



MATERIAL SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

SDS # : 081880

JET A1

Date of the previous version: 2013-05-22

Revision Date: 2014-02-20

Version 2

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

| | |
|-------------------------------|---------------|
| Product name | JET A1 |
| Other names | F35 |
| Pure substance/mixture | Mixture |

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

| | |
|------------------------|-----------------------------|
| Identified uses | Fuel for aircraft turbines. |
|------------------------|-----------------------------|

1.3. Details of the supplier of the safety data sheet

| | |
|-----------------|---|
| Supplier | TOTAL Mayotte Immeuble Jacaranda 1, Lotissement Les 3 vallées Majicavo Lamir BP 867 kawéni 97600 MAMOUDZOU tél : +262 (0) 269 60 12 94 fax : +262 (0) 269 60 17 30 |
|-----------------|---|

For further information, please contact:

| | |
|-----------------------|-----------------------|
| Contact Point | HSE |
| E-mail Address | hseq@totalmayotte.com |

1.4. Emergency telephone number

+262 (0) 639 69 13 36
SAMU - Tel : +262 (0) 269 61 86 86 ou 15 ou 112 - Fax: +262 (0) 269 61 86 54
ORFILA (INRS) Tél: +33 (0)1 45 42 59 59
Centre Hospitalier de Mayotte
BP 04 - 97600 MAMOUDZOU
Secrétariat : Tél : 02 69 61 86 86

2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

REGULATION (EC) No 1272/2008

For the full text of the H-Statements mentioned in this Section, see Section 2.2.

Classification

Flammable liquids - Category 3 - H226
Aspiration toxicity - Category 1 - H304
Skin corrosion/irritation - Category 2 - H315
Specific target organ systemic toxicity (single exposure) - Category 3 - H336
Chronic aquatic toxicity - Category 2 - H411



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DIRECTIVE 67/548/EEC or 1999/45/EC

For the full text of the R-phrases mentioned in this Section, see Section 16

Classification

R10 - Xn;R65 - Xi;R38 - N;R51-53

2.2. Label elements

Labelled according to

REGULATION (EC) No 1272/2008

**Signal Word**

DANGER

Hazard Statements

H226 - Flammable liquid and vapor
 H304 - May be fatal if swallowed and enters airways
 H315 - Causes skin irritation
 H336 - May cause drowsiness or dizziness
 H411 - Toxic to aquatic life with long lasting effects

Precautionary Statements

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
 P261 - Avoid breathing dust/fume/gas/mist/vapors/spray
 P280 - Wear protective gloves and eye/face protection
 P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
 P331 - Do NOT induce vomiting
 P273 - Avoid release to the environment
 P501 - Dispose of contents/ container to an approved incineration plant.

3. COMPOSITION/INFORMATION ON INGREDIENTS3.2. Mixture**Chemical nature**

A complex and variable combination of paraffinic, cyclic and aromatic hydrocarbons having a carbon number range predominantly of C9 to C16 and boiling in the range of approximately 130°C to 290°C.

Hazardous ingredients

| Chemical Name | EC-No | REACH registration No | CAS-No | Weight % | Classification (Dir. 67/548) | Classification (Reg. 1272/2008) |
|---------------|-------|-----------------------|--------|----------|------------------------------|---------------------------------|
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|---|-----------|------------------|------------|-------|-------------------------------------|---|
| Kerosine (petroleum), sweetened | 294-799-5 | 01-2119502385-46 | 91770-15-9 | < 100 | R10 Xn;R65 Xi;R38 N;R51/53 | Flam. Liq. 3 (H226) Asp. Tox. 1 (H304) Skin Irrit. 2 (H315) STOT SE 3 (H336) Aquatic Chronic 2 (H411) |
| Kerosine (petroleum), hydrodesulfurized | 265-184-9 | 01-2119462828-25 | 64742-81-0 | < 100 | R10 Xn;R65 Xi;R38 N;R51/53 | Flam. Liq. 3 (H226) Asp. Tox. 1 (H304) Skin Irrit. 2 (H315) STOT SE 3 (H336) Aquatic Chronic 2 (H411) |
| Kerosine (petroleum) | 232-366-4 | 01-2119485517-27 | 8008-20-6 | < 100 | R10 Xn;R65 Xi;R38 N;R51/53 | Flam. Liq. 3 (H226) Asp. Tox. 1 (H304) Skin Irrit. 2 (H315) STOT SE 3 (H336) Aquatic Chronic 2 (H411) |

