145, 1061726, 1021845, 1028621, 1021842, 1021844, 1028384, 1028355, 1021843, 10455211

EC-No.Registration number

Chemical name	CAS-No. EC-No. Index No.	Legal Entity Registration number
n-Heptane	142-82-5 205-563-8 601-008-00-2	Chevron Phillips Chemicals International NV 01-2119457603-38-0002

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

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

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

SDS Requests: (800) 852-5530
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:
CHEMTREC 800.424.9300 or 703.527.3887(int'l)
Asia: +800 CHEMCALL (+800 2436 2255) China:+86-21-22157316
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Mexico CHEMTREC 01-800-681-9531 (24 hours)
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

Aspiration hazard, Category 1	H304: May be fatal if swallowed and enters airways.
Flammable liquids, Category 2	H225: Highly flammable liquid and vapor.
Skin irritation, Category 2	H315: Causes skin irritation.
Specific target organ systemic toxicity - single exposure, Category 3	H336: May cause drowsiness or dizziness.
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.

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.
	H336	May cause drowsiness or dizziness.
	H410	Very toxic to aquatic life with long lasting effects.
Precautionary Statements	: **Prevention:**	
	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.
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/doctor.
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.
P331	Do NOT induce vomiting.
Storage:	
P403 + P235	Store in a well-ventilated place. Keep cool.

Hazardous ingredients which must be listed on the label:
- 142-82-5 n-Heptane

SECTION 3: Composition/information on ingredients

Synonyms : Normal Heptane
Dipropilmetano
n-Heptane, 99%

Molecular formula : C7H16

Mixtures

Hazardous ingredients

Chemical name	CAS-No. EC-No. Index No.	Classification (REGULATION (EC) No 1272/2008)	Concentration [wt%]
n-Heptane	142-82-5 205-563-8 601-008-00-2	Flam. Liq. 2; H225 Skin Irrit. 2; H315 STOT SE 3; H336 Asp. Tox. 1; H304 Aquatic Acute 1; H400 Aquatic Chronic 1; H410	100

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. 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	:	Move to fresh air. If unconscious, place in recovery position and seek medical advice. If symptoms persist, call a physician.
In case of skin contact	:	If skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.
In case of eye contact	:	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	:	-4 °C (25 °F) Method: Tag closed cup
Autoignition temperature	:	203,85 °C (398,93 °F)
Suitable extinguishing media	:	Dry chemical. Carbon dioxide (CO2). 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 firefighting if necessary.
Further information	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.
Fire and explosion protection	:	Do not spray on 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	:	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).

SECTION 7: Handling and storage

Handling

Advice on safe handling : Avoid formation of aerosol. Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. 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.
Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary, but may not by themselves be sufficient. Review all operations, which have the potential to generating and accumulation of electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures. For more information, refer to OSHA Standard 29 CFR 1910.106 "Flammable and Combustible Liquids"; National Fire Protection Association (NFPA 77), "Recommended Practice on Static Electricity"; and/or the American Petroleum Institute (API) Recommended Practice 2003, "Protection Against Ignitions Arising Out of Static, Lightning, and stray Currents".

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

SECTION 8: Exposure controls/personal protection

Ingredients with workplace control parameters

SK

Zložka	Podstata	Hodnota	Kontrolné parametre	Poznámka
n-heptane	SK OEL	NPEL priemerný	500 ppm, 2.085 mg/m3	

SI

Sestavine	Osnova	Vrednost	Parametri nadzora	Pripomba
n-heptane	SI OEL	MV	500 ppm, 2.085 mg/m3	EU*,

EU* Mejna vrednost, določena z Direktivo Komisije 2000/39/ES z dne 8. junija 2000 o določitvi prvega seznama indikativnih mejnih vrednosti za poklicno izpostavljenost pri izvajanju Direktive Sveta 98/24/ES o varovanju zdravja in zagotavljanju varnosti delavcev pred tveganjem zaradi izpostavljenosti kemičnim dejavnikom pri delu (UL L, št. 142, z dne 16. junija 2000, str. 47).

SE

Beståndsdelar	Grundval	Värde	Kontrollparametrar	Anmärkning
n-heptane	SE AFS	NGV	200 ppm, 800 mg/m3	V,
	SE AFS	KTV	300 ppm, 1.200 mg/m3	V,

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

RO

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

PT

Componentes	Bases	Valor	Parâmetros de controlo	Nota
n-heptane	PT DL 305/2007	oito horas	500 ppm, 2.085 mg/m3	
	PT OEL	VLE-MP	400 ppm,	(1), irritação do TRS, afeção do SNC,
	PT OEL	VLE_CD	500 ppm,	(1), irritação do TRS, afeção do SNC,

(1) Abrangido por legislação nacional específica ou por legislação comunitária não transposta
afeção do SNC afeção do sistema nervoso central
irritação do TRS irritação do trato respiratório superior

PL

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

NO

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

E EU har en veiledende grenseverdi for stoffet

NL

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

MT

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

LV

Sastāvdaļas	Bāze	Vērtība	Pārvaldības parametri	Piezīme
n-heptane	LV OEL	AER 8 st	85 ppm, 350 mg/m3	
	LV OEL	AER īslaicīgā	500 ppm, 2.085 mg/m3	

LU

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

LT

Komponentai	Pagrindas, bazė	Vertė	Kontrolės parametrai	Pastaba
n-heptane	LT OEL	IPRD	500 ppm, 2.085 mg/m3	
	LT OEL	TPRD	750 ppm, 3.128 mg/m3	

IT

Componenti	Base	Valore	Parametri di controllo	Nota

n-heptane	IT OEL	TWA	500 ppm, 2.085 mg/m3	

IE

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

IOELV Indicative Occupational Exposure Limit Value

HU

Komponensek	Bázis	Érték	Ellenőrzési paraméterek	Megjegyzés
n-heptane	HU OEL	AK-érték	2.000 mg/m3	*, EU3,
	HU OEL	CK-érték	8.000 mg/m3	*, EU3,

* Európai 'indikatív' határértékek (96/94/EK, 2000/39/EK, 2006/15/EK, 2009/161/EU), amelyeknél nincs csúcskoncentráció megadva. Ezekben az esetekben jelen melléklet 1.3. pontja szerint kell eljárni

EU3 2000/39/EK irányelvben közölt érték

GR

Συστατικά	Βάση	Τιμή	Παράμετροι ελέγχου	Σημείωση
n-heptane	GR OEL	TWA	500 ppm, 2.000 mg/m3	
	GR OEL	STEL	500 ppm, 2.000 mg/m3	

