



## Diesel Cetane Check Fuel, low

Version 1.14

Revision Date 2016-06-02

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

#### Product information

Product Name : Diesel Cetane Check Fuel, low  
 Material : 1104937, 1024260, 1024259, 1024261, 1024262, 1024258

#### EC-No.Registration number

| Chemical name | CAS-No.<br>EC-No.<br>Index No.          | Legal Entity<br>Registration number                                  |
|---------------|---|--|
| Diesel fuel   | 68476-34-6<br>270-676-1<br>649-227-00-2 | Chevron Phillips Chemicals International NV<br>01-2119475502-40-0023 |

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

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

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

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

#### Emergency telephone:

**Health:**  
 866.442.9628 (North America)

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1.832.813.4984 (International)

**Transport:**

CHEMTREC 800.424.9300 or 703.527.3887(int'l)

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

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

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

Responsible Department : Product Safety and Toxicology Group

E-mail address : SDS@CPChem.com

Website : www.CPChem.com

**SECTION 2: Hazards identification****Classification of the substance or mixture****REGULATION (EC) No 1272/2008**

Flammable liquids, Category 3

H226:

Flammable liquid and vapor.

Acute aquatic toxicity, Category 2

H401:

Toxic to aquatic life.

Acute toxicity, Category 4

H332:

Harmful if inhaled.

Skin irritation, Category 2

H315:

Causes skin irritation.

Carcinogenicity, Category 2

H351:

Suspected of causing cancer.

Specific target organ systemic toxicity -  
repeated exposure, Category 2, Liver

H373:

May cause damage to organs through prolonged or  
repeated exposure.

, thymus

, Bone marrow

Aspiration hazard, Category 1

H304:

May be fatal if swallowed and enters airways.

Chronic aquatic toxicity, Category 2

H411:

Toxic to aquatic life with long lasting effects.

**Label elements****Labeling (REGULATION (EC) No 1272/2008)**

Hazard pictograms



Signal Word

: Danger

Hazard Statements

|  |  |
|--|--|
| : H226<br>H304<br><br>H315<br>H332<br>H351<br>H373<br><br>H411 | Flammable liquid and vapor.<br>May be fatal if swallowed and enters<br>airways.<br>Causes skin irritation.<br>Harmful if inhaled.<br>Suspected of causing cancer.<br>May cause damage to organs (Liver)<br>through prolonged or repeated exposure.<br>Toxic to aquatic life with long lasting effects. |
|--|--|

Precautionary Statements

|                              |                                 |
|------------------------------|---------------------------------|
| : <b>Prevention:</b><br>P210 | Keep away from heat/sparks/open |
|------------------------------|---------------------------------|

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|                  |   |
|------------------|---|
| P260             | flames/hot surfaces. No smoking.<br>Do not breathe<br>dust/fume/gas/mist/vapor/spray.   |
| P280             | Wear protective gloves/ protective clothing/<br>eye protection/ face protection.        |
| <b>Response:</b> |   |
| P301 + P310      | IF SWALLOWED: Immediately call a<br>POISON CENTER/doctor.                               |
| P331             | Do NOT induce vomiting.   |
| P362 + P364      | Take off contaminated clothing and wash it<br>before reuse.                             |
| P370 + P378      | In case of fire: Use dry sand, dry chemical<br>or alcohol-resistant foam to extinguish. |

Hazardous ingredients which must be listed on the label:

- 68476-34-6 Diesel fuel

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

Synonyms : Diesel Special Test Fuel  
Low Cetane Check Fuel Diesel

Molecular formula : Mixture

**Mixtures****Hazardous ingredients**

| Chemical name | CAS-No.<br>EC-No.<br>Index No.          | Classification<br>(REGULATION (EC) No<br>1272/2008)  | Concentration<br>[wt%] |
|---------------|---|--|------------------------|
| Diesel fuel   | 68476-34-6<br>270-676-1<br>649-227-00-2 | STOT RE 2; H373<br>Flam. Liq. 3; H226<br>Aquatic Acute 2; H401<br>Acute Tox. 4; H332<br>Skin Irrit. 2; H315<br>Carc. 2; H351<br>Asp. Tox. 1; H304<br>Aquatic Chronic 2; H411 | 100                    |

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

**SECTION 4: First aid measures**

|                         |  |
|-------------------------|--|
| General advice          | : Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Material may produce a serious, potentially fatal pneumonia if swallowed or vomited. |
| If inhaled              | : Consult a physician after significant exposure. If unconscious place in recovery position and seek medical advice.   |
| In case of skin contact | : If skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.   |

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- In case of eye contact : Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

**SECTION 5: Firefighting measures**

- Flash point : 67,9 °C (154,2 °F)  
Method: ASTM D 93
- Autoignition temperature : No data available
- Suitable extinguishing media : Alcohol-resistant foam. Carbon dioxide (CO<sub>2</sub>). Dry chemical.
- Unsuitable extinguishing media : High volume water jet.
- Specific hazards during fire fighting : Do not allow run-off from fire fighting to enter drains or water courses.
- Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.
- Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.
- Fire and explosion protection : Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Keep away from open flames, hot surfaces and sources of ignition.
- Hazardous decomposition products : Hydrocarbons. Carbon oxides.

**SECTION 6: Accidental release measures**

- Personal precautions : Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.
- Environmental precautions : Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.

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

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

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

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

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

**Storage**

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

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

PT

| Componentes          | Bases  | Valor  | Parâmetros de controlo | Nota                           |
|----------------------|--------|--------|------------------------|--------------------------------|
| Fuels, diesel, no. 2 | PT OEL | VLE-MP | 100 mg/m3              | P, A3,                         |
|                      | PT OEL | VLE-MP | 100 mg/m3              | P, A3, Fração inalável e vapor |

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

**Engineering measures**

Adequate ventilation to control airborne concentrations below the exposure guidelines/limits. Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

**Personal protective equipment**

SDS Number:100000100064

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

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

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

- Form : Liquid
- Physical state : Liquid at 40 °C (104 °F)  
(101,50 kPa)
- Color : Pale yellow to brown (if undyed), red to purple (dyed)
- Odor : Mild

**Safety data**

- Flash point : 67,9 °C (154,2 °F)  
Method: ASTM D 93
- Lower explosion limit : No data available
- Upper explosion limit : No data available
- Oxidizing properties : no
- Autoignition temperature : No data available

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|  |   |
|--|---|
| Molecular formula                      | : Mixture   |
| Molecular weight                       | : Not applicable                                      |
| pH                                     | : Not applicable                                      |
| Pour point                             | : -21 °C (-6 °F)<br>Method: ASTM D97                  |
| Boiling point/boiling range            | : 178 - 353 °C (352 - 667 °F)                         |
| Vapor pressure                         | : 0,10 kPa<br>at 40 °C (104 °F)<br>Method: ASTM D5191 |
| Relative density                       | : 0,8496<br>at 16 °C (61 °F), ASTM D-4052             |
| Density                                | : 0,8496 g/cm <sup>3</sup><br>Method: ASTM D 4052     |
| Water solubility                       | : Negligible  |
| Partition coefficient: n-octanol/water | : No data available                                   |
| Viscosity, kinematic                   | : 2,4 cSt<br>at 40 °C (104 °F)                        |
| Relative vapor density                 | : No data available                                   |
| Evaporation rate                       | : No data available                                   |
| Percent volatile                       | : > 99 %  |

**SECTION 10: Stability and reactivity**

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

**Possibility of hazardous reactions**

|                                  |   |
|----------------------------------|---|
| Conditions to avoid              | : Heat, flames and sparks.  |
| Materials to avoid               | : May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc. |
| Hazardous decomposition products | : Hydrocarbons<br>Carbon oxides   |
| Other data                       | : No decomposition if stored and applied as directed.   |

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**SECTION 11: Toxicological information****Acute oral toxicity**

Diesel fuel : LD50: > 5.000 mg/kg  
Species: Rat  
Sex: male and female  
Method: OECD Test Guideline 401

**Acute inhalation toxicity**

Diesel fuel : LC50: 4,1 mg/l  
Exposure time: 4 h  
Species: Rat  
Sex: male and female  
Test atmosphere: dust/mist  
Method: OECD Test Guideline 403  
Test substance: yes

**Acute dermal toxicity**

Diesel fuel : LD50 Dermal: > 4.300 mg/kg  
Species: Rabbit  
Sex: male and female  
Test substance: yes

**Skin irritation**

Diesel fuel : Irritating to skin.

