TrusTec™ Diesel Reference Fuel U-34

Version 1.19 Revision Date 2023-05-18

According to Regulation (EC) No. 1907/2006, Regulation (EC) No. 2020/878

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

1.1 Product identifier

Product information

Product Name : TrusTec™ Diesel Reference Fuel U-34
Material : 1108915, 1024281, 1024280, 1032195, 1024277, 1024279, 1024278

EC-No.Registration number

Chemical name	CAS-No. EC-No. Index No.	Legal Entity Registration number
Light Cycle Oil	64741-59-9 265-060-4 649-435-00-3	Chevron Phillips Chemicals International NV 01-2119489734-23-0015
C12-C14 Isoalkanes	68551-19-9 271-369-5	Chevron Phillips Chemicals International NV 01-2119491311-45-0000
C12-C14 Isoalkanes	68551-19-9 271-369-5	Chevron Phillips Chemical Company LP 01-2119491311-45-0001

1.2

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

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

1.3

Details of the supplier of the safety data sheet

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

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

Belgium

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

1.4

Emergency telephone:

Health:
866.442.9628 (North America)
1.832.813.4984 (International)
Transport:
CHEMTREC 800.424.9300 or 703.527.3887(int'l)
Asia: CHEMWATCH (+612 9186 1132) China: 0532 8388 9090
Mexico CHEMTREC 01-800-681-9531 (24 hours)
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600
Argentina: +(54)-1159839431
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Austria: VIZ +43 1 406 43 43 (24 hours/day, 7 days/week)
Belgium: 070 245 245 (24 hours/day, 7 days/week)
Bulgaria: +359 2 9154 233
Croatia: +3851 2348 342 (24 hours/day, 7 days/week)
Cyprus: 1401
Czech Republic: Toxicological Information Center +420 224 919 293, +420 224 915 402
Denmark: Danish Poison Center (Giftlinjen): +45 8212 1212
Estonia: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Finland: 0800 147 111 09 471 977 (24 hours/day)
France: ORFILA number (INRS): + 33 (0) 1 45 42 59 59 (24 hours/day, 7 days/week)
Germany: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Greece: (0030) 2107793777 (24 hours/day, 7 days/week)
Hungary: +36-80-201-199 (24 hours/day, 7 days/week)
Iceland: 543 2222 (24 hours/day, 7 days/week)
Ireland: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Italy: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Latvia: State Fire and Rescue Service, phone number: 112; Toxicology and Sepsis Clinic Poisoning and Drug Information Center, Hipokrāta 2, Riga, Latvia, LV-1038, phone number +371 67042473. (24 hours.)
Liechtenstein: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Lithuania: +370 (85) 2362052
Luxembourg: (+352) 8002 5500 (24 hours/day, 7 days/week)
Malta: +356 2395 2000
The Netherlands: NVIC: +31 (0)88 755 8000
Norway: 22 59 13 00 (24 hours/day, 7 days/week)
Poland: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Portugal: CIAV phone number: +351 800 250 250
Romania: +40213183606
Slovakia: +421 2 5477 4166
Slovenia: Phone number: 112
Spain: National Emergency Telephone Number of Spanish Poison Centre: +34 91 562 04 20 (24 hours/day, 7 days/week)
Sweden: 112 – ask for Poisons Information

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

SECTION 2: Hazards identification

2.1

Classification of the substance or mixture
REGULATION (EC) No 1272/2008

Flammable liquids, Category 3	H226: Flammable liquid and vapor.
Skin irritation, Category 2	H315: Causes skin irritation.
Carcinogenicity, Category 1B	H350: May cause cancer.
Specific target organ toxicity - repeated exposure, Category 2	H373: May cause damage to organs through prolonged or repeated exposure.
Aspiration hazard, Category 1	H304: May be fatal if swallowed and enters airways.
Short-term (acute) aquatic hazard, Category 1	H400: Very toxic to aquatic life.
Long-term (chronic) aquatic hazard, Category 1	H410: Very toxic to aquatic life with long lasting effects.

2.2

Labeling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Signal Word : Danger

Hazard Statements :	H226	Flammable liquid and vapor.
	H304	May be fatal if swallowed and enters airways.
	H315	Causes skin irritation.
	H350	May cause cancer.
	H373	May cause damage to organs through prolonged or repeated exposure.
	H410	Very toxic to aquatic life with long lasting effects.
Precautionary Statements :	**Prevention:**	
	P201	Obtain special instructions before use.
	P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
	P260	Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
	P273	Avoid release to the environment.
	P280	Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.
	Response:	
	P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
	P308 + P313	IF exposed or concerned: Get medical advice/ attention.
	P331	Do NOT induce vomiting.
	P370 + P378	In case of fire: Use dry sand, dry chemical

	or alcohol-resistant foam to extinguish.
P391	Collect spillage.

Hazardous ingredients which must be listed on the label:
- 64741-59-9 Light Cycle Oil
- 68551-19-9 C12-C14 Isoalkanes

Additional Labeling:

Restricted to professional users.

2.3

Other hazards

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

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

SECTION 3: Composition/information on ingredients

3.1 - 3.2

Substance or Mixture

Synonyms : Diesel Reference Fuel U

Molecular formula : Mixture

Hazardous ingredients

Chemical name	CAS-No. EC-No. Index No.	Classification (REGULATION (EC) No 1272/2008)	Concentration [wt%]	Specific Conc. Limits, M-factors and ATEs
Light Cycle Oil	**64741-59-9** **265-060-4** 649-435-00-3	Flam. Liq. 3; H226 Acute Tox. 4; H332 Skin Irrit. 2; H315 Carc. 1B; H350 STOT RE 2; H373 Asp. Tox. 1; H304 Aquatic Acute 1; H400 Aquatic Chronic 1; H410	60 - 70	M [Acute]=11 M [Chronic]=1 1
C12-C14 Isoalkanes	68551-19-9 271-369-5	Asp. Tox. 1; H304	30 - 40	

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

SECTION 4: First aid measures

4.1
Description of first-aid measures

General advice	:	Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Material may produce a serious, potentially fatal pneumonia if swallowed or vomited.
If inhaled	:	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	:	Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
If swallowed	:	Keep respiratory tract clear. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

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

Symptoms	:	No information available.
Risks	:	No information available.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment	:	No information available.

SECTION 5: Firefighting measures

Flash point	:	46,33°C (115,39°F) Method: Tag closed cup
Autoignition temperature	:	No data available

5.1
Extinguishing media

Suitable extinguishing media	:	Alcohol-resistant foam. Carbon dioxide (CO2). Dry chemical.
Unsuitable extinguishing media	:	High volume water jet.

5.2
Special hazards arising from the substance or mixture

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

5.3
Advice for firefighters

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

Further information	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.
Fire and explosion protection	:	Do not spray on a naked flame or any incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Keep away from open flames, hot surfaces and sources of ignition.
Hazardous decomposition products	:	Carbon oxides.

SECTION 6: Accidental release measures

6.1

Personal precautions, protective equipment and emergency procedures

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

6.2

Environmental precautions

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

6.3

Methods and materials for containment and cleaning up

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

6.4

Reference to other sections

Reference to other sections	:	For personal protection see section 8. For disposal considerations see section 13.

