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# **Diethylene Glycol**

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

#### 1.1 Product identifier

Trade name : Diethylene Glycol Product code : U1237, U1239

Registration number EU : 01-2119457857-21-0001, 01-2119457857-21-0003

Synonyms : 2,2' Dihydroxy diethyl ether, bis (2-hydroxyethyl) ether, DEG,

Diglycol, Digol, Ethylene diglycol

CAS-No. : 111-46-6

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

Use of the Sub- : Chemical intermediate.

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

tered uses under REACH.

Uses advised against : This product must not be used in applications other than the

above without first seeking the advice of the supplier., Do not use in the manufacture or preparation of foods or pharmaceuticals., Keep out of reach of children and pets., Do not use in theatrical fogs or other artificial smoke generator applications.,

Do not use in aircraft deicing applications.

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 : +31 (0)10 441 5137 / +31 (0)10 441 5191 Telefax : +31 (0)20 716 8316 / +31 (0)20 713 9230

Contact for Safety Data : sccmsds@shell.com

Sheet

#### 1.4 Emergency telephone number

+44 (0) 1235 239 670

National Poison Information Centre (NVIC): Tel. nr. +31(0)88 755 8000 (24 hrs a day and 7 days a week).

Only for the purpose of informing medical personnel.

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#### **SECTION 2: Hazards identification**

#### 2.1 Classification of the substance or mixture

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

Acute toxicity, Category 4, Oral H302: Harmful if swallowed.

#### 2.2 Label elements

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

Hazard pictograms

Signal word : Warning

Hazard statements : PHYSICAL HAZARDS:

Not classified as a physical hazard according to CLP

criteria.

HEALTH HAZARDS: H302 Harmful if swallowed.

**ENVIRONMENTAL HAZARDS:** 

Not classified as environmental hazard according to

CLP criteria.

Precautionary statements : Prevention:

P264 Wash skin thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

Response:

P301 + P312 IF SWALLOWED: Call a POISON CENTER/

doctor if you feel unwell. P330 Rinse mouth.

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.

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Slightly irritating to the skin. Slightly irritating to respiratory system. Slightly irritating to the eye. Vapours may be irritating to the eye.

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

#### 3.1 Substances

#### Components

Chemical name	CAS-No.	Concentration (% w/w)
	EC-No.	
Diethylene glycol	111-46-6	95 - 100
	203-872-2	

#### **Further information**

#### Contains:

Contains.			
Chemical name	Identification number	Classification	Concentration (% w/w)
Ethanediol	107-21-1, 203-473- 3	Acute Tox.4; H302 STOT RE2; H373	<= 0,15

#### **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 : No treatment necessary under normal conditions of use. If

symptoms persist, obtain medical advice.

In case of skin contact : Remove contaminated clothing. Flush exposed area with wa-

ter and follow by washing with soap if available.

If persistent irritation occurs, obtain medical attention.

In case of eye contact : Flush eye with copious quantities of water.

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

rinsing.

If persistent irritation occurs, obtain medical attention.

If swallowed : If swallowed, do not induce vomiting: transport to nearest

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medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration.

Rinse mouth.

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

Symptoms : Not considered to be an inhalation hazard under normal con-

ditions of use.

Possible respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, cough-

ing, and/or difficulty breathing.

No specific hazards under normal use conditions.

Skin irritation signs and symptoms may include a burning sen-

sation, redness, or swelling.

Eye irritation signs and symptoms may include a burning sen-

sation, redness, swelling, and/or blurred vision.

Ingestion may result in nausea, vomiting and/or diarrhoea. High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death. Kidney toxicity may be recognized by blood in the urine or increased or decreased urine flow. Other signs and symptoms can include nausea, vomiting, abdominal cramps, diarrhoea, lumbar pain shortly after ingestion, and possibly narcosis and

death.

## 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.

Treat symptomatically.

May cause significant renal, respiratory, and CNS toxicity.

May cause significant acidosis.

# **SECTION 5: Firefighting measures**

#### 5.1 Extinguishing media

Suitable extinguishing media : Alcohol-resistant foam, water spray or fog. Dry chemical pow-

der, carbon dioxide, 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-

fighting

Material will not burn unless preheated.

Carbon monoxide may be evolved if incomplete combustion

occurs.

Containers exposed to intense heat from fires should be

cooled with large quantities of water.

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#### 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 : Evacuate the area of all non-essential personnel.

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.

6.1.2 For emergency responders:

Avoid contact with skin, eyes and clothing.

#### 6.2 Environmental precautions

Environmental precautions

Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers.

Use appropriate containment to avoid environmental contami-

nation.

Ventilate contaminated area thoroughly.

## 6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Contain run-off from residue flush and dispose of properly.

Soak up residue with an absorbent such as clay, sand or other

suitable material.

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

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up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely

#### 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 : Use local exhaust extraction over processing area.

Handle and open container with care in a well-ventilated area.

Do not empty into drains.

When handling product in drums, safety footwear should be worn and proper handling equipment should be used.

Handling Temperature:

Ambient.

Product Transfer : Keep containers closed when not in use. Do not pressurize

drum containers to empty.

Hygiene measures : Wash hands before eating, drinking, smoking and using the

toilet. Launder contaminated clothing before re-use.

#### 7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers

Refer to section 15 for any additional specific legislation cov-

ering the packaging and storage of this product.

Further information on stor-

age stability

Tanks must be clean, dry and rust-free.

Keep container tightly closed.

Must be stored in a diked (bunded) well- ventilated area, away from sunlight, ignition sources and other sources of heat. Cleaning, inspection and maintenance of storage tanks is a specialist operation, which requires the implementation of

strict procedures and precautions.

Drums should be stacked to a maximum of 3 high.

Storage Temperature:

Ambient.

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Packaging material : Suitable material: Stainless steel., Mild steel., Carbon steel

Unsuitable material: Data not available

Container Advice : Containers, even those that have been emptied, can contain

explosive vapours. 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.

Ensure that all local regulations regarding handling and stor-

age facilities are followed.

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

### 8.1 Control parameters

## **Occupational Exposure Limits**

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
Ethanediol	107-21-1	TLV-8hr (Drop- lets)	10 mg/m3	NL WG
	Further inforn	nation: Skin notation		
Ethanediol		TLV-8hr (Vapour)	20 ppm 52 mg/m3	NL WG
	Further inforn	nation: Skin notation		
Ethanediol		TLV-15 min (Va- pour)	40 ppm 104 mg/m3	NL WG
	Further inforn	Further information: Skin notation		
Ethanediol		STEL	40 ppm 104 mg/m3	2000/39/EC
	Further inform skin, Indicativ		possibility of significant uptal	ke through the
Ethanediol		TWA	20 ppm 52 mg/m3	2000/39/EC
		Further information: Identifies the possibility of significant uptake through the skin, Indicative		

## **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	
Diethylene glycol	Workers	Dermal	Long-term systemic effects	43 mg/kg bw/day
Diethylene glycol	Workers	Inhalation	Long-term local ef- fects	60 mg/m3

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Diethylene glycol	Consumers	Dermal	Long-term systemic effects	21 mg/kg bw/day
Diethylene glycol	Consumers	Inhalation	Long-term local effects	12 mg/m3

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

Substance name		Environmental Compartment	Value
Diethylene glycol			
Remarks:	Exposure	assessments have not been presented for the	environment
	therefore	PNEC values not required.	

#### 8.2 Exposure controls

#### **Engineering measures**

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:

Adequate ventilation to control airborne concentrations.

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

Eye washes and showers for emergency use.

#### **General Information**

Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

Define procedures for safe handling and maintenance of controls.

Educate and train workers in the hazards and control measures relevant to normal activities associated with this product.

Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation.

Drain down system prior to equipment break-in or maintenance.

Retain drain downs in sealed storage pending disposal or subsequent recycle.

#### 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 : If material is handled such that it could be splashed into eyes,

protective eyewear is recommended. 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: Nitrile

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rubber gloves. Incidental contact/Splash protection: PVC or neoprene rubber gloves. 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. 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 moisturizer is recommended.

Skin and body protection

Skin protection is not ordinarily required beyond standard work clothes.

It is good practice to wear chemical resistant gloves. Protective clothing approved to EU Standard EN14605.

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 appropriate combination of mask and filter.

If air-filtering respirators are suitable for conditions of use: Select a filter suitable for the combination of organic gases and vapours and particles meeting EN14387 and EN143 [Filter type A/P for use against certain organic gases and vapours with a boiling point >65°C (149°F) and for use

against particles].

Thermal hazards : Not applicable

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

9.1 Information on basic physical and chemical properties

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Physical state Slightly viscous liquid.

Colour colourless

Odour mild

Odour Threshold Data not available

Melting point/freezing point -10 °C

Boiling point/boiling range 244 - 250 °C

Flammability

Flammability (solid, gas) Not applicable

Lower explosion limit and upper explosion limit / flammability limit

Upper explosion limit /

Upper flammability limit

10,8 %(V)

Lower explosion limit /

Lower flammability limit

: 1,6 %(V)

Flash point 149 °C

Method: Pensky-Martens closed cup

Auto-ignition temperature 365 °C

Decomposition temperature

Decomposition tempera-

ture

Data not available

рΗ Not applicable

Viscosity

Viscosity, dynamic Data not available

Viscosity, kinematic 33 mm2/s (20 °C)

Method: ASTM D445

Solubility(ies)

Water solubility completely soluble

Partition coefficient: n-

octanol/water

log Pow: -1,98

Vapour pressure < 1,3 Pa (20 °C)

Relative density 1,12

Method: ASTM D4052

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Density : 1.116 g/cm3 (20 °C)

Method: ASTM D4052

Relative vapour density : 3,7

Particle characteristics

Particle size : Data not available

9.2 Other information

Explosive properties : Not applicable

Oxidizing properties : Data not available

Evaporation rate : < 0,01

Method: ASTM D 3539, nBuAc=1

Conductivity: > 10,000 pS/m

A number of factors, for example liquid temperature, presence of contaminants, and anti-static additives can greatly influence the conductivity of a liquid, This material is not expected to be

a static accumulator.

