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

# 1.1 Product identifier

Trade name : C6 Raffinate Product code : Q9110, Q9140

Registration number EU : 01-2119484660-35-0001, 01-2119484660-35-0002, 01-

2119484660-35-0003, 01-2119484660-35-0004

Synonyms : Naphtha, petroleum, solvent-refined light, Raffinate, Solvent

refined light naphtha heartcut (petroleum)

CAS-No. : 64741-84-0

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

Use of the Substance/Mixture : Chemical feedstock and component of motor gasoline. For

use only in industrial processes.

Please refer to section 16 and/or the annexes for the regis-

tered uses under REACH.

Uses advised against : Restricted to professional users., This product must not be

used in applications other than the above without first seeking

the advice of the supplier.

This product must not be used in applications other than those

listed in Section 1 without first seeking the advice of the sup-

plier.

# 1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier : Shell Chemicals Europe B.V.

PO Box 2334

3000 CH Rotterdam

Netherlands

Telephone Telefax

Contact for Safety Data

Sheet

1.4 Emergency telephone number

# SECTION 2: Hazards identification

# 2.1 Classification of the substance or mixture

# Classification (REGULATION (EC) No 1272/2008)

Flammable liquids, Category 2 H225: Highly flammable liquid and vapour.

Aspiration hazard, Category 1 H304: May be fatal if swallowed and enters air-

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ways.

Skin irritation, Category 2 H315: Causes skin irritation.

Eye irritation, Category 2 H319: Causes serious eye irritation.

Specific target organ toxicity - single ex-

posure, Category 3

H336: May cause drowsiness or dizziness.

Germ cell mutagenicity, Category 1B H340: May cause genetic defects.

Carcinogenicity, Category 1A H350: May cause cancer.

Reproductive toxicity, Category 2 H361: Suspected of damaging fertility or the un-

born child.

Specific target organ toxicity - repeated

exposure, Category 1

H372: Causes damage to organs through pro-

longed or repeated exposure.

Long-term (chronic) aquatic hazard, Cat-

egory 2

H411: Toxic to aquatic life with long lasting effects.

#### 2.2 Label elements

# Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :









Signal word : Danger

Hazard statements : PHYSICAL HAZARDS:

H225 Highly flammable liquid and vapour.

**HEALTH HAZARDS:** 

H304 May be fatal if swallowed and enters airways.

H315 Causes skin irritation.

H319 Causes serious eye irritation.H336 May cause drowsiness or dizziness.

H340 May cause genetic defects.

H350 May cause cancer.

H361 Suspected of damaging fertility or the unborn child.H372 Causes damage to organs through prolonged or re-

peated exposure.

**ENVIRONMENTAL HAZARDS:** 

H411 Toxic to aquatic life with long lasting effects.

Precautionary statements : Prevention:

P210 Keep away from heat, hot surfaces, sparks, open

flames and other ignition sources. No smoking. P243 Take action to prevent static discharges.

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P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.

P202 Do not handle until all safety precautions have been read and understood.

P273 Avoid release to the environment.

#### Response:

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.

P331 Do NOT induce vomiting.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P314 Get medical advice/ attention if you feel unwell.

P391 Collect spillage.

# Storage:

No precautionary phrases.

#### Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

#### 2.3 Other hazards

Ecological information: 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.

Toxicological information: 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.

May form flammable/explosive vapour-air mixture.

This material is a static accumulator.

Even with proper grounding and bonding, this material can still accumulate an electrostatic charge.

If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable airvapour mixtures can occur.

May be fatal if swallowed and enters airways.

Causes skin irritation.

Causes serious eye irritation.

May cause drowsiness or dizziness.

May cause genetic defects.

May cause cancer.

Suspected of damaging fertility or the unborn child.

Causes damage to organs through prolonged or repeated exposure.

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

#### 3.1 Substances

# Components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
naphtha (petroleum), solvent- refined light	64741-84-0 265-086-6 649-278-00-0 01-2119484660-35	Flam. Liq. 1; H224 Skin Irrit. 2; H315 Asp. Tox. 1; H304 Repr. 2; H361 Muta. 1B; H340 Carc. 1B; H350 STOT SE 3; H336 (Narcotic effects) Aquatic Chronic 2; H411	<= 100

#### **Further information**

#### Contains:

Chemical name	Identification number	Classification	Concentration (% w/w)
n-Hexane	110-54-3, 203-777-6	Flam. Liq.2; H225 Skin Irrit.2; H315 Asp. Tox.1; H304 STOT RE2; H373 STOT SE3; H336 Repr.2; H361f Aquatic Chronic2; H411	>= 10 - <= 30
Cyclohexane	110-82-7, 203-806-2	Flam. Liq.2; H225 Asp. Tox.1; H304 Skin Irrit.2; H315 STOT SE3; H336 Aquatic Chronic1; H410 Aquatic Acute1; H400 ——— M-Factor (Acute aquatic toxicity): 1 M-Factor (Chronic aquatic toxicity): 1	>= 5 - <= 10
pentane	109-66-0, 203-692-4	Flam. Liq.1; H224 Asp. Tox.1; H304 STOT SE3; H336 Aquatic Chronic2; H411	>= 0 - <= 5

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		EUH066	
Benzene	71-43-2, 200-753-7	Flam. Liq.2; H225 Asp. Tox.1; H304 Skin Irrit.2; H315 Eye Irrit.2; H319 Muta.1B; H340 Carc.1A; H350 STOT RE1; H372 Aquatic Chronic3; H412	< 1

#### **SECTION 4: First aid measures**

#### 4.1 Description of first aid measures

General advice : Not expected to be a health hazard when used under normal

conditions.

Protection of first-aiders : When administering first aid, ensure that you are wearing the

appropriate personal protective equipment according to the

incident, injury and surroundings.

If inhaled : Remove to fresh air. If rapid recovery does not occur,

transport to nearest medical facility for additional treatment.

In case of skin contact : Remove contaminated clothing. Immediately flush skin with

large amounts of water for at least 15 minutes, and follow by washing with soap and water if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical

facility for additional treatment.

In case of eye contact : Immediately flush eye(s) with plenty of water.

Remove contact lenses, if present and easy to do. Continue

rinsing.

Transport to the nearest medical facility for additional treat-

ment.

If swallowed : Call emergency number for your location / facility.

If swallowed, do not induce vomiting: transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. If any of the following delayed signs and symptoms appear within the next 6 hours, transport to the nearest medical facility: fever greater than 101° F (38.3°C), shortness of breath, chest congestion or continued coughing or wheezing.

# 4.2 Most important symptoms and effects, both acute and delayed

Symptoms : Breathing of high vapour concentrations may cause central

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nervous system (CNS) depression resulting in dizziness, light-headedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness and death.

Skin irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blisters.

Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision.

If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath, and/or fever.

If any of the following delayed signs and symptoms appear within the next 6 hours, transport to the nearest medical facility: fever greater than 101° F (38.3°C), shortness of breath, chest congestion or continued coughing or wheezing.

Damage to blood-forming organs may be evidenced by: a) fatigue and anaemia (RBC), b) decreased resistance to infection, and/or excessive bruising and bleeding (platelet effect). Immunotoxicity may be evidenced by decreased resistance to infection.

Peripheral nerve damage may be evidenced by impairment of motor function (incoordination, unsteady walk, or muscle weakness in the extremities, and/or loss of sensation in the arms and legs).

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

Treatment : IMMEDIATE TREATMENT IS EXTREMELY IMPORTANT!

Call a doctor or poison control center for guidance.

Potential for chemical pneumonitis.

Treat symptomatically.

Potential for cardiac sensitisation, particularly in abuse situations. Hypoxia or negative inotropes may enhance these ef-

fects. Consider: oxygen therapy.

# **SECTION 5: Firefighting measures**

# 5.1 Extinguishing media

Suitable extinguishing media : Foam, water spray or fog. Dry chemical powder, carbon diox-

ide, sand or earth may be used for small fires only.