GB

Ingredients	Basis	Value	Control parameters	Note
n-Heptane	GB EH40	TWA	500 ppm,	2,

2 Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used

FR

Composants	Base	Valeur	Paramètres de contrôle	Note
n-heptane	FR VLE	VME	400 ppm, 1.668 mg/m3	noir,
	FR VLE	VLCT (VLE)	500 ppm, 2.085 mg/m3	noir,

noir Valeurs limites réglementaires contraignantes

FI

Aineosat	Peruste	Arvo	Valvontaa koskevat muuttujat	Huomautus
n-heptane	FI OEL	HTP-arvot 8h	300 ppm, 1.200 mg/m3	
	FI OEL	HTP-arvot 15 min	500 ppm, 2.100 mg/m3	
	FI OEL	HTP-arvot 8h	300 ppm, 1.200 mg/m3	
	FI OEL	HTP-arvot 15 min	500 ppm, 2.100 mg/m3	

ES

Componentes	Base	Valor	Parámetros de control	Nota
n-heptane	ES VLA	VLA-ED	500 ppm, 2.085 mg/m3	VLI,

VLI Agente químico para el que la U.E. estableció en su día un valor límite indicativo. Todos estos agentes químicos figuran al menos en una de las directivas de valores límite indicativos publicadas hasta ahora (ver Anexo C. Bibliografía). Los estados miembros disponen de un tiempo fijado en dichas directivas para su transposición a los valores límites de cada país miembro. Una vez adoptados, estos valores tienen la misma validez que el resto de los valores adoptados por el país.

EE

Komponendid, osad	Alused	Väärtus	Kontrolliparameetrid	Märkused
n-heptane	EE OEL	Piirnorm	500 ppm, 2.085 mg/m3	

DK

Komponenter	Basis	Værdi	Kontrolparametre	Note
n-heptane	DK OEL	GV	200 ppm, 820 mg/m3	E,

E At stoffet har en EF-grænseværdi

DE

Inhaltsstoffe	Grundlage	Wert	Zu überwachende Parameter	Bemerkung
n-heptane	DE TRGS 900	AGW	500 ppm, 2.100 mg/m3	DFG,

DFG Senatskommission zur Prüfung gesundheitsschädlicher Arbeitsstoffe der DFG (MAK-Kommission)

CZ

Složky	Základ	Hodnota	Kontrolní parametry	Poznámka
n-heptane	CZ OEL	PEL	1.000 mg/m3	I,
	CZ OEL	NPK-P	2.000 mg/m3	I,

I dráždí sliznice (oči, dýchací cesty) resp. kůži

CY

Συστατικά	Βάση	Τιμή	Παράμετροι ελέγχου	Σημείωση
n-heptane	CY OEL	TWA	500 ppm, 2.085 mg/m3	

CH

Inhaltsstoffe	Grundlage	Wert	Zu überwachende Parameter	Bemerkung

n-heptane	CH SUVA	KZGW	400 ppm, 1.600 mg/m3	NIOSH,
	CH SUVA	MAK-Wert	400 ppm, 1.600 mg/m3	NIOSH,

NIOSH National Institute for Occupational Safety and Health

BG

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

- Химични агенти, за които са определени гранични стойности във въздуха на работната среда за Европейската общност. Граничните стойности на тези химични агенти във въздуха на работната среда, определени с наредбата, са съобразени със съответните стойности, приети за Европейската общност, като могат да бъдат равни или по-ниски от тях.

BE

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

AT

Inhaltsstoffe	Grundlage	Wert	Zu überwachende Parameter	Bemerkung
n-heptane	AT OEL	TMW	500 ppm, 2.000 mg/m3	
	AT OEL	KZW	2.000 ppm, 8.000 mg/m3	

DNEL : End Use: Workers
Routes of exposure: Skin contact
Potential health effects: Chronic effects, Systemic effects
Value: 300 mg/kg

DNEL : End Use: Workers
Routes of exposure: Inhalation
Potential health effects: Chronic effects, Systemic effects
Value: 2085 mg/m3

PNEC : Fresh water
Value: 0,03 mg/l

PNEC : Marine water
Value: 0,03 mg/l

PNEC : Fresh water sediment
Value: 4,4 mg/kg

PNEC : Marine sediment
Value: 4,4 mg/kg

PNEC : Soil
Value: 1,8 mg/kg

Engineering measures

Adequate ventilation to control airborned 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:. Air-Purifying Respirator for Organic Vapors. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.
Hand protection	:	The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Eye protection	:	Eye wash bottle with pure water. Tightly fitting safety goggles.
Skin and body protection	:	Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate:. Flame retardant antistatic protective clothing. Workers should wear antistatic footwear.
Hygiene measures	:	When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

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

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance

Form	:	Liquid
Physical state	:	Liquid
Color	:	Clear
Odor	:	Sweet

Safety data

Flash point	:	-4 °C (25 °F) Method: Tag closed cup
Lower explosion limit	:	1 %(V)
Upper explosion limit	:	7 %(V)
Oxidizing properties	:	no
Autoignition temperature	:	203,85 °C (398,93 °F)
Molecular formula	:	C7H16
Molecular weight	:	100,23 g/mol

pH	:	Not applicable
Pour point	:	No data available
Boiling point/boiling range	:	98 °C (208 °F)
Vapor pressure	:	1,60 PSI at 38 °C (100 °F)
Relative density	:	0,69 at 16 °C (61 °F)
Density	:	5,75 L/G at 20 °C (68 °F)
Water solubility	:	Negligible
Partition coefficient: n-octanol/water	:	No data available
Relative vapor density	:	3,4 (Air = 1.0)
Evaporation rate	:	3,46
Percent volatile	:	> 99 %

Other information

Conductivity	:	< 1 pSm at 20 °C

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.

Possibility of hazardous reactions

Conditions to avoid	:	Not applicable.
Materials to avoid	:	May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Hazardous decomposition products	:	Carbon oxides
Other data	:	No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

Acute oral toxicity

n-Heptane	:	LD50: > 5.000 mg/kg

Species: Rat
Method: OECD Test Guideline 401
Information given is based on data obtained from similar substances.

n-Heptane (Pure Grade)
Skin irritation : Irritating to skin.

May cause skin irritation in susceptible persons.

n-Heptane (Pure Grade)
Eye irritation : Vapors may cause irritation to the eyes, respiratory system and the skin.