Additional information

Contains additives
According to the refinery, the CAS number of this product may vary

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

4. FIRST AID MEASURES

4.1. Description of first-aid measures

General advice

IN CASE OF SERIOUS OR PERSISTENT CONDITIONS, CALL A DOCTOR OR EMERGENCY MEDICAL CARE.
Before attempting to rescue casualties, isolate area from all potential sources of ignition including disconnecting electrical supply.
Ensure adequate ventilation and check that a safe, breathable atmosphere is present before entry into confined spaces.

Eye contact

Rinse thoroughly with plenty of water, also under the eyelids.
Check for and remove any contact lenses. Rinse eyes.
If eye irritation persists, consult a specialist.

Skin contact

Remove contaminated clothing and shoes. Wash skin with soap and water.
High pressure injection of the products under the skin may have very serious consequences even though no symptom or injury may be apparent.
In this case, the casualty should be sent immediately to hospital.
For minor thermal burns. Hold the burned area under cold running water for at least five minutes, or until the pain subsides. Wash off with soap and water.

Inhalation

In case of exposure to intense concentrations of vapours, fumes or spray, transport the person away from the contaminated zone, keep warm and allow to rest.
Immediately begin artificial respiration if breathing has ceased. Call a physician immediately.
If there is any suspicion of inhalation of H₂S. Rescuers must wear breathing apparatus, belt and safety rope, and follow rescue procedures. If not breathing, give artificial respiration. Provision of oxygen may help. Remove casualty to fresh air as quickly as possible. Obtain medical advice for further treatment.



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| Ingestion | Give nothing to drink. Do NOT induce vomiting. as there is high risk of aspiration. The fluid can enter the lungs and cause damage (chemical pneumonitis, potentially fatal). Take victim immediately to hospital. Do not wait for symptoms to develop. |
| Protection of First-aiders | CAUTION! First aid personnel must be aware of personal risk during rescue!. Use personal protective equipment. See Section 8 for more detail. |

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

| | |
|---------------------|---|
| Eye contact | May cause slight irritation. |
| Skin contact | May cause skin irritation and/or dermatitis. |
| Inhalation | Inhalation of vapors in high concentration may cause irritation of respiratory system. May cause central nervous system depression with nausea, headache, dizziness, vomiting, and incoordination. |
| Ingestion | Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. May cause central nervous system depression. Harmful: If swallowed accidentally, the product may enter the lungs due to its low viscosity and lead to the rapid development of very serious inhalation pulmonary lesions (medical survey during 48 hours). |

4.3. Indication of immediate medical attention and special treatment needed, if necessary

| | |
|---------------------------|--|
| Notes to physician | Harmful: If swallowed accidentally, the product may enter the lungs due to its low viscosity and lead to the rapid development of very serious inhalation pulmonary lesions (medical survey during 48 hours). Treat symptomatically. |
|---------------------------|--|

5. FIRE-FIGHTING MEASURES5.1. Extinguishing media

| | |
|---------------------------------------|--|
| Suitable Extinguishing Media | Extinguishing media - small fires: Carbon dioxide (CO ₂). Dry powder. Sand or earth. Extinguishing media - large fires: Foam. Water fog (trained personnel only). |
| Unsuitable Extinguishing Media | Do not use a solid water stream as it may scatter and spread fire. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam. |

5.2. Special hazards arising from the substance or mixture

| | |
|-----------------------|---|
| Special Hazard | Incomplete combustion and thermolysis may produce gases of varying toxicity such as carbon monoxide, carbon dioxide, various hydrocarbons, aldehydes and soot. These may be highly dangerous if inhaled in confined spaces or at high concentration. Vapors may form explosive mixtures with air. If sulphur compounds are present in appreciable amounts, combustion products may include also H ₂ S and SO _x (sulfur oxides) or sulfuric acid. |
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5.3. Advice for fire-fighters

Special protective equipment for fire-fighters

In case of a large fire or in confined or poorly ventilated spaces, wear full fire resistant protective clothing and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Other information

Cool down any tanks and surfaces exposed to fire by spraying abundantly with water. Use water to cool tanks and parts exposed to the thermal flux not caught up in the flames. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. Cool containers / tanks with water spray.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

General Information

Except in case of small spillages, The feasibility of any actions should always be assessed and advised, if possible, by a trained, competent person in charge of managing the emergency.