Unsuitable extinguishing

media

Do not use water in a jet.

# 5.2 Special hazards arising from the substance or mixture

Specific hazards during fire- : Clear fire area of all non-emergency personnel.

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fighting Hazardous combustion products may include:

A complex mixture of airborne solid and liquid particulates and

gases (smoke). Carbon monoxide.

Unidentified organic and inorganic compounds.

Flammable vapours may be present even at temperatures

below the flash point.

The vapour is heavier than air, spreads along the ground and

distant ignition is possible.

Will float and can be reignited on surface water.

# 5.3 Advice for firefighters

Special protective equipment :

for firefighters

Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to

relevant Standards (e.g. Europe: EN469).

Specific extinguishing meth-

ods

Standard procedure for chemical fires.

Further information : Keep adjacent containers cool by spraying with water.

#### **SECTION 6: Accidental release measures**

#### 6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions

Observe all relevant local and international regulations.

Notify authorities if any exposure to the general public or the

environment occurs or is likely to occur.

Local authorities should be advised if significant spillages

cannot be contained.

6.1.1 For non emergency personnel: Avoid contact with skin, eyes and clothing.

Isolate hazard area and deny entry to unnecessary or unpro-

tected personnel.

Do not breathe fumes, vapour. Do not operate electrical equipment. 6.1.2 For emergency responders:

Avoid contact with skin, eyes and clothing.

Isolate hazard area and deny entry to unnecessary or unpro-

tected personnel.

Do not breathe fumes, vapour. Do not operate electrical equipment.

#### 6.2 Environmental precautions

Environmental precautions : Shut off leaks, if possible without personal risks. Remove all

possible sources of ignition in the surrounding area. Use ap-

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propriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. Attempt to disperse the vapour or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Monitor area with combustible gas indicator.

# 6.3 Methods and material for containment and cleaning up

Methods for cleaning up : For small liquid spills (< 1 drum), transfer by mechanical

means to a labeled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove

contaminated soil and dispose of safely.

For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely

Ventilate contaminated area thoroughly.

If contamination of site occurs remediation may require spe-

cialist advice.

#### 6.4 Reference to other sections

For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet., For guidance on disposal of spilled material see Section 13 of this Safety Data Sheet.

# **SECTION 7: Handling and storage**

# 7.1 Precautions for safe handling

Technical measures : Avoid breathing of or direct contact with material. Only use in

well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see

Section 8 of this Safety Data Sheet.

Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this

material.

Ensure that all local regulations regarding handling and stor-

age facilities are followed.

Advice on safe handling : Avoid inhaling vapour and/or mists.

Avoid contact with skin, eyes and clothing.

Extinguish any naked flames. Do not smoke. Remove ignition

sources. Avoid sparks.

Use local exhaust ventilation if there is risk of inhalation of

vapours, mists or aerosols.

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Bulk storage tanks should be diked (bunded).

When using do not eat or drink.

The vapour is heavier than air, spreads along the ground and distant ignition is possible.

**Product Transfer** 

: Even with proper grounding and bonding, this material can still accumulate an electrostatic charge. If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can occur. Be aware of handling operations that may give rise to additional hazards that result from the accumulation of static charges. These include but are not limited to pumping (especially turbulent flow), mixing, filtering, splash filling, cleaning and filling of tanks and containers, sampling, switch loading, gauging, vacuum truck operations, and mechanical movements. These activities may lead to static discharge e.g. spark formation. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (≤ 1 m/s until fill pipe submerged to twice its diameter, then ≤ 7 m/s). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations.

Refer to guidance under Handling section.

Hygiene measures

Wash hands before eating, drinking, smoking and using the toilet. Launder contaminated clothing before re-use. Do not ingest. If swallowed, then seek immediate medical assistance.

# 7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers

Refer to section 15 for any additional specific legislation covering the packaging and storage of this product.

Further information on storage stability

Storage Temperature: Ambient.

Bulk storage tanks should be diked (bunded).

Locate tanks away from heat and other sources of ignition. Cleaning, inspection and maintenance of storage tanks is a specialist operation, which requires the implementation of strict procedures and precautions.

Must be stored in a diked (bunded) well- ventilated area, away from sunlight, ignition sources and other sources of heat. Keep away from aerosols, flammables, oxidizing agents, corrosives and from other flammable products which are not harmful or toxic to man or to the environment.

Electrostatic charges will be generated during pumping.
Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment to

reduce the risk.

The vapours in the head space of the storage vessel may lie in the flammable/explosive range and hence may be flamma-

ble.

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Packaging material : Suitable material: For containers, or container linings use mild

steel, stainless steel., For container paints, use epoxy paint,

zinc silicate paint.

Unsuitable material: Avoid prolonged contact with natural,

butyl or nitrile rubbers.

Container Advice : Do not cut, drill, grind, weld or perform similar operations on or

near containers.

7.3 Specific end use(s)

Specific use(s) : Please refer to section 16 and/or the annexes for the regis-

tered uses under REACH.

See additional references that provide safe handling practices for liquids that are determined to be static accumulators: American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practices

on Static Electricity).

IEC/TS 60079-32-1: Electrostatic hazards, guidance

# **SECTION 8: Exposure controls/personal protection**

#### 8.1 Control parameters

#### **Occupational Exposure Limits**

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
naphtha (petrole- um), solvent- refined light	64741-84-0	VME (Vapour)	1.000 mg/m3	FR VLE
	M1b, unless the mentioned in the ue of 500 mg/	Further information: These hydrocarbon fractions are classified as C1a and M1b, unless they contain less than 1% by weight of benzene, The values mentioned in the list for specific hydrocarbons apply at the same time., A value of 500 mg/m3 has been foreseen in the circulaire of July 12th, 1993 and had to be reexamined in 1995, but has not., Permissible limit values (circular)		
naphtha (petrole- um), solvent- refined light		VLCT (VLE) (Vapour)	1.500 mg/m3	FR VLE
	Further information: These hydrocarbon fractions are classified as C1a and M1b, unless they contain less than 1% by weight of benzene, The values mentioned in the list for specific hydrocarbons apply at the same time., Permissible limit values (circular)			
n-Hexane	110-54-3	VME	20 ppm 72 mg/m3	FR VLE
	Further information: Reprotoxic category 2 - Possibly reprotoxic to humans, Regulatory binding exposure limits			
n-Hexane		TWA	20 ppm 72 mg/m3	2006/15/EC
	Further information: Indicative			

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Cyclohexane	110-82-7	VME	200 ppm	FR VLE
			700 mg/m3	
	Further infor	mation: Regulatory	binding exposure limits	
Cyclohexane		VLCT (VLE)	375 ppm	FR VLE
		` '	1.300 mg/m3	
	Further infor	mation: Permissible	e limit values (circular)	•
Cyclohexane		TWA	200 ppm	2006/15/EC
			700 mg/m3	
	Further infor	mation: Indicative		•
pentane	109-66-0	VME	1.000 ppm	FR VLE
·			3.000 mg/m3	
	Further infor	mation: Regulatory	binding exposure limits	
pentane		TWA	1.000 ppm	2006/15/EC
			3.000 mg/m3	
	Further infor	mation: Indicative	•	
Benzene	71-43-2	VME	0,5 ppm	FR VLE
			1,65 mg/m3	
	Further infor	mation: Carcinoger	nic category 1A - Carcinog	jenic to humans,
	Mutagenic c	ategory 1B - Proba	bly mutagenic to humans,	Risk of penetration
	through skin	, Regulatory bindin	g exposure limits	
Benzene		TWA	0,25 ppm	Shell Internal
			0,8 mg/m3	Standard
				(SIS) for 8-12
				hour TWA.
Benzene		STEL	2,5 ppm	Shell Internal
			8 mg/m3	Standard
				(SIS) for 15
				min (STEL)

# **Biological occupational exposure limits**

No biological limit allocated.

# Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Exposure routes	Potential health ef-	Value
			fects	
C6 Raffinate, 64741- 84-0	Workers	Dermal	Long-term systemic effects	25,9 mg/kg bw/day
C6 Raffinate, 64741- 84-0	Workers	Inhalation	Long-term systemic effects	3,25 mg/m3

# Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name		Environmental Compartment	Value
Remarks:		e is a hydrocarbon with a complex, unknown or rentional methods of deriving PNECs are not a	•
	not possib	ole to identify a single representative PNEC for	such substances.

# 8.2 Exposure controls

# **Engineering measures**

Read in conjunction with the Exposure Scenario for your specific use contained in the Annex. Use sealed systems as far as possible.

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Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits.

Local exhaust ventilation is recommended.

Firewater monitors and deluge systems are recommended.

Eye washes and showers for emergency use.

Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include:

#### General Information

Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise 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 authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when there is potential for inhalation; 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.

#### Personal protective equipment

Read in conjunction with the Exposure Scenario for your specific use contained in the Annex. The provided information is made in consideration of the PPE directive (Council Directive 89/686/EEC) and the CEN European Committee for Standardisation (CEN) standards.

Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

Eye protection : Wear goggles for use against liquids and gas.

Wear full face shield if splashes are likely to occur.

Approved to EU Standard EN166.

Hand protection

Remarks : Where hand contact with the product may occur the use of

gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection. Longer term protection: Viton.

Incidental contact/Splash protection: Nitrile rubber.

For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same but recognize that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time maybe acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material.

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Glove thickness should be typically greater than 0.35 mm depending on the glove make and model. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moistur-

izer is recommended.

Skin and body protection

Wear chemical resistant gloves/gauntlets and boots. Where

risk of splashing, also wear an apron.

Protective clothing approved to EU Standard EN14605. Wear antistatic and flame-retardant clothing, if a local risk

assessment deems it so.

Respiratory protection

If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus.

Where air-filtering respirators are suitable, select an appro-

priate combination of mask and filter.

If air-filtering respirators are suitable for conditions of use: Select a filter suitable for organic gases and vapours [Type A

boiling point > 65°C (149°F)] meeting EN14387.

Thermal hazards

When handling heated product, wear heat resistant gloves, safety hat with chin strap, face shield (preferably with a chin guard), safety glasses, heat resistant coveralls (with cuffs over gloves and legs over boots), neck protection and heavy duty boots, e.g. leather for heat resistance.

# **SECTION 9: Physical and chemical properties**

# 9.1 Information on basic physical and chemical properties

Physical state Liquid.

Colour colourless

Odour aromatic

Odour Threshold Data not available

Melting point/freezing point Data not available

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Boiling point/boiling range : ca. 55 - 105 °C

Flammability

Flammability (solid, gas) : Not applicable

Lower explosion limit and upper explosion limit / flammability limit

Upper explosion limit /

Upper flammability limit

: 7,5 %(V)

Lower explosion limit / Lower flammability limit

1 %(V)

Flash point : < 0 °C

Auto-ignition temperature : > 225 °C

Decomposition temperature

Decomposition tempera-

ture

Data not available

pH : Data not available

Viscosity

Viscosity, dynamic : ca. 0,5 mPa.s (20 °C)

Method: ASTM D445

Viscosity, kinematic : Data not available

Solubility(ies)

Water solubility : Data not available

Partition coefficient: n-

octanol/water

Data not available

Vapour pressure : < 500 mbar (38 °C)

Relative density : Data not available

Density : Typical 700 kg/m3 (20 °C)

Method: ASTM D4052

Relative vapour density : 3,3

Particle characteristics

Particle size : Data not available

9.2 Other information

Explosive properties : No data available

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Oxidizing properties : Data not available

Evaporation rate : Data not available

Conductivity : Low conductivity: < 100 pS/m

> The conductivity of this material makes it a static accumulator., A liquid is typically considered nonconductive if its con-

ductivity is below 100 pS/m and is considered semi-

conductive if its conductivity is below 10,000 pS/m., Whether a liquid is nonconductive or semi-conductive, the precautions are the same., A number of factors, for example liquid temperature, presence of contaminants, and anti-static additives

can greatly influence the conductivity of a liquid

Surface tension Data not available

Molecular weight Data not available

# **SECTION 10: Stability and reactivity**

#### 10.1 Reactivity

The product does not pose any further reactivity hazards in addition to those listed in the following sub-paragraph.

#### 10.2 Chemical stability

No hazardous reaction is expected when handled and stored according to provisions Stable under normal conditions of use.

#### 10.3 Possibility of hazardous reactions

Hazardous reactions : Reacts with strong oxidising agents.

#### 10.4 Conditions to avoid

Conditions to avoid : Avoid heat, sparks, open flames and other ignition sources.

In certain circumstances product can ignite due to static elec-

tricity.

#### 10.5 Incompatible materials

Materials to avoid Strong oxidising agents.

#### 10.6 Hazardous decomposition products

Hazardous decomposition products are not expected to form during normal storage.

Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases including carbon monoxide, carbon dioxide, sulphur oxides and unidentified organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

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# **SECTION 11: Toxicological information**

### 11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Information on likely routes of:

exposure

Inhalation is the primary route of exposure although absorption may occur through skin contact or following accidental

ingestion.

# **Acute toxicity**

# **Components:**

# naphtha (petroleum), solvent-refined light:

Acute oral toxicity : LD50 Oral (Rat): > 5.000 mg/kg

Remarks: Low toxicity

Acute inhalation toxicity : LC 50 (Rat): > 5 mg/l

Exposure time: 4 h Remarks: Low toxicity

Remarks: Based on human experience, breathing of vapours or mists may cause a temporary burning sensation to nose,

throat and lungs.

Acute dermal toxicity : LD 50 (Rabbit): > 2.000 mg/kg

Remarks: Low toxicity

Acute toxicity (other routes of :

administration)

Remarks: Exposure may occur via inhalation, ingestion, skin

absorption, skin or eye contact, and accidental ingestion.

#### Skin corrosion/irritation

# **Components:**

#### naphtha (petroleum), solvent-refined light:

Remarks : Irritating to skin.

#### Serious eye damage/eye irritation

#### **Components:**

# naphtha (petroleum), solvent-refined light:

Remarks : Irritating to eyes. (Hydrogen Sulfide)

Based on available data, the classification criteria are not met.

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#### Respiratory or skin sensitisation

# **Components:**

# naphtha (petroleum), solvent-refined light:

Remarks : Not a sensitiser.

Based on available data, the classification criteria are not met.

#### Germ cell mutagenicity

#### **Components:**

# naphtha (petroleum), solvent-refined light:

Genotoxicity in vivo : Remarks: Contains Benzene, CAS # 71-43-2.

May cause heritable genetic damage

Remarks: Mutagenicity studies on gasoline and gasoline blending streams have shown predominantly negative results.

Germ cell mutagenicity- As-

sessment

Category 1B

#### Carcinogenicity

# **Components:**

# naphtha (petroleum), solvent-refined light:

Remarks : Contains Benzene, CAS # 71-43-2.

Known human carcinogen.

Remarks : Contains Benzene, CAS # 71-43-2.

May cause leukaemia (AML - acute myelogenous leukaemia).

May cause MDS (Myelodysplastic Syndrome).

Remarks : Inhalation exposure to mice causes liver tumours, which are

not considered relevant to humans.

Remarks : An epidemiology study of more than 18,000 petroleum mar-

keting and distribution workers found no significantly increased risk of death from leukemia, multiple myeloma, or

kidney cancer associated with gasoline exposure.

Carcinogenicity - Assess-

ment

: Category 1B

Material	GHS/CLP Carcinogenicity Classification
naphtha (petroleum), solvent- refined light	Carcinogenicity Category 1B
n-Hexane	No carcinogenicity classification.