Sensitization

n-Heptane : Did not cause sensitization on laboratory animals.
Information given is based on data obtained from similar substances.

Repeated dose toxicity

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

Reproductive toxicity

n-Heptane : Species: Rat
Application Route: Inhalation
Dose: 0, 900, 3000, 9000 ppm
Number of exposures: 6 hr/d, 5 d/wk
Test period: 13 wk
Method: OECD Test Guideline 416
NOAEL Parent: 9000 ppm
NOAEL F1: 3000 ppm
NOAEL F2: 3000 ppm

Developmental Toxicity

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

n-Heptane (Pure Grade)
Aspiration toxicity : 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.

CMR effects

n-Heptane : Mutagenicity: Tests on bacterial or mammalian cell cultures did not show mutagenic effects.
Teratogenicity: Animal testing did not show any effects on fetal development.
Reproductive toxicity: No toxicity to reproduction

n-Heptane (Pure Grade)
Further information : 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.

SECTION 12: Ecological information

Toxicity to fish

n-Heptane : LL50: 1,284 mg/l
Exposure time: 96 h
Species: Oncorhynchus mykiss (rainbow trout)
Method: QSAR

LC50: 375 mg/l
Exposure time: 96 h
Species: Tilapia mosambica (Fish)

Toxicity to daphnia and other aquatic invertebrates

n-Heptane : EC50: 1,5 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)
static test Toxic to aquatic organisms.

LC50: 0,1 mg/l
Exposure time: 96 h
Species: Mysidopsis bahia (mysid shrimp)
semi-static test Very toxic to aquatic organisms.

Toxicity to algae

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

Biodegradability

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

Ecotoxicology Assessment

Acute aquatic toxicity
n-Heptane : Very toxic to aquatic life.

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

Results of PBT assessment
n-Heptane : Non-classified PBT substance, Non-classified vPvB substance

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal., Very toxic to aquatic life with long lasting effects.

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)
UN1206, HEPTANES, 3, II, MARINE POLLUTANT, (N-HEPTANE)

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)
UN1206, HEPTANES, 3, II, (-4 °C), MARINE POLLUTANT, (N-HEPTANE)

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)
UN1206, HEPTANES, 3, II

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))
UN1206, HEPTANES, 3, II, (D/E), ENVIRONMENTALLY HAZARDOUS, (N-HEPTANE)

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))
UN1206, HEPTANES, 3, II, ENVIRONMENTALLY HAZARDOUS, (N-HEPTANE)

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)
UN1206, HEPTANES, 3, II, ENVIRONMENTALLY HAZARDOUS, (N-HEPTANE)

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

SECTION 15: Regulatory information

National legislation

Chemical Safety Assessment

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

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

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

Water contaminating class (Germany) : WGK 2 water endangering
Classifications, planned by the commission, but not yet included in the VwVwS are classified as "KBwS-Beschluss"

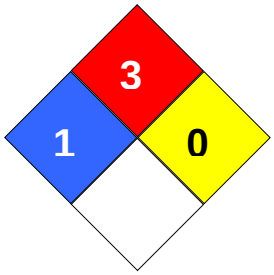
: WGK 2 water endangering
List with water hazardous substances (Class 1 till 3) in VwVwS

Notification status
Europe REACH : On the inventory, or in compliance with the inventory

United States of America (USA) 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	:	On the inventory, or 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: 1
Fire Hazard: 3
Reactivity Hazard: 0



Further information

Legacy SDS Number : 133

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

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

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

Key or legend to abbreviations and acronyms used in the safety data sheet			
ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level
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	PRNT	Presumed Not Toxic

	Values		
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 H-Statements referred to under sections 2 and 3.

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

Annex

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

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	:	**SU3, SU8, SU9:** Industrial Manufacturing (all), Manufacture of bulk, large scale chemicals (including petroleum products), Manufacture of fine chemicals
Process category	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC8a:** Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities **PROC8b:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities **PROC15:** Use as laboratory reagent
Environmental release category	:	**ERC1, ERC4:** 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

Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):(Msafe)	:	720.000

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

Number of emission days per year	:	100
Emission or Release Factor: Air	:	5 %

Emission or Release Factor: Water : 0,03 %
Emission or Release Factor: Soil : 0,01 %

Technical conditions and measures / Organizational measures

Air : Treat air emission to provide the required removal efficiency of (%): (Effectiveness: 90 %)
Water : Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): (Effectiveness: 0 %)
Remarks : Prevent discharge of undissolved substance to or recover from onsite wastewater.
Water : If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%): (Effectiveness: 0 %)
Remarks : Risk from environmental exposure is driven by freshwater sediment.
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) : 96,2 %
Percentage removed from waste water : 96,2 %

Conditions and measures related to external treatment of waste for disposal

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

Conditions and measures related to external recovery of waste

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

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

Product characteristics

Physical Form (at time of use) : Liquid substance

Amount used

Remarks : Not applicable

Frequency and duration of use

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

Other operational conditions affecting workers exposure

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

Technical conditions and measures

Store substance within a closed system.

Organizational measures to prevent /limit releases, dispersion and exposure

No specific measures identified.

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

Product characteristics
Physical Form (at time of use) : Liquid substance

Amount used
Remarks : Not applicable

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.

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

Product characteristics
Physical Form (at time of use) : Liquid substance

Amount used
Remarks : Not applicable

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.

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

Product characteristics
Physical Form (at time of use) : Liquid substance

Amount used
Remarks : Not applicable

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
No specific measures identified.

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

Product characteristics
Physical Form (at time of use) : Liquid substance

Amount used
Remarks : Not applicable

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.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.

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

Product characteristics
Physical Form (at time of use) : Liquid substance

Amount used
Remarks : Not applicable

Frequency and duration of use
Remarks : Covers daily exposures up to 8 hours (unless stated differently)

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

Technical conditions and measures
Handle substance within a closed system.