If required, notify relevant authorities according to all applicable regulations.

Avoid direct contact with released material. Evacuate non-essential personnel. For personal protection see section 8.

Ensure adequate ventilation, especially in confined areas.

Stay upwind. In case of large spillages, alert occupants in downwind areas. Stop or contain leak at the source, if safe to do so. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Cover discharges with foam in order to reduce the risks of ignition.

Advice for non-emergency personnel

Do not touch or walk through spilled material. Ensure adequate ventilation. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). For personal protection see section 8.

Advice for emergency responders

In case of:

Small spillages: normal antistatic working clothes are usually adequate.

Large spillages: full body suit of chemically resistant and antistatic material. Work gloves (preferably gauntlets) providing adequate chemical resistance. Remarks: Gloves made of PVA are not water-resistant, and are not suitable for emergency use. Work helmet.

Antistatic non-skid safety shoes or boots. Goggles and/or face shield, if splashes or contact with eyes is possible or anticipated.

Respiratory protection: A half or full-face respirator with filter(s) for organic vapours (and when applicable: for H₂S). A Self-Contained Breathing Apparatus (SCBA) can be used according to the extent of spill and predictable amount of exposure.

If the situation cannot be completely assessed, or if an oxygen deficiency is possible, only SCBA's should be used.

6.2. Environmental precautions

General Information

The product should not be allowed to enter drains, water courses or the soil. Do not allow material to contaminate ground water system.

In case of spill in river, suspend the use of the water downstream to the spillpoint. If necessary, Consult an expert. Local authorities should be advised if significant spillages cannot be contained.



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6.3. Methods and materials for containment and cleaning up**Methods for Containment**

Contain and collect spillage 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). Large spillages may be cautiously covered with foam, if available, to limit fire risk. In case of spillage in the water, contain product with floating barriers or other equipment. The use of dispersants should be advised by an expert, and, if required, approved by local authorities.

Methods for cleaning up

Never use dispersing agents. Do not use direct jets.
Do not flush into surface water or sanitary sewer system. Transfer recovered product and other materials to suitable tanks or containers and store/dispose according to relevant regulations.

6.4. Reference to other sections**Personal Protective Equipment**

See Section 8 for more detail.

Waste treatment

See section 13.

Other information

Recommended measures are based on the most likely spillage scenarios for this material. However, local conditions (wind, air temperature, wave/current direction and speed) may significantly influence the choice of appropriate actions. For this reason, local experts should be consulted when necessary. Local regulations may also prescribe or limit actions to be taken.

Concentration of H₂S in tank headspaces may reach hazardous values, especially in case of prolonged storage. This situation is especially relevant for those operations which involve direct exposure to the vapours in the tank.

Spillages of limited amounts of products, especially in the open air when vapours will be usually quickly dispersed, are dynamic situations, which presumably do not entail exposure to dangerous concentrations. As H₂S has a density greater than ambient air, a possible exception may regard the build-up of dangerous concentrations in specific spots, like trenches, depressions or confined spaces. In all these circumstances, however, the correct actions should be assessed on a case-by-case basis.

7. HANDLING AND STORAGE7.1. Precautions for safe handling**Advice on safe handling**

Ensure that all relevant regulations regarding explosive atmospheres, handling and storage facilities of flammable products, are followed. Take precautionary measures against static electricity.

The inspection, cleaning and maintenance of storage containers require the application of strict procedures and must be entrusted to qualified personnel (internal or external).

Ensure adequate ventilation. Vapors may form explosive mixtures with air. Do not smoke. Avoid breathing vapors or mists. Avoid contact with skin, eyes and clothing.

NEVER ATTEMPT TO PRIME THE CONTAINER SIPHON BY SUCKING WITH THE MOUTH. Prevent the formation of vapors, mists and aerosols.

Do not use compressed air for filling, discharging, or handling operations. Never pierce, drill, grind, cut, saw or weld any empty container.

Do not use mobile phones during handling. For personal protection see section 8.