**Eye irritation**

Diesel fuel : No eye irritation

**Sensitization**

Diesel fuel : Did not cause sensitization on laboratory animals.

**Repeated dose toxicity**

Diesel fuel : Species: Rat, Male and female  
Sex: Male and female  
Application Route: Dermal  
Dose: 0, 30, 125, 500 mg/kg  
Exposure time: 13 wks  
Number of exposures: daily, 5 days/week  
NOEL: 30 mg/kg  
Method: OECD Guideline 411  
Target Organs: Thymus, Liver, Bone marrow  
Information given is based on data obtained from similar substances.



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Species: Rat, Male and female  
 Sex: Male and female  
 Application Route: inhalation (dust/mist/fume)  
 Dose: 0, 0.35, 0.88, 1.71 mg/l  
 Exposure time: 13 wks  
 Number of exposures: Twice/wk  
 NOEL: > 1,71 mg/l  
 Method: OECD Guideline 413

**Carcinogenicity**

Diesel fuel : Species: Mouse  
 Sex: male  
 Dose: 0, 25 ul  
 Exposure time: lifetime  
 Number of exposures: 3 times/wk  
 Remarks: Moderate dermal carcinogen

**Developmental Toxicity**

Diesel fuel : Species: Rat  
 Application Route: Inhalation  
 Dose: 0, 86.9, 408.8 ppm  
 Number of exposures: 6 h/d  
 Test period: GD 6-15  
 Method: OECD Guideline 414  
 NOAEL Teratogenicity: 408.8 ppm  
 NOAEL Maternal: 408.8 ppm  
 Information given is based on data obtained from similar substances.

Species: Rat  
 Application Route: Dermal  
 Dose: 30, 125, 500, 1000 mg/kg  
 Exposure time: daily  
 Test period: GD 0-20  
 Method: OECD Guideline 414  
 NOAEL Teratogenicity: 125 mg/kg  
 Information given is based on data obtained from similar substances.

**Diesel Cetane Check Fuel, low  
Aspiration toxicity**

: May be fatal if swallowed and enters airways.

**CMR effects**

Diesel fuel : Carcinogenicity: Limited evidence of carcinogenicity in animal studies  
 Teratogenicity: Animal testing did not show any effects on fetal development.

**Diesel Cetane Check Fuel, low  
Further information**

: Solvents may degrease the skin.

**SECTION 12: Ecological information**

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**Toxicity to fish**

Diesel fuel : LL50: 3,2 mg/l  
 Exposure time: 96 h  
 Species: Menidia beryllina (Silverside)  
 semi-static test Method: EPA/600/4-90/027

**Toxicity to daphnia and other aquatic invertebrates**

Diesel fuel : EC50: 68 mg/l  
 Exposure time: 48 h  
 Species: Daphnia magna (Water flea)  
 Method: OECD Test Guideline 202

**Toxicity to algae**

Diesel fuel : EbC50: 10 mg/l  
 Exposure time: 72 h  
 Species: Raphidocellus subcapitata (algae)  
 static test Analytical monitoring: no  
 Method: OECD Test Guideline 201

**Biodegradability**

Diesel fuel : aerobic  
 Result: Not readily biodegradable.  
 57,5 %  
 Testing period: 28 d  
 Method: OECD Test Guideline 301F

**Ecotoxicology Assessment**

Acute aquatic toxicity  
 Diesel fuel : Toxic to aquatic life.

Chronic aquatic toxicity  
 Diesel fuel : Toxic to aquatic life with long lasting effects.

Results of PBT assessment  
 Diesel fuel : Non-classified PBT substance, Non-classified vPvB substance

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

**SECTION 13: Disposal considerations**

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

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

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Product : The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.

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

**SECTION 14: Transport information**

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

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

**US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)**

UN1202, DIESEL FUEL, COMBUSTIBLE LIQUID, III

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

UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (DIESEL FUEL), 9, III, (67,9 °C), MARINE POLLUTANT, (DIESEL FUEL)

**IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)**

UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (DIESEL FUEL), 9, III

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

UN1202, DIESEL FUEL, 3, III, (D/E), ENVIRONMENTALLY HAZARDOUS, (DIESEL FUEL)

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

UN1202, DIESEL FUEL, 3, III, ENVIRONMENTALLY HAZARDOUS, (DIESEL FUEL)

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

UN1202, DIESEL FUEL, 3, III, ENVIRONMENTALLY HAZARDOUS, (DIESEL FUEL)

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

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**SECTION 15: Regulatory information****National legislation****Chemical Safety Assessment****Ingredients** : Fuels, diesel, no. 2 270-676-1**Major Accident Hazard Legislation** : 96/82/EC Update: 2003  
Flammable.  
6  
Quantity 1: 5.000 t  
Quantity 2: 50.000 t**Water contaminating class (Germany)** : WGK 3 highly water endangering  
List with water hazardous substances (Class 1 till 3) in  
VwVwS**Notification status**

Europe REACH : This mixture contains only ingredients which have been registered according to Regulation (EU) No. 1907/2006 (REACH).

United States of America TSCA : On TSCA Inventory

Canada DSL : All components of this product are on the Canadian DSL

Australia AICS : On the inventory, or in compliance with the inventory

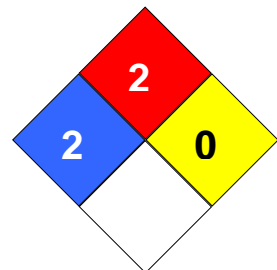
New Zealand NZIoC : On the inventory, or in compliance with the inventory

Japan ENCS : On the inventory, or in compliance with the inventory

Korea KECI : On the inventory, or in compliance with the inventory

Philippines PICCS : On the inventory, or in compliance with the inventory

China IECSC : On the inventory, or in compliance with the inventory

**SECTION 16: Other information****NFPA Classification** : Health Hazard: 2  
Fire Hazard: 2  
Reactivity Hazard: 0**Further information**