Organizational measures to prevent /limit releases, dispersion and exposure
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
ERC1, ERC4	Hydrocarbon Block Method with Petrorisk		Air		0,0051 mg/m3	
			Freshwater		0,0015 mg/L	0,016
			Freshwater sediment		0,046 mg/kg	0,019
			Marine water		0,15 µg/L	0,0016
			Marine sediment		0,0046 mg/kg	0,0018
			Agricultural soil		0,036 µg/kg	0,000068

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	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,04 mg/m3	0,000
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,001
			Worker – long-term – systemic Combined routes		0,001
PROC2, CS15, CS67	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	40,90 mg/m3	0,020
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,005
			Worker – long-term – systemic Combined routes		0,024
PROC3, CS15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	102,25 mg/m3	0,049
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,001
			Worker – long-term – systemic Combined routes		0,050
PROC4, CS16	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	81,80 mg/m3	0,039
			Worker – dermal, long-term – systemic	6,86 mg/kg/d	0,023
			Worker – long-term – systemic Combined routes		0,062
PROC15, CS36	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	40,90 mg/m3	0,020
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,001
			Worker – long-term – systemic Combined routes		0,021
PROC8a, CS39	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	204,50 mg/m3	0,098
			Worker – dermal, long-term – systemic	2,742 mg/kg/d	0,009
			Worker – long-term – systemic Combined routes		0,107
PROC8b, CS2, CS14, CS107, CS108	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	204,50 mg/m3	0,098
			Worker – dermal, long-	6,86 mg/kg/d	0,023

			term – systemic		
			Worker – long-term – systemic Combined routes		0,121

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)
CS67: Storage

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

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

PROC15: Use as laboratory reagent
CS36: Laboratory activities

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

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
CS2: Process sampling
CS14: Bulk transfers
CS107: (closed systems)
CS108: (open systems)

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

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.
Risk Management Measures are based on qualitative risk characterisation.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

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

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	:	**SU3:** Industrial Manufacturing (all)
Process category	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional

controlled exposure
PROC3: Use in closed batch process (synthesis or formulation)
PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
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 :

Bulk loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading, maintenance and associated laboratory activities. Excludes emissions during transport.

Manufacture of polymers from monomers in continuous and batch processes, include sparging, discharging, and reactor maintenance and immediate polymer product formation (i.e. compounding, pelletisation, product off-gassing).

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

Product characteristics
Physical Form (at time of use) : Liquid substance

Amount used
Remarks : No limit

Frequency and duration of use
Remarks : Covers daily exposures up to 8 hours (unless stated differently)

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

Technical conditions and measures
Handle substance within a closed system., Store substance within a closed system., Transfer via enclosed lines.

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

Product characteristics
Physical Form (at time of use) : Liquid substance

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.

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

Product characteristics
Physical Form (at time of use) : Liquid substance

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
No specific measures identified.

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

Product characteristics
Physical Form (at time of use) : Liquid substance

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.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.

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

Product characteristics
Physical Form (at time of use) : Liquid substance

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
Apply vessel entry procedures including use of forced supplied air.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable coveralls to prevent exposure to the skin., Wear suitable gloves tested to EN374.

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

Product characteristics
Physical Form (at time of use) : Liquid substance

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.

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, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7	Hydrocarbon Block Method with Petrorisk		Air		0,0023 µg/m3	
			Freshwater		0,0032 µg/L	0,000034
			Freshwater sediment		0,062 µg/kg	0,00002
			Marine water		0,082 ng/L	< 0,000088
			Marine sediment		0,0025 µg/kg	< 0,000099
			Agricultural soil		0,57 ng/kg	< 0,000006

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	0,04 mg/m3	0,000
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,001
			Worker – long-term – systemic Combined routes		0,001
PROC2, CS15, CS67	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	40,90 mg/m3	0,020
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,005
			Worker – long-term – systemic Combined routes		0,024
PROC3, CS2, CS15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	102,25 mg/m3	0,049
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,001
			Worker – long-term – systemic Combined routes		0,050

PROC9, CS6	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	204,50 mg/m3	0,098
			Worker – dermal, long-term – systemic	6,86 mg/kg/d	0,023
			Worker – long-term – systemic Combined routes		0,0121
PROC15, CS36	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	40,90 mg/m3	0,020
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,001
			Worker – long-term – systemic Combined routes		0,021
PROC4, CS16	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	81,80 mg/m3	0,039
			Worker – dermal, long-term – systemic	1,372 mg/kg/d	0,005
			Worker – long-term – systemic Combined routes		0,044
PROC8a, CS39	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	204,50 mg/m3	0,098
			Worker – dermal, long-term – systemic	2,742 mg/kg/d	0,009
			Worker – long-term – systemic Combined routes		0,107
PROC8b, CS14, CS107, CS108	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	204,50 mg/m3	0,098
			Worker – dermal, long-term – systemic	1,372 mg/kg/d	0,005
			Worker – long-term – systemic Combined routes		0,103

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)
CS2: Process sampling
CS15: General exposures (closed systems)

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

PROC15: Use as laboratory reagent
CS36: Laboratory activities

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

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
CS107: (closed systems)
CS108: (open systems)

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

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.
Risk Management Measures are based on qualitative risk characterisation.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

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

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

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

Amount used

Annual site tonnage (tonnes/year):	:	150
Maximum daily site tonnage (kg/day):	:	1500
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):(Msafe)	:	220.000

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	:	100
Emission or Release Factor: Air	:	2,5 %
Emission or Release Factor: Water	:	0,02 %
Emission or Release Factor: Soil	:	0,01 %

Technical conditions and measures / Organizational measures

Air	:	Treat air emission to provide a typical removal efficiency of (%): (Effectiveness: 0 %)
Water	:	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): (Effectiveness: 0 %)
Remarks	:	Prevent discharge of undissolved substance to or recover from onsite wastewater.
Water	:	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%): (Effectiveness: 0 %)
Remarks	:	Risk from environmental exposure is driven by freshwater sediment.
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)	:	96,2 %
Percentage removed from waste water	:	96,2 %

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
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.

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

Product characteristics
Physical Form (at time of use) : Liquid substance

Amount used
Remarks : No limit

Frequency and duration of use
Remarks : Covers daily exposures up to 8 hours (unless stated differently)

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

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

2.2 Contributing scenario controlling worker exposure for: PROC4, PROC9, PROC14, 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), Production of mixtures or articles by tabletting, compression, extrusion, pelletization; Industrial setting;, Use as laboratory reagent

Product characteristics
Physical Form (at time of use) : Liquid substance

Amount used
Remarks : No limit

Frequency and duration of use
Remarks : Covers daily exposures up to 8 hours (unless stated differently)

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

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

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.

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

Product characteristics
Physical Form (at time of use) : Liquid substance

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.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.

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

Product characteristics
Physical Form (at time of use) : Liquid substance

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.