SECTION 7: Handling and storage

7.1

Precautions for safe handling
Handling

Advice on safe handling	:	Avoid formation of aerosol. Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Take precautionary measures against static discharges. Provide sufficient air exchange and/or exhaust in work rooms. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with

local and national regulations.

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

7.2

Conditions for safe storage, including any incompatibilities

Storage

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

7.3

Specific End Use

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

SECTION 8: Exposure controls/personal protection

8.1

Control parameters

Ingredients with workplace control parameters

Chevron Phillips Chemical Company LP

Components	Basis	Value	Control parameters	Note
C12-C14 Isoalkanes	Manufacturer	TWA	1.200 mg/m3	RCP,

SK

Zložky	Podstata	Hodnota	Kontrolné parametre	Poznámka
Naphthalene	SK OEL	NPEL priemerný	10 ppm, 50 mg/m3	K,
	SK OEL	NPEL krátkodobý	15 ppm, 80 mg/m3	K,

K Znamená, ze faktor môže byt' l'ahko absorbovaný kožou. Niektoré faktory, ktoré l'ahko prenikajú kožou, môžu spôsobovat' až smrtel'né otravy, éasto bez varovných príznakov (napr. anilín, nitrobenzén, nitroglykol, fenoly a pod.). Pri látkach s významným prienikom cez kožu, éi už v podobe kvapalín alebo pár, je osobitne dôležité zabránit' kožnému kontaktu.

SI

Sestavine	Osnova	Vrednost	Parametri nadzora	Pripomba
C12-C14 Isoalkanes	SI OEL	MV	300 mg/m3	
Naphthalene	SI OEL	MV	10 ppm,	2, K,
	SI OEL	MV	50 mg/m3	2, K, Inhalabilna frakcija
	SI OEL	KTV	10 ppm,	2, K,
	SI OEL	KTV	50 mg/m3	2, K, Inhalabilna frakcija

2 Rakotvorne snovi - kategorija 2
K Lastnost lažjega prehajanja snovi v organizem skozi kožo

SE

Beståndsdelar	Grundval	Värde	Kontrollparametrar	Anmärkning
Naphthalene	SE AFS	NGV	10 ppm, 50 mg/m3	
	SE AFS	KGV	15 ppm, 80 mg/m3	V,

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

RS

Компоненты	Основа	Величина	Параметры контроля	Заметка
Нафталин	RS OEL	GVI	10 ppm, 50 mg/m3	Carc. cat. 3, EU,

Carc. cat. 3 Chemical substances that cause concern about possible carcinogenic effects for humans
EU Substance mentioned in indicative exposure limit values in Directive 91/322 / EEC

RO

Componente	Sursă	Valoare	Parametri de control	Notă
Naphthalene	RO OEL	TWA	10 ppm, 50 mg/m3	C2,

Polynuclear Aromatics	RO OEL	TWA	0,2 mg/m3	C1B,

C1B poate provoca apariţia cancerului
C2 susceptibil de a provoca apariţia cancerului

PT

Componentes	Bases	Valor	Parâmetros de controlo	Nota
Naphthalene	PT OEL	VLE-MP	10 ppm,	P, A3,
	PT DL 305/2007	oito horas	10 ppm, 50 mg/m3	

A3 Agente carcinogénico confirmado nos animais de laboratório com relevância desconhecida no Homem.
P Perigo de absorção cutânea

PL

Składniki	Podstawa	Wartość	Parametry dotyczące kontroli	Uwaga
Naphthalene	PL NDS	NDS	20 mg/m3	
	PL NDS	NDSch	50 mg/m3	
Polynuclear Aromatics	PL NDS	NDS	0,002 mg/m3	

NO

Komponenter	Grunnlag	Verdi	Kontrollparametrer	Nota
Naphthalene	FOR-2011-12-06-1358	GV	10 ppm, 50 mg/m3	
Polynuclear Aromatics	FOR-2011-12-06-1358	GV	0,04 mg/m3	K,

K Kjemikalier som skal betraktes som kreftfremkallende.

NL

Bestanddelen	Basis	Waarde	Controleparameters	Opmerking
Naphthalene	NL WG	TGG-8 uur	50 mg/m3	
	NL WG	TGG-15 min	80 mg/m3	

MT

Components	Basis	Value	Control parameters	Note
Naphthalene	MT OEL	TWA	10 ppm, 50 mg/m3	

MK

Съставки	Основа	Стойност	Параметри на контрол	Бележка
Naphthalene	MK OEL	MV	10 ppm, 50 mg/m3	

LV

Sastāvdaļas	Bāze	Vērtība	Pārvaldības parametri	Piezīme
Naphthalene	LV OEL	AER 8 st	10 ppm, 50 mg/m3	

LU

Composants	Base	Valeur	Paramètres de contrôle	Note
Naphthalene	LU OEL	TWA	10 ppm, 50 mg/m3	

LT

Komponentai	Šaltinis	Vertė	Kontrolės parametrai	Pastaba
Naphthalene	LT OEL	IPRD	10 ppm, 50 mg/m3	

IS

Komponenter	Grunnlag	Verdi	Kontrollparametrer	Nota
Naphthalene	IS OEL	TWA	10 ppm, 50 mg/m3	
Polynuclear Aromatics	IS OEL	TWA	0,2 mg/m3	Partikkel

IE

Components	Basis	Value	Control parameters	Note
Naphthalene	IE OEL	OELV - 8 hrs (TWA)	10 ppm, 50 mg/m3	

HU

Komponensek	Bázis	Érték	Ellenőrzési paraméterek	Megjegyzés
Naphthalene	HU OEL	AK-érték	50 mg/m3	N, EU91, i,

EU91 91/322/EGK irányelvben közölt érték
i Ingerlő anyag (izgatja a bőrt, nyálkahártyát, szemet vagy mindhármat)
N Irritáló anyagok, egyszerű fojtógázok, csekély egészségkárosító hatással bíró anyagok. Korrekció NEM szükséges.

HR

Sastojci	Temelj	Vrijednost	Nadzorni parametri	Bilješka
Light Cycle Oil	HR OEL	GVI	100 ppm, 400 mg/m3	
Naphthalene	HR OEL	GVI	10 ppm, 50 mg/m3	
	HR OEL		15 ppm, 75 mg/m3	

GR

Συστατικά	Βάση	Τιμή	Παράμετροι ελέγχου	Σημείωση
Naphthalene	GR OEL	TWA	10 ppm, 50 mg/m3	

FR

Composants	Base	Valeur	Paramètres de contrôle	Note
Naphthalene	FR VLE	VME	10 ppm, 50 mg/m3	C2, Valeurs limites indicatives,

C2 Cancérigène de catégorie 2 - Substances preoccupantes en raison d'effets cancerogenes possibles
Valeurs limites indicatives Valeurs limites indicatives

FI

Aineosat	Peruste	Arvo	Valvontaa koskevat muuttujat	Huomautus
Naphthalene	FI OEL	HTP-arvot 8h	1 ppm, 5 mg/m3	
	FI OEL	HTP-arvot 15 min	2 ppm, 10 mg/m3	

ES

Componentes	Base	Valor	Parámetros de control	Nota
Naphthalene	ES VLA	VLA-ED	10 ppm, 53 mg/m3	vía dérmica,
	ES VLA	VLA-EC	15 ppm, 80 mg/m3	vía dérmica,

vía dérmica Vía dérmica

EE

Komponendid, osad	Alused	Väärtus	Kontrolliparameetrid	Märkused
Naphthalene	EE OEL	Piirnorm	10 ppm, 50 mg/m3	

DK

Komponenter	Basis	Værdi	Kontrolparametre	Note
Naphthalene	DK OEL	GV	10 ppm, 50 mg/m3	K,
Polynuclear Aromatics	DK OEL	GV	0,2 mg/m3	partikler

K Betyder, at stoffet er optaget på listen over stoffer, der anses for at være kræftfremkaldende.