Surface tension : Data not available

Molecular weight : 106,12 g/mol

## **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 Oxidises on contact with air.

### 10.3 Possibility of hazardous reactions

Hazardous reactions : None known.

10.4 Conditions to avoid

Conditions to avoid : Extremes of temperature and direct sunlight.

Product cannot ignite due to static electricity.

10.5 Incompatible materials

Materials to avoid : Strong oxidising agents.

Strong acids. Strong bases.

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#### 10.6 Hazardous decomposition products

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.

# **SECTION 11: Toxicological information**

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

Information on likely routes of : Exposure may occur via inhalation, ingestion, skin absorption,

exposure skin or eye contact, and accidental ingestion.

#### **Acute toxicity**

#### **Components:**

Diethylene glycol:

Acute oral toxicity : LD 50 (Rat, male and female): > 5.000 mg/kg

Method: Literature data

Remarks: Harmful if swallowed.

There is a marked difference in acute oral toxicity between rodents and man, man being more susceptible than rodents. The estimated fatal dose for man is 100 milliliters (1/2 cup). This material has also been shown to be toxic and potentially

lethal by ingestion to cats and dogs.

Acute inhalation toxicity : LC 50 (Rat): Exposure time: 4 h

Test atmosphere: Aerosol Method: Literature data

Remarks: LC50 greater than near-saturated vapour concen-

tration.

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

Acute dermal toxicity : LD 50 (Rabbit): > 5.000 mg/kg

Method: Literature data

Remarks: Based on available data, the classification criteria

are not met.

#### Skin corrosion/irritation

#### **Components:**

#### Diethylene glycol:

Species : Rabbit

Method : Literature data

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

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## Serious eye damage/eye irritation

#### **Components:**

Diethylene glycol:

Species : Rabbit

Method : Literature data

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

## Respiratory or skin sensitisation

#### **Components:**

Diethylene glycol:

Species : Guinea pig

Method : Regulation (EC) No. 440/2008, Annex, B.6

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

Method : Tested according to Annex V of Directive 67/548/EEC.

#### Germ cell mutagenicity

#### **Components:**

Diethylene glycol:

Genotoxicity in vitro : Method: OECD Test Guideline 471

Remarks: Based on available data, the classification criteria

are not met.

Method: OECD Test Guideline 473

Remarks: Based on available data, the classification criteria

are not met.

Method: OECD Test Guideline 476

Remarks: Based on available data, the classification criteria

are not met.

Method: OECD Test Guideline 479

Remarks: Based on available data, the classification criteria

are not met.

Genotoxicity in vivo : Species: Mouse

Method: OECD Test Guideline 474

Remarks: Based on available data, the classification criteria

are not met.

Germ cell mutagenicity- As-

sessment

This product does not meet the criteria for classification in

categories 1A/1B.

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## Carcinogenicity

#### **Components:**

Diethylene glycol:

Species : Rat, male and female

Application Route : Oral

Method : Literature data

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

Tumours produced in animals are not considered relevant to

humans.

Carcinogenicity - Assess-

ment

This product does not meet the criteria for classification in

categories 1A/1B.

Material	GHS/CLP Carcinogenicity Classification
Diethylene glycol	No carcinogenicity classification.
Ethanediol	No carcinogenicity classification.

#### Reproductive toxicity

## **Components:**

# Diethylene glycol:

Effects on fertility : Species: Mouse

Sex: male and female Application Route: Oral

Method: Acceptable non-standard method.

Remarks: Based on available data, the classification criteria

are not met.

Reproductive toxicity - As-

sessment

This product does not meet the criteria for classification in

categories 1A/1B.

# STOT - single exposure

#### **Components:**

### Diethylene glycol:

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

Inhalation of vapours or mists may cause irritation to the res-

piratory system.

Ingestion may cause drowsiness and dizziness.

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#### STOT - repeated exposure

#### **Components:**

Diethylene glycol:

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

## Repeated dose toxicity

#### **Components:**

#### Diethylene glycol:

Species : Rat, male and female

Application Route : Oral

Method : Acceptable non-standard method.
Target Organs : No specific target organs noted

NOAEL : 300 mg/kg Exposure time : 98 Days

LOAEL : 1500 mg/kg Exposure time : 98 Days

Species : Dog, male Application Route : Dermal

Method : OECD Test Guideline 410
Target Organs : No specific target organs noted

NOAEL : 4440 mg/kg

LOAEL : 8880 mg/kg

#### **Aspiration toxicity**

#### **Components:**

# Diethylene glycol:

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

#### 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

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#### **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:** 

Diethylene glycol:

Remarks : Classifications by other authorities under varying regulatory

frameworks may exist.

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

## 12.1 Toxicity

#### Components:

Diethylene glycol:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): > 100 mg/l

Exposure time: 96 h Method: Literature data. Remarks: Practically non toxic:

Method: Other guideline method. Remarks: LL/EL/IL50 > 100 mg/l

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): > 100 mg/l

Exposure time: 48 h

Method: Other guideline method. Remarks: Practically non toxic:

LL/EL/IL50 > 100 mg/l

Toxicity to algae/aquatic plants : EC50 (Scenedesmus quadricauda (Green algae)): > 100 mg/l

Exposure time: 72 h

Method: Information given is based on data obtained from

similar substances.

Remarks: Practically non toxic: LL/EL/IL50 > 100 mg/l

Toxicity to microorganisms : EC20 (Activated sludge, domestic waste): > 1.000 mg/l

Exposure time: 3 h

Method: Test(s) equivalent or similar to OECD Guideline 209

Remarks: Practically non toxic: LL/EL/IL50 > 100 mg/l

Toxicity to fish (Chronic tox-

icity)

NOEC: > 40 mg/l

Exposure time: 28 d

Species: Pimephales promelas (fathead minnow)

Method: Information given is based on data obtained from

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similar substances.

Remarks: NOEC/NOEL > 100 mg/l

Toxicity to daphnia and other :

aquatic invertebrates (Chron-

ic toxicity)

NOEC: > 100 mg/l

Species: Ceriodaphnia dubia (Water flea)

Method: Information given is based on data obtained from

similar substances.

Remarks: NOEC/NOEL > 100 mg/l

## 12.2 Persistence and degradability

#### **Components:**

Diethylene glycol:

Biodegradability : Biodegradation: 70 - 80 %

Exposure time: 28 d

Method: OECD Test Guideline 301B Remarks: Inherently biodegradable.

#### 12.3 Bioaccumulative potential

## Components:

Diethylene glycol:

Bioaccumulation : Remarks: Does not bioaccumulate significantly.

#### 12.4 Mobility in soil

#### **Components:**

Diethylene glycol:

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

will or may be mobile and may contaminate groundwater.,

Dissolves in water.

#### 12.5 Results of PBT and vPvB assessment

#### **Components:**

Diethylene glycol:

Assessment : The substance does not fulfill all screening criteria for persis-

tence, bioaccumulation and toxicity and hence is not consid-

ered to be PBT or vPvB..

#### 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.

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#### 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).

#### **Components:**

# Diethylene glycol:

Additional ecological infor-

mation

Data not available

## **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 meth-

ods in compliance with applicable regulations.

Remove all packaging for recovery or waste disposal. Waste product should not be allowed to contaminate soil or ground water, or be disposed of into the environment. Do not dispose of tank water bottoms by allowing them to drain into the ground. This will result in soil and groundwater contamination.

Do not dispose into the environment, in drains or in water courses

courses.
Waste arising from a spillage or tank cleaning should be dis-

posed of in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.

Disposal should be in accordance with applicable regional, national, and local laws and regulations.

Local regulations may be more stringent than regional or national 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

Dispose in accordance with prevailing regulations, preferably to a recognized collector or contractor. The competence of the collector or contractor should be established beforehand.

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# **SECTION 14: Transport information**

14.1 UN number or ID number

ADN : Not regulated as a dangerous good
ADR : Not regulated as a dangerous good
RID : Not regulated as a dangerous good
IMDG : Not regulated as a dangerous good
IATA : Not regulated as a dangerous good
: Not regulated as a dangerous good

14.2 UN proper shipping name

ADN : Not regulated as a dangerous good
ADR : Not regulated as a dangerous good
RID : Not regulated as a dangerous good
IMDG : Not regulated as a dangerous good
IATA : Not regulated as a dangerous good
in the contraction of the contraction o

14.3 Transport hazard class(es)

ADN : Not regulated as a dangerous good
ADR : Not regulated as a dangerous good
RID : Not regulated as a dangerous good
IMDG : Not regulated as a dangerous good
IATA : Not regulated as a dangerous good
I Not regulated as a dangerous good

14.4 Packing group

ADN : Not regulated as a dangerous good

CDNI Inland Water Waste : NST 8963 Diethylene glycol

Agreement

ADR : Not regulated as a dangerous good

RID : Not regulated as a dangerous good

IMDG : Not regulated as a dangerous good

IATA : Not regulated as a dangerous good

: Not regulated as a dangerous good

14.5 Environmental hazards

ADN : Not regulated as a dangerous good
ADR : Not regulated as a dangerous good
RID : Not regulated as a dangerous good
IMDG : Not regulated as a dangerous good

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

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Pollution category : Z Ship type : 3

Product name : Diethylene glycol

**Additional Information**: This product may be transported under nitrogen blanketing.

Nitrogen is an odourless and invisible gas. Exposure to nitrogen enriched atmospheres displaces available oxygen which may cause asphyxiation or death. Personnel must observe strict safety precautions when involved with a confined space

entry.