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
ERC2	Hydrocarbon Block Method with Petrorisk		Air		0,0029 mg/m3	
			Freshwater		0,57 µg/L	0,0061
			Freshwater sediment		0,017 mg/kg	0,0069
			Marine water		0,057 µg/L	0,00061
			Marine sediment		0,0017 mg/kg	0,00069
			Agricultural soil		0,02 µg/kg	0,000038

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	0,04 mg/m3	0,000
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,001
			Worker – long-term –		0,001

			systemic Combined routes		
PROC2, CS15, CS67	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	40,90 mg/m3	0,020
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,005
			Worker – long-term – systemic Combined routes		0,024
PROC3, CS15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	102,25 mg/m3	0,049
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,001
			Worker – long-term – systemic Combined routes		0,050
PROC3, CS136	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	122,70 mg/m3	0,059
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,001
			Worker – long-term – systemic Combined routes		0,060
PROC4, CS16	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	81,80 mg/m3	0,039
			Worker – dermal, long-term – systemic	6,86 mg/kg/d	0,023
			Worker – long-term – systemic Combined routes		0,062
PROC9, CS6	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	204,50 mg/m3	0,098
			Worker – dermal, long-term – systemic	6,86 mg/kg/d	0,023
			Worker – long-term – systemic Combined routes		0,121
PROC14, CS100	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	204,50 mg/m3	0,098
			Worker – dermal, long-term – systemic	3,43 mg/kg/d	0,011
			Worker – long-term – systemic Combined routes		0,110
PROC15, CS36	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	40,90 mg/m3	0,020
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,001
			Worker – long-term – systemic Combined routes		0,021
PROC5, CS30	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	204,50 mg/m3	0,098
			Worker – dermal, long-term – systemic	2,742 mg/kg/d	0,009
			Worker – long-term – systemic Combined routes		0,107
PROC8a, CS34, CS22	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	20,45 mg/m3	0,010
			Worker – dermal, long-term – systemic	0,1371 mg/kg/d	0,000
			Worker – long-term – systemic Combined routes		0,010
PROC8a, CS39	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	204,50 mg/m3	0,098
			Worker – dermal, long-term – systemic	2,742 mg/kg/d	0,009
			Worker – long-term – systemic Combined routes		0,107

PROC8b, CS14	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	204,50 mg/m3	0,098
			Worker – dermal, long-term – systemic	1,372 mg/kg/d	0,005
			Worker – long-term – systemic Combined routes		0,103
PROC8b, CS8	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	6,13 mg/m3	0,003
			Worker – dermal, long-term – systemic	0,686 mg/kg/d	0,002
			Worker – long-term – systemic Combined routes		0,005

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)

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)

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 tabletting, compression, extrusion, pelletization; Industrial setting;
CS100: Production or preparation or articles by tabletting, compression, extrusion or pelletization

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

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

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.
Risk Management Measures are based on qualitative risk characterisation.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

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

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	:	**SU3:** Industrial Manufacturing (all)
Process category	:	**PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC7:** Industrial spraying **PROC8a:** Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities **PROC8b:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities **PROC10:** Roller application or brushing **PROC13:** Treatment of articles by dipping and pouring
Environmental release category	:	**ERC4:** 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

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

Continuous use/release		
Number of emission days per year	:	20
Emission or Release Factor: Air	:	100 %
Emission or Release Factor: Water	:	3 ppm
Emission or Release Factor: Soil	:	0 %

Technical conditions and measures / Organizational measures

Air	:	Treat air emission to provide a typical removal efficiency of (%): (Effectiveness: 70 %)
Water	:	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): (Effectiveness: 0 %)
Remarks	:	Prevent discharge of undissolved substance to or recover from onsite wastewater.
Water	:	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%): (Effectiveness: 0 %)
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)	:	96,2 %
Percentage removed from waste water	:	96,2 %

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

Product characteristics

Physical Form (at time of use)	:	Liquid substance

Amount used

Remarks	:	No limit

Frequency and duration of use

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

differently)

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

Organizational measures to prevent /limit releases, dispersion and exposure
No specific measures identified.

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

Product characteristics
Physical Form (at time of use) : Liquid substance

Amount used
Remarks : No limit

Frequency and duration of use
Remarks : Covers daily exposures up to 8 hours (unless stated differently)

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

Organizational measures to prevent /limit releases, dispersion and exposure
No specific measures identified.

2.2 Contributing scenario controlling worker exposure for: PROC4, PROC13: Use in batch and other process (synthesis) where opportunity for exposure arises, Treatment of articles by dipping and pouring

Product characteristics
Physical Form (at time of use) : Liquid substance

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.

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

Product characteristics
Physical Form (at time of use) : Liquid substance

Amount used
Remarks : No limit

Frequency and duration of use
Remarks : Covers daily exposures up to 8 hours (unless stated differently)

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

Technical conditions and measures
Provide enhanced general ventilation by mechanical means.

Organizational measures to prevent /limit releases, dispersion and exposure
Avoid carrying out operation for more than 4 hours.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training., Wear a respirator conforming to EN140 with Type A filter or better.

2.2 Contributing scenario controlling worker exposure for: PROC8a, PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Product characteristics
Physical Form (at time of use) : Liquid substance

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.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.

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

Product characteristics
Physical Form (at time of use) : Liquid substance

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.

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		0,23 µg/m3	
			Freshwater		0,0027 µg/L	0,000028
			Freshwater sediment		0,046 µg/kg	0,000013
			Marine water		0,028 ng/L	< 0,000003
			Marine sediment		0,87 ng/kg	< 0,000004
			Agricultural soil		0,0016 µg/kg	< 0,000003

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, CS101	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	40,90 mg/m3	0,020
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,005
			Worker – inhalation, long-term – systemic		0,024
PROC3, CS93	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	102,5 mg/m3	0,049
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,001
			Worker – inhalation, long-term – systemic		0,050
PROC4, CS37	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	8,18 mg/m3	0,004
			Worker – dermal, long-term – systemic	0,686 mg/kg/d	0,002
			Worker – inhalation, long-term – systemic		0,006
PROC13, CS41	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	20,45 mg/m3	0,010
			Worker – dermal, long-term – systemic	0,686 mg/kg/d	0,002
			Worker – long-term – systemic Combined routes		0,012
PROC7, CS44	ECETOC TRA		Worker – inhalation,	184,05 mg/m3	0,088