DE

Inhaltsstoffe	Grundlage	Wert	Zu überwachende Parameter	Bemerkung
Light Cycle Oil	DE TRGS 900	AGW	100 mg/m3	Gruppen-AGW, AGS,
Naphthalene	DE TRGS 900	AGW	0,4 ppm, 2 mg/m3	H, Y, Dampf und Aerosole, einatembare Fraktion

AGS Ausschuss für Gefahrstoffe
Gruppen-AGW Gruppengrenzwert für Kohlenwasserstoff-Lösemittelgemische
H Hautresorptiv
Y Ein Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes (BGW) nicht befürchtet zu werden

CZ

Složky	Základ	Hodnota	Kontrolní parametry	Poznámka
Naphthalene	CZ OEL	PEL	50 mg/m3	
	CZ OEL	NPK-P	100 mg/m3	

CY

Συστατικά	Βάση	Τιμή	Παράμετροι ελέγχου	Σημείωση
Naphthalene	CY OEL	TWA	10 ppm, 50 mg/m3	

CH

Inhaltsstoffe	Grundlage	Wert	Zu überwachende Parameter	Bemerkung
Naphthalene	CH SUVA	MAK-Wert	10 ppm, 50 mg/m3	H, Carc.Cat.3, NIOSH, OSHA,
Polynuclear Aromatics	CH SUVA	MAK-Wert	0,002 mg/m3	H, Carc.Cat.2, M1B, R1BF, NIOSH, OSHA, DFG, BG,

BG BG
Carc.Cat.2 Krebserzeugende Stoffe Kategorie 2
Carc.Cat.3 Krebserzeugende Stoffe Kategorie 3
DFG Deutsche Forschungsgemeinschaft
H Vergiftung durch Hautresorption möglich; Bei Stoffen, welche die Haut leicht zu durchdringen vermögen, kann durch die zusätzliche Hautresorption die innere Belastung wesentlich höher werden als bei alleiniger Aufnahme durch die Atemwege.
M1B Stoffe, die wahrscheinlich vererbbare Mutationen an menschlichen Keimzellen auslösen.
NIOSH National Institute for Occupational Safety and Health
OSHA Occupational Safety and Health Administration
R1BF Stoffe, die wahrscheinlich reproduktionstoxisch sind; die Reproduktionstoxizität bezieht sich auf die Fruchtbarkeit oder Sexualität.

BG

Съставки	Основа	Стойност	Параметри на контрол	Бележка

Light Cycle Oil	BG OEL	TWA	300 mg/m3	
Naphthalene	BG OEL	TWA	50 mg/m3	
	BG OEL	STEL	75 mg/m3	

BE

Bestanddelen	Basis	Waarde	Controleparameters	Opmerking
Naphthalene	BE OEL	TGG 8 hr	10 ppm, 53 mg/m3	D,
	BE OEL	TGG 15 min	15 ppm, 80 mg/m3	D,

D Opname van het agens via de huid, de slijmvliezen of de ogen vormt een belangrijk deel van de totale blootstelling. Deze opname kan het gevolg zijn van zowel direct contact als zijn aanwezigheid in de lucht.

AT

Inhaltsstoffe	Grundlage	Wert	Zu überwachende Parameter	Bemerkung
Naphthalene	AT OEL	MAK-TMW	10 ppm, 50 mg/m3	H,

H Besondere Gefahr der Hautresorption

Biological exposure indices

SK

Názov látky	Č. CAS	Kontrolné parametre	Doba odberu vzorky	Aktualizácia
Naphthalene	91-20-3	1-hydroxypyrén: 5,66 µg/l V tejto prílohe sú uvedené aj niektoré chemické faktory s karcinogénnym účinkom (kategória 1A a kategória 1B). Pre tieto chemické faktory platí, že dodržanie BMH nevylučuje riziko škodlivých zdravotných účinkov, preto sú určené ako základ pre biomonitoring exponovaných osôb a zdravotný dohľad vykonávaný lekárom pracovnej zdravotnej služby podľa § 13 a prílohy č. 4 nariadenia vlády Slovenskej republiky č. 356/2006 Z. z. o ochrane zdravia zamestnancov pred rizikami súvisiacimi s expozíciou karcinogénnym a mutagénnym faktorom pri práci v znení neskorších predpisov. (moč) Karcinogén kategórie 1B ()	Koniec vystavenia alebo pracovnej zmeny	2015-04-08
		1-hydroxypyrén: 0.0259 nmol/l V tejto prílohe sú uvedené aj niektoré chemické faktory s karcinogénnym účinkom (kategória 1A a kategória 1B). Pre tieto chemické faktory platí, že dodržanie BMH nevylučuje riziko škodlivých zdravotných účinkov, preto sú určené ako základ pre biomonitoring exponovaných osôb a zdravotný dohľad vykonávaný lekárom pracovnej zdravotnej služby podľa § 13 a prílohy č. 4 nariadenia vlády Slovenskej republiky č. 356/2006 Z. z. o ochrane zdravia zamestnancov pred rizikami súvisiacimi s expozíciou karcinogénnym a mutagénnym faktorom pri práci v znení neskorších predpisov. (moč) Karcinogén kategórie 1B ()	Koniec vystavenia alebo pracovnej zmeny	2015-04-08