Transport in bulk according to Annex II of Marpol and the IBC

Code

# **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 Authorisa-

tion 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).

#### Other regulations:

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

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

DSL : Listed

IECSC : Listed

ENCS : Listed

KECI : Listed

NZIoC : Listed

PICCS : Listed

TSCA : Listed

TCSI : Listed

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#### 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

2000/39/EC : Europe. Commission Directive 2000/39/EC establishing a first

list of indicative occupational exposure limit values

NL WG : Netherlands. Law on Labour conditions - Occupational Expo-

sure Limits

2000/39/EC / TWA : Limit Value - eight hours 2000/39/EC / STEL : Short term exposure limit NL WG / TLV-8hr : Time Weighted Average NL WG / TLV-15 min : 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 (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.

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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 R22/H302 Harmful if swallowed. The same control advice applies to all uses of this product and is included in 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

IUCLID date base, EC 1272 regulation, etc).

Classification of the mixture: Classification procedure:

Acute Tox. 4 H302 Expert judgement and weight of evi-

dence determination.

Identified Uses according to the Use Descriptor System

**Uses - Worker** 

Title : Manufacture of substance

- Industrial

**Uses - Worker** 

Title : Use as an intermediate

- Industrial

**Uses - Worker** 

Title : Distribution of substance

- Industrial

**Uses - Worker** 

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

- Industrial

**Uses - Worker** 

Title : Uses in Coatings

- Industrial

**Uses - Worker** 

Title : Uses in Coatings

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- Professional

**Uses - Worker** 

Title : Use in Cleaning Agents

- Industrial

**Uses - Worker** 

Title : Use in Cleaning Agents

- Professional

**Uses - Worker** 

Title : Lubricants

- Industrial

**Uses - Worker** 

Title : Metal working fluids / rolling oils

- Industrial

**Uses - Worker** 

Title : Metal working fluids / rolling oils

- Professional

**Uses - Worker** 

Title : Functional Fluids

- Industrial

**Uses - Worker** 

Title : Functional Fluids

- Professional

Uses - Worker

Title : De-icing and anti-icing applications

- Professional

**Uses - Worker** 

Title : Use in laboratories

- Industrial

**Uses - Worker** 

Title : Use in laboratories

- Professional

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**Uses - Worker** 

Title : Use as a fuel

- Professional

**Uses - Worker** 

Title : Use in Oil and Gas field drilling and production operations

- Industrial

Identified Uses according to the Use Descriptor System

**Uses - Consumer** 

Title : Uses in Coatings

- Consumer

**Uses - Consumer** 

Title : Use in Cleaning Agents

- Consumer

**Uses - Consumer** 

Title : De-icing and anti-icing applications

- Consumer

**Uses - Consumer** 

Title : Other Consumer Uses

- Consumer

**Uses - Consumer** 

Title : Use as a fuel

- Consumer

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.

NL / EN

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

30000000645	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Manufacture of substance- Industrial
Use Descriptor	Sector of Use: SU 3, SU8, SU9 Process Categories: PROC 1, PROC 2, PROC 3, PROC 4, PROC 8a, PROC 8b, PROC 15 Environmental Release Categories: ERC1, ERC4
Scope of process	Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/ recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Additional Information	No exposure assessment presented for the environment.	
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Liquid, vapour pressure < 0.5 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	ns affecting Exposure	
Assumes a good basic standard of occupational hygiene is implemented.		
Assumes use at not more that	an 20°C above ambient temperature (unless stated differently).	

**Contributing Scenarios Risk Management Measures** General exposures (closed No specific measures identified. systems)elevated temperatureContinuous processPROC1 General exposures (closed Provide extraction ventilation at points where emissions ocsystems) with occasional cur. controlled exposure.elevated temperature-Continuous processPROC2 No specific measures identified. General exposures. Use in contained batch processesPROC3 General exposures.Batch No specific measures identified. processPROC4 Process samplingelevated Use a sampling system designed to control exposure. temperaturePROC2

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Equipment cleaning and maintenancePROC8a	Drain down and flush system prior to equipment opening or maintenance.
Bulk transfersDedicated facilityPROC8b	Use in semi-automated and predominantly enclosed filling lines.
Bulk product storage(closed systems)PROC1	No specific measures identified.
Laboratory activi- tiesPROC15	No specific measures identified.
Section 2.2	Control of Environmental Exposure

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**

No exposure assessment presented for the environment.

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 Rick Management		

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

No exposure assessment presented for the environment.

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## **Exposure Scenario - Worker**

3000000647	
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, PROC4, 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
Additional Information	No exposure assessment presented for the environment.
Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Liquid, vapour pressure < 0.5 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
•	dard of occupational hygiene is implemented.

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

Contributing Scenarios	Risk Management Measures
General exposures (closed systems)Continuous processPROC1	No specific measures identified.
General exposures (closed systems) with occasional controlled exposure. Continuous process PROC2	No specific measures identified.
General exposures.Use in contained batch process-esPROC3	No specific measures identified.
General exposures.Batch processPROC4	No specific measures identified.
Process samplingPROC2	Ensure dedicated sample points are provided.
Equipment cleaning and	Drain down and flush system prior to equipment opening or

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Section 2.2	Control of Environmental Exposure
Laboratory activi- tiesPROC15	No specific measures identified.
Bulk product storage(closed systems)PROC1	No specific measures identified.
Bulk transfersNon- dedicated facilityPROC8a	Ensure material transfers are under containment or extract ventilation.
Bulk transfersDedicated facilityPROC8b	No specific measures identified.
maintenancePROC8a	maintenance.

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

## **Section 3.2 - Environment**

No exposure assessment presented for the environment.

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	
No exposure assessment presented for the environment.	

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## **Exposure Scenario - Worker**

30000000646	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Distribution of substance- Industrial
Use Descriptor	Sector of Use: SU 3, SU8, SU9 Process Categories: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15 Environmental Release Categories: ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7
Scope of process	Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading distribution and associated laboratory activities.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Additional Information	No exposure assessment presented for the environment.
Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Liquid, vapour pressure < 0.5 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 Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
•	dard of occupational hygiene is implemented.

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

Contributing Scenarios	Risk Management Measures
General exposures (closed systems)Continuous processPROC1	No specific measures identified.
General exposures (closed systems) with occasional controlled exposure. Continuous process PROC2	No specific measures identified.
General exposures.Use in contained batch process-esPROC3	No specific measures identified.
General exposures.Batch processPROC4	No specific measures identified.
Product sampling.PROC2	Ensure dedicated sample points are provided.
Equipment cleaning and	Drain down and flush system prior to equipment opening or

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maintenancePROC8a	maintenance.
Bulk transfersDedicated facilityPROC8b	No specific measures identified.
Bulk transfersNon- dedicated facilityPROC8a	Ensure material transfers are under containment or extract ventilation.
Drum/batch transfersDedicated facilityPROC8b	No specific measures identified.
Drum and small package fillingPROC9	Fill containers/cans at dedicated filling points supplied with local extract ventilation.
Bulk product storage(closed systems)PROC1	No specific measures identified.
Laboratory activi- tiesPROC15	No specific measures identified.
Section 2.2	Control of Environmental Exposure

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

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

# **Section 3.2 - Environment**

No exposure assessment presented for the environment.

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**

No exposure assessment presented for the environment.

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## **Exposure Scenario - Worker**

Exposure Scenario - Works	×1
30000000648	
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, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15 Environmental Release Categories: ERC2
Scope of process	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Additional Information	No exposure assessment presented for the environment.
Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Liquid, vapour pressure < 0.5 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 Condition	ns affecting Exposure

Assumes a good basic standard of occupational hygiene is implemented.

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

Contributing Scenarios	Risk Management Measures
General exposures (closed systems)Continuous processPROC1	No specific measures identified.
General exposures (closed systems) with occasional controlled exposure. Continuous process PROC2	No specific measures identified.
General exposures.Use in contained batch process-esPROC3	No specific measures identified.
General exposures.Batch processPROC4	No specific measures identified.
Mixing operations (open systems)PROC5	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

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Production or preparation or articles by tabletting, compression, extrusion or pelletisationPROC14	No specific measures identified.
Product sampling.PROC9	Ensure dedicated sample points are provided.
Equipment cleaning and maintenancePROC8a	Drain down and flush system prior to equipment opening or maintenance.
Bulk transfersDedicated facilityPROC8b	No specific measures identified.
Bulk transfersNon- dedicated facilityPROC8a	Ensure material transfers are under containment or extract ventilation.
Drum/batch transfersDedicated facilityPROC8b	No specific measures identified.
Drum and small package fillingPROC9	Fill containers/cans at dedicated filling points supplied with local extract ventilation.
Bulk product storage(closed systems)PROC1	No specific measures identified.
Laboratory activi- tiesPROC15	No specific measures identified.
Section 2.2	Control of Environmental Exposure

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

No exposure assessment presented for the environment.

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

No exposure assessment presented for the environment.