	Modified		long-term – systemic		
			Worker – dermal, long-term – systemic	4,286 mg/kg/d	0,014
			Worker – inhalation, long-term – systemic		0,103
PROC7, CS44	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	30,67 mg/m3	0,015
			Worker – dermal, long-term – systemic	4,286 mg/kg/d	0,014
			Worker – long-term – systemic Combined routes		0,029
PROC8a, CS14, PROC8b, CS45	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	204,50 mg/m3	0,098
			Worker – dermal, long-term – systemic	2,742 mg/kg/d	0,009
			Worker – inhalation, long-term – systemic		0,107
PROC8b, CS45	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	204,50 mg/m3	0,098
			Worker – dermal, long-term – systemic	1,372 mg/kg/d	0,005
			Worker – long-term – systemic Combined routes		0,103
PROC10, CS34, CS42	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	204,50 mg/m3	0,098
			Worker – dermal, long-term – systemic	2,743 mg/kg/d	0,009
			Worker – inhalation, long-term – systemic		0,107

PROC2: Use in closed, continuous process with occasional controlled exposure
CS93: Automated process with (semi) closed systems.
CS101: Application of cleaning products in closed systems

PROC3: Use in closed batch process (synthesis or formulation)
CS93: Automated process with (semi) 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

PROC7: Industrial spraying
CS44: Cleaning with high pressure washers

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

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

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	:	**SU 22:** Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sector of use	:	**SU 22:** Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process category	:	**PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC8a:** Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities **PROC8b:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities **PROC10:** Roller application or brushing **PROC11:** Non industrial spraying **PROC13:** Treatment of articles by dipping and pouring
Environmental release category	:	**ERC8a, ERC8d:** 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

Daily amount per site(Msafe) : 55

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: Air : < 0.001 %

Technical conditions and measures / Organizational measures

Water : Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): (Effectiveness: 0 %)
Remarks : Prevent discharge of undissolved substance to or recover from onsite wastewater.
Water : If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%): (Effectiveness: 0 %)
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 : Onsite sewage treatment plant
Flow rate of sewage treatment plant effluent : 2.000 m3/d
Effectiveness (of a measure) : 96,2 %
Percentage removed from waste water : 96,2 %

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: PROC2, PROC3: Use in closed, continuous process with occasional controlled exposure, Use in closed batch process (synthesis or formulation)

Product characteristics

Physical Form (at time of use) : Liquid substance

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
No specific measures identified.

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

Product characteristics
Physical Form (at time of use) : Liquid substance

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

Product characteristics
Physical Form (at time of use) : Liquid substance

Amount used
Remarks : No limit

Frequency and duration of use
Remarks : Covers daily exposures up to 8 hours (unless stated differently)

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

Technical conditions and measures
Ensure operation is undertaken outdoors.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.

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

Product characteristics
Physical Form (at time of use) : Liquid substance

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.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.

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

Product characteristics
Physical Form (at time of use) : Liquid substance

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., Provide extraction ventilation at points where emissions occur., Ensure doors and windows are opened

Organizational measures to prevent /limit releases, dispersion and exposure
No specific measures identified., Limit the substance content in the product to 25%

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374., Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.

2.2 Contributing scenario controlling worker exposure for: PROC11: Non industrial

spraying

Product characteristics
Physical Form (at time of use) : Liquid substance

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.

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		0,0022 µg/m3	
			Freshwater		0,0024 µg/L	0,000025
			Freshwater sediment		0,037 µg/kg	0,000009
			Marine water		0,0078 ng/L	< 0,000007
			Marine sediment		0,085 ng/kg	< 0,000002
			Agricultural soil		0,57 ng/kg	< 0,000006

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	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	81,80 mg/m3	0,039
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,005
			Worker – long-term – systemic Combined routes		0,044
PROC3, CS93	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	102,25 mg/m3	0,049
			Worker – dermal, long-term – systemic	0,34 mg/kg	0,001
			Worker – long-term – systemic Combined routes		0,050

PROC4, CS76	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	61,36 mg/m3	0,029
			Worker – dermal, long-term – systemic	1,372 mg/kg	0,005
			Worker – long-term – systemic Combined routes		0,034
PROC4, CS101	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	143,15 mg/m3	0,069
			Worker – dermal, long-term – systemic	1,372 mg/kg	0,005
			Worker – long-term – systemic Combined routes		0,073
PROC4, CS74	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	204,50 mg/m3	0,098
			Worker – dermal, long-term – systemic	6,86 mg/kg	0,023
			Worker – long-term – systemic Combined routes		0,121
PROC8a, CS45	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	286,30 mg/m3	0,137
			Worker – dermal, long-term – systemic	2,742 mg/kg	0,009
			Worker – long-term – systemic Combined routes		0,146
PROC8b, CS45	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	204,50 mg/m3	0,098
			Worker – dermal, long-term – systemic	1,372 mg/kg	0,005
			Worker – long-term – systemic Combined routes		0,103
PROC10, CS42	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	122,70 mg/m3	0,059
			Worker – dermal, long-term – systemic	5,486 mg/kg	0,018
			Worker – long-term – systemic Combined routes		0,077
PROC10, CS34	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	122,70 mg/m3	0,059
			Worker – dermal, long-term – systemic	2,734 mg/kg	0,009
			Worker – long-term – systemic Combined routes		0,068
PROC10, CS27	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	49,08 mg/m3	0,024
			Worker – dermal, long-term – systemic	0,8229 mg/kg	0,003
			Worker – long-term – systemic Combined routes		0,026
PROC10, CS27	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	245,40 mg/m3	0,118
			Worker – dermal, long-term – systemic	3,2916 mg/kg	0,011
			Worker – long-term – systemic Combined routes		0,129
PROC11, CS44	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	122,70 mg/m3	0,059
			Worker – dermal, long-term – systemic	4,2856 mg/kg	0,014
			Worker – long-term – systemic Combined routes		0,073
PROC11, CS44	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	143,15 mg/m3	0,069

			Worker – dermal, long-term – systemic	2,1428 mg/kg	0,007
			Worker – long-term – systemic Combined routes		0,076
PROC11, CS44	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	286,30 mg/m3	0,137
			Worker – dermal, long-term – systemic	4,2856 mg/kg	0,014
			Worker – long-term – systemic Combined routes		0,152

PROC2: Use in closed, continuous process with occasional controlled exposure
CS93: Automated process with (semi) closed systems.

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

PROC10: Roller application or brushing
CS34: Manual

PROC10: Roller application or brushing
CS27: Ad hoc manual application via trigger sprays, dipping, etc.

PROC10: Roller application or brushing
CS27: Ad hoc manual application via trigger sprays, dipping, etc.