		1-hydroxypyrén: 3.77 µg/g kreatinínu V tejto prílohe sú uvedené aj niektoré chemické faktory s karcinogénnym účinkom (kategória 1A a kategória 1B). Pre tieto chemické faktory platí, že dodržanie BMH nevylučuje riziko škodlivých zdravotných účinkov, preto sú určené ako základ pre biomonitoring exponovaných osôb a zdravotný dohľad vykonávaný lekárom pracovnej zdravotnej služby podľa § 13 a prílohy č. 4 nariadenia vlády Slovenskej republiky č. 356/2006 Z. z. o ochrane zdravia zamestnancov pred rizikami súvisiacimi s expozíciou karcinogénnym a mutagénnym faktorom pri práci v znení neskorších predpisov. (moč) Karcinogén kategórie 1B ()	Koniec vystavenia alebo pracovnej zmeny	2015-04-08
		1-hydroxypyrén: 1.95 µmol/mol kreatinínu V tejto prílohe sú uvedené aj niektoré chemické faktory s karcinogénnym účinkom (kategória 1A a kategória 1B). Pre tieto chemické faktory platí, že dodržanie BMH nevylučuje riziko škodlivých zdravotných účinkov, preto sú určené ako základ pre biomonitoring exponovaných osôb a zdravotný dohľad vykonávaný lekárom pracovnej zdravotnej služby podľa § 13 a prílohy č. 4 nariadenia vlády Slovenskej republiky č. 356/2006 Z. z. o ochrane zdravia zamestnancov pred rizikami súvisiacimi s expozíciou karcinogénnym a mutagénnym faktorom pri práci v znení neskorších predpisov. (moč) Karcinogén kategórie 1B ()	Koniec vystavenia alebo pracovnej zmeny	2015-04-08
Polynuclear Aromatics	130498-29-2	1-hydroxypyrén: 5,66 µg/l V tejto prílohe sú uvedené aj niektoré chemické faktory s karcinogénnym účinkom (kategória 1A a kategória 1B). Pre tieto chemické faktory platí, že dodržanie BMH nevylučuje riziko škodlivých zdravotných účinkov, preto sú určené ako základ pre biomonitoring exponovaných osôb a zdravotný dohľad vykonávaný lekárom pracovnej zdravotnej služby podľa § 13 a prílohy č. 4 nariadenia vlády Slovenskej republiky č. 356/2006 Z. z. o ochrane zdravia zamestnancov pred rizikami súvisiacimi s expozíciou karcinogénnym a mutagénnym faktorom pri práci v znení neskorších predpisov. (moč) Karcinogén kategórie 1B ()	Koniec vystavenia alebo pracovnej zmeny	2015-04-08

		1-hydroxypyrén: 0.0259 nmol/l V tejto prílohe sú uvedené aj niektoré chemické faktory s karcinogénnym účinkom (kategória 1A a kategória 1B). Pre tieto chemické faktory platí, že dodržanie BMH nevylučuje riziko škodlivých zdravotných účinkov, preto sú určené ako základ pre biomonitoring exponovaných osôb a zdravotný dohľad vykonávaný lekárom pracovnej zdravotnej služby podľa § 13 a prílohy č. 4 nariadenia vlády Slovenskej republiky č. 356/2006 Z. z. o ochrane zdravia zamestnancov pred rizikami súvisiacimi s expozíciou karcinogénnym a mutagénnym faktorom pri práci v znení neskorších predpisov. (moč) Karcinogén kategórie 1B ()	Koniec vystavenia alebo pracovnej zmeny	2015-04-08
		1-hydroxypyrén: 3.77 µg/g kreatinínu V tejto prílohe sú uvedené aj niektoré chemické faktory s karcinogénnym účinkom (kategória 1A a kategória 1B). Pre tieto chemické faktory platí, že dodržanie BMH nevylučuje riziko škodlivých zdravotných účinkov, preto sú určené ako základ pre biomonitoring exponovaných osôb a zdravotný dohľad vykonávaný lekárom pracovnej zdravotnej služby podľa § 13 a prílohy č. 4 nariadenia vlády Slovenskej republiky č. 356/2006 Z. z. o ochrane zdravia zamestnancov pred rizikami súvisiacimi s expozíciou karcinogénnym a mutagénnym faktorom pri práci v znení neskorších predpisov. (moč) Karcinogén kategórie 1B ()	Koniec vystavenia alebo pracovnej zmeny	2015-04-08
		1-hydroxypyrén: 1.95 µmol/mol kreatinínu V tejto prílohe sú uvedené aj niektoré chemické faktory s karcinogénnym účinkom (kategória 1A a kategória 1B). Pre tieto chemické faktory platí, že dodržanie BMH nevylučuje riziko škodlivých zdravotných účinkov, preto sú určené ako základ pre biomonitoring exponovaných osôb a zdravotný dohľad vykonávaný lekárom pracovnej zdravotnej služby podľa § 13 a prílohy č. 4 nariadenia vlády Slovenskej republiky č. 356/2006 Z. z. o ochrane zdravia zamestnancov pred rizikami súvisiacimi s expozíciou karcinogénnym a mutagénnym faktorom pri práci v znení neskorších predpisov. (moč) Karcinogén kategórie 1B ()	Koniec vystavenia alebo pracovnej zmeny	2015-04-08

IT

Denominazione della sostanza	N. CAS	Parametri di controllo	Tempo di campionamento	Aggiornamento

GB

Substance name	CAS-No.	Control parameters	Sampling time	Update
Naphthalene	91-20-3	1-hydroxypyrene: 4 µmol/mol creatinine (Urine)	After shift	2011-12-18
Polynuclear Aromatics	130498-29-2	1-hydroxypyrene: 4 µmol/mol creatinine (Urine)	After shift	2011-12-18

8.2

Exposure controls
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	:	If ventilation or other engineering controls are not adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure, a supplied-air NIOSH approved respirator may be appropriate. If exposure to harmful levels of airborne material may occur, a NIOSH approved respirator that provides protection may be appropriate, such as:. Air-Purifying Respirator for Organic Vapors. Full-Face Air-Purifying Respirator for Organic Vapors, Dusts and Mists. A positive pressure, air-supplying respirator may be appropriate if there is potential for uncontrolled release, aerosolization, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.
Hand protection	:	The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Eye protection	:	Eye wash bottle with pure water. Tightly fitting safety goggles.
Skin and body protection	:	Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate:. Flame retardant antistatic protective clothing. Workers should wear antistatic footwear.
Hygiene measures	:	When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

SECTION 9: Physical and chemical properties

9.1

Information on basic physical and chemical properties

Appearance

Physical state	:	liquid
Color	:	Yellow
Odor	:	Mild

Safety data

Flash point	:	46,33°C (115,39°F) Method: Tag closed cup
Lower explosion limit	:	No data available
Upper explosion limit	:	No data available
Oxidizing properties	:	No
Autoignition temperature	:	No data available
Thermal decomposition	:	No data available
Molecular formula	:	Mixture
Molecular weight	:	Not applicable
pH	:	Not applicable
Pour point	:	No data available
Boiling point/boiling range	:	173-313°C (343-595°F)
Vapor pressure	:	No data available
Relative density	:	0,876 at 15,6 °C (60,1 °F)
Density	:	0,8755 g/cm3
Bulk density	:	7,31 L/G
Water solubility	:	negligible
Partition coefficient: n-octanol/water	:	No data available
Viscosity, kinematic	:	1,813 cSt at 40°C (104°F)
Relative vapor density	:	3 (Air = 1.0)
Evaporation rate	:	< 1
Percent volatile	:	> 99 % 70 %

9.2

Other information

Conductivity	:	No data available

SECTION 10: Stability and reactivity

10.1

Reactivity : Stable under recommended storage conditions.

10.2

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

10.3

Possibility of hazardous reactions

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

Hazardous reactions: Vapors may form explosive mixture with air.

10.4

Conditions to avoid : Heat, flames and sparks.