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## **Exposure Scenario - Worker**

30000000649	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Uses in Coatings- Industrial
Use Descriptor	Sector of Use: SU 3 Process Categories: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC13, PROC15 Environmental Release Categories: ERC4
Scope of process	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip, flow, fluidised bed on production lines and film formation) and equipment cleaning, maintenance and associated laboratory activities.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Additional Information	No exposure assessment presented for the environment.
Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Liquid, vapour pressure < 0.5 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	ons affecting Exposure
ASSUMES A GOOD DASIC STAND	iard of occupational hydiene is implemented
Assumes use at not more that	lard of occupational hygiene is implemented. an 20°C above ambient temperature (unless stated differently).  Risk Management Measures
Assumes use at not more that  Contributing Scenarios	an 20°C above ambient temperature (unless stated differently).  Risk Management Measures
Assumes use at not more that  Contributing Scenarios  General exposures (closed	an 20°C above ambient temperature (unless stated differently).
Assumes use at not more that  Contributing Scenarios  General exposures (closed systems)PROC1	Risk Management Measures  No specific measures identified.
Assumes use at not more that  Contributing Scenarios  General exposures (closed	an 20°C above ambient temperature (unless stated differently).  Risk Management Measures
Contributing Scenarios General exposures (closed systems)PROC1 General exposures (closed systems)with sample collectionPROC2 Film formation - force dry-	Risk Management Measures  No specific measures identified.
Contributing Scenarios General exposures (closed systems)PROC1 General exposures (closed systems)with sample collectionPROC2 Film formation - force drying, stoving and other tech-	Risk Management Measures  No specific measures identified.  No specific measures identified.
Contributing Scenarios General exposures (closed systems)PROC1 General exposures (closed systems)with sample collectionPROC2 Film formation - force dry-	Risk Management Measures  No specific measures identified.  No specific measures identified.
Contributing Scenarios General exposures (closed systems)PROC1 General exposures (closed systems)with sample collectionPROC2 Film formation - force drying, stoving and other technologies.PROC2 Film formation - air dry-	Risk Management Measures  No specific measures identified.  No specific measures identified.  No specific measures identified.

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material for applica- tionPROC5	
Material transfersDedicated facilityPROC8b	No specific measures identified.
Bulk transfersNon- dedicated facilityPROC8a	Ensure material transfers are under containment or extract ventilation.
Drum/batch transfer- sPROC8b	Use drum pumps or carefully pour from container.
Spraying (automatic/robotic)PROC7	Carry out in a vented booth or extracted enclosure. Ensure the ventilation system is regularly maintained and tested. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Wear suitable coveralls to prevent exposure to the skin.
ManualSprayingPROC7	Carry out in a vented booth or extracted enclosure. Ensure the ventilation system is regularly maintained and tested. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Wear suitable coveralls to prevent exposure to the skin.
Roller, spreader, flow applicationPROC10	Use long handled brushes and rollers where possible. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Dipping, immersion and pouringPROC13	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Laboratory activi- tiesPROC15	No specific measures identified.
Equipment cleaning and maintenancePROC8a	Drain down system prior to equipment opening or maintenance.
Storage.PROC1	Store substance within a closed system.
Section 2.2	Control of Environmental Exposure

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
The ECETOC TRA too	ol has been used to estimate workplace exposures unless otherwise

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

Section 3.2 -Environment
No exposure assessment presented for the environment.

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE
	EXPOSURE SCENARIO

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## 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

No exposure assessment presented for the environment.

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## **Exposure Scenario - Worker**

30000000650	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Uses in Coatings- Professional
Use Descriptor	Sector of Use: SU 22 Process Categories: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC19 Environmental Release Categories: ERC8a, ERC8d
Scope of process	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, brush, spreader by hand or similar methods, and film formation), and equipment cleaning, maintenance and associated laboratory activities.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Additional Information	No exposure assessment presented for the environment.
Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Liquid, vapour pressure < 0.5 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 Conditio	ns affecting Exposure
Assumes a good basic standard of occupational hygiene is implemented.	
Assumes use at not more than 20°C above ambient temperature (unless stated differently).	
Contributing Scenarios	Risk Management Measures
Filling/ preparation of	No specific measures identified.
equipment from drums or	
containers.PROC8b	
Canaral avpaguras (alacad	No enocific massures identified

	Trion management measures	
Filling/ preparation of equipment from drums or containers.PROC8b	No specific measures identified.	
General exposures (closed systems)Use in contained systemsPROC1	No specific measures identified.	
Preparation of material for applicationPROC5	No specific measures identified.	
Film formation - air dry-ingPROC2	No specific measures identified.	
Film formation - force dry- ing, stoving and other tech- nologies.PROC2	No specific measures identified.	
Material trans-	Use drum pumps or carefully pour from container.	

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fersDrum/batch trans-	
fersNon-dedicated facili-	
tyPROC8a	
Material trans-	No specific measures identified.
fersDrum/batch trans-	No specific measures identified.
fersDedicated facili-	
tyPROC8b	Dec 11s of the office of the flavor of the f
Roller, spreader, flow applicationPROC10	Provide extraction ventilation at points where emissions oc-
CallotteROCTO	CUI.
	Use long handled brushes and rollers where possible.
	Wear chemically resistant gloves (tested to EN374) in combi-
	nation with 'basic' employee training.
ManualSprayingPROC7	Wear chemically resistant gloves (tested to EN374) in combi-
Wandalopraying 11007	nation with 'basic' employee training.
	Wear suitable coveralls to prevent exposure to the skin.
	Carry out in a vented booth or extracted enclosure.
	, or:
	Wear a respirator conforming to EN140 with Type A/P2 filter
	or better.
	or botton.
Dipping, immersion and	Wear chemically resistant gloves (tested to EN374) in combi-
pouringPROC13	nation with 'basic' employee training.
	1 , 0
Hand application - finger-	Wear chemically resistant gloves (tested to EN374) in combi-
paints, pastels, adhe-	nation with 'basic' employee training.
sivesPROC19	
Laboratory activi-	No specific measures identified.
tiesPROC15	
Equipment cleaning and	Drain down system prior to equipment opening or mainte-
maintenancePROC8a	nance.
Storage.PROC1	Store substance within a closed system.
Section 2.2	Control of Environmental Exposure

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 No exposure assessment presented for the environment.

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO
Section 4.1 - Health	
•	are not expected to exceed the DN(M)EL when the Risk Management

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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

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

Exposure Scenario - WC	DI NEI
30000000651	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use in Cleaning Agents- Industrial
Use Descriptor	Sector of Use: SU 3 Process Categories: PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC10, PROC13 Environmental Release Categories: ERC4
Scope of process	Covers the use as a component of cleaning products including transfer from storage, pouring/unloading from drums or containers. Exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping, automated and by hand), related equipment cleaning and maintenance.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES			
Additional Information	No exposure assessment presented for the environment.			
Section 2.1	Control of Worker Exposure			
<b>Product Characteristics</b>				
Physical form of product	Liquid, vapour pressure < 0.5 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	Use			
Covers daily exposures up to	to 8 hours (unless stated differently).			
Other Operational Condition	ns affecting Exposure			
	ard of occupational hygiene is implemented.			
Assumes use at not more that	an 20°C above ambient temperature (unless stated differently).			

Contributing Scenarios	Risk Management Measures
Bulk transfersNon- dedicated facilityPROC8a	Ensure material transfers are under containment or extract ventilation.
Use in contained system- sAutomated process with (semi) closed sys- tems.PROC1PROC2	No specific measures identified.
Drum/batch transfer- sPROC3	Use drum pumps or carefully pour from container.
Filling/ preparation of equipment from drums or containers. Dedicated facilityPROC8b	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Use in contained batch processesTreatment by	Provide extraction ventilation at points where emissions occur.

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heatingPROC3PROC4 Degreasing small objects in cleaning stationPROC13	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Cleaning with low-pressure washersPROC10	Use long handled tools where possible. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Cleaning with high pressure washersPROC7	Carry out in a vented booth or extracted enclosure. Ensure the ventilation system is regularly maintained and tested. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Wear suitable coveralls to prevent exposure to the skin.
ManualCleaningSurfacesno sprayingPROC10	Use long handled tools where possible. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Section 2.2	Control of Environmental Exposure

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

No exposure assessment presented for the environment.

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 No exposure assessment presented for the environment.

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

30000000652	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use in Cleaning Agents- Professional
Use Descriptor	Sector of Use: SU 22 Process Categories: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC10, PROC11, PROC13 Environmental Release Categories: ERC8a, ERC8d
Scope of process	Covers the use as a component of cleaning products including pouring/unloading from drums or containers; and exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping automated and by hand).

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMEN MEASURES			
Additional Information	No exposure assessment presented for the environment.			
Section 2.1	Control of Worker Exposure			
Product Characteristics				
Physical form of product	Liquid, vapour pressure < 0.5 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	of Use			
Covers daily exposures up t	to 8 hours (unless stated differently).			
<b>Other Operational Conditi</b>	ons affecting Exposure			
	dard of occupational hygiene is implemented.  nan 20°C above ambient temperature (unless stated differently).			