PROC11: Non industrial spraying
CS44: Cleaning with high pressure washers

PROC11: Non industrial spraying
CS44: Cleaning with high pressure washers

PROC11: Non industrial spraying
CS44: Cleaning with high pressure washers

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: **Agrochemical uses**

Main User Groups	:	**SU 22:** Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sector of use	:	**SU 22:** Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process category	:	**PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC8a:** Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities **PROC8b:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities **PROC11:** Non industrial spraying **PROC13:** Treatment of articles by dipping and pouring
Environmental release category	:	**ERC8a, ERC8d:** Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems
Further information	:	Use as an agrochemical excipient for application by manual or machine spraying, smokes and fogging; including equipment clean-downs and disposal.

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

Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):(Msafe)	:	4.300

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 : 90 %
Emission or Release Factor: Water : 1 %
Emission or Release Factor: Soil : 9 %

Technical conditions and measures / Organizational measures
Water : Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): (Effectiveness: 0 %)
Remarks : Risk from environmental exposure is driven by freshwater sediment.
Water : If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%): (Effectiveness: 0 %)

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant : Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent : 2.000 m3/d
Effectiveness (of a measure) : 96,2 %
Percentage removed from waste water : 96,2 %

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

Conditions and measures related to external recovery of waste
Recovery Methods : External recovery and recycling of waste should comply with applicable local and/or national regulations.

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

Product characteristics
Physical Form (at time of use) : Liquid substance

Amount used
Remarks : No limit

Frequency and duration of use
Remarks : Covers daily exposures up to 8 hours (unless stated differently)

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

Technical conditions and measures
Store substance within a closed system.

2.2 Contributing scenario controlling worker exposure for: PROC4, PROC8b: Use in

batch and other process (synthesis) where opportunity for exposure arises, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Product characteristics
Physical Form (at time of use) : Liquid substance

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
No specific measures identified.

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

Product characteristics
Physical Form (at time of use) : Liquid substance

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
Limit the substance content in the product to 25%, Avoid carrying out operation for more than 1 hour., Avoid carrying out operation for more than 4 hours.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.

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

Product characteristics

Physical Form (at time of use) : Liquid substance

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
Limit the substance content in the product to 25%, Avoid carrying out operation for more than 4 hours.

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: PROC11: Non industrial spraying

Product characteristics
Physical Form (at time of use) : Liquid substance

Amount used
Remarks : No limit

Frequency and duration of use
Remarks : Covers daily exposures up to 8 hours (unless stated differently)

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

Technical conditions and measures
Ensure operation is undertaken outdoors., Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20.

Organizational measures to prevent /limit releases, dispersion and exposure
Limit the substance content in the product to 25%, Avoid carrying out operation for more than 4 hours.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear a respirator conforming to EN140 with Type A filter or better., Wear suitable coveralls to prevent exposure to the skin., Wear chemically resistant gloves (tested to EN374) in combination with specific activity 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
ERC8a, ERC8d	Hydrocarbon Block Method with Petrorisk		Air		0,0025 µg/m3	
			Freshwater		0,003 µg/L	0,000032
			Freshwater sediment		0,09 µg/kg	0,000036
			Marine water		0,3 ng/L	0,000003
			Marine sediment		0,009 µg/kg	0,000004
			Agricultural soil		0,054 µg/kg	0,000035

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, CS67	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,04 mg/m3	0,000
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,001
			Worker – long-term – systemic Combined routes		0,001
PROC2, CS67	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	81,80 mg/m3	0,039
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,005
			Worker – long-term – systemic Combined routes		0,044
PROC4, CS23, PROC8b, CS22	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	204,50 mg/m3	0,098
			Worker – dermal, long-term – systemic	6,86 mg/kg/d	0,023
			Worker – long-term – systemic Combined routes		0,121
PROC8a, CS26	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	44,17 mg/m3	0,021
			Worker – dermal, long-term – systemic	1,6452 mg/kg/d	0,005
			Worker – long-term – systemic Combined routes		0,027
PROC8a, CS28	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	11,45 mg/m3	0,005
			Worker – dermal, long-term – systemic	0,5484 mg/kg/d	0,002
			Worker – long-term – systemic Combined routes		0,007
PROC13, CS27	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	103,07 mg/m3	0,049
			Worker – dermal, long-term – systemic	1,6452 mg/kg/d	0,005
			Worker – long-term – systemic Combined routes		0,055
PROC11, CS24	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	51,53 mg/m3	0,025
			Worker – dermal, long-term – systemic	3,2142 mg/kg/d	0,011
			Worker – long-term – systemic Combined routes		0,035

PROC11, CS25	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	147,24 mg/m3	0,071
			Worker – dermal, long-term – systemic	1,2857 mg/kg/d	0,004
			Worker – long-term – systemic Combined routes		0,075

PROC1: Use in closed process, no likelihood of exposure
CS67: Storage

PROC2: Use in closed, continuous process with occasional controlled exposure
CS67: Storage

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
CS23: Mixing and blending.
PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
CS22: Transfer from/pouring from containers

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
CS26: Operation of equipment containing engine oils and similar

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
CS28: Disposal of wastes

PROC13: Treatment of articles by dipping and pouring
CS27: Ad hoc manual application via trigger sprays, dipping, etc.

PROC11: Non industrial spraying
CS24: Spraying/ fogging by manual application

PROC11: Non industrial spraying
CS25: Spraying/ fogging by machine application

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

		preparations at industrial sites
Sector of use	:	**SU3:** Industrial Manufacturing (all)
Process category	:	**PROC10:** Roller application or brushing **PROC15:** Use as laboratory reagent
Environmental release category	:	**ERC2, ERC4:** 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. Wiping

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

Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):(Msafe)	:	2.200

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	:	2,5 %
Emission or Release Factor: Water	:	2 %
Emission or Release Factor: Soil	:	0,01 %

Technical conditions and measures / Organizational measures

Air	:	Treat air emission to provide a typical removal efficiency of (%): (Effectiveness: 0 %)
Water	:	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): (Effectiveness: 17,4 %)
Remarks	:	Risk from environmental exposure is driven by freshwater sediment.
Water	:	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%): (Effectiveness: 0 %)
Remarks	:	If discharging to domestic sewage treatment plant, no onsite 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)	:	96,2 %
Percentage removed from waste	:	96,2 %

water

Conditions and measures related to external treatment of waste for disposal

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

Conditions and measures related to external recovery of waste

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

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

Product characteristics

Physical Form (at time of use) : Liquid substance

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.

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

Wear suitable gloves tested to EN374.