10.5

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

Thermal decomposition : No data available

10.6

Hazardous decomposition products : Carbon oxides

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

SECTION 11: Toxicological information

11.1

Information on toxicological effects

TrusTec™ Diesel Reference Fuel U-34
Acute oral toxicity : Acute toxicity estimate: 3.572 mg/kg
Method: Calculation method

TrusTec™ Diesel Reference Fuel U-34
Acute inhalation toxicity : Acute toxicity estimate: 6,64 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method

TrusTec™ Diesel Reference Fuel U-34
Acute dermal toxicity : Acute toxicity estimate: > 2.000 mg/kg

Method: Calculation method

TrusTec™ Diesel Reference Fuel U-34
Skin irritation : Skin irritation
largely based on animal evidence.

TrusTec™ Diesel Reference Fuel U-34
Eye irritation : Vapors may cause irritation to the eyes, respiratory system and the skin.

TrusTec™ Diesel Reference Fuel U-34
Sensitization : Does not cause skin sensitization.
Estimated based on individual component values.

Repeated dose toxicity

Light Cycle Oil : Species: Rat, males
Sex: males
Application Route: Dermal
Dose: 0, 8, 25, 125, 500, 1250 mg/kg
Exposure time: 90 day
Number of exposures: 5 days/wk
NOEL: 25 mg/kg
Target Organs: Blood, Liver, Thymus

Species: Rat, females
Sex: females
Application Route: Dermal
Dose: 0, 8, 25, 125, 500, 1250 mg/kg
Exposure time: 90 day
Number of exposures: 5 days/wk
NOEL: 125 mg/kg
Target Organs: Blood, Liver, Thymus

C12-C14 Isoalkanes Species: Rat, male and female
Sex: male and female
Application Route: oral gavage
Dose: 100, 500, 1000 mg/kg/d
Exposure time: 13 wk
Number of exposures: daily
NOEL: > 1000 mg/kg/d
Method: OECD Test Guideline 408
No adverse effects expected
Information given is based on data obtained from similar substances.

Species: Rat, male and female
Sex: male and female
Application Route: Inhalation
Dose: 2600, 5200, 10400 mg/m3
Exposure time: 90 d
Number of exposures: 6 h/d; 5d/wk
NOEL: > 10400 mg/m3
Method: OECD Test Guideline 413
No adverse effects expected
Information given is based on data obtained from similar substances.

Genotoxicity in vitro

Light Cycle Oil	:	Test Type: Modified Ames test Result: positive Test Type: Mouse lymphoma assay Result: positive Test Type: Sister Chromatid Exchange Assay Result: negative
C12-C14 Isoalkanes		Test Type: Ames test Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471 Result: negative Test Type: Mouse lymphoma assay Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 476 Result: negative Test Type: Sister Chromatid Exchange Assay Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 479 Result: negative

Genotoxicity in vivo

Light Cycle Oil	:	Test Type: Cytogenetic assay Result: negative
C12-C14 Isoalkanes		Test Type: dominant lethal test Species: Rat Route of Application: Intraperitoneal injection Dose: 300, 900 ppm Method: OECD Test Guideline 478 Remarks: Information given is based on data obtained from similar substances.

TrusTec™ Diesel Reference Fuel U-34

Carcinogenicity	:	Remarks: May cause cancer.

Developmental Toxicity

Light Cycle Oil	:	Species: Rat Application Route: Dermal Dose: 1, 50, 250 mg/kg/d Number of exposures: once daily Test period: GD 0-19 Method: OECD Guideline 414 NOAEL Teratogenicity: 1 mg/kg NOAEL Maternal: 1 mg/kg
C12-C14 Isoalkanes		Species: Rat Application Route: Inhalation Dose: 0, 400, 1200 ppm Exposure time: 6h Test period: GD 6-15

NOAEL Teratogenicity: 1200 ppm
NOAEL Maternal: 1200 ppm
Information given is based on data obtained from similar substances.

Species: Rat
Application Route: Inhalation
Dose: 300, 900 ppm
Exposure time: 6h
Test period: GD 6-15
NOAEL Teratogenicity: >= 900 ppm
NOAEL Maternal: >= 900 ppm
Information given is based on data obtained from similar substances.

TrusTec™ Diesel Reference Fuel U-34
Aspiration toxicity : May be fatal if swallowed and enters airways.

Specific Target Organ Toxicity (Repeated Exposure)
Light Cycle Oil : Target Organs: Blood, Liver, thymus gland
Assessment: May cause damage to organs through prolonged or repeated exposure.

CMR effects

Light Cycle Oil : Carcinogenicity: Possible human carcinogen

C12-C14 Isoalkanes
Carcinogenicity: Not available
Mutagenicity: Tests on bacterial or mammalian cell cultures did not show mutagenic effects., In vivo tests did not show mutagenic effects
Teratogenicity: Animal testing did not show any effects on fetal development.
Reproductive toxicity: Animal testing did not show any effects on fertility.

11.2
Information on other hazards

TrusTec™ Diesel Reference Fuel U-34
Further information : Solvents may degrease the skin.
Endocrine disrupting properties : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 12: Ecological information

12.1
Toxicity

Toxicity to fish

Light Cycle Oil : LL50: > 0,3 mg/l
Exposure time: 96 h

Species: Oncorhynchus mykiss (rainbow trout)
semi-static test Method: OECD Test Guideline 203

C12-C14 Isoalkanes

LL50: > 1.000 mg/l
Exposure time: 96 h
Species: Oncorhynchus mykiss (rainbow trout)
semi-static test Method: OECD Test Guideline 203
Information given is based on data obtained from similar substances.

Toxicity to daphnia and other aquatic invertebrates

Light Cycle Oil : EL50: 0,32 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)
Immobilization Method: OECD Test Guideline 202

C12-C14 Isoalkanes

EL50: > 1.000 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)
static test Method: OECD Test Guideline 202
Information given is based on data obtained from similar substances.

Toxicity to algae

Light Cycle Oil : EL50: 0,51 mg/l
Exposure time: 72 h
Species: Pseudokirchneriella subcapitata (green algae)
Growth inhibition Method: OECD Test Guideline 201

C12-C14 Isoalkanes

EL50: > 1.000 mg/l
Exposure time: 72 h
Species: Pseudokirchneriella subcapitata (green algae)
Growth inhibition Method: OECD Test Guideline 201
Information given is based on data obtained from similar substances.

M-Factor

Distillates (petroleum), light catalytic cracked : M-Factor (Acute Aquat. Tox.) 1

M-Factor (Chron. Aquat. Tox.) 1

Toxicity to fish (Chronic toxicity)

C12-C14 Isoalkanes : No data available:

12.2

Persistence and degradability

Biodegradability

Light Cycle Oil : aerobic
56,32 %
Testing period: 28 d

Method: OECD Test Guideline 301F
Expected to be inherently biodegradable.

C12-C14 Isoalkanes : aerobic
Result: Readily biodegradable.
89,8 %
Testing period: 28 d
Method: OECD Test Guideline 301F
Information given is based on data obtained from similar substances.

12.3
Bioaccumulative potential

Bioaccumulation

Light Cycle Oil : The product may be accumulated in organisms.

C12-C14 Isoalkanes : The product may be accumulated in organisms.