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

Contributing Scenarios	Risk Manage	ement Measures	
Filling/ preparation of equipm drums or containers.Dedicate tyPROC8b		Wear chemically resistant gloves (tested to EN3 in combination with 'basic' employee training.	74)
Use in contained systemsAut cess with (semi) closed systems.PROC1PROC2	omated pro-	No specific measures identified.	
Drum/batch transfersPROC8	)	Use drum pumps or carefully pour from containe	er.
Semi Automated process. (e.g.: Semi automatic application of floor care and maintenance products)PROC4		No specific measures identified.	
Filling/ preparation of equipm drums or containers.Non-ded tyPROC8a		Use drum pumps or carefully pour from containe	er.
ManualCleaningSurfacesDipp sion and pouringPROC13	oing, immer-	Wear chemically resistant gloves (tested to EN3 in combination with 'basic' employee training.	74)

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Cleaning with low-pressure washer- sPROC10	Use long handled tools where possible. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Cleaning with high pressure washersPROC11	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Wear suitable coveralls to prevent exposure to the skin.  Carry out in a vented booth or extracted enclosure., or:  Wear a respirator conforming to EN140 with Type A/P2 filter or better.	
ManualCleaningSurfacesSprayingPROC11	Provide extraction ventilation at points where emissions occur. Use long handled brushes and rollers where possible. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Ad hoc manual application via trigger sprays, dipping, etc.Rolling, BrushingPROC10	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Application of cleaning products in closed systemsPROC3PROC4	No specific measures identified.	
Cleaning of medical devicesPROC13	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Section 2.2 Control of Environmental Exposure		

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
The FORTON TDA (selled become altered by the selection of allered by the selection of the s	

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

# Section 3.2 -Environment No exposure assessment presented for the environment.

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

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

30000000653	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Lubricants- Industrial
Use Descriptor	Sector of Use: SU 3 Process Categories: PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17, PROC18 Environmental Release Categories: ERC4, ERC7
Scope of process	Covers the use of formulated lubricants in closed and open systems including transfer operations, operation of machinery/engines and similar articles, reworking on reject articles, equipment maintenance and disposal of wastes.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Additional Information	No exposure assessment presented for the environment.	
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Liquid, vapour pressure < 0.5 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 Use		
Covers daily exposures up to 8 hours (unless stated differently).		
Other Operational Conditions affecting Exposure		
Assumes a good basic standard of occupational hygiene is implemented. Assumes use at not more than 20°C above ambient temperature (unless stated differently).		

**Contributing Scenarios Risk Management Measures** General exposures (closed No specific measures identified. systems)PROC1PROC3 General exposures (open Wear suitable gloves tested to EN374. systems)PROC2PROC4 Bulk transfersDedicated No specific measures identified. facilityPROC8b Bulk transfersNon-dedicated Ensure material transfers are under containment or extract facilityPROC8a ventilation. Filling/ preparation of equip-Wear chemically resistant gloves (tested to EN374) in combiment from drums or containnation with 'basic' employee training. ers.PROC8b Initial factory fill of equip-Use in semi-automated and predominantly enclosed filling mentPROC9 lines. Operation and lubrication of Minimise exposure by partial enclosure of the operation or

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Section 2.2	Control of Environmental Exposure	
Storage.PROC1	No specific measures identified.	
Remanufacture of reject articlesPROC9	Provide extraction ventilation at points where emissions occur.	
Maintenance of small itemsPROC8a	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Engine lubricant service- PROC9	Handle substance within a closed system.	
Maintenance (of larger plant items) and machine set up-PROC8b	No specific measures identified.	
SprayingPROC7	Carry out in a vented booth or extracted enclosure. Ensure the ventilation system is regularly maintained and tested. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Wear suitable coveralls to prevent exposure to the skin.	
Treatment by dipping and pouringPROC13	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Manual applications e.g. brushing, rollingPROC10	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  Use long handled brushes and rollers where possible.	
high energy open equip- mentwith potential for aero- sol genera- tion.PROC17PROC18	equipment and provide extract ventilation at openings. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	

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

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

Section 3.2 -Environment	
No exposure assessment presented for the environment.	

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.

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Section 4.2 - Environment

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

30000000654	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Metal working fluids / rolling oils- Industrial
Use Descriptor	Sector of Use: SU 3 Process Categories: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17 Environmental Release Categories: ERC4
Scope of process	Covers the use in formulated MWFs/rolling oils including transfer operations, rolling and annealing activities, cutting/machining activities, automated and manual application of corrosion protections (including brushing, dipping and spraying), equipment maintenance, draining and disposal of waste oils.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES		
Additional Information	No exposure assessment presented for the environment.		
Section 2.1	Control of Worker Exposure		
Product Characteristics			
Physical form of product	Liquid, vapour pressure < 0.5 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 Conditions affecting Exposure			
Assumes a good basic standard of occupational hygiene is implemented.			
Assumes use at not more than 20°C above ambient temperature (unless stated differently).			

Contributing Scenarios Risk M		Management Measures
General exposures (closed sy tems)PROC1PROC3	ys-	No specific measures identified.
General exposures (open systems)PROC2PROC4	<b>}-</b>	Wear suitable gloves tested to EN374.
Bulk transfersDedicated facili tyPROC8b	-	No specific measures identified.
Bulk transfersNon-dedicated tyPROC8a	facili-	Ensure material transfers are under containment or extract ventilation.
Filling/ preparation of equipm from drums or containers.PROC5PROC8bPROC9	ent	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Product sampling.PROC9		Use dedicated equipment. Wear suitable gloves tested to EN374.

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Metal machining operationsPROC17	Provide extraction ventilation at points where emissions occur.
	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Treatment by dipping and pour- ingPROC13	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
SprayingPROC7	Carry out in a vented booth or extracted enclosure. Ensure the ventilation system is regularly maintained and tested.
	Wear chemically resistant gloves (tested to EN374) in
	combination with 'basic' employee training.  Wear suitable coveralls to prevent exposure to the skin.
	wear suitable coverails to prevent exposure to the skin.
ManualRoller, spreader, flow applicationPROC10	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
	Use long handled brushes and rollers where possible.
Automated metal roll- ing/formingPROC2	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.
Semi-automated metal roll- ing/formingPROC17	Provide extraction ventilation at points where emissions occur.
	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Equipment cleaning and maintenancePROC8a	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Storage.PROC1	Store substance within a closed system.

Section 2.2	Control of Environmental Ex	posure

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
No exposure assessment presented for the environment.

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	

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should ensure that risks are managed to at least equivalent levels.

Section 4.2 - Environment

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

30000000655	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Metal working fluids / rolling oils- Professional
Use Descriptor	Sector of Use: SU 22 Process Categories: PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC17 Environmental Release Categories: ERC8a, ERC8d
Scope of process	Covers the use in formulated MWFs including transfer operations, open and contained cutting/machining activities, automated and manual application of corrosion protections, draining and working on contaminated/ reject articles, and disposal of waste oils.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Additional Information	No exposure assessment presented for the environment.	
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Liquid, vapour pressure < 0.5 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 Use		
Covers daily exposures up to 8 hours (unless stated differently).		
Other Operational Conditions affecting Exposure		
Assumes a good basic stand	dard of occupational hydiene is implemented	

Assumes a good basic standard of occupational hygiene is implemented.

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

**Contributing Scenarios Risk Management Measures** No specific measures identified. General exposures (closed systems)PROC1PROC3 Bulk transfersDedicated facili-No specific measures identified. tyPROC8b Bulk transfersNon-dedicated Ensure material transfers are under containment or extract facilityPROC8a ventilation. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Filling/ preparation of equip-No specific measures identified. ment from drums or containers.Dedicated facilityPROC5PROC8bPROC9 Filling/ preparation of equip-Ensure material transfers are under containment or extract ment from drums or containventilation.

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ers.Non-dedicated facili- tyPROC8a	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Product sam- pling.PROC8bPROC9	Use dedicated equipment. Wear suitable gloves tested to EN374.
Metal machining operationsPROC17	Provide extraction ventilation at points where emissions occur.  Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Manual applications e.g. brushing, rollingPROC10	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use long handled brushes and rollers where possible.
Treatment by dipping and pouringPROC13	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
SprayingPROC11	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  Wear suitable coveralls to prevent exposure to the skin.  Carry out in a vented booth or extracted enclosure.  , or:  Wear a respirator conforming to EN140 with Type A/P2 filter or better.
Equipment cleaning and maintenanceDedicated facilityPROC8b	No specific measures identified.
Equipment cleaning and maintenanceNon-dedicated facilityPROC8a	Provide extraction ventilation at points where emissions occur.  Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Storage.PROC1	Store substance within a closed system.
Section 2.2	Control of Environmental Exposure

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	
No exposure assessment presented for the environment.	

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

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

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

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# **Diethylene Glycol**

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

systems)PROC1PROC3

30000000656	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Functional Fluids- Industrial
Use Descriptor	Sector of Use: SU 3 Process Categories: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9 Environmental Release Categories: ERC7
Scope of process	Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in industrial equipment including maintenance and related material transfers.