Legacy SDS Number : CPC00523

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

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

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

**Key or legend to abbreviations and acronyms used in the safety data sheet**

|        |  |       |  |
|--------|--|-------|--|
| ACGIH  | American Conference of Government Industrial Hygienists  | LD50  | Lethal Dose 50%  |
| AICS   | Australia, Inventory of Chemical Substances              | LOAEL | Lowest Observed Adverse Effect Level   |
| DSL    | Canada, Domestic Substances List                         | NFPA  | National Fire Protection Agency  |
| NDSL   | Canada, Non-Domestic Substances List                     | NIOSH | National Institute for Occupational Safety & Health                                  |
| CNS    | Central Nervous System                                   | NTP   | National Toxicology Program  |
| CAS    | Chemical Abstract Service                                | NZIoC | New Zealand Inventory of Chemicals   |
| EC50   | Effective Concentration                                  | NOAEL | No Observable Adverse Effect Level   |
| EC50   | Effective Concentration 50%                              | NOEC  | No Observed Effect Concentration   |
| EGEST  | EOSCA Generic Exposure Scenario Tool                     | OSHA  | Occupational Safety & Health Administration  |
| EOSCA  | European Oilfield Specialty Chemicals Association        | PEL   | Permissible Exposure Limit   |
| EINECS | European Inventory of Existing Chemical Substances       | PICCS | Philippines Inventory of Commercial Chemical Substances                              |
| MAK    | Germany Maximum Concentration Values                     | PRNT  | Presumed Not Toxic   |
| GHS    | Globally Harmonized System                               | RCRA  | Resource Conservation Recovery Act   |
| >=     | Greater Than or Equal To                                 | STEL  | Short-term Exposure Limit  |
| IC50   | Inhibition Concentration 50%                             | SARA  | Superfund Amendments and Reauthorization Act.  |
| IARC   | International Agency for Research on Cancer              | TLV   | Threshold Limit Value  |
| IECSC  | Inventory of Existing Chemical Substances in China       | TWA   | Time Weighted Average  |
| ENCS   | Japan, Inventory of Existing and New Chemical Substances | TSCA  | Toxic Substance Control Act  |
| KECI   | Korea, Existing Chemical Inventory                       | UVCB  | Unknown or Variable Composition, Complex Reaction Products, and Biological Materials |
| <=     | Less Than or Equal To                                    | WHMIS | Workplace Hazardous Materials Information System                                     |
| LC50   | Lethal Concentration 50%                                 |       |  |

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

|      |  |
|------|--|
| H226 | Flammable liquid and vapor.  |
| H304 | May be fatal if swallowed and enters airways.                      |
| H315 | Causes skin irritation.  |
| H332 | Harmful if inhaled.  |
| H351 | Suspected of causing cancer.                                       |
| H373 | May cause damage to organs through prolonged or repeated exposure. |
| H401 | Toxic to aquatic life.   |
| H411 | Toxic to aquatic life with long lasting effects.                   |



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Emission or Release Factor: Water : 0,003 %

Emission or Release Factor: Soil : 0,01 %

**Technical conditions and measures / Organizational measures**

- Air : Treat air emission to provide a typical removal efficiency of (%): (Effectiveness: 90 %)
- Water : Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of  $\geq$  (%): (Effectiveness: 90,3 %)
- Remarks : Common practices vary across sites thus conservative process release estimates used.
- Water : If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of  $\geq$  (%): (Effectiveness: 0 %)
- Remarks : Risk from environmental exposure is driven by freshwater sediment.
- Remarks : Prevent discharge of undissolved substance to or recover from onsite wastewater.
- Remarks : If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.
- Remarks : Prevent discharge of undissolved substance to or recover from wastewater.
- Remarks : Do not apply industrial sludge to natural soils.
- Remarks : Sludge should be incinerated, contained or reclaimed.

**Conditions and measures related to municipal sewage treatment plant**

- Type of Sewage Treatment Plant : Municipal sewage treatment plant
- Flow rate of sewage treatment plant effluent : 10.000 m<sup>3</sup>/d
- Effectiveness (of a measure) : 94,1 %
- Percentage removed from waste water : 94,1 %

**Conditions and measures related to external treatment of waste for disposal**

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

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

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

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

- Remarks : Substance is complex UVCB., Predominantly hydrophobic.
- Remarks : Liquid, vapour pressure < 0.5 kPa at STP
- Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

- Remarks : Operation is carried out at elevated temperature (> 20°C above ambient temperature)., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

- Handle substance within a closed system., Store substance within a closed system.

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

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

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

Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of exposure potential and aware of basic actions to minimize exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions.

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

Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

Remarks : Operation is carried out at elevated temperature (> 20°C above ambient temperature)., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Handle substance within a closed system., Store substance within a closed system.

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

Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

Remarks : Operation is carried out at elevated temperature (> 20°C above ambient temperature)., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Handle substance within a closed system.

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



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No other specific measures identified.

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

Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
 Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

Remarks : Operation is carried out at elevated temperature (> 20°C above ambient temperature)., Assumes a good basic standard of occupational hygiene is implemented.

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

Wear suitable gloves tested to EN374.

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

Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
 Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

Remarks : Operation is carried out at elevated temperature (> 20°C above ambient temperature)., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Drain down system prior to equipment opening or maintenance.

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

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

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

Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
 Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

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differently)

**Other operational conditions affecting workers exposure**

Remarks : Operation is carried out at elevated temperature (> 20°C above ambient temperature)., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Handle substance within a closed system.

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

Wear suitable gloves tested to EN374.

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

Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

Remarks : Operation is carried out at elevated temperature (> 20°C above ambient temperature)., Assumes a good basic standard of occupational hygiene is implemented.

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

No other specific measures identified.

**3. Exposure estimation and reference to its source****Environment**

| Contributing Scenario | Exposure Assessment Method              | Specific conditions | Compartment         | Value type | Level of Exposure     | Risk characterization ratio |
|-----------------------|---|---------------------|---------------------|------------|-----------------------|-----------------------------|
| ERC1                  | Hydrocarbon Block Method with Petrorisk |                     | Air                 |            | 0,46 mg/m3            |                             |
|                       |   |                     | Freshwater          |            | 0,036 mg/L            | 0,54                        |
|                       |   |                     | Freshwater sediment |            | 1,4 mg/kg wet weight  | 0,61                        |
|                       |   |                     | Marine water        |            | 0,0036 mg/L           | 0,054                       |
|                       |   |                     | Marine sediment     |            | 0,14 mg/kg wet weight | 0,061                       |
|                       |   |                     | Agricultural soil   |            | 0,17 mg/kg wet weight | 0,015                       |

ERC1: Manufacture of substances

**Workers/Consumers**

| Contributing Scenario | Exposure Assessment Method | Specific conditions | Value type           | Level of Exposure | Risk characterization ratio |
|-----------------------|----------------------------|---------------------|----------------------|-------------------|-----------------------------|
| PROC1, CS15           | ECETOC TRA                 |                     | Worker – inhalation, | 0,01 mg/m3        | 0,00                        |