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Cyclohexane	No carcinogenicity classification.
pentane	No carcinogenicity classification.
Benzene	Carcinogenicity Category 1A

Material	Other Carcinogenicity Classification
naphtha (petroleum), solvent- refined light	IARC: Group 2B: Possibly carcinogenic to humans
Benzene	IARC: Group 1: Carcinogenic to humans

#### Reproductive toxicity

#### **Components:**

#### naphtha (petroleum), solvent-refined light:

Effects on fertility :

Remarks: Contains n-Hexane, CAS # 110-54-3., May impair

fertility at doses which produce other toxic effects.

Reproductive toxicity - As-

sessment

This product does not meet the criteria for classification in

categories 1A/1B.

#### STOT - single exposure

# **Components:**

# naphtha (petroleum), solvent-refined light:

Remarks : High concentrations may cause central nervous system de-

pression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death.

Remarks : Slightly irritating to respiratory system.

#### STOT - repeated exposure

#### **Components:**

#### naphtha (petroleum), solvent-refined light:

Remarks : Kidney: caused kidney effects in male rats which are not con-

sidered relevant to humans

Remarks : Contains Toluene, CAS # 108-88-3.

Prolonged and repeated exposures to high concentrations have resulted in hearing loss in rats. Solvent abuse and noise interaction in the work environment may cause hearing loss. Abuse of vapours has been associated with organ damage

and death.

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# **Aspiration toxicity**

### **Components:**

# naphtha (petroleum), solvent-refined light:

Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.

#### 11.2 Information on other hazards

#### **Endocrine disrupting properties**

#### **Product:**

Assessment The substance/mixture does not contain components consid-

ered 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.

#### **Further information**

**Product:** 

Remarks Unless indicated otherwise, the data presented is representa-

tive of the product as a whole, rather than for individual com-

ponent(s).

#### Components:

#### naphtha (petroleum), solvent-refined light:

Remarks Exposure to very high concentrations of similar materials has

been associated with irregular heart rhythms and cardiac ar-

Classifications by other authorities under varying regulatory Remarks

frameworks may exist.

#### **SECTION 12: Ecological information**

#### 12.1 Toxicity

#### **Components:**

#### naphtha (petroleum), solvent-refined light:

Toxicity to fish Remarks: Toxic

 $LL/EL/IL50 > 1 \le 10 \text{ mg/l}$ 

Toxicity to daphnia and other : Remarks: Toxic

aquatic invertebrates

 $LL/EL/IL50 > 1 \le 10 \text{ mg/l}$ 

Toxicity to algae/aquatic plants : Remarks: Toxic

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 $LL/EL/IL50 > 1 \le 10 \text{ mg/l}$ 

Toxicity to microorganisms

Remarks: LL/EL/IL50 > 10 <= 100 mg/l

Harmful

Toxicity to fish (Chronic tox-

icity)

Remarks: Data not available

Toxicity to daphnia and other :

aquatic invertebrates (Chron-

ic toxicity)

Remarks: NOEC/NOEL > 1.0 - <= 10 mg/l

#### 12.2 Persistence and degradability

# **Components:**

# naphtha (petroleum), solvent-refined light:

Biodegradability : Remarks: Oxidises rapidly by photo-chemical reactions in air.

Inherently biodegradable. Not Persistent per IMO criteria.

International Oil Pollution Compensation (IOPC) Fund definition: "A non-persistent oil is oil, which, at the time of shipment, consists of hydrocarbon fractions, (a) at least 50% of which, by volume, distills at a temperature of 340°C (645°F) and (b) at least 95% of which, by volume, distills at a temperature of 370°C (700°F) when tested by the ASTM Method D-86/78 or any subsequent revision

thereof."

#### 12.3 Bioaccumulative potential

#### Components:

#### naphtha (petroleum), solvent-refined light:

Bioaccumulation : Remarks: Contains components with the potential to bioaccumulate.

#### 12.4 Mobility in soil

#### **Components:**

#### naphtha (petroleum), solvent-refined light:

Mobility : Remarks: If the product enters soil, one or more constituents

will or may be mobile and may contaminate groundwater., Floats on water., Evaporates within a day from water or soil

surfaces.

#### 12.5 Results of PBT and vPvB assessment

### **Components:**

# naphtha (petroleum), solvent-refined light:

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Assessment The substance does not meet the criteria for PBT or vPvB in

accordance with Annex XIII...

#### 12.6 Endocrine disrupting properties

#### **Product:**

Assessment 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

#### **Product:**

Additional ecological infor-

mation

Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

# **SECTION 13: Disposal considerations**

#### 13.1 Waste treatment methods

Product

Recover or recycle if possible.

It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations.

Waste product should not be allowed to contaminate soil or ground water, or be disposed of into the environment. Do not dispose into the environment, in drains or in water courses.

Do not dispose of tank water bottoms by allowing them to drain into the ground. This will result in soil and groundwater contamination.

Waste arising from a spillage or tank cleaning should be disposed of in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.

Waste, spills or used product is dangerous waste.

Disposal should be in accordance with applicable regional,

national, and local laws and regulations.

Local regulations may be more stringent than regional or na-

tional requirements and must be complied with.

MARPOL - see International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) which provides technical aspects at controlling pollutions from ships.

Contaminated packaging Drain container thoroughly.

After draining, vent in a safe place away from sparks and fire.

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Residues may cause an explosion hazard. Do not puncture,

cut or weld uncleaned drums.

Send to drum recoverer or metal reclaimer.

Comply with any local recovery or waste disposal regulations.

# **SECTION 14: Transport information**

14.1 UN number or ID number

ADN : 1268
ADR : 1268
RID : 1268
IMDG : 1268
IATA : 1268

14.2 UN proper shipping name

**ADN** : PETROLEUM DISTILLATES, N.O.S.

 $(NAPHTHA, vp50 \le 110 kPa)$ 

ADR : PETROLEUM DISTILLATES, N.O.S.

RID : PETROLEUM DISTILLATES, N.O.S.

IMDG : PETROLEUM DISTILLATES, N.O.S.

(NAPHTHA)

IATA : Petroleum distillates, n.o.s.

14.3 Transport hazard class(es)

ADN : 3
ADR : 3
RID : 3
IMDG : 3
IATA : 3

14.4 Packing group

**ADN** 

Packing group : II Classification Code : F1

Labels : 3 (N2, CMR, F) CDNI Inland Water Waste : NST 3212 Naphtha

Agreement

**ADR** 

Packing group : II
Classification Code : F1
Hazard Identification Number : 33
Labels : 3

**RID** 

Packing group : II

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Classification Code Hazard Identification Number : 33 Labels

Remarks SP640CD: Special provision 640D

**IMDG** 

Packing group Ш Labels 3

**IATA** 

Packing group : II Labels : 3

14.5 Environmental hazards

ADN

Environmentally hazardous : yes

**ADR** 

Environmentally hazardous yes

Environmentally hazardous yes

**IMDG** 

Marine pollutant yes

14.6 Special precautions for user

Remarks Special Precautions: Refer to Section 7, Handling & Storage,

for special precautions which a user needs to be aware of or

needs to comply with in connection with transport.

14.7 Maritime transport in bulk according to IMO instruments

MARPOL Annex 1 rules apply for bulk shipments by sea.

# **SECTION 15: Regulatory information**

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

REACH - List of substances subject to authorisation

(Annex XIV)

Product is not subject to Authorisation under REACH.

REACH - Candidate List of Substances of Very High

Concern for Authorisation (Article 59).

This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH),

Article 57).

Occupational Illnesses (R- : 4, 4 bis, 59, 84

461-3, France)

# Other regulations:

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The following regulatory information is not intended to be comprehensive and does not exempt the end user of the product to refer to all official documents to determine its obligations. Labour code: Exposure forbidden to certain works/products to:

- Young people at least 15 years old and under 18 years old: art. D4153-17
- Pregnant or breast-feeding women : art. D4152-10, D4152-11

According type of product and quantity stored, check for applicability of Code of environment: art. R511-9 - Nomenclature of classified facilities.

Social security code - Article L.461-6, Appendix A, no. 601-15. Labour code - Intensified medical supervision: Articles R.4624-18 and R.4624-19, decree 2012-135 of 30.01.2012.