Additional Information  No exposure assessment presented for the environment.  Section 2.1  Control of Worker Exposure  Product Characteristics  Physical form of product  Liquid, vapour pressure < 0.5 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 Use  Covers daily exposures up to 8 hours (unless stated differently).  Other Operational Conditions affecting Exposure  Assumes a good basic standard of occupational hygiene is implemented.  Assumes use at not more than 20°C above ambient temperature (unless stated differently).	SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Product Characteristics  Physical form of product  Concentration of the Substance in Mixture/Article  Covers percentage substance in the product up to 100%., Unless stated otherwise.,  Frequency and Duration of Use  Covers daily exposures up to 8 hours (unless stated differently).  Other Operational Conditions affecting Exposure  Assumes a good basic standard of occupational hygiene is implemented.	Additional Information	No exposure assessment presented for the environment.
Physical form of product  Concentration of the Substance in Mixture/Article  Covers percentage substance in the product up to 100%., Unless stated otherwise.,  Frequency and Duration of Use  Covers daily exposures up to 8 hours (unless stated differently).  Other Operational Conditions affecting Exposure  Assumes a good basic standard of occupational hygiene is implemented.	Section 2.1	Control of Worker Exposure
Concentration of the 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 Conditions affecting Exposure  Assumes a good basic standard of occupational hygiene is implemented.	Product Characteristics	
stance in Mixture/Article Unless stated otherwise.,  Frequency and Duration of Use  Covers daily exposures up to 8 hours (unless stated differently).  Other Operational Conditions affecting Exposure  Assumes a good basic standard of occupational hygiene is implemented.	Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP
Covers daily exposures up to 8 hours (unless stated differently).  Other Operational Conditions affecting Exposure  Assumes a good basic standard of occupational hygiene is implemented.		
Other Operational Conditions affecting Exposure Assumes a good basic standard of occupational hygiene is implemented.	Frequency and Duration of	f Use
Assumes a good basic standard of occupational hygiene is implemented.	Covers daily exposures up t	o 8 hours (unless stated differently).
	Other Operational Conditi	ons affecting Exposure
Assumes use at not more than 20°C above ambient temperature (unless stated different)	Assumes a good basic stan	dard of occupational hygiene is implemented.
	Assumes use at not more th	an 20°C above ambient temperature (unless stated differently)

Contributing Scenarios	Risk Management Measures
Bulk transfersDedicated facilityPROC8b	No specific measures identified.
Bulk transfersNon- dedicated facilityPROC8a	Ensure material transfers are under containment or extract ventilation.
	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Filling of arti- cles/equipmentPROC9	Fill containers/cans at dedicated filling points supplied with local extract ventilation.
	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Filling/ preparation of	Use dedicated equipment.
equipment from drums or containers.PROC8b	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
General exposures.(closed	No specific measures identified.

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Section 2.2	Control of Environmental Exposure
Storage.PROC1	Store substance within a closed system.
Remanufacture of reject articlesPROC9	Drain down system prior to equipment opening or maintenance. Wear suitable gloves tested to EN374.
Equipment maintenance- PROC8a	Drain down system prior to equipment opening or maintenance. Wear suitable gloves tested to EN374.
General exposures.(open systems)PROC2PROC4	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

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**

No exposure assessment presented for the environment.

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 No exposure assessment presented for the environment.

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

30000000657	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Functional Fluids- Professional
Use Descriptor	Sector of Use: SU 22 Process Categories: PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC9, PROC20 Environmental Release Categories: ERC9a, ERC9b
Scope of process	Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in professional equipment including maintenance and related material transfers.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Additional Information	No exposure assessment presented for the environment.
Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Liquid, vapour pressure < 0.5 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	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Condition	ons affecting Exposure
Assumes a good basic stand	lard of occupational hygiene is implemented.
Assumes use at not more than 20°C above ambient temperature (unless stated differently).	

Contributing Scenarios Risk Management Measures

Contributing Scenarios	RISK Management Measures
Drum/batch transfersPROC8a	Use drum pumps or carefully pour from container. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Transfer from/pouring from cotainersPROC9	Use drum pumps or carefully pour from container. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Filling/ preparation of equipme from drums or containers.PROC9PROC20	Use drum pumps or carefully pour from container. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
General exposures.(closed systems)PROC1PROC2PRO	No specific measures identified.
Remanufacture of reject articlesPROC9	Drain down system prior to equipment opening or maintenance. Wear suitable gloves tested to EN374.

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Equipment maintenance- PROC8a	Drain down system prior to equipment opening or maintenance. Wear suitable gloves tested to EN374.
Storage.PROC1	Store substance within a closed system.
Drum/batch transfersDedicated facilityPROC8b	No specific measures identified.

Control of Environmental Exposure Section 2.2

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**

No exposure assessment presented for the environment.

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**

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

30000000658	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	De-icing and anti-icing applications- Professional
Use Descriptor	Sector of Use: SU 22 Process Categories: PROC1, PROC2, PROC8a, PROC8b, PROC11 Environmental Release Categories: ERC8d
Scope of process	Ice prevention and de-icing of vehicles, aircraft and other equipment by spraying.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Additional Information	No exposure assessment presented for the environment.	
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Liquid, vapour pressure < 0.5 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 Conditio	ns affecting Exposure	
Assumes a good basic standa	ard of occupational hygiene is implemented.	
Assumes use at not more than 20°C above ambient temperature (unless stated differently).		
Contributing Scenarios	Risk Management Measures	
Bulk open unload-	Use dedicated equipment.	
ing.PROC8a	, or:	
	Ensure material transfers are under containment or extract ventilation.	
Filling/ preparation of	Use drum pumps or carefully pour from container.	
equipment from drums or	Wear chemically resistant gloves (tested to EN374) in combi-	
containers.PROC8b	nation with 'basic' employee training.	
General exposures.(closed	No specific measures identified.	
systems)PROC1PROC2	·	
Material transferselevated	Use dedicated equipment.	
temperaturePROC8a	, or:	
	Ensure material transfers are under containment or extract ventilation.	
Spraying/ fogging by ma-	Apply within a vented cab supplied with filtered air under posi-	
chine applicationelevated	tive pressure and with a protection factor of >20.	
temperaturePROC11	·	

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Equipment maintenance-PROC8a  Section 2.2	Drain down system prior to equipment opening or maintenance. Wear suitable gloves tested to EN374.  Control of Environmental Exposure
Spraying/ fogging by manual applicationPROC11	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  Wear suitable coveralls to prevent exposure to the skin.  Carry out in a vented booth or extracted enclosure.  , or:  Wear a respirator conforming to EN140 with Type A/P2 filter or better.

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**

No exposure assessment presented for the environment.

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	

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	
No exposure assessment presented for the environment.	

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

30000000659	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use in laboratories- Industrial
Use Descriptor	Sector of Use: SU 3 Process Categories: PROC 15 Environmental Release Categories: ERC2, ERC4
Scope of process	Use of the substance within laboratory settings, including material transfers and equipment cleaning.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Additional Information	No exposure assessment presented for the environment.	
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Liquid, vapour pressure < 0.5 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	o 8 hours (unless stated differently).	
Other Operational Condition	ons affecting Exposure	
Assumes a good basic standard of occupational hygiene is implemented. Assumes use at not more than 20°C above ambient temperature (unless stated differently).		
Contributing Scenarios	Risk Management Measures	
Laboratory activitiessmall scalePROC15	No specific measures identified.	
Section 2.2	Control of Environmental Exposure	

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 No exposure assessment presented for the environment.

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

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should ensure that risks are managed to at least equivalent levels.

Section 4.2 -Environment

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

3000000660	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use in laboratories- Professional
Use Descriptor	Sector of Use: SU 22 Process Categories: PROC15 Environmental Release Categories: ERC8a
Scope of process	Use of small quantities within laboratory settings, including material transfers and equipment cleaning.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Additional Information	No exposure assessment presented for the environment.	
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Liquid, vapour pressure < 0.5 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	o 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure		
Assumes a good basic standard of occupational hygiene is implemented. Assumes use at not more than 20°C above ambient temperature (unless stated differently).		
Contributing Scenarios	Risk Management Measures	
Laboratory activitiessmall scalePROC15	No specific measures identified.	
Section 2.2	Control of Environmental Exposure	

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 No exposure assessment presented for the environment.

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

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should ensure that risks are managed to at least equivalent levels.

Section 4.2 -Environment

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

30000010118		
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	
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	
Additional Information	No exposure assessment presented for the environment.	
Section 2.1	Control of Worker Exposure	
Product Characteristics	duct Characteristics	
Physical form of product	Liquid, vapour pressure < 0.5 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 Conditions affecting Exposure		
Assumes use at not more than 20°C above ambient temperature (unless stated differently).		
Assumes a good basic standard of occupational hygiene is implemented.		

Contributing Scenarios **Risk Management Measures** Bulk transfersPROC8b Handle substance within a closed system. Clear transfer lines prior to de-coupling. Wear suitable gloves tested to EN374. Avoid carrying out operation for more than 4 hours. Drum/batch transfersPROC8b Use drum pumps or carefully pour from container. Wear suitable gloves tested to EN374. Refueling.PROC8b Use drum pumps or carefully pour from container. Wear suitable gloves tested to EN374. General exposures (closed sys-No other specific measures identified. tems)PROC1PROC2PROC3PROC16 Equipment cleaning and maintenance-Drain down and flush system prior to equipment PROC8a opening or maintenance. Wear chemically resistant gloves (tested to EN374)

in combination with 'basic' employee training. Wear suitable coveralls to prevent exposure to the

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	skin.	
Storage.PROC1	Store substance within a closed system.	

Section 2.2 **Control of Environmental Exposure** No exposure assessment presented for the environment.

#### **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

No exposure assessment presented for the environment.