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|                      |                     |  |   |               |      |
|----------------------|---------------------|--|---|---------------|------|
|                      | Modified            |  | long-term – systemic                          |               |      |
|                      |                     |  | Worker – dermal, long-term – systemic         | 0,34 mg/kg/d  | 0,11 |
|                      |                     |  | Worker – long-term – systemic Combined routes |               | 0,11 |
| PROC1, CS85          | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 1 mg/m3       | 0,01 |
|                      |                     |  | Worker – dermal, long-term – systemic         | 1,37 mg/kg/d  | 0,47 |
|                      |                     |  | Worker – long-term – systemic Combined routes |               | 0,49 |
| PROC2, CS15, CS85    | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 1 mg/m3       | 0,01 |
|                      |                     |  | Worker – dermal, long-term – systemic         | 1,37 mg/kg/d  | 0,47 |
|                      |                     |  | Worker – long-term – systemic Combined routes |               | 0,49 |
| PROC3, CS15          | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 3 mg/m3       | 0,04 |
|                      |                     |  | Worker – dermal, long-term – systemic         | 0,34 mg/kg/d  | 0,12 |
|                      |                     |  | Worker – long-term – systemic Combined routes |               | 0,16 |
| PROC3, CS2           | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 2,1 mg/m3     | 0,03 |
|                      |                     |  | Worker – dermal, long-term – systemic         | 0,34 mg/kg/d  | 0,12 |
|                      |                     |  | Worker – long-term – systemic Combined routes |               | 0,15 |
| PROC4, CS16          | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 5 mg/m3       | 0,07 |
|                      |                     |  | Worker – dermal, long-term – systemic         | 6,86 mg/kg/d  | 0,47 |
|                      |                     |  | Worker – long-term – systemic Combined routes |               | 0,55 |
| PROC8a, CS39         | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 2 mg/m3       | 0,03 |
|                      |                     |  | Worker – dermal, long-term – systemic         | 13,71 mg/kg/d | 0,47 |
|                      |                     |  | Worker – long-term – systemic Combined routes |               | 0,50 |
| PROC8b, CS501, CS503 | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 5 mg/m3       | 0,07 |
|                      |                     |  | Worker – dermal, long-term – systemic         | 6,86 mg/kg/d  | 0,47 |
|                      |                     |  | Worker – long-term – systemic Combined routes |               | 0,55 |
| PROC15, CS36         | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 5 mg/m3       | 0,07 |
|                      |                     |  | Worker – dermal, long-term – systemic         | 0,34 mg/kg/d  | 0,12 |
|                      |                     |  | Worker – long-term – systemic Combined routes |               | 0,19 |

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

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

PROC2: Use in closed, continuous process with occasional controlled exposure  
 CS15: General exposures (closed systems)  
 CS85: Bulk product storage

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

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

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

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

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities  
CS501: Bulk closed loading and unloading  
CS503: Bulk transfers (open systems)

PROC15: Use as laboratory reagent  
CS36: Laboratory activities

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

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

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.  
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.  
Scaled local assessments for EU refineries have been performed using site-specific data and are attached in PETRORISK file – “Site-Specific Production” worksheet.

If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.  
Taking into account the findings of the air- monitoring evaluation on benzene included as the Tier 2 analysis in the Low Boiling Point Naphtha category, the default “Air Removal Efficiency” of 90% included in the SPERC has been shown to be over- conservative and that the 95% efficiency can safely be claimed in a Tier II analysis. On this basis, the Tier 2 analysis demonstrates that no refineries have RCRs>1 (see PETRORISK file in IUCLID section 13- “Tier 2 Site Specific Production worksheet”).

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

|                  |   |
|------------------|---|
| Main User Groups | : <b>SU 3:</b> Industrial uses: Uses of substances as such or in preparations at industrial sites |
| Sector of use    | : <b>SU3:</b> Industrial Manufacturing (all)  |

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**Environment factors not influenced by risk management**

Flow rate : 18.000 m<sup>3</sup>/d  
 Dilution Factor (River) : 10  
 Dilution Factor (Coastal Areas) : 100

**Other given operational conditions affecting environmental exposure**

Continuous use/release  
 Number of emission days per year : 300  
 Emission or Release Factor: Air : 0,1 %  
 Emission or Release Factor: Water : 0,0001 %  
 Emission or Release Factor: Soil : 0,001 %

**Technical conditions and measures / Organizational measures**

Air : Treat air emission to provide a typical removal efficiency of (%) (Effectiveness: 90 %)  
 Water : Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of  $\geq$  (%): (Effectiveness: 0 %)  
 Remarks : Common practices vary across sites thus conservative process release estimates used.  
 Water : If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of  $\geq$  (%): (Effectiveness: 0 %)  
 Remarks : Prevent discharge of undissolved substance to or recover from onsite wastewater.  
 Remarks : Risk from environmental exposure is driven by humans via indirect exposure (primarily ingestion).  
 Remarks : No wastewater treatment required.  
 Remarks : Prevent discharge of undissolved substance to or recover from wastewater.  
 Remarks : Do not apply industrial sludge to natural soils.  
 Remarks : Sludge should be incinerated, contained or reclaimed.

**Conditions and measures related to municipal sewage treatment plant**

Type of Sewage Treatment Plant : Municipal sewage treatment plant  
 Flow rate of sewage treatment plant effluent : 2.000 m<sup>3</sup>/d  
 Effectiveness (of a measure) : 94,1 %  
 Percentage removed from waste water : 94,1 %

**Conditions and measures related to external treatment of waste for disposal**

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

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

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

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

Remarks : Substance is complex UVCB., Predominantly hydrophobic.  
 Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
 Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

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

**Technical conditions and measures**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance is likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent/minimize exposures and to report any skin effects that may develop., Handle substance within a closed system., Store substance within a closed system.

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

Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of exposure potential and aware of basic actions to minimize exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions.

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

Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

Remarks : Operation is carried out at elevated temperature (> 20°C above ambient temperature)., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Handle substance within a closed system., Store substance within a closed system.

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

Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

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**Other operational conditions affecting workers exposure**

Remarks : Operation is carried out at elevated temperature (> 20°C above ambient temperature)., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Handle substance within a closed system.

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

No other specific measures identified.

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

Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

Remarks : Operation is carried out at elevated temperature (> 20°C above ambient temperature)., Assumes a good basic standard of occupational hygiene is implemented.

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

Wear suitable gloves tested to EN374.

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

Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

Remarks : Operation is carried out at elevated temperature (> 20°C above ambient temperature)., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Drain down system prior to equipment opening or maintenance.

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

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

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



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**dedicated facilities****Product characteristics**

Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
 Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

Remarks : Operation is carried out at elevated temperature (> 20°C above ambient temperature)., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Handle substance within a closed system.

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

Wear suitable gloves tested to EN374.

**2.2 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)****Product characteristics**

Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
 Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

Remarks : Operation is carried out at elevated temperature (> 20°C above ambient temperature)., Assumes a good basic standard of occupational hygiene is implemented.

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

Wear suitable gloves tested to EN374.

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

Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
 Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

Remarks : Operation is carried out at elevated temperature (> 20°C above ambient temperature)., Assumes a good basic standard of occupational hygiene is implemented.

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

No other specific measures identified.

**3. Exposure estimation and reference to its source****Environment**

| Contributing Scenario  | Exposure Assessment Method              | Specific conditions | Compartment         | Value type | Level of Exposure      | Risk characterization ratio |
|--|---|---------------------|---------------------|------------|------------------------|-----------------------------|
| ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7 | Hydrocarbon Block Method with Petrorisk |                     | Air                 |            | 0,024 mg/m3            |                             |
|  |   |                     | Freshwater          |            | 0,0018 mg/L            | 0,048                       |
|  |   |                     | Freshwater sediment |            | 1,4 mg/kg wet weight   | 0,055                       |
|  |   |                     | Marine water        |            | 0,000057 mg/L          | 0,00083                     |
|  |   |                     | Marine sediment     |            | 0,064 mg/kg wet weight | 0,0019                      |
|  |   |                     | Agricultural soil   |            | 0,17 mg/kg wet weight  | 0,0017                      |

ERC1: Manufacture of substances

ERC2: Formulation of preparations

ERC3: Formulation in materials

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

ERC5: Industrial use resulting in inclusion into or onto a matrix

ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)