The product is subject to the DDADUE (Provisions for Adaptation of Legislation to European Union Law in the Field of Sustainable Development) from 16 July 2013 of Articles 10 and 11, the transposition of the Seveso III directive (2012/18/EU).

# The components of this product are reported in the following inventories:

AIIC : Listed

DSL : Listed

IECSC : Listed

KECI : Listed

NZIoC : Listed

PICCS : Listed

TSCA : Listed

TCSI : Listed

#### 15.2 Chemical safety assessment

A Chemical Safety Assessment has been carried out for this substance.

#### **SECTION 16: Other information**

#### Full text of other abbreviations

2006/15/EC : Europe. Indicative occupational exposure limit values

FR VLE : France. Occupational Exposure Limits

2006/15/EC / TWA : Limit Value - eight hours
FR VLE / VME : Time Weighted Average
FR VLE / VLCT (VLE) : Short Term Exposure Limit

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation; Regulation;

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tion (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA -European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECI -Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

#### **Further information**

Training advice : Provide adequate information, instruction and training for op-

erators.

Other information : For Industry guidance and tools on REACH please visit the

CEFIC website at http://cefic.org/Industry-support.

The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not consid-

ered to be PBT or vPvB.

A vertical bar (|) in the left margin indicates an amendment

from the previous version.

This product is classified as H304 (May be fatal if swallowed and enters airways). The risk relates to potential for aspiration. The risk arising from aspiration hazard is solely related to the physico-chemical properties of the substance. The risk can therefore be controlled by implementing risk management measures tailored to this specific hazard and included within Section 8 of the SDS. An exposure scenario is not presented.

Sources of key data used to compile the Safety Data Sheet

The quoted data are from, but not limited to, one or more sources of information (e.g. toxicological data from Shell Health Services, material suppliers' data, CONCAWE, EU

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IUCLID date base, EC 1272 regulation, etc).

Classification of the mixture:		Classification procedure:
Flam. Liq. 2	H225	On basis of test data.
Asp. Tox. 1	H304	Expert judgement and weight of evidence determination.
Skin Irrit. 2	H315	Expert judgement and weight of evidence determination.
Eye Irrit. 2	H319	Expert judgement and weight of evidence determination.
STOT SE 3	H336	Expert judgement and weight of evidence determination.
Muta. 1B	H340	Expert judgement and weight of evidence determination.
Carc. 1A	H350	Expert judgement and weight of evidence determination.
Repr. 2	H361	Expert judgement and weight of evidence determination.
STOT RE 1	H372	Expert judgement and weight of evidence determination.
Aquatic Chronic 2	H411	Expert judgement and weight of evidence determination.

Identified Uses according to the Use Descriptor System Uses - Worker

Title : Manufacture of substance

- Industrial

Uses - Worker

Title : Distribution of substance

- Industrial

**Uses - Worker** 

Title : Use as an intermediate

- Industrial

Uses - Worker

Title : Formulation & (re)packing of substances and mixtures

- Industrial

**Uses - Worker** 

Title : Use as a fuel

- Industrial

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**Uses - Worker** 

Title : Use as a fuel

- Professional

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.

FR / EN

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# **Exposure Scenario - Worker**

30000000414	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Manufacture of substance- Industrial
Use Descriptor	Sector of Use: SU 3, SU8, SU9 Process Categories: PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15 Environmental Release Categories: ERC1
Scope of process	Manufacture of the substance or use as a process chemical or extraction agent within closed or contained systems. Includes incidental exposures during recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Section 2.1	Control of Worker Exposure
<b>Product Characteristics</b>	
Physical form of product	Liquid, vapour pressure > 10 kPa at STP
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100%., Unless stated otherwise.,
Frequency and Duration of	
Covers daily exposures up to	o 8 hours (unless stated differently).
Other Operational Condition	ons affecting Exposure
	an 20°C above ambient temperature (unless stated differently). dard of occupational hygiene is implemented.
Cantributing Comprise	Diels Menoment Mesource

Contributing Scenarios	Risk Management Measures
General measures (carcinogens).	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise 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 authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when there is potential for inhalation; 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.

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General measures (skin irritants).	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.	
General exposures (closed systems)	Handle substance within a closed system	n.
General exposures (closed systems) with sample collection with occasional controlled exposure.	Handle substance within a closed system Sample via a closed loop or other system	
General exposures (closed systems)Use in contained batch processes	Handle substance within a predominantly vided with extract ventilation. Avoid carrying out activities involving expands the substance within a predominantly vided with extract ventilation.	
Process sampling	Sample via a closed loop or other system Avoid carrying out activities involving exp 1 hour.	
Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.	
Bulk transfers(open systems)with potential for aerosol generation.	Ensure material transfers are under cont ventilation.	ainment or extract
Bulk transfers(closed systems)	Transfer via enclosed lines. Clear transfer lines prior to de-coupling. Use vapour recovery units when necessary	ary.
Equipment cleaning and maintenance	Drain down and flush system prior to equivalent maintenance.  Wear a respirator conforming to EN140 vibetter.  Clear spills immediately.  Retain drain downs in sealed storage persubsequent recycle.	with Type A filter or
Storage.with occasional controlled exposure.	Store substance within a closed system. Ensure material transfers are under containment or extract ventilation. Ensure dedicated sample points are provided.	
Section 2.2	Control of Environmental Exposure	
Substance is complex UVCB		
Predominantly hydrophobic.		
Not readily biodegradable.		
Amounts Used		1
Fraction of EU tonnage used in region: 0,1		0,1

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Danieral van terrene (terrene).	45.05
Regional use tonnage (tonnes/year):	1E+05
Fraction of Regional tonnage used locally:	6
Annual site tonnage (tonnes/year):	6E+05
Maximum daily site tonnage (kg/day):	2E+06
Frequency and Duration of Use	1
Continuous release.	
Emission Days (days/year):	300
Environmental factors not influenced by risk management	1
Local freshwater dilution factor:	40
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	1,0E-05
Release fraction to wastewater from process (initial release prior to RMM):	1,0E-04
Release fraction to soil from process (initial release prior to RMM):	1,0E-04
Technical conditions and measures at process level (source) to pro-	
Common practices vary across sites thus conservative process re-	
lease estimates used.	
Technical onsite conditions and measures to reduce or limit discha	arges, air emis-
sions and releases to soil	<b>J</b> ,
Risk from environmental exposure is driven by humans via indirect	
exposure (primarily ingestion).	
If discharging to domestic sewage treatment plant, no onsite	
wastewater treatment required.	
Prevent discharge of undissolved substance to or recover from onsite	
wastewater.	
Treat air emission to provide a typical removal efficiency of (%)	90
Treat onsite wastewater (prior to receiving water discharge) to provide	99,6
the required removal efficiency of >= (%)	,
If discharging to domestic sewage treatment plant, provide the re-	92,6
quired onsite wastewater removal efficiency of (%)	,
Organisational measures to prevent/limit release from site	•
Do not apply industrial sludge to natural soils.	
Sludge should be incinerated, contained or reclaimed.	
Conditions and Measures related to municipal sewage treatment p	lant
Estimated substance removal from wastewater via domestic sewage	95,2
treatment (%)	00,2
Total efficiency of removal from wastewater after onsite and offsite	99,6
(domestic treatment plant) RMMs (%)	33,3
Maximum allowable site tonnage (MSafe) based on release following	2,0E+06
total wastewater treatment removal (kg/d)	_,000
Assumed domestic sewage treatment plant flow (m3/d)	10.000
Conditions and Measures related to external treatment of waste for	
During manufacturing no waste of the substance is generated.	alopoodi
Daning mandataning no waste of the substance is generated.	
Conditions and measures related to external recovery of waste	
During manufacturing no waste of the substance is generated.	
burning mandiacturing no waste of the substance is generated.	

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SECTION 3	EXPOSURE ESTIMATION

#### Section 3.1 - Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

#### **Section 3.2 - Environment**

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

# SECTION 4 GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO

# Section 4.1 - Health

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.