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**

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

30000010777	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use in Oil and Gas field drilling and production operations- Industrial
Use Descriptor	Sector of Use: SU 3 Process Categories: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b Environmental Release Categories: ERC4
Scope of process	Oil field well drilling and production operations (including drilling muds and well cleaning) including material transfers, onsite formulation, well head operations, shaker room activities and related maintenance.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Additional Information	No exposure assessment presented for the environment.	
Section 2.1	Control of Worker Exposure	
Product Characteristics		
Physical form of product	Liquid, vapour pressure < 0.5 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 Conditions affecting Exposure		
Assumes a good basic standard of occupational hygiene is implemented.		
Assumes use at not more than 20°C above ambient temperature (unless stated differently		

Contributing Scenarios	Risk Management Measures	
Bulk transfers from tote	No specific measures identified.	
tanks and supply ves-		
selsPROC8b		
Filling/ preparation of	Use drum pumps or carefully pour from container.	
equipment from drums or	Wear chemically resistant gloves (tested to EN374) in combi-	
containers.PROC8b	nation with 'basic' employee training.	
Drilling mud (re-	Wear chemically resistant gloves (tested to EN374) in combi-	
)formulationPROC3	nation with 'basic' employee training.	
D 111 (1 D D D D D D D D D D D D D D D D		
Drill floor operationsPROC4	Wear chemically resistant gloves (tested to EN374) in combi-	
	nation with 'basic' employee training.	
Operation of called filtering	Minimine assessment by portial analysis of the analysis or	
Operation of solids filtering	Minimise exposure by partial enclosure of the operation or	
equipmentelevated temperaturePROC4	equipment and provide extract ventilation at openings.	
aluier NOC4		

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Cleaning of solids filtering equipmentPROC8a	Wear suitable gloves tested to EN374. Provide a good standard of general ventil 3 to 5 air changes per hour).	ation (not less than	
Treatment and disposal of filtered solidsPROC3	Wear suitable gloves tested to EN374. Provide a good standard of general ventil 3 to 5 air changes per hour).	ation (not less than	
Process samplingPROC3	Wear suitable gloves tested to EN374.		
General exposures (closed systems)PROC1	No specific measures identified.		
Pouring from small containersPROC8a	Wear chemically resistant gloves (tested nation with 'basic' employee training.	to EN374) in combi-	
General exposures (open systems)PROC4	Wear suitable gloves tested to EN374.		
Equipment cleaning and maintenancePROC8a	Drain down system prior to equipment opening or maintenance.  Wear chemically resistant gloves (tested to EN374) in connation with 'basic' employee training.		
General process exposures from enclosed process-esPROC2	Store substance within a closed system.	closed system.	
Section 2.2	Control of Environmental Exposure		
No exposure assessment pre	esented for the environment.		

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

	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 Managemen 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.		ions outlined in Section 2 are implemented.  nt Measures/Operational Conditions are adopted, then users

Section 4.2 -Environment	
No exposure assessment presented for the environment.	

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#### **Exposure Scenario - Consumer**

30000001088	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Uses in Coatings - Consumer
Use Descriptor	Sector of Use: SU 21 Product Categories: PC1, PC9a, PC15, PC18, PC23, PC31, PC32, PC34 Environmental Release Categories: ERC8a, ERC8d
Scope of process	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including product transfer and preparation, application by brush, spray by hand or similar methods) and equipment cleaning.

SECTION 2	OPERATIONAL CONDITIONS AND RIS	SK MANAGEMENT
Additional Information	No exposure assessment presented for t	the environment.
Section 2.1	Control of Consumer Exposure	
Product Characteristics		
Physical form of product	Liquid, vapour pressure > 10 Pa at STP	
Concentration of the Substance in Mixture/Article	Covers concentration up to (%): 5 %	
Amounts Used		
for each use event, covers ar	mount up to (g):	9.000
Frequency and Duration of		
Covers use up to (days/year)		365
covers use up to (times/day of	of use):	1
Exposure (hours/event):		10
Product Categories	OPERATIONAL CONDITIONS AND RIS	SK MANAGEMENT
Adhesives, sealants Glues DIY-use (carpet glue, tile glue, wood parquet glue).	Covers concentrations up to 0,1 %	
g.a.c, are carpanyare grace,	For each use event, covers amount up to	9.000 g
	covers use up to 0,25 day/year	J
	Covers use up to 1 times/day of use	
	Covers exposure up to 1,25 hours/even	t
	covers skin contact area up to (cm2): 11	
	Covers use in room size of 58 m3	
	Covers use under typical household vent	tilation.
	Covers use at ambient temperatures.	
Coatings and paints, thin- ners, paint removers Wa- terborne latex wall paint.	Covers concentrations up to 10 %	
•	For each use event, covers amount up to	1.250 g
	covers use up to 1 day/year	

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	Covers use up to 1 times/day of use
	Covers exposure up to 2,2 hours/event
	covers skin contact area up to (cm2): 1.900 cm2
	Covers use in room size of 20 m3
	Covers use under typical household ventilation.
	Covers use at ambient temperatures.
Coatings and paints, thin-	Covers concentrations up to 10 %
ners, paint removers Sol-	
vent rich, high solid, water	
borne paint.	
	For each use event, covers amount up to 1.250 g
	covers use up to 1 day/year
	Covers use up to 1 times/day of use
	Covers exposure up to 2,2 hours/event
	covers skin contact area up to (cm2): 1.900 cm2
	Covers use in room size of 20 m3
	Covers use under typical household ventilation.
	Covers use at ambient temperatures.
Coatings and paints, thin-	Covers concentrations up to 10 %
ners, paint removers Aero-	
sol spray can.	
, ,	For each use event, covers amount up to 300 g
	covers use up to 2 day/year
	Covers use up to 1 times/day of use
	Covers exposure up to 0,25 hours/event
	covers skin contact area up to (cm2): 1.900 cm2
	Covers use in a one car garage (34 m3) under typical ventila-
	tion.
	Covers use at ambient temperatures.
Coatings and paints, thin-	Covers concentrations up to 10 %
ners, paint removers Re-	Covere contentions up to 10 70
movers (paint-, glue-, wall	
paper-, sealant-remover).	
paper ; ecalarit remevel).	For each use event, covers amount up to 1.250 g
	covers use up to 1 day/year
	Covers use up to 1 times/day of use
	Covers exposure up to 2,2 hours/event
	covers skin contact area up to (cm2): 1.900 cm2
	Covers use in room size of 20 m3
	Covers use under typical household ventilation.
	Covers use at ambient temperatures.
Non motal surface tract	
Non-metal-surface treat-	Covers concentrations up to 10 %
ment products Waterborne latex wall paint.	
iaiox waii paiiit.	For each use event covers amount up to 1 250 c
	For each use event, covers amount up to 1.250 g
	covers use up to 1 day/year
	Covers use up to 1 times/day of use
	Covers exposure up to 2,2 hours/event
	covers skin contact area up to (cm2): 1.900 cm2
	Covers use in room size of 20 m3  Covers use under typical household ventilation.

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	Covers use at ambient temperatures.
Non-metal-surface treat-	Covers concentrations up to 10 %
ment products Solvent rich,	
high solid, water borne	
paint.	
•	For each use event, covers amount up to 1.250 g
	covers use up to 1 day/year
	Covers use up to 1 times/day of use
	Covers exposure up to 2,2 hours/event
	covers skin contact area up to (cm2): 1.900 cm2
	Covers use in room size of 20 m3
	Covers use under typical household ventilation.
	Covers use at ambient temperatures.
Non-metal-surface treat-	Covers concentrations up to 10 %
ment products Aerosol	Covers concentrations up to 10 %
-	
spray can.	For each use event, severe amount up to 200 a
	For each use event, covers amount up to 300 g
	covers use up to 2 day/year
	Covers use up to 1 times/day of use
	Covers exposure up to 0,25 hours/event
	covers skin contact area up to (cm2): 1.900 cm2
	Covers use in a one car garage (34 m3) under typical ventila-
	tion.
	Covers use at ambient temperatures.
Non-metal-surface treat-	Covers concentrations up to 10 %
ment products Removers	
(paint-, glue-, wall paper-,	
sealant-remover).	
	For each use event, covers amount up to 1.250 g
	covers use up to 1 day/year
	Covers use up to 1 times/day of use
	Covers exposure up to 2,2 hours/event
	covers skin contact area up to (cm2): 1.900 cm2
	Covers use in room size of 20 m3
	Covers use under typical household ventilation.
	Covers use at ambient temperatures.
Ink and toners	Covers concentrations up to 5 %
	For each use event, covers amount up to 50 g
	covers use up to 365 day/year
	Covers use up to 1 times/day of use
	Covers exposure up to 10 hours/event
	covers skin contact area up to (cm2): 215 cm2
	1 00.0.0 Chill Collicol Glock op to (Clife): E10 Clife
	Covers use in room size of 25 m3
	Covers use in room size of 25 m3 Covers use under typical household ventilation.
Loothor tanning dvo finish	Covers use in room size of 25 m3  Covers use under typical household ventilation.  Covers use at ambient temperatures.
Leather tanning, dye, finishing imprognation and care	Covers use in room size of 25 m3 Covers use under typical household ventilation.
ing, impregnation and care	Covers use in room size of 25 m3  Covers use under typical household ventilation.  Covers use at ambient temperatures.
ing, impregnation and care products Polishes, wax /	Covers use in room size of 25 m3  Covers use under typical household ventilation.  Covers use at ambient temperatures.
ing, impregnation and care products Polishes, wax / cream (floor, furniture,	Covers use in room size of 25 m3  Covers use under typical household ventilation.  Covers use at ambient temperatures.
ing, impregnation and care products Polishes, wax /	Covers use in room size of 25 m3  Covers use under typical household ventilation.  Covers use at ambient temperatures.