ERC6b: Industrial use of reactive processing aids

ERC6c: Industrial use of monomers for manufacture of thermoplastics

ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

ERC7: Industrial use of substances in closed systems

**Workers/Consumers**

| Contributing Scenario | Exposure Assessment Method | Specific conditions | Value type                                    | Level of Exposure | Risk characterization ratio |
|-----------------------|----------------------------|---------------------|---|-------------------|-----------------------------|
| PROC1, CS15           | ECETOC TRA Modified        |                     | Worker – inhalation, long-term – systemic     | 0,01 mg/m3        | 0,00                        |
|                       |                            |                     | Worker – dermal, long-term – systemic         | 0,34 mg/kg/d      | 0,12                        |
|                       |                            |                     | Worker – long-term – systemic Combined routes |                   | 0,12                        |
| PROC1, CS67           | ECETOC TRA Modified        |                     | Worker – inhalation, long-term – systemic     | 1 mg/m3           | 0,01                        |
|                       |                            |                     | Worker – dermal, long-term – systemic         | 1,37 mg/kg/d      | 0,47                        |
|                       |                            |                     | Worker – long-term – systemic Combined routes |                   | 0,49                        |
| PROC2, CS15, CS67     | ECETOC TRA Modified        |                     | Worker – inhalation, long-term – systemic     | 1 mg/m3           | 0,01                        |
|                       |                            |                     | Worker – dermal, long-term – systemic         | 1,37 mg/kg/d      | 0,47                        |
|                       |                            |                     | Worker – long-term – systemic Combined routes |                   | 0,49                        |
| PROC3, CS2            | ECETOC TRA                 |                     | Worker – inhalation,                          | 3 mg/m3           | 0,04                        |

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|                      | Modified            |  | long-term – systemic                          |               |      |
|----------------------|---------------------|--|---|---------------|------|
|                      |                     |  | Worker – dermal, long-term – systemic         | 0,34 mg/kg/d  | 0,12 |
|                      |                     |  | Worker – long-term – systemic Combined routes |               | 0,16 |
| PROC4, CS16          | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 5 mg/m3       | 0,07 |
|                      |                     |  | Worker – dermal, long-term – systemic         | 6,86 mg/kg/d  | 0,47 |
|                      |                     |  | Worker – long-term – systemic Combined routes |               | 0,55 |
| PROC8a, CS39         | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 2 mg/m3       | 0,03 |
|                      |                     |  | Worker – dermal, long-term – systemic         | 13,71 mg/kg/d | 0,47 |
|                      |                     |  | Worker – long-term – systemic Combined routes |               | 0,50 |
| PROC8b, CS501, CS503 | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 5 mg/m3       | 0,07 |
|                      |                     |  | Worker – dermal, long-term – systemic         | 6,86 mg/kg/d  | 0,47 |
|                      |                     |  | Worker – long-term – systemic Combined routes |               | 0,55 |
| PROC9, CS6           | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 5 mg/m3       | 0,07 |
|                      |                     |  | Worker – dermal, long-term – systemic         | 6,86 mg/kg/d  | 0,47 |
|                      |                     |  | Worker – long-term – systemic Combined routes |               | 0,55 |
| PROC15, CS36         | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 5 mg/m3       | 0,07 |
|                      |                     |  | Worker – dermal, long-term – systemic         | 0,34 mg/kg/d  | 0,12 |
|                      |                     |  | Worker – long-term – systemic Combined routes |               | 0,19 |

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

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

PROC2: Use in closed, continuous process with occasional controlled exposure  
 CS15: General exposures (closed systems)  
 CS67: Storage

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

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

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

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities  
 CS501: Bulk closed loading and unloading  
 CS503: Bulk transfers (open systems)

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including

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weighing)  
 CS6: Drum and small package filling

PROC15: Use as laboratory reagent  
 CS36: Laboratory activities

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

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

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

**1. Short title of Exposure Scenario: Use as an intermediate**

|                                |   |   |
|--------------------------------|---|---|
| Main User Groups               | : | <b>SU 3:</b> Industrial uses: Uses of substances as such or in preparations at industrial sites   |
| Sector of use                  | : | <b>SU3, SU8, SU9:</b> Industrial Manufacturing (all), Manufacture of bulk, large scale chemicals (including petroleum products), Manufacture of fine chemicals  |
| Process category               | : | <b>PROC1:</b> Use in closed process, no likelihood of exposure<br><b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure<br><b>PROC3:</b> Use in closed batch process (synthesis or formulation)<br><b>PROC4:</b> Use in batch and other process (synthesis) where opportunity for exposure arises<br><b>PROC8a:</b> Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities<br><b>PROC8b:</b> Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities<br><b>PROC15:</b> Use as laboratory reagent |
| Environmental release category | : | <b>ERC6a:</b> Industrial use resulting in manufacture of another substance (use of intermediates)   |
| Further information            | : | 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,   |

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road/rail car and bulk container).

**2.1 Contributing scenario controlling environmental exposure for:ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)****Product characteristics**

Remarks Substance is complex UVCB., Predominantly hydrophobic.

Maximum allowable site tonnage : 410.000  
 (MSafe) based on release  
 following total wastewater  
 treatment removal (kg/d):(Msafe)

**Environment factors not influenced by risk management**

Flow rate : 18.000 m3/d  
 Dilution Factor (River) : 10  
 Dilution Factor (Coastal Areas) : 100

**Other given operational conditions affecting environmental exposure**

Continuous use/release  
 Number of emission days per year : 300  
 Emission or Release Factor: Air : 0,1 %  
 Emission or Release Factor: Water : 0,003 %  
 Emission or Release Factor: Soil : 0,1 %

**Technical conditions and measures / Organizational measures**

Air : Treat air emission to provide a typical removal efficiency of (%) (Effectiveness: 80 %)  
 Water : Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of  $\geq$  (%) (Effectiveness: 51,6 %)  
 Remarks : Common practices vary across sites thus conservative process release estimates used.  
 Water : If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of  $\geq$  (%) (Effectiveness: 0 %)  
 Remarks : Risk from environmental exposure is driven by freshwater sediment.  
 Remarks : Prevent discharge of undissolved substance to or recover from onsite wastewater.  
 Remarks : If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.  
 Remarks : Prevent discharge of undissolved substance to or recover from wastewater.  
 Remarks : Do not apply industrial sludge to natural soils.  
 Remarks : Sludge should be incinerated, contained or reclaimed.

**Conditions and measures related to municipal sewage treatment plant**

Type of Sewage Treatment Plant : Municipal sewage treatment plant  
 Flow rate of sewage treatment plant effluent : 2.000 m3/d  
 Effectiveness (of a measure) : 94,1 %  
 Percentage removed from waste water : 94,1 %

**Conditions and measures related to external treatment of waste for disposal**

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Waste treatment : This substance is consumed during use and no waste of the substance is generated.

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

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

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

Remarks : Substance is complex UVCB., Predominantly hydrophobic.

Remarks : Liquid, vapour pressure < 0.5 kPa at STP

Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

Remarks : Operation is carried out at elevated temperature (> 20°C above ambient temperature)., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance is likely. Clean up contamination/spills as soon as they occur. Wash off skin contamination immediately. Provide basic employee training to prevent/minimize exposures and to report any skin effects that may develop., Handle substance within a closed system., Store substance within a closed system.

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

Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of exposure potential and aware of basic actions to minimize exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions.

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

Remarks : Liquid, vapour pressure < 0.5 kPa at STP

Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

Remarks : Operation is carried out at elevated temperature (> 20°C above ambient temperature)., Assumes a good basic standard of occupational hygiene is implemented.