#### **Section 4.2 - Environment**

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).

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# **Exposure Scenario - Worker**

30000000415	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Distribution of substance- Industrial
Use Descriptor	Sector of Use: SU 3, SU8, SU9 Process Categories: PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15 Environmental Release Categories: ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC 6C, ERC6d, ERC7
Scope of process	Bulk loading (including marine vessel/barge, rail/road car and IBC loading) of substance within closed or contained systems, including incidental exposures during its sampling, storage, unloading, maintenance and associated laboratory activities.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Liquid, vapour pressure > 10 kPa at STP
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100%., Unless stated otherwise.,
Frequency and Duration o	f Use
Covers daily exposures up t	o 8 hours (unless stated differently).
Other Operational Condition	ons affecting Exposure
	an 20°C above ambient temperature (unless stated differently). dard of occupational hygiene is implemented.
0 (') (' 0	D'al Manager de Manage

to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory pro-	Contributing Scenarios	Risk Management Measures
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 surveil-lance.	`	ing automation) for the elimination of releases. Minimise 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 authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when there is potential for inhalation; 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 surveil-

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General measures (skin irritants).	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.	
General exposures (closed systems)	Handle substance within a closed system.	
General exposures (closed systems) with sample collection with occasional controlled exposure.	Handle substance within a closed system. Sample via a closed loop or other system to avoid exposure	
General exposures (closed systems)Use in contained batch processes	Handle substance within a closed system. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Provide extraction ventilation at points where emissions occur. Avoid carrying out activities involving exposure for more than 4 hours	
Process sampling	Sample via a closed loop or other system to avoid exposure Avoid carrying out activities involving exposure for more than 4 hours	
Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.	
Bulk transfers(closed systems)	Ensure material transfers are under containment or extract ventilation. Ensure operation is undertaken outdoors.	
Bulk transfers(open systems)	Ensure material transfers are under containment or extract ventilation. Ensure operation is undertaken outdoors.	
Equipment cleaning and maintenance	Drain down and flush system prior to equipment opening or maintenance.  Wear a respirator conforming to EN140 with Type A filter or better.  Clear spills immediately.  Retain drain downs in sealed storage pending disposal or for subsequent recycle.	
Storage.with occasional controlled exposure.	Store substance within a closed system. Ensure dedicated sample points are provided. Transfer via enclosed lines. Ensure operation is undertaken outdoors.	
Section 2.2	Control of Environmental Exposure	
Substance is complex UVCB		

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Prodominantly hydraphobic	
Predominantly hydrophobic.  Not readily biodegradable.	
Amounts Used	
	0.4
Fraction of EU tonnage used in region:	0,1
Regional use tonnage (tonnes/year):	1,00E+05
Fraction of Regional tonnage used locally:	0,02
Annual site tonnage (tonnes/year):	2,00E+02
Maximum daily site tonnage (kg/day):	1,0E+04
Frequency and Duration of Use	T
Continuous release.	
Emission Days (days/year):	20
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	1,0E-03
Release fraction to wastewater from process (initial release prior to RMM):	1,0E-05
Release fraction to soil from process (initial release prior to RMM):	1,0E-05
Technical conditions and measures at process level (source) to pre	event release
Common practices vary across sites thus conservative process re-	
lease estimates used.	
Technical onsite conditions and measures to reduce or limit discha-	arges, air emis-
sions and releases to soil	<b>,</b>
Risk from environmental exposure is driven by humans via indirect	
exposure (primarily ingestion).	
If discharging to domestic sewage treatment plant, no onsite	
wastewater treatment required.	
Prevent discharge of undissolved substance to or recover from onsite	
wastewater.	
Treat air emission to provide a typical removal efficiency of (%)	90
Treat onsite wastewater (prior to receiving water discharge) to provide	0,00
the required removal efficiency of >= (%)	0,00
Organisational measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils.	
117	
Sludge should be incinerated, contained or reclaimed.	
Conditions and Measures related to municipal sewage treatment pl	lant
Estimated substance removal from wastewater via domestic sewage	95,2
treatment (%)	,
Total efficiency of removal from wastewater after onsite and offsite	95,2
(domestic treatment plant) RMMs (%)	,
Maximum allowable site tonnage (MSafe) based on release following	6,1E+05
total wastewater treatment removal (kg/d)	,
Assumed domestic sewage treatment plant flow (m3/d)	2.000
Conditions and Measures related to external treatment of waste for	
External treatment and disposal of waste should comply with applicable regulations.	•
Conditions and measures related to external recovery of waste	

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External recovery and recycling of waste should comply with applicable local and/or regional regulations.

# SECTION 3 EXPOSURE ESTIMATION

#### Section 3.1 - Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

#### **Section 3.2 - Environment**

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

# SECTION 4 GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO

#### Section 4.1 - Health

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.

# Section 4.2 - Environment

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).

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# **Exposure Scenario - Worker**

30000000417	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use as an intermediate- Industrial
Use Descriptor	Sector of Use: SU 3, SU8, SU9 Process Categories: PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15 Environmental Release Categories: ERC6a
Scope of process	Use of substance as an intermediate (not related to Strictly Controlled Conditions). Includes recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Liquid, vapour pressure > 10 kPa at STP
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100%., Unless stated otherwise.,
Frequency and Duration o	f Use
Covers daily exposures up t	o 8 hours (unless stated differently).
Other Operational Condition	ons affecting Exposure
	an 20°C above ambient temperature (unless stated differently). dard of occupational hygiene is implemented.

Contributing Scenarios	Risk Management Measures
General measures (carcinogens).	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise 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 authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when there is potential for inhalation; 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.
General measures (skin	Avoid direct skin contact with product. Identify potential areas

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irritants).	for indirect skin contact. Wear gloves (te	
	hand contact with substance likely. Clear tion/spills as soon as they occur. Wash o nation immediately. Provide basic employent / minimise exposures and to report a	ff any skin contami- yee training to pre-
	that may develop.	any skiii problems
General exposures (closed systems)	Handle substance within a closed system	١.
General exposures (closed systems) with sample collection with occasional controlled exposure.	Handle substance within a closed system Sample via a closed loop or other system	
General exposures (closed systems)Use in contained batch processes	Handle substance within a predominantly vided with extract ventilation. Avoid carrying out activities involving exp 4 hours	
Process sampling	Sample via a closed loop or other system to avoid exposure Avoid carrying out activities involving exposure for more than 1 hour.	
Laboratory activities	Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.	
Bulk transfers(open systems)with potential for aerosol generation.	Ensure material transfers are under containment or extract ventilation.	
Bulk transfers(closed systems)	Transfer via enclosed lines. Clear transfer lines prior to de-coupling. Use vapour recovery units when necessary.	
Equipment cleaning and maintenance  Drain down and flush system prior to equipment oper maintenance.  Wear a respirator conforming to EN140 with Type A better.  Clear spills immediately.  Retain drain downs in sealed storage pending disposubsequent recycle.		
		nding disposal or for
Storage.with occasional controlled exposure.	Store substance within a closed system. Ensure material transfers are under containment or extract ventilation. Ensure dedicated sample points are provided.	
		naca.
Section 2.2 Control of Environmental Exposure		1
Substance is complex UVCB	•	
Predominantly hydrophobic.		
Not readily biodegradable.		
Amounts Used Fraction of EU tonnage used in region: 0,1		0,1
Regional use tonnage (tonne		4,8E+04
rregional use tornage (toffile	ory carj.	T,ULTU4