12.4
Mobility in soil

Mobility

Light Cycle Oil : No data available

C12-C14 Isoalkanes : immobile

12.5
Results of PBT and vPvB assessment

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

12.6
Endocrine disrupting properties

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

12.7
Other adverse effects

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

12.8
Additional Information

Ecotoxicology Assessment

Short-term (acute) aquatic hazard
Light Cycle Oil : Very toxic to aquatic life.

C12-C14 Isoalkanes	:	This material is not expected to be harmful to aquatic organisms.

Long-term (chronic) aquatic hazard

Light Cycle Oil	:	Very toxic to aquatic life with long lasting effects.
C12-C14 Isoalkanes	:	This material is not expected to be harmful to aquatic organisms.

SECTION 13: Disposal considerations

13.1

Waste treatment methods

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

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

Product	:	The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.
Contaminated packaging	:	Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.

SECTION 14: Transport information

14.1 - 14.7

Transport information

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

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

US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)

UN1202, DIESEL FUEL, 3, III

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)

UN1202, DIESEL FUEL, 3, III, (46,33 °C c.c.), MARINE POLLUTANT, (LIGHT CYCLE OIL)

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)

UN1202, DIESEL FUEL, 3, III

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))
UN1202, DIESEL FUEL, 3, III, (D/E), ENVIRONMENTALLY HAZARDOUS, (LIGHT CYCLE OIL)

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))
30,UN1202,DIESEL FUEL, 3, III, ENVIRONMENTALLY HAZARDOUS, (LIGHT CYCLE OIL)

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)
UN1202, DIESEL FUEL, 3, III, ENVIRONMENTALLY HAZARDOUS, (LIGHT CYCLE OIL)

Maritime transport in bulk according to IMO instruments

SECTION 15: Regulatory information

15.1

Safety, health and environmental regulations/legislation specific for the substance or mixture
National legislation

Commission Regulation (EU) 2020/878 of 18 June 2020 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

Water hazard class (Germany) : WGK 3 highly water endangering

15.2

Chemical Safety Assessment

Components	:	Distillates (petroleum), light catalytic cracked		265-060-4
Chemical Safety Assessment				
		Alkanes, C12-14-iso-	A Chemical Safety Assessment has been carried out for this substance.A quantitative risk assessment is not required for human health.A quantitative risk assessment is not required for the environment.	271-369-5

Major Accident Hazard Legislation : 96/82/EC Update:
Flammable.
6
Quantity 1: 5.000 t
Quantity 2: 50.000 t

: 96/82/EC Update:
Dangerous for the environment
9b
Quantity 1: 200 t
Quantity 2: 500 t

: 96/82/EC Update:
Petroleum products: (a) gasolines and naphthas, (b) kerosenes (including jet fuels), (c) gas oils (including diesel fuels, home heating oils and gas oil blending streams),(d) heavy fuel oils
13
Quantity 1: 2.500 t
Quantity 2: 25.000 t

: ZEU_SEVES3 Update:
FLAMMABLE LIQUIDS
P5c
Quantity 1: 5.000 t
Quantity 2: 50.000 t

: ZEU_SEVES3 Update:
ENVIRONMENTAL HAZARDS
E1
Quantity 1: 100 t
Quantity 2: 200 t

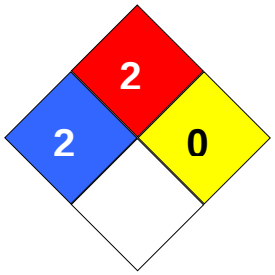
: ZEU_SEVES3 Update:
Petroleum products: (a) gasolines and naphthas, (b) kerosenes (including jet fuels), (c) gas oils (including diesel fuels, home heating oils and gas oil blending streams),(d) heavy fuel oils (e) alternative fuels serving the same purposes and with similar properties as regards flammability and environmental hazards as the products referred to in points (a) to (d)
34
Quantity 1: 2.500 t
Quantity 2: 25.000 t

Notification status

Europe REACH	:	This product is in full compliance according to REACH regulation 1907/2006/EC.
United States of America (USA) TSCA	:	On or in compliance with the active portion of the TSCA inventory
Switzerland CH INV	:	On the inventory, or in compliance with the inventory
Canada DSL	:	All components of this product are on the Canadian DSL
Australia AIIC	:	Not in compliance with the inventory
New Zealand NZIoC	:	Not in compliance with the inventory
Japan ENCS	:	On the inventory, or in compliance with the inventory
Korea KECI	:	A substance(s) in this product was not registered, notified to be registered, or exempted from registration by CPChem according to K-REACH regulations. Importation or manufacture of this product is still permitted provided the Korean Importer of Record has themselves notified the substance or the exported amount does not exceed the minimum threshold quantity of the non-registered substance(s).
Philippines PICCS	:	Not in compliance with the inventory
Taiwan TCSI	:	On the inventory, or in compliance with the inventory
China IECSC	:	On the inventory, or in compliance with the inventory

SECTION 16: Other information

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



Further information

Legacy SDS Number : 664950

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

	New Chemical Substances		
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%	ATE	Acute toxicity estimate

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

H226	Flammable liquid and vapor.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H332	Harmful if inhaled.
H350	May cause cancer.
H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

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:** 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 **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 a process chemical or extraction agent. Includes recycling/ recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities

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

Product characteristics

Remarks		Substance is complex UVCB., Predominantly hydrophobic.
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):(Msafe)	:	930.000

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 exposure		
Number of emission days per year	:	300
Emission or Release Factor: Air	:	1 %
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 a typical removal efficiency of (%): (Effectiveness: 90 %)
Water	:	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): (Effectiveness: 98,7 %)
Remarks	:	Do not apply industrial sludge to natural soils.
Water	:	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%): (Effectiveness: 83,6 %)
Remarks	:	Sludge should be incinerated, contained or reclaimed.
Remarks	:	Common practices vary across sites thus conservative process release estimates used.
Remarks	:	Risk from environmental exposure is driven by freshwater sediment.
Remarks	:	Onsite wastewater treatment required.

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

Remarks		Substance is complex UVCB., Predominantly hydrophobic.
Remarks	:	Liquid, vapour pressure < 0.5 kPa at STP

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

Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimize exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance.
Where there is potential for exposure: Restrict access to authorized persons; provide specific activity training to operators to minimize exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.,Handle substance within a predominantly closed system provided with extract ventilation.,Store substance within a closed system.

Organizational measures to prevent /limit releases, dispersion and exposure

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

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

Product characteristics
Remarks : Liquid, vapour pressure < 0.5 kPa at STP

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
Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimize exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance.
Where there is potential for exposure: Restrict access to authorized persons; provide specific activity training to operators to minimize exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.,Store substance within a closed system.

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

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

Product characteristics
Remarks : Liquid, vapour pressure < 0.5 kPa at STP

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
Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimize exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance.
Where there is potential for exposure: Restrict access to authorized persons; provide specific activity training to operators to minimize exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent

arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.,Sample via a closed loop or other system intended to avoid exposure

Organizational measures to prevent /limit releases, dispersion and exposure

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

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

Product characteristics

Remarks : Liquid, vapour pressure < 0.5 kPa at STP

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

Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimize exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance.
Where there is potential for exposure: Restrict access to authorized persons; provide specific activity training to operators to minimize exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.,Drain down and flush system prior to equipment opening or maintenance.