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**Technical conditions and measures**

Handle substance within a closed system., Store substance within a closed system.

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

Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
 Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

Remarks : Operation is carried out at elevated temperature (> 20°C above ambient temperature)., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Handle substance within a closed system.

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

No other specific measures identified.

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

Remarks : Liquid, vapour pressure < 0.5 kPa at STP

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

Remarks : Operation is carried out at elevated temperature (> 20°C above ambient temperature)., Assumes a good basic standard of occupational hygiene is implemented.

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

Wear suitable gloves tested to EN374.

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

Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
 Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

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differently)

**Other operational conditions affecting workers exposure**

Remarks : Operation is carried out at elevated temperature (> 20°C above ambient temperature)., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Drain down system prior to equipment opening or maintenance.

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

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

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

Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

Remarks : Operation is carried out at elevated temperature (> 20°C above ambient temperature)., Assumes a good basic standard of occupational hygiene is implemented.

**Technical conditions and measures**

Handle substance within a closed system.

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

Wear suitable gloves tested to EN374.

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

Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

Remarks : Operation is carried out at elevated temperature (> 20°C above ambient temperature)., Assumes a good basic standard of occupational hygiene is implemented.

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

No other specific measures identified.



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**3. Exposure estimation and reference to its source****Environment**

| Contributing Scenario | Exposure Assessment Method              | Specific conditions | Compartment         | Value type | Level of Exposure      | Risk characterization ratio |
|-----------------------|---|---------------------|---------------------|------------|------------------------|-----------------------------|
| ERC6a                 | Hydrocarbon Block Method with Petrorisk |                     | Air                 |            | 0,022 mg/m3            |                             |
|                       |   |                     | Freshwater          |            | 0,0045 mg/L            | 0,067                       |
|                       |   |                     | Freshwater sediment |            | 1,5 mg/kg wet weight   | 0,12                        |
|                       |   |                     | Marine water        |            | 0,000057 mg/L          | 0,0067                      |
|                       |   |                     | Marine sediment     |            | 0,079 mg/kg wet weight | 0,085                       |
|                       |   |                     | Agricultural soil   |            | 0,17 mg/kg wet weight  | 0,0017                      |

ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)

**Workers/Consumers**

| Contributing Scenario | Exposure Assessment Method | Specific conditions | Value type                                    | Level of Exposure | Risk characterization ratio |
|-----------------------|----------------------------|---------------------|---|-------------------|-----------------------------|
| PROC1, CS15           | ECETOC TRA Modified        |                     | Worker – inhalation, long-term – systemic     | 0,01 mg/m3        | 0,00                        |
|                       |                            |                     | Worker – dermal, long-term – systemic         | 0,34 mg/kg/d      | 0,11                        |
|                       |                            |                     | Worker – long-term – systemic Combined routes |                   | 0,11                        |
| PROC1, CS85           | ECETOC TRA Modified        |                     | Worker – inhalation, long-term – systemic     | 1 mg/m3           | 0,01                        |
|                       |                            |                     | Worker – dermal, long-term – systemic         | 1,37 mg/kg/d      | 0,47                        |
|                       |                            |                     | Worker – long-term – systemic Combined routes |                   | 0,49                        |
| PROC2, CS15, CS85     | ECETOC TRA Modified        |                     | Worker – inhalation, long-term – systemic     | 1 mg/m3           | 0,01                        |
|                       |                            |                     | Worker – dermal, long-term – systemic         | 1,37 mg/kg/d      | 0,47                        |
|                       |                            |                     | Worker – long-term – systemic Combined routes |                   | 0,49                        |
| PROC3, CS15           | ECETOC TRA Modified        |                     | Worker – inhalation, long-term – systemic     | 3 mg/m3           | 0,04                        |
|                       |                            |                     | Worker – dermal, long-term – systemic         | 0,34 mg/kg/d      | 0,12                        |
|                       |                            |                     | Worker – long-term – systemic Combined routes |                   | 0,16                        |
| PROC3, CS2            | ECETOC TRA Modified        |                     | Worker – inhalation, long-term – systemic     | 2,1 mg/m3         | 0,03                        |
|                       |                            |                     | Worker – dermal, long-term – systemic         | 0,34 mg/kg/d      | 0,12                        |
|                       |                            |                     | Worker – long-term – systemic Combined routes |                   | 0,15                        |
| PROC4, CS16           | ECETOC TRA Modified        |                     | Worker – inhalation, long-term – systemic     | 5 mg/m3           | 0,07                        |
|                       |                            |                     | Worker – dermal, long-term – systemic         | 6,86 mg/kg/d      | 0,47                        |
|                       |                            |                     | Worker – long-term – systemic Combined routes |                   | 0,55                        |

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|                      |                     |  |   |                     |      |
|----------------------|---------------------|--|---|---------------------|------|
| PROC8a, CS39         | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 2 mg/m <sup>3</sup> | 0,03 |
|                      |                     |  | Worker – dermal, long-term – systemic         | 13,71 mg/kg/d       | 0,47 |
|                      |                     |  | Worker – long-term – systemic Combined routes |                     | 0,50 |
| PROC8b, CS501, CS503 | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 5 mg/m <sup>3</sup> | 0,07 |
|                      |                     |  | Worker – dermal, long-term – systemic         | 6,86 mg/kg/d        | 0,47 |
|                      |                     |  | Worker – long-term – systemic Combined routes |                     | 0,55 |
| PROC15, CS36         | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 5 mg/m <sup>3</sup> | 0,07 |
|                      |                     |  | Worker – dermal, long-term – systemic         | 0,34 mg/kg/d        | 0,12 |
|                      |                     |  | Worker – long-term – systemic Combined routes |                     | 0,19 |

PROC1: Use in closed process, no likelihood of exposure

CS15: General exposures (closed systems)

PROC1: Use in closed process, no likelihood of exposure

CS85: Bulk product storage

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

CS15: General exposures (closed systems)

CS85: Bulk product storage

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

CS15: General exposures (closed systems)

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

CS2: Process sampling

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

CS16: General exposures (open systems)

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

CS39: Equipment cleaning and maintenance

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

CS501: Bulk closed loading and unloading

CS503: Bulk transfers (open systems)

PROC15: Use as laboratory reagent

CS36: Laboratory activities

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

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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.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Available hazard data do not support the need for a DNEL to be established for other health effects.

Risk Management Measures are based on qualitative risk characterisation. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

**1. Short title of Exposure Scenario: Use as a fuel - industrial**

|                                |   |   |
|--------------------------------|---|---|
| Main User Groups               | : | <b>SU 3:</b> Industrial uses: Uses of substances as such or in preparations at industrial sites   |
| Sector of use                  | : | <b>SU3:</b> Industrial Manufacturing (all)  |
| Process category               | : | <b>PROC1:</b> Use in closed process, no likelihood of exposure<br><b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure<br><b>PROC3:</b> Use in closed batch process (synthesis or formulation)<br><b>PROC8a:</b> Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities<br><b>PROC8b:</b> Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities<br><b>PROC16:</b> Using material as fuel sources, limited exposure to unburned product to be expected |
| Environmental release category | : | <b>ERC7:</b> Industrial use of substances in closed systems   |
| Further information            | : | Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.   |

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

|  |   |  |
|--|---|--|
| Remarks  | : | Substance is complex UVCB., Predominantly hydrophobic. |
| Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (tonnes/day): (Msafe) | : | 5.000  |

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**Environment factors not influenced by risk management**

Flow rate : 18.000 m<sup>3</sup>/d  
 Dilution Factor (River) : 10  
 Dilution Factor (Coastal Areas) : 100

**Other given operational conditions affecting environmental exposure**

Continuous use/release  
 Number of emission days per year : 300  
 Emission or Release Factor: Air : 0,5 %  
 Emission or Release Factor: Water : 0,001 %  
 Emission or Release Factor: Soil : 0 %

**Technical conditions and measures / Organizational measures**

Air : Treat air emission to provide a typical removal efficiency of (%) (Effectiveness: 95 %)  
 Water : Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of  $\geq$  (%) (Effectiveness: 97,7 %)  
 Remarks : Common practices vary across sites thus conservative process release estimates used.  
 Water : If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of  $\geq$  (%) (Effectiveness: 60,4 %)  
 Remarks : Risk from environmental exposure is driven by freshwater sediment.  
 Remarks : If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.  
 Remarks : Prevent discharge of undissolved substance to or recover from wastewater.  
 Remarks : Do not apply industrial sludge to natural soils.  
 Remarks : Sludge should be incinerated, contained or reclaimed.