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Fraction of Regional tonnage used locally: Annual site tonnage (tonnes/year): Maximum daily site tonnage (kg/day): Frequency and Duration of Use	0,3 1,5E+04
Maximum daily site tonnage (kg/day):	1,35+04
	E OF LOE
	5,0E+05
Continuous release.	<u> </u>
	200
Emission Days (days/year):	300
Environmental factors not influenced by risk management	T.,
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	T = - = - :
Release fraction to air from process (initial release prior to RMM):	5,0E-04
Release fraction to wastewater from process (initial release prior to RMM):	5,0E-04
Release fraction to soil from process (initial release prior to RMM):	1,0E-03
Technical conditions and measures at process level (source) to p	revent release
Common practices vary across sites thus conservative process re-	
lease estimates used.	
Technical onsite conditions and measures to reduce or limit disch	narges, air emis-
sions and releases to soil	
Risk from environmental exposure is driven by humans via indirect	
exposure (primarily ingestion).	
If discharging to domestic sewage treatment plant, no onsite	
wastewater treatment required.	
Prevent discharge of undissolved substance to or recover from onsite	
wastewater.	
Treat air emission to provide a typical removal efficiency of (%)	80
Treat onsite wastewater (prior to receiving water discharge) to provide	88,1
the required removal efficiency of >= (%)	
Organisational measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils.	
Sludge should be incinerated, contained or reclaimed.	
Conditions and Measures related to municipal sewage treatment լ	nlant
Estimated substance removal from wastewater via domestic sewage	95,2
treatment (%)	55,2
Total efficiency of removal from wastewater after onsite and offsite	99,4
(domestic treatment plant) RMMs (%)	33,4
Maximum allowable site tonnage (MSafe) based on release following	5,0E+04
total wastewater treatment removal (kg/d)	J,UL TUT
Conditions and Measures related to external treatment of waste for	 or disposal
This substance is consumed during use and no waste of substance is	
This substance is consumed during use and no waste or substance is	generaleu.
Conditions and measures related to external recovery of waste	

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	

#### Section 3.2 -Environment

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SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO
Section 4.1 - Health	

Section 4.2 -Environment

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#### **Exposure Scenario - Worker**

30000000419	30000000419	
SECTION 1	EXPOSURE SCENARIO TITLE	
Title	Formulation & (re)packing of substances and mixtures- Industrial	
Use Descriptor	Sector of Use: SU 3, SU 10 Process Categories: PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC15 Environmental Release Categories: ERC2	
Scope of process	Formulation of the substance and its mixtures in batch or continuous operations within closed or contained systems, including incidental exposures during storage, materials transfers, mixing, maintenance, sampling and associated laboratory activities.	

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Liquid, vapour pressure > 10 kPa at STP
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100%., Unless stated otherwise.,
Frequency and Duration of	
Covers daily exposures up to	8 hours (unless stated differently).
Other Operational Conditio	ns affecting Exposure
	n 20°C above ambient temperature.
Assumes a good basic stand	ard of occupational hygiene is implemented.
Contributing Scenarios	Risk Management Measures
General measures (carcinogens).	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise 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 authorised persons; provide specific activity training to operators to minimise 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 maintain all control measures. Consider the need for risk based health surveillance.
General measures (skin irritants).	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if

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	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.
General exposures (closed systems)	Handle substance within a closed system.
General exposures (closed systems) with sample collection with occasional controlled exposure.	Handle substance within a predominantly closed system provided with extract ventilation.  Sample via a closed loop or other system to avoid exposure
General exposures (closed systems)Use in contained batch processes	Handle substance within a predominantly closed system provided with extract ventilation.  Ensure operation is undertaken outdoors.
	, or: Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Avoid carrying out activities involving exposure for more than 4 hours
Batch processes at elevat- ed temperatures	Ensure material transfers are under containment or extract ventilation. Ensure operation is undertaken outdoors. , or: Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
	Avoid carrying out activities involving exposure for more than 1 hour.
Process sampling	Sample via a closed loop or other system to avoid exposure Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
Laboratory activities	Handle in a fume cupboard or under extract ventilation.
Bulk transfers	Ensure material transfers are under containment or extract ventilation. Avoid carrying out activities involving exposure for more than 4 hours
ManualTransfer from/pouring from containers	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  Ensure material transfers are under containment or extract ventilation.
Drum/batch transfers	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  Ensure material transfers are under containment or extract ventilation.
Equipment cleaning and	Drain down and flush system prior to equipment opening or

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maintenance	maintenance.	
	Clear spills immediately.	10. T A (10
	Wear a respirator conforming to EN140 v	vith Type A filter or
	better.	
	Retain drain downs in sealed storage per	nding disposal or for
	subsequent recycle.	
Storage.with occasional	Store substance within a closed system.	
controlled exposure. Ensure material transfers are under containment or extract		ainment or extract
ventilation.		
	Ensure dedicated sample points are prov	rided.
Section 2.2	Control of Environmental Exposure	
Substance is complex UVCB	•	
Predominantly hydrophobic.		
Not readily biodegradable.		
Amounts Used		
Fraction of EU tonnage used		0,1
Regional use tonnage (tonne	s/year):	5,0E+04
Fraction of Regional tonnage	used locally:	0,6
Annual site tonnage (tonnes/	year):	3,00E+04
Maximum daily site tonnage	(kg/day):	1,0E+05
Frequency and Duration of	Use	
Continuous release.		
Emission Days (days/year):		300
	influenced by risk management	•
Local freshwater dilution fact	or:	10
Local marine water dilution fa	actor:	100
Other Operational Condition	ns affecting Environmental Exposure	
Release fraction to air from p	rocess (initial release prior to RMM):	1,0E-04
	er from process (initial release prior to	1,0E-04
RMM):		
Release fraction to soil from	process (initial release prior to RMM):	1,0E-04
Technical conditions and n	neasures at process level (source) to pro	event release
	ss sites thus conservative process re-	
lease estimates used.	·	
Technical onsite conditions	s and measures to reduce or limit discha	arges, air emis-
sions and releases to soil		
Risk from environmental exp	osure is driven by humans via indirect	
exposure (primarily ingestion		
If discharging to domestic se	wage treatment plant, no onsite	
wastewater treatment required.		
	lived substance to or recover from onsite	
wastewater.		
	a typical removal efficiency of (%)	0
	or to receiving water discharge) to provide	0,00
the required removal efficience		
	prevent/limit release from site	
Do not apply industrial sludge	e to natural soils.	
Sludge should be incinerated	I, contained or reclaimed.	

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Conditions and Measures related to municipal sewage treatment plant		
Estimated substance removal from wastewater via domestic sewage	95,2	
treatment (%)		
Total efficiency of removal from wastewater after onsite and offsite	95,2	
(domestic treatment plant) RMMs (%)		
Maximum allowable site tonnage (MSafe) based on release following	1,0E+05	
total wastewater treatment removal (kg/d)		
Assumed domestic sewage treatment plant flow (m3/d)	2.000	
Conditions and Massures related to external treatment of waste for disposal		

#### Conditions and Measures related to external treatment of waste for disposal

External treatment and disposal of waste should comply with applicable local and/or regional regulations.

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

External recovery and recycling of waste should comply with applicable local and/or regional regulations.

	SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health		
	The ECETOC TRA tool has b	peen used to estimate workplace exposures unless otherwise

indicated.

#### Section 3.2 - Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE
	EXPOSURE SCENARIO
Section 4.1 - Health	

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.

#### Section 4.2 -Environment

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).