Organizational measures to prevent /limit releases, dispersion and exposure

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

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

Remarks : Liquid, vapour pressure < 0.5 kPa at STP

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

Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimize exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance.
Where there is potential for exposure: Restrict access to authorized persons; provide specific activity training to operators to minimize exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.,Drain down and flush system prior to equipment opening or maintenance.,Retain drain downs in sealed storage pending disposal or for subsequent recycle.

Organizational measures to prevent /limit releases, dispersion and exposure

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

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

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

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

Product characteristics

Remarks : Liquid, vapour pressure < 0.5 kPa at STP

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

Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimize exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance.
Where there is potential for exposure: Restrict access to authorized persons; provide specific activity training to operators to minimize exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.,Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.

Organizational measures to prevent /limit releases, dispersion and exposure

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves

(tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
ERC1, ERC4	Hydrocarbon Block Method with Petrorisk		Air		0,046 mg/m3	
			Freshwater		0,0056 mg/L	0,73
			Marine water		0,00056 mg/L	0,073
			Freshwater sediment		0,46 mg/kg wet weight	0,91
			Marine sediment		0,046 mg/kg wet weight	0,091
			Agricultural soil		0,00069 mg/kg wet weight	0,0018

ERC1: Manufacture of substances
ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

Workers/Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
PROC1, CS15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,01 mg/m3	0,00
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,14
			Worker – long-term – systemic Combined routes		0,14
PROC1, CS85	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,5 mg/m3	0,02
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,57
			Worker – long-term – systemic Combined routes		0,59
PROC2, CS85	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,05 mg/m3	0,02
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,57
			Worker – long-term – systemic Combined routes		0,59
PROC3, CS2	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1 mg/m3	0,04
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,14
			Worker – long-term – systemic Combined routes		0,18
PROC8a, CS39	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	5 mg/m3	0,02
			Worker – dermal, long-term – systemic	1,371 mg/kg/d	0,57
			Worker – long-term – systemic Combined routes		0,59

PROC8b, CS39	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	5 mg/m3	0,18
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,57
			Worker – long-term – systemic Combined routes		0,75
PROC15, CS36	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,5 mg/m3	0,00
			Worker – dermal, long-term – systemic	0,03 mg/kg/d	0,01
			Worker – long-term – systemic Combined routes		0,01

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

PROC1: Use in closed process, no likelihood of exposure
CS85: Bulk product storage

PROC2: Use in closed, continuous process with occasional controlled exposure
CS85: Bulk product storage

PROC3: Use in closed batch process (synthesis or formulation)
CS2: Process sampling

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
CS39: Equipment cleaning and maintenance

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.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.
Available hazard data do not enable the derivation of a DNEL for carcinogenic effects.
Available hazard data do not support the need for a DNEL to be established for other health effects.
Risk Management Measures are based on qualitative risk characterisation.Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

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

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

1. Short title of Exposure Scenario: **Use as a 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:** Industrial use of substances in closed systems
Further information	:	Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

2.1 Contributing scenario controlling environmental exposure for:ERC7: Industrial use of substances in closed systems

Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

Product characteristics

Remarks		Substance is complex UVCB., Predominantly hydrophobic.
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):(Msafe)	:	920.000

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 exposure

Number of emission days per year	:	300
Emission or Release Factor: Air	:	0,5 %
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: 88,9 %)
Remarks	:	Do not apply industrial sludge to natural soils.
Water	:	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%): (Effectiveness: 0 %)
Remarks	:	Sludge should be incinerated, contained or reclaimed.
Remarks	:	Common practices vary across sites thus conservative process release estimates used.
Remarks	:	Risk from environmental exposure is driven by freshwater sediment.
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)	:	92,3 %
Percentage removed from waste water	:	92,3 %

Conditions and measures related to external treatment of waste for disposal

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

Conditions and measures related to external recovery of waste

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

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

Product characteristics

Remarks		Substance is complex UVCB., Predominantly hydrophobic.
Physical Form (at time of use)	:	Liquid mixture
Remarks	:	Liquid, vapour pressure < 0.5 kPa at STP

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

Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimize exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance.
Where there is potential for exposure: Restrict access to authorized persons; provide specific activity

training to operators to minimize exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.,Store substance within a closed system.

Organizational measures to prevent /limit releases, dispersion and exposure

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

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

Product characteristics

Remarks		Substance is complex UVCB., Predominantly hydrophobic.
Physical Form (at time of use)	:	Liquid mixture
Remarks	:	Liquid, vapour pressure < 0.5 kPa at STP

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

Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimize exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance.
Where there is potential for exposure: Restrict access to authorized persons; provide specific activity training to operators to minimize exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.,Store substance within a closed system.

Organizational measures to prevent /limit releases, dispersion and exposure

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

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

Product characteristics

Remarks		Substance is complex UVCB., Predominantly hydrophobic.
Physical Form (at time of use)	:	Liquid mixture
Remarks	:	Liquid, vapour pressure < 0.5 kPa at STP

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

Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimize exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance.
Where there is potential for exposure: Restrict access to authorized persons; provide specific activity training to operators to minimize exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.,Handle substance within a closed system.

Organizational measures to prevent /limit releases, dispersion and exposure

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

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

Product characteristics

Remarks Substance is complex UVCB., Predominantly hydrophobic.

Physical Form (at time of use) : Liquid mixture
Remarks : Liquid, vapour pressure < 0.5 kPa at STP

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

Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimize exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance.
Where there is potential for exposure: Restrict access to authorized persons; provide specific activity training to operators to minimize exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.,Drain down and flush system prior to equipment

opening or maintenance.,Clear spills immediately

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

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

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

Product characteristics

Remarks		Substance is complex UVCB., Predominantly hydrophobic.
Physical Form (at time of use)	:	Liquid mixture
Remarks	:	Liquid, vapour pressure < 0.5 kPa at STP

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
Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimize exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance.
Where there is potential for exposure: Restrict access to authorized persons; provide specific activity training to operators to minimize exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.,Ensure material transfers are under containment or extract ventilation.

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

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

Product characteristics

Remarks		Substance is complex UVCB., Predominantly hydrophobic.
Physical Form (at time of use)	:	Liquid mixture

Remarks : Liquid, vapour pressure < 0.5 kPa at STP

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

Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimize exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance.
Where there is potential for exposure: Restrict access to authorized persons; provide specific activity training to operators to minimize exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.,Handle substance within a closed system.