**Conditions and measures related to municipal sewage treatment plant**

Type of Sewage Treatment Plant : Municipal sewage treatment plant  
 Flow rate of sewage treatment plant effluent : 2.000 m<sup>3</sup>/d  
 Effectiveness (of a measure) : 94,1 %  
 Percentage removed from waste water : 97,7 %

**Conditions and measures related to external treatment of waste for disposal**

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

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

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

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

Remarks : Substance is complex UVCB., Predominantly hydrophobic.  
 Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
 Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

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

**Technical conditions and measures**

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

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

No other specific measures identified.

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

Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of exposure potential and aware of basic actions to minimize exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions.

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

Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

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

**Technical conditions and measures**

Store substance within a closed system.

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

Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

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

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

No other specific measures identified.

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

Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

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

**Technical conditions and measures**

Drain down system prior to equipment opening or maintenance.

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

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

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

Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

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

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

Wear suitable gloves tested to EN374.

**2.2 Contributing scenario controlling worker exposure for: PROC16: Using material as**

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**fuel sources, limited exposure to unburned product to be expected****Product characteristics**

Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
 Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

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

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

No other specific measures identified.

**3. Exposure estimation and reference to its source****Environment**

| Contributing Scenario | Exposure Assessment Method              | Specific conditions | Compartment         | Value type | Level of Exposure     | Risk characterization ratio |
|-----------------------|---|---------------------|---------------------|------------|-----------------------|-----------------------------|
| ERC7                  | Hydrocarbon Block Method with Petrorisk |                     | Air                 |            | 0,29 mg/m3            |                             |
|                       |   |                     | Freshwater          |            | 0,055 mg/L            | 0,8                         |
|                       |   |                     | Freshwater sediment |            | 2,1 mg/kg wet weight  | 0,91                        |
|                       |   |                     | Marine water        |            | 0,0055 mg/L           | 0,08                        |
|                       |   |                     | Marine sediment     |            | 0,21 mg/kg wet weight | 0,091                       |
|                       |   |                     | Agricultural soil   |            | 0,17 mg/kg wet weight | 0,01                        |

ERC7: Industrial use of substances in closed systems

**Workers/Consumers**

| Contributing Scenario | Exposure Assessment Method | Specific conditions | Value type                                    | Level of Exposure | Risk characterization ratio |
|-----------------------|----------------------------|---------------------|---|-------------------|-----------------------------|
| PROC1, CS15           | ECETOC TRA Modified        |                     | Worker – inhalation, long-term – systemic     | 1 mg/m3           | 0,01                        |
|                       |                            |                     | Worker – dermal, long-term – systemic         | 1,37 mg/kg/d      | 0,47                        |
|                       |                            |                     | Worker – long-term – systemic Combined routes |                   | 0,49                        |
| PROC1, CS67           | ECETOC TRA Modified        |                     | Worker – inhalation, long-term – systemic     | 1 mg/m3           | 0,01                        |
|                       |                            |                     | Worker – dermal, long-term – systemic         | 0,14 mg/kg/d      | 0,05                        |
|                       |                            |                     | Worker – long-term – systemic Combined routes |                   | 0,06                        |
| PROC2, CS15           | ECETOC TRA Modified        |                     | Worker – inhalation, long-term – systemic     | 1 mg/m3           | 0,01                        |
|                       |                            |                     | Worker – dermal, long-term – systemic         | 1,37 mg/kg/d      | 0,47                        |
|                       |                            |                     | Worker – long-term –                          |                   | 0,49                        |

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|                     |                     |  |   |               |      |
|---------------------|---------------------|--|---|---------------|------|
|                     |                     |  | systemic Combined routes                      |               |      |
| PROC2, CS67         | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 1 mg/m3       | 0,01 |
|                     |                     |  | Worker – dermal, long-term – systemic         | 0,14 mg/kg/d  | 0,05 |
|                     |                     |  | Worker – long-term – systemic Combined routes |               | 0,06 |
| PROC3, CS107        | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 1 mg/m3       | 0,01 |
|                     |                     |  | Worker – dermal, long-term – systemic         | 0,34 mg/kg/d  | 0,12 |
|                     |                     |  | Worker – long-term – systemic Combined routes |               | 0,13 |
| PROC8a, CS39, CS103 | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 1 mg/m3       | 0,01 |
|                     |                     |  | Worker – dermal, long-term – systemic         | 13,71 mg/kg/d | 0,47 |
|                     |                     |  | Worker – long-term – systemic Combined routes |               | 0,49 |
| PROC8b, CS8, CS14   | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 5 mg/m3       | 0,07 |
|                     |                     |  | Worker – dermal, long-term – systemic         | 6,86 mg/kg/d  | 0,47 |
|                     |                     |  | Worker – long-term – systemic Combined routes |               | 0,55 |
| PROC16, CS107       | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 1 mg/m3       | 0,03 |
|                     |                     |  | Worker – dermal, long-term – systemic         | 0,03 mg/kg/d  | 0,01 |
|                     |                     |  | Worker – long-term – systemic Combined routes |               | 0,02 |

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

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

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

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

PROC3: Use in closed batch process (synthesis or formulation)  
 CS107: (closed systems)

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities  
 CS39: Equipment cleaning and maintenance  
 CS103: Vessel and container cleaning

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

PROC16: Using material as fuel sources, limited exposure to unburned product to be expected  
 CS107: (closed systems)



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

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

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

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

|                                |   |   |
|--------------------------------|---|---|
| Main User Groups               | : | <b>SU 22:</b> Professional uses: Public domain (administration, education, entertainment, services, craftsmen)  |
| Sector of use                  | : | <b>SU 22:</b> Professional uses: Public domain (administration, education, entertainment, services, craftsmen)  |
| Process category               | : | <b>PROC1:</b> Use in closed process, no likelihood of exposure<br><b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure<br><b>PROC3:</b> Use in closed batch process (synthesis or formulation)<br><b>PROC8a:</b> Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities<br><b>PROC8b:</b> Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities<br><b>PROC16:</b> Using material as fuel sources, limited exposure to unburned product to be expected |
| Environmental release category | : | <b>ERC9a, ERC9b:</b> Wide dispersive indoor use of substances in closed systems, Wide dispersive outdoor use of substances in closed systems  |
| Further information            | : | Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.   |

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

|         |  |
|---------|--|
| Remarks | Substance is complex UVCB., Predominantly hydrophobic. |
|---------|--|