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	covers use up to 1 day/year
	Covers use up to 1 times/day of use
	Covers exposure up to 2,2 hours/event
	covers skin contact area up to (cm2): 1.900 cm2
	Covers use in room size of 20 m3
	Covers use under typical household ventilation.
	Covers use at ambient temperatures.
Polishes and wax blends	Covers concentrations up to 10 %
Polishes, wax / cream	
(floor, furniture, shoes).	
	For each use event, covers amount up to 550 g
	covers use up to 1 day/year
	Covers use up to 1 times/day of use
	Covers exposure up to 4 hours/event
	covers skin contact area up to (cm2): 430 cm2
	Covers use in room size of 58 m3
	Covers use under typical household ventilation.
	Covers use at ambient temperatures.
Polymer preparations and compounds	Covers concentrations up to 5 %
	For each use event, covers amount up to 825 g
	covers use up to 0,2 day/year
	Covers use up to 1 times/day of use
	Covers exposure up to 0,5 hours/event
	covers skin contact area up to (cm2): 1.900 cm2
	Covers use in room size of 58 m3
	Covers use under typical household ventilation.
	Covers use at ambient temperatures.
Textile dyes, finishing and impregnating products; including bleaches and other processing aids	Covers concentrations up to 10 %
impregnating products; including bleaches and	
impregnating products; including bleaches and	Covers concentrations up to 10 %
impregnating products; including bleaches and	Covers concentrations up to 10 %  For each use event, covers amount up to 1.250 g
impregnating products; including bleaches and	Covers concentrations up to 10 %  For each use event, covers amount up to 1.250 g covers use up to 1 day/year
impregnating products; including bleaches and	Covers concentrations up to 10 %  For each use event, covers amount up to 1.250 g covers use up to 1 day/year Covers use up to 1 times/day of use
impregnating products; including bleaches and	Covers concentrations up to 10 %  For each use event, covers amount up to 1.250 g covers use up to 1 day/year Covers use up to 1 times/day of use Covers exposure up to 2,2 hours/event
impregnating products; including bleaches and	Covers concentrations up to 10 %  For each use event, covers amount up to 1.250 g covers use up to 1 day/year Covers use up to 1 times/day of use Covers exposure up to 2,2 hours/event covers skin contact area up to (cm2): 1.900 cm2

Section 2.2	Control of Environmental Exposure
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SECTION 3	EXPOSURE ESTIMATION	
Section 3.1 - Health		
The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.		

Section 3.2 -Environment	
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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** 

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#### **Exposure Scenario - Consumer**

30000001090		
SECTION 1	EXPOSURE SCENARIO TITLE	
Title	Use in Cleaning Agents - Consumer	
Use Descriptor	Sector of Use: SU 21 Product Categories: PC3, PC35 Environmental Release Categories: ERC8a, ERC8d	
Scope of process	Covers general exposures to consumers arising from the use of household products sold as washing and cleaning products, aerosols, coatings, de-icers, lubricants and air care products.	

SECTION 2	OPERATIONAL CONDITIONS MEASURES	S AND RISK MANAGEMENT
Additional Information	No exposure assessment pres	ented for the environment.
Section 2.1	Control of Consumer Exposi	
Product Characteristics	Total of or confound Exposi	u. 0
Physical form of product	Liquid, vapour pressure > 10 F	a at STP
Frequency and Duration of	of Use	
Unless stated otherwise.		
Covers use up to (days/yea	r):	365
Unless otherwise stated.		
covers use up to (times/day	of use):	4
Covers exposure up to (hou		8
Other Operational Conditi		
Unless stated otherwise.		
Covers use at ambient temp	peratures.	
Covers use in room size of	20m3	
Covers use under typical ho	ousehold ventilation.	
Product Categories	OPERATIONAL CONDITIONS MEASURES	S AND RISK MANAGEMENT
Air care products Air care, instant action (aerosol sprays).	Unless stated otherwise. Cove	rs concentrations up to 1 %
1 7 /	covers use up to 365 day/year	r
	Covers use up to 4 times/day	
	For each use event, covers an	
	Covers use under typical hous	
	Covers use in room size of 20r	
	for each use event Covers exp	
Air care products Air care,	Unless stated otherwise. Cove	

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continuous action (solid and	
liquid).	
iiquiu).	covers use up to 364 day/year
	covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 35,70 cm2
	For each use event, covers amount up to 0,48 g
	Covers use under typical household ventilation.
	Covers use in room size of 20m3
	for each use event Covers exposure up to 8,00 hours/event
Washing and cleaning products (including solvent based products) Laundry and dish washing products.	Unless stated otherwise. Covers concentrations up to 5 %
	covers use up to 364 day/year
	Covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 857,50
	For each use event, covers amount up to 15 g
	Covers use under typical household ventilation.
	Covers use in room size of 20m3
	for each use event Covers exposure up to 0,5 hours/event
products (including solvent based products) Cleaners, liquids (all purpose clean- ers, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners).	
	covers use up to 364 day/year
	Covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 857,50 cm2
	for each use event, covers amount up to (g): 27 g
	Covers use under typical household ventilation.
	Covers use in room size of 20m3
	for each use event Covers exposure up to 0,33 hours/event
Washing and cleaning products (including solvent based products) Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners).	Unless stated otherwise. Covers concentrations up to 15 %
	covers use up to 364 day/year
	Covers use up to 1 times/day of use
	covers skin contact area up to (cm2): 428,00 cm2
	For each use event, covers amount up to 35 g
	For each use event, covers amount up to 35 g
	Covers use under typical household ventilation.  Covers use in room size of 20m3

Section 2.2	Control of Environmental Exposure

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SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
EGRET Consumer Tool V2	

#### Section 3.2 -Environment

No exposure assessment presented for the environment.

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**

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#### **Exposure Scenario - Consumer**

30000001092	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	De-icing and anti-icing applications - Consumer
Use Descriptor	Sector of Use: SU 21 Product Categories: PC4 Environmental Release Categories: ERC8d
Scope of process	De-icing of vehicles and similar equipment by spraying.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES	
Additional Information	No exposure assessment presente	ed for the environment.
Section 2.1	Control of Consumer Exposure	
Product Characteristics	•	
Physical form of product	Liquid, vapour pressure > 10 Pa a	STP
Concentration of the Substance in Mixture/Article	Covers concentration up to (%): 100 %	
Amounts Used		
for each use event, covers a		5.000
Frequency and Duration of		<u> </u>
Covers use up to (days/year)		365
Exposure (hours/event):		4
Product Categories	OPERATIONAL CONDITIONS AN MEASURES	ND RISK MANAGEMENT
Anti-Freeze and de-icing products Washing car window.	Covers concentrations up to 100 °	%
	For each use event, covers amour	nt up to 33 g
	covers use up to 365 day/year	
	Covers use up to 1 times/day of u	
	Covers exposure up to 4 hours/ev	
	covers skin contact area up to (cm	
	Covers use in room size of 58 m3	
	Covers use under typical househo	
	Covers use at ambient temperatur	
Anti-Freeze and de-icing products Pouring into radiator.	Covers concentrations up to 45 %	
	For each use event, covers amour	nt up to 5.000 g
	covers use up to 1 day/year	<u> </u>
	Covers use up to 1 times/day of u	se
	Covers exposure up to 0,25 hours	
	covers skin contact area up to (cm	2): 960 cm2
	Covers use in a one car garage (3	4 m3) under typical ventila-

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tion.
Covers use at ambient temperatures.

Section 2.2   Control of Environmental Exposure	
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SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	

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

#### Section 3.2 - Environment

No exposure assessment presented for the environment.

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

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#### **Exposure Scenario - Consumer**

30000001093	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Other Consumer Uses - Consumer
Use Descriptor	Sector of Use: SU 21 Product Categories: PC28, PC39 Environmental Release Categories: ERC8a, ERC8d
Scope of process	Consumer uses e.g. as a carrier in cosmetics/personal care products, perfumes and fragrances. Note: For cosmetic and personal care products, risk assessment only required for the environment under REACH as human health is covered by alternative legislation.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES
Additional Information	No exposure assessment presented for human health.
	No exposure assessment presented for the environment.
Section 2.1	Control of Consumer Exposure
<b>Product Characteristics</b>	
Product Categories	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES

SECTION 3	EXPOSURE ESTIMATION
Section 3.1 - Health	
No exposure assessment presented for human health.	

#### Section 3.2 - Environment

SECTION 4	GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO	
Section 4.1 - Health		
No exposure assessment presented for human health.		

Section 4.2 -Environment	
No exposure assessment presented for the environment.	

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#### **Exposure Scenario - Consumer**

300000010119	
SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use as a fuel - Consumer
Use Descriptor	Sector of Use: SU 21 Product Categories: PC13 Environmental Release Categories: ERC9a, ERC9b
Scope of process	Covers consumer uses in liquid fuels.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES			
Additional Information	No exposure assessment presented for the environment.			
Section 2.1	Control of Consumer Exposure	Control of Consumer Exposure		
<b>Product Characteristics</b>				
Physical form of product	Liquid, vapour pressure > 10 Pa at STP			
Concentration of the Substance in Mixture/Article	Covers concentration up to (%): 100 %			
Amounts Used	•			
for each use event, covers	amount up to (g):	220		
Frequency and Duration	of Use			
Covers use up to (days/yea	ar):	52		
Covers exposure up to (ho		5		
Product Categories	OPERATIONAL CONDITIONS A MEASURES	AND RISK MANAGEMENT		
Fuels Liquid: Lamp oil.	Covers use under typical househ	old ventilation.		
	Covers concentrations up to 100	Covers concentrations up to 100 %		
	covers use up to 52 day/year	covers use up to 52 day/year		
	Covers use up to 1 times/day of	use		
	covers skin contact area up to (c	m2): 210 cm2		
	For each use event, covers amount up to 220 g			
	Covers use in room size of 20m3	<u> </u>		
	for each use event Covers expos	sure up to 5 hours/event		

Section 2.2	Control of Environmental Exposure
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SECTION 3	EXPOSURE ESTIMATION	
Section 3.1 - Health		
The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.		

#### Section 3.2 - Environment

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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