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#### **Exposure Scenario - Worker**

Exposure occurro - Worker	
30000010420	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use as a fuel- Industrial
Use Descriptor	Sector of Use: SU 3, SU 10 Process Categories: PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16 Environmental Release Categories: ERC7, ESVOC SpERC 7.12a.v1
Scope of process	Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Liquid, vapour pressure > 10 kPa
Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100%.,
Frequency and Duration of	Use
	8 hours (unless stated differently).
Other Operational Condition	
Assumes a good basic stand	ard of occupational hygiene is implemented.
Contributing Scenarios	Risk Management Measures
General measures (carcinogens).	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise 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 authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory protection when there is potential for inhalation; 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.
General measures (skin irritants).	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 contamina-

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	tion/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.
General exposures (closed systems)	Handle substance within a closed system.
General exposures (closed systems) with sample collection with occasional controlled exposure.	Handle substance within a closed system. Sample via a closed loop or other system to avoid exposure Ensure operation is undertaken outdoors.
General exposures (closed systems)Use in contained batch processes	Handle substance within a closed system. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Provide extraction ventilation at points where emissions occur. Avoid carrying out activities involving exposure for more than 4 hours
Process sampling	Sample via a closed loop or other system to avoid exposure Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  Avoid carrying out activities involving exposure for more than 1 hour.
Drum/batch transfers	Use drum pumps. Limit the substance content in the product to 25 %. Provide extract ventilation to material transfer points and other openings. Ensure material transfers are under containment or extract ventilation.
Bulk transfers(closed systems)	Ensure material transfers are under containment or extract ventilation. Clear transfer lines prior to de-coupling. Ensure operation is undertaken outdoors.
Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance. Ensure operation is undertaken outdoors. Clear spills immediately. Wear a respirator conforming to EN140 with Type A filter or better. Retain drain downs in sealed storage pending disposal or for subsequent recycle.
Storage.with occasional controlled exposure.	Store substance within a closed system. Ensure material transfers are under containment or extract ventilation. Ensure operation is undertaken outdoors.
Section 2.2	Control of Environmental Exposure

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Cubatanas is complay LIVCD	
Substance is complex UVCB.	
Predominantly hydrophobic.	
Not readily biodegradable.	
Amounts Used	T 0.4
Fraction of EU tonnage used in region:	0,1
Regional use tonnage (tonnes/year):	3,5E+04
Fraction of Regional tonnage used locally:	1
Annual site tonnage (tonnes/year):	3,5E+04
Maximum daily site tonnage (kg/day):	1,2E+05
Frequency and Duration of Use	<del></del>
Continuous release.	
Emission Days (days/year):	300
Environmental factors not influenced by risk management	T
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	T ==
Release fraction to air from process (initial release prior to RMM):	5E-03
Release fraction to wastewater from process (initial release prior to RMM):	1E-06
Release fraction to soil from process (initial release prior to RMM):	0
Technical conditions and measures at process level (source) to pr	event release
Common practices vary across sites thus conservative process re-	
lease estimates used.	
Technical onsite conditions and measures to reduce or limit disch sions and releases to soil	arges, air emis-
Risk from environmental exposure is driven by freshwater sediment.	
If discharging to domestic sewage treatment plant, no onsite	
wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%)	95
Treat onsite wastewater (prior to receiving water discharge) to provide	0
the required removal efficiency of >= (%)	
Organisational measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils.	
Sludge should be incinerated, contained or reclaimed.	
Conditions and Measures related to municipal sewage treatment p	lant
Estimated substance removal from wastewater via domestic sewage treatment (%)	95,2
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	95,2
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d)	1,2E+05
Assumed domestic sewage treatment plant flow (m3/d)	2.000
Conditions and Measures related to external treatment of waste fo	r disposal
	•
This substance is consumed during use and no waste of substance is g	generated.
	generated.

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#### Section 3.1 - Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

#### **Section 3.2 - Environment**

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

# SECTION 4 GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO

#### Section 4.1 - Health

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.

#### **Section 4.2 - Environment**

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).

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#### **Exposure Scenario - Worker**

30000010421	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use as a fuel- Professional
Use Descriptor	Sector of Use: SU 22 Process Categories: PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16 Environmental Release Categories: ERC9a, ERC9b, ESVOC SpERC 9.12b.v1
Scope of process	Covers the use as a fuel (or fuel additives and additive components) within closed or contained systems, including incidental exposures during activities associated with its transfer, use, equipment maintenance and handling of waste.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Liquid, vapour pressure > 10 kPa at STP	
Concentration of the Sub-	Covers percentage substance in the product up to 100%.,	
stance in Mixture/Article	Unless stated otherwise.,	
Frequency and Duration of	Use	
Covers daily exposures up to	8 hours (unless stated differently).	
Other Operational Condition		
	an 20°C above ambient temperature (unless stated differently). lard of occupational hygiene is implemented.	
Contributing Scenarios	Risk Management Measures	
General measures (skin irritants).	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.	
General measures (carcinogens).	Consider technical advances and process upgrades (including automation) for the elimination of releases. Minimise 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 authorised persons; provide specific activity training to operators to minimise exposures; wear suitable gloves and coveralls to prevent skin contamination; wear respiratory pro-	

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	tection when there is potential for inhala immediately and dispose of wastes safe tems of work or equivalent arrangemen manage risks. Regularly inspect, test at measures. Consider the need for risk b lance.	ely.Ensure safe sys- its are in place to nd maintain all control
General exposures (closed systems)Outdoor	Handle substance within a closed syste	em.
Bulk closed unloading.	Ensure material transfers are under conventilation.	ntainment or extract
Drum/batch transfers	Ensure material transfers are under corventilation.	ntainment or extract
Refueling.	Ensure material transfers are under corventilation.	ntainment or extract
Use as a fuel(closed systems)	Handle substance within a closed syste	em.
Equipment maintenance	Drain down system prior to equipment of nance.  Retain drain downs in sealed storage processed subsequent recycle.  Clear spills immediately.  Provide a good standard of general verifation is from doors, windows etc. Continuents air is supplied or removed by a general removed by a general verifation.	ending disposal or for ntilation. Natural venti-rolled ventilation powered fan.
Storage.	Store substance within a closed system Provide a good standard of general ver lation is from doors, windows etc. Conti means air is supplied or removed by a	ntilation. Natural venti- rolled ventilation
Section 2.2	Control of Environmental Exposure	
Substance is complex UVC	3.	
Predominantly hydrophobic.		
Amounts Used		
Fraction of EU tonnage used		0,1
Regional use tonnage (tonn		1,5E+04
Fraction of Regional tonnage	· · · · · · · · · · · · · · · · · · ·	5,0E-04
Annual site tonnage (tonnes/year):		7,5
Maximum daily site tonnage (kg/day):		21
Frequency and Duration o	T USE	
Continuous release.		205
Emission Days (days/year):	influenced by violance consent	365
Local free bureter dilution for	influenced by risk management	10
Local freshwater dilution factorial marine water dilution f		10
	actor. ons affecting Environmental Exposure	100
Other Operational Condition	ons anecting Environmental Exposure	

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Release fraction to air from process (initial release prior to RMM):	0,01
Release fraction to wastewater from process (initial release prior to	1,0E-05
RMM):	
Release fraction to soil from process (initial release prior to RMM):	1,0E-05
Technical conditions and measures at process level (source) to pro	event release
Common practices vary across sites thus conservative process re-	
lease estimates used.	
Technical onsite conditions and measures to reduce or limit discharge	arges, air emis-
sions and releases to soil	1
Risk from environmental exposure is driven by humans via indirect	
exposure (primarily ingestion).	
If discharging to domestic sewage treatment plant, no onsite	
wastewater treatment required.	
Treat onsite wastewater (prior to receiving water discharge) to provide	0
the required removal efficiency of >= (%)	
If discharging to domestic sewage treatment plant, provide the re-	0
quired onsite wastewater removal efficiency of (%)	
Organisational measures to prevent/limit release from site	
Do not apply industrial sludge to natural soils.	
Sludge should be incinerated, contained or reclaimed.	
Conditions and Measures related to municipal sewage treatment p	lant
Estimated substance removal from wastewater via domestic sewage treatment (%)	95,2
Total efficiency of removal from wastewater after onsite and offsite	95,2
(domestic treatment plant) RMMs (%)	33,2
Maximum allowable site quantity (MSafe) based on OCs and RMMs	1,8E+03
as above (kg/day):	1,02100
Assumed domestic sewage treatment plant flow (m3/d)	2.000
Conditions and Measures related to external treatment of waste for	
Combustion emissions limited by required exhaust emission controls.	
Waste combustion emissions considered in regional exposure assessm	ent.
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of substance is g	enerated.

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
The ECETOC TRA tool has be indicated.	peen used to estimate workplace exposures unless otherwise

### Section 3.2 -Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE
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#### **EXPOSURE SCENARIO**

#### Section 4.1 - Health

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.

#### **Section 4.2 - Environment**

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).