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Maximum allowable site tonnage : 140.000  
(MSafe) based on release  
following total wastewater  
treatment removal (kg/d):(Msafe)

**Environment factors not influenced by risk management**

Flow rate : 18.000 m<sup>3</sup>/d  
Dilution Factor (River) : 10  
Dilution Factor (Coastal Areas) : 100

**Other given operational conditions affecting environmental exposure**

Continuous use/release  
Number of emission days per year : 365

**Technical conditions and measures / Organizational measures**

Air : Release fraction to air from wide dispersive use (regional use only)  
Remarks : < 0.001 %  
Water : Release fraction to wastewater wide dispersive use  
Remarks : < 0.001 %  
Soil : Release fraction to soil from wide dispersive use (regional use only)  
Remarks : < 0.001 %  
Remarks : Common practices vary across sites thus conservative process release estimates used.  
Remarks : Risk from environmental exposure is driven by humans via indirect exposure (primarily ingestion).  
Remarks : No wastewater treatment required.  
Air : Treat air emission to provide a typical removal efficiency of (%):  
Remarks : Not applicable  
Water : Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%):  
(Effectiveness: 0 %)  
Water : If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of ≥ (%):  
(Effectiveness: 0 %)  
Remarks : Prevent discharge of undissolved substance to or recover from wastewater.  
Remarks : Do not apply industrial sludge to natural soils.  
Remarks : Sludge should be incinerated, contained or reclaimed.

**Conditions and measures related to municipal sewage treatment plant**

Type of Sewage Treatment Plant : Municipal sewage treatment plant  
Flow rate of sewage treatment plant effluent : 2.000 m<sup>3</sup>/d  
Effectiveness (of a measure) : 94,1 %  
Percentage removed from waste water : 94,1 %

**Conditions and measures related to external treatment of waste for disposal**

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

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

Recovery Methods : External recovery and recycling of waste should comply with

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applicable local and/or national regulations.

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

Remarks : Substance is complex UVCB., Predominantly hydrophobic.

Remarks : Liquid, vapour pressure &lt; 0.5 kPa at STP

Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

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

**Technical conditions and measures**

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

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

No other specific measures identified.

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

Control any potential exposure using measures such as contained systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of exposure potential and aware of basic actions to minimize exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; provide regular health surveillance as appropriate; identify and implement corrective actions.

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

Remarks : Liquid, vapour pressure &lt; 0.5 kPa at STP

Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

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

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

No other specific measures identified.

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

Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
 Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

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

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

No other specific measures identified.

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

Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
 Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

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

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

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

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

Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
 Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

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**Other operational conditions affecting workers exposure**

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

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

Wear suitable gloves tested to EN374.

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

Remarks : Liquid, vapour pressure < 0.5 kPa at STP  
Remarks : With potential for aerosol generation.

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

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

**Technical conditions and measures**

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour), Ensure operation is undertaken outdoors.

**3. Exposure estimation and reference to its source****Environment**

| Contributing Scenario | Exposure Assessment Method              | Specific conditions | Compartment         | Value type | Level of Exposure      | Risk characterization ratio |
|-----------------------|---|---------------------|---------------------|------------|------------------------|-----------------------------|
| ERC9a, ERC9b          | Hydrocarbon Block Method with Petrorisk |                     | Air                 |            | 0,02 mg/m3             |                             |
|                       |   |                     | Freshwater          |            | 0,0015 mg/L            | 0,043                       |
|                       |   |                     | Freshwater sediment |            | 1,4 mg/kg wet weight   | 0,05                        |
|                       |   |                     | Marine water        |            | 0,000028 mg/L          | 0,00041                     |
|                       |   |                     | Marine sediment     |            | 0,063 mg/kg wet weight | 0,0014                      |
|                       |   |                     | Agricultural soil   |            | 0,17 mg/kg wet weight  | 0,0054                      |

ERC9a: Wide dispersive indoor use of substances in closed systems

ERC9b: Wide dispersive outdoor use of substances in closed systems

**Workers/Consumers**

| Contributing Scenario | Exposure Assessment Method | Specific conditions | Value type                                | Level of Exposure | Risk characterization ratio |
|-----------------------|----------------------------|---------------------|---|-------------------|-----------------------------|
| PROC1, CS15           | ECETOC TRA Modified        |                     | Worker – inhalation, long-term – systemic | 1 mg/m3           | 0,01                        |
|                       |                            |                     | Worker – dermal, long-                    | 1,34 mg/kg/d      | 0,46                        |

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|                     |                     |  |   |               |      |
|---------------------|---------------------|--|---|---------------|------|
|                     |                     |  | term – systemic                               |               |      |
|                     |                     |  | Worker – long-term – systemic Combined routes |               | 0,48 |
| PROC1, CS67         | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 0,01 mg/m3    | 0,00 |
|                     |                     |  | Worker – dermal, long-term – systemic         | 0,34 mg/kg/d  | 0,12 |
|                     |                     |  | Worker – long-term – systemic Combined routes |               | 0,12 |
| PROC2, CS15         | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 1 mg/m3       | 0,01 |
|                     |                     |  | Worker – dermal, long-term – systemic         | 1,34 mg/kg/d  | 0,46 |
|                     |                     |  | Worker – long-term – systemic Combined routes |               | 0,48 |
| PROC3, CS107        | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 1 mg/m3       | 0,01 |
|                     |                     |  | Worker – dermal, long-term – systemic         | 0,34 mg/kg/d  | 0,12 |
|                     |                     |  | Worker – long-term – systemic Combined routes |               | 0,13 |
| PROC8a, CS39        | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 1 mg/m3       | 0,01 |
|                     |                     |  | Worker – dermal, long-term – systemic         | 13,71 mg/kg/d | 0,47 |
|                     |                     |  | Worker – long-term – systemic Combined routes |               | 0,49 |
| PROC8a, CS103       | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 5 mg/m3       | 0,07 |
|                     |                     |  | Worker – dermal, long-term – systemic         | 13,71 mg/kg/d | 0,47 |
|                     |                     |  | Worker – long-term – systemic Combined routes |               | 0,55 |
| PROC8b, CS14, CS507 | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 5 mg/m3       | 0,07 |
|                     |                     |  | Worker – dermal, long-term – systemic         | 6,86 mg/kg/d  | 0,47 |
|                     |                     |  | Worker – long-term – systemic Combined routes |               | 0,55 |
| PROC8b, CS8         | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 1 mg/m3       | 0,01 |
|                     |                     |  | Worker – dermal, long-term – systemic         | 6,86 mg/kg/d  | 0,47 |
|                     |                     |  | Worker – long-term – systemic Combined routes |               | 0,49 |
| PROC16, CS107       | ECETOC TRA Modified |  | Worker – inhalation, long-term – systemic     | 14 mg/m3      | 0,20 |
|                     |                     |  | Worker – dermal, long-term – systemic         | 0,34 mg/kg/d  | 0,12 |
|                     |                     |  | Worker – long-term – systemic Combined routes |               | 0,32 |

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

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

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

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

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CS107: (closed systems)

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

CS39: Equipment cleaning and maintenance

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

CS103: Vessel and container cleaning

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

CS14: Bulk transfers

CS507: Refueling

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

CS8: Drum/batch transfers

PROC16: Using material as fuel sources, limited exposure to unburned product to be expected

CS107: (closed systems)

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

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

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects.

Available hazard data do not support the need for a DNEL to be established for other health effects.

Risk Management Measures are based on qualitative risk characterisation. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).