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

Product characteristics

Physical Form (at time of use) : Liquid substance

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

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		0,059 µg/m3	
			Freshwater		0,0038 mg/L	0,041
			Freshwater sediment		0,12 mg/kg	0,046
			Marine water		0,38 µg/L	0,0041
			Marine sediment		0,012 mg/kg	0,0046
			Agricultural soil		0,67 ng/kg	< 0,000008

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	204,50 mg/m3	0,098
			Worker – dermal, long-term – systemic	5,486 mg/kg/d	0,018
			Worker – long-term – systemic Combined routes		0,116
PROC15, CS36	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	40,90 mg/m3	0,020
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,001
			Worker – long-term – systemic Combined routes		0,021

PROC10: Roller application or brushing
CS47: Cleaning

PROC15: Use as laboratory reagent
CS36: Laboratory activities

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

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.
Risk Management Measures are based on qualitative risk characterisation.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).

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

Main User Groups	:	**SU 22:** Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sector of use	:	**SU 22:** Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process category	:	**PROC10:** Roller application or brushing **PROC15:** Use as laboratory reagent
Environmental release category	:	**ERC8a:** Wide dispersive indoor use of processing aids in open systems
Further information	:	Use of the substance within laboratory settings, including material transfers and equipment cleaning.

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

Daily amount per site(Msafe)	:	87

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 a typical removal efficiency of (%): (Effectiveness: 0 %)
Water	:	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): (Effectiveness: 0 %)
Remarks	:	Risk from environmental exposure is driven by freshwater sediment.
Water	:	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%): (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)	:	96,2 %
Percentage removed from waste water	:	96,2 %

Conditions and measures related to external treatment of waste for disposal

Waste treatment	:	External treatment and disposal of waste should comply with

applicable local and/or national regulations.

Conditions and measures related to external recovery of waste

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

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

Product characteristics

Physical Form (at time of use) : Liquid substance

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.

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

Product characteristics

Physical Form (at time of use) : Liquid substance

Amount used

Remarks : No limit

Frequency and duration of use

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

Other operational conditions affecting workers exposure

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

Organizational measures to prevent /limit releases, dispersion and exposure

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
ERC8a	Hydrocarbon Block Method with		Air		0,0029 µg/m3	

	Petrorisk					
			Freshwater		0,0071 µg/L	0,000076
			Freshwater sediment		0,22 µg/kg	0,000087
			Marine water		0,71 ng/L	< 0,000008
			Marine sediment		0,022 µg/kg	0,000009
			Agricultural soil		0,13 µg/kg	0,000083

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	81,80 mg/m3	0,039
			Worker – dermal, long-term – systemic	1,3715 mg/kg/d	0,005
			Worker – long-term – systemic Combined routes		0,044
PROC15, CS36	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	40,90 mg/m3	0,020
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,001
			Worker – long-term – systemic Combined routes		0,021

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 fuel - industrial**

Main User Groups : **SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use : **SU3:** Industrial Manufacturing (all)
Process category : **PROC1:** Use in closed process, no likelihood of exposure

		PROC2: Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC8a:** Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities **PROC8b:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities **PROC16:** Using material as fuel sources, limited exposure to unburned product to be expected
Environmental release category	:	**ERC7, ERC8b:** 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

Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (tonnes/day): (Msafe)	:	4.300 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	:	20
Emission or Release Factor: Air	:	5 %
Emission or Release Factor: Water	:	0,001 %
Emission or Release Factor: Soil	:	0 %

Technical conditions and measures / Organizational measures

Air	:	Treat air emission to provide a typical removal efficiency of (%): (Effectiveness: 95 %)
Water	:	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): (Effectiveness: 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 ≥ (%): (Effectiveness: 0 %)
Remarks	:	No wastewater treatment required.

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

Conditions and measures related to municipal sewage treatment plant

Flow rate of sewage treatment plant effluent	:	2.000 m3/d
Effectiveness (of a measure)	:	96,2 %
Percentage removed from waste water	:	96,2 %

Conditions and measures related to external treatment of waste for disposal

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

Conditions and measures related to external recovery of waste

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

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

Product characteristics

Physical Form (at time of use)	:	Liquid substance

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.

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

Product characteristics

Physical Form (at time of use)	:	Liquid substance

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., Transfer via enclosed lines.

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

Product characteristics
Physical Form (at time of use) : Liquid substance

Amount used
Remarks : No limit

Frequency and duration of use
Remarks : Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting workers exposure
Remarks : Assumes 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
No specific measures identified.

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

Product characteristics
Physical Form (at time of use) : Liquid substance

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
Apply vessel entry procedures including use of forced supplied air.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374., Wear suitable coveralls to prevent exposure to the skin.

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

Product characteristics
Physical Form (at time of use) : Liquid substance

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.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.

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

Product characteristics
Physical Form (at time of use) : Liquid substance

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.

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		Air		0,0086 µg/m3	

	Method with Petrorisk					
			Freshwater		0,0043 µg/L	0,000046
			Freshwater sediment		0,13 µg/kg	0,000052
			Marine water		0,0004 µg/L	0,000005
			Marine sediment		0,013 µg/kg	0,000005
			Agricultural soil		0,0006 µg/kg	< 0,000001

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	0,04 mg/m3	0,000
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,001
			Worker – long-term – systemic Combined routes		0,001
PROC2, CS15, CS37, CS67	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	40,90 mg/m3	0,020
			Worker – dermal, long-term – systemic	1,37 mg/kg	0,005
			Worker – long-term – systemic Combined routes		0,024
PROC3, CS15, CS37, CS107	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	102,25 mg/m3	0,049
			Worker – dermal, long-term – systemic	0,34 mg/kg	0,001
			Worker – long-term – systemic Combined routes		0,050
PROC8a, CS39	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	204,50 mg/m3	0,098
			Worker – dermal, long-term – systemic	2,742 mg/kg/d	0,009
			Worker – long-term – systemic Combined routes		0,107
PROC8a, CS103	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	20,45 mg/m3	0,010
			Worker – long-term – systemic Combined routes	2,742 mg/kg	0,009
			Worker – dermal, long-term – systemic		0,019
PROC8b, CS8, CS14	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	204,50 mg/m3	0,098
			Worker – dermal, long-term – systemic	1,372 mg/kg	0,005
			Worker – long-term – systemic Combined routes		0,103
PROC16, CS15, CS107	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	20,45 mg/m3	0,010
			Worker – dermal, long-term – systemic	0,34 mg/kg	0,001
			Worker – long-term – systemic Combined routes		0,011

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.

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).