Organizational measures to prevent /limit releases, dispersion and exposure

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

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
ERC7	Hydrocarbon Block Method with Petrorisk		Air		0,039 mg/m3	0,65
			Freshwater		0,028 mg/L	0,65
			Marine water		0,0028 mg/L	0,065
			Freshwater sediment		1,4 mg/kg wet weight	0,74
			Marine sediment		0,14 mg/kg wet weight	0,074
			Agricultural soil		0,00055 mg/kg wet weight	0,0072

ERC7: Industrial use of substances in closed systems

Workers/Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
PROC1, CS85	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,5 mg/m3	0,02
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,57
			Worker – long-term –		0,59

			systemic Combined routes		
PROC2, CS85	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,5 mg/m3	0,02
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,57
			Worker – long-term – systemic Combined routes		0,59
PROC3, CS107	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1 mg/m3	0,04
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,14
			Worker – long-term – systemic Combined routes		0,18
PROC8a, CS39	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,5 mg/m3	0,02
			Worker – dermal, long-term – systemic	13,71 mg/kg/d	0,57
			Worker – long-term – systemic Combined routes		0,59
PROC8b, CS14, CS8	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,5 mg/m3	0,02
			Worker – dermal, long-term – systemic	0,69 mg/kg/d	0,29
			Worker – long-term – systemic Combined routes		0,31
PROC16, CS107	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	5 mg/m3	0,18
			Worker – dermal, long-term – systemic	0,03 mg/kg/d	0,01
			Worker – long-term – systemic Combined routes		0,20

PROC1: Use in closed process, no likelihood of exposure
CS85: Bulk product storage

PROC2: Use in closed, continuous process with occasional controlled exposure
CS85: Bulk product storage

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

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
CS14: Bulk transfers
CS8: Drum/batch transfers

PROC16: Using material as fuel sources, limited exposure to unburned product to be expected
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.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.
Available hazard data do not enable the derivation of a DNEL for carcinogenic effects.
Available hazard data do not support the need for a DNEL to be established for other health effects.
Risk Management Measures are based on qualitative risk characterisation.Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

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

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

Main User Groups	:	**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	:	**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	:	**ERC9a, ERC9b:** Wide dispersive indoor use of substances in closed systems, Wide dispersive outdoor use of substances in closed systems
Further information	:	Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

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

Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

Product characteristics

Remarks	Substance is complex UVCB., Predominantly hydrophobic.

Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d):(Msafe)	:	31.000

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

Technical conditions and measures / Organizational measures

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

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2.000 m3/d
Effectiveness (of a measure)	:	92,3 %
Percentage removed from waste water	:	92,3 %

Conditions and measures related to external treatment of waste for disposal

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

Conditions and measures related to external recovery of waste

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

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

Product characteristics

Remarks		Substance is complex UVCB., Predominantly hydrophobic.

Physical Form (at time of use) : Liquid mixture
Remarks : Liquid, vapour pressure < 0.5 kPa at STP

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
Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimize exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance.
Where there is potential for exposure: Restrict access to authorized persons; provide specific activity training to operators to minimize exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.,Store substance within a closed system.

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

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

Product characteristics
Remarks Substance is complex UVCB., Predominantly hydrophobic.

Physical Form (at time of use) : Liquid mixture
Remarks : Liquid, vapour pressure < 0.5 kPa at STP

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
Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimize exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance.
Where there is potential for exposure: Restrict access to authorized persons; provide specific activity training to operators to minimize exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures.

Consider the need for risk based health surveillance.

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

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

Product characteristics

Remarks		Substance is complex UVCB., Predominantly hydrophobic.
Physical Form (at time of use)	:	Liquid mixture
Remarks	:	Liquid, vapour pressure < 0.5 kPa at STP

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
Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimize exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance.
Where there is potential for exposure: Restrict access to authorized persons; provide specific activity training to operators to minimize exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.

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

Remarks		Substance is complex UVCB., Predominantly hydrophobic.
Physical Form (at time of use)	:	Liquid mixture
Remarks	:	Liquid, vapour pressure < 0.5 kPa at STP

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

Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimize exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance.
Where there is potential for exposure: Restrict access to authorized persons; provide specific activity training to operators to minimize exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.,Drain down and flush system prior to equipment opening or maintenance.,Clear spills immediately

Organizational measures to prevent /limit releases, dispersion and exposure

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

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

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

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

Product characteristics

Remarks Substance is complex UVCB., Predominantly hydrophobic.

Physical Form (at time of use) : Liquid mixture
Remarks : Liquid, vapour pressure < 0.5 kPa at STP

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

Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimize exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance.
Where there is potential for exposure: Restrict access to authorized persons; provide specific activity training to operators to minimize exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios;

clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.,Ensure material transfers are under containment or extract ventilation.

Organizational measures to prevent /limit releases, dispersion and exposure

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

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

Remarks: Substance is complex UVCB., Predominantly hydrophobic.

Physical Form (at time of use) : Liquid mixture
Remarks : Liquid, vapour pressure < 0.5 kPa at STP

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

Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimize exposure using measures such as closed systems, dedicated facilities and suitable general/local exhaust ventilation. Drain down systems and clear transfer lines prior to breaking containment. Clean/flush equipment, where possible, prior to maintenance.
Where there is potential for exposure: Restrict access to authorized persons; provide specific activity training to operators to minimize exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when its use is identified for certain contributing scenarios; clear up spills immediately and dispose of wastes safely. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Regularly inspect, test and maintain all control measures. Consider the need for risk based health surveillance.

Organizational measures to prevent /limit releases, dispersion and exposure

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

3. Exposure estimation and reference to its source

Environment

Contributing	Exposure Assessment	Specific	Compartment	Value type	Level of	Risk characterization

Scenario	Method	conditions			Exposure	ratio (PEC/PNEC):
ERC9a, ERC9b	Hydrocarbon Block Method with Petrorisk		Air		0,00015 mg/m3	
			Freshwater		0,000029 mg/L	0,00092
			Marine water		0,0000005 mg/L	0,000023
			Freshwater sediment		0,0032 mg/kg wet weight	0,00085
			Marine sediment		0,0001 mg/kg wet weight	0,00
			Agricultural soil		0,00022 mg/kg wet weight	0,000058

ERC9a: Wide dispersive indoor use of substances in closed systems
ERC9b: Wide dispersive outdoor use of substances in closed systems

Workers/Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio (PEC/PNEC):
PROC1, CS67	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,01 mg/m3	0,00
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,14
			Worker – long-term – systemic Combined routes		0,14
PROC2, CS15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,5 mg/m3	0,04
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,57
			Worker – long-term – systemic Combined routes		0,61
PROC3, CS107	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1 mg/m³	0,04
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,14
			Worker – long-term – systemic Combined routes		0,18
PROC8a, CS39	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	5 mg/m3	0,18
			Worker – dermal, long-term – systemic	13,71 mg/kg/d	0,57
			Worker – long-term – systemic Combined routes		0,75
PROC8b, CS14	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	5 mg/m³	0,04
			Worker – inhalation, long-term – systemic	0,69 mg/kg/d	0,28
			Worker – long-term – systemic Combined routes		0,32
PROC8b, CS8, CS507	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	5 mg/m³	0,18
			Worker – inhalation, long-term – systemic	6,86 mg/kg/d	0,57
			Worker – long-term – systemic Combined routes		0,75
PROC16, CS107	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	20 mg/m³	0,76
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,14

			Worker – long-term – systemic Combined routes		0,87

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

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

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

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
CS507: Refueling

PROC16: Using material as fuel sources, limited exposure to unburned product to be expected
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.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.
Available hazard data do not enable the derivation of a DNEL for carcinogenic effects.
Available hazard data do not support the need for a DNEL to be established for other health effects.
Risk Management Measures are based on qualitative risk characterisation.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).