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| Technical measures | <p>Ensure adequate ventilation.</p> <p>WHILE MOVING THE PRODUCT: To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded.</p> <p>Take all necessary precautions to prevent water from entering the containers, tanks, transfer lines etc...</p> |
| Prevention of fire and explosion | <p>Handle away from any source of ignition (open flame and sparks) and heat (hot manifolds or casings). Take precautionary measures against static discharges. Ground/bond containers, tanks and transfer/receiving equipment. Friction generated by product discharge can create static charges of sufficient magnitude to cause SPARKS WHICH MAY LEAD TO FIRE OR EXPLOSION. Do not allow splash loading and ensure that the product is poured slowly, particularly at the beginning of the operation.</p> <p>Empty containers may contain flammable or explosive vapors. Never weld any container or empty pipe that has not been degassed.</p> <p>OPERATE ONLY ON COLD AND DEGASSED TANKS IN VENTILATED PREMISES (TO AVOID RISK OF EXPLOSION).</p> <p>Design installations (machinery and equipment) to prevent burning product from spreading (tanks, retention systems, interceptors (traps) in drainage systems).</p> |
| Hygiene measures | <p>When using, do not eat, drink or smoke. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. IF ON SKIN: Wash skin with soap and water. Remove contaminated clothing and shoes.</p> <p>Gloves must be periodically inspected and changed in case of wear, perforations or contaminations.</p> <p>Provide regular cleaning of equipment, work area and clothing. Keep away from food, drink and animal feeding stuffs.</p> <p>Ensure the application of strict rules of hygiene by the personnel exposed to the risk of contact with the product. Use personal protective equipment as required.</p> |

7.2. Conditions for safe storage, including any incompatibilities

| | |
|--|--|
| Technical measures/Storage conditions | <p>Storage area layout, tank design, equipment and operating procedures must comply with the relevant European, national or local legislation. Before entering storage tanks and commencing any operation in a confined area, check the atmosphere for oxygen content and flammability. If sulphur compounds are suspected to be present in the product, check the atmosphere for H₂S content. Take precautionary measures against static discharges. Ensure all equipment is electrically grounded before beginning transfer operations. Storage installations should be designed with adequate bunds so as to prevent ground or water pollution in case of leaks or spills. Do not remove the hazard labels of the containers (even if they are empty).</p> <p>Store the packed products (drums, samples, cans ...) in properly ventilated rooms, away from damp, heat and any potential source of ignition.</p> <p>Keep preferably in the original container. Otherwise reproduce all indication of the regulation label on the new container.</p> <p>Keep containers tightly closed and properly labelled. Store separately from oxidising agents.</p> <p>Store in accordance with the particular national regulations.</p> |
| Materials to Avoid | Strong oxidizing agents. Strong acids. Strong bases. (herbicides...). Halogens. |

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Packaging material

Use only containers, seals, pipes, etc... made in a material suitable for use with aromatic hydrocarbons. Recommended materials for containers, or container linings use mild steel, stainless steel. Some synthetic materials may be unsuitable for containers or container linings depending on the material specification and intended use. Compatibility should be checked with the manufacturer.

7.3. Specific end uses**Specific use(s)** See exposure scenarios.**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**8.1. Control parameters**Exposure limits** Ingredients with workplace control parameters

| Chemical Name | European Union | France |
|---|----------------|---|
| Kerosine (petroleum), sweetened 91770-15-9 | | vapeurs d'hydrocarbures C6-C12 : VLE = 1500 mg/m ³ VME = 1000 mg/m ³ Vapeurs d'hydrocarbures benzéniques en C9-C12 : VME 150 mg/m ³ |
| Kerosine (petroleum), hydrodesulfurized 64742-81-0 | | vapeurs d'hydrocarbures C6-C12 : VLE = 1500 mg/m ³ VME = 1000 mg/m ³ Vapeurs d'hydrocarbures benzéniques en C9-C12 : VME 150 mg/m ³ |
| Kerosine (petroleum) 8008-20-6 | | vapeurs d'hydrocarbures C6-C12 : VLE = 1500 mg/m ³ VME = 1000 mg/m ³ Vapeurs d'hydrocarbures benzéniques en C9-C12 : VME 150 mg/m ³ |

Legend See section 16**DNEL Worker (Industrial/Professional)**

| Chemical Name | Short term, systemic effects | Short term, local effects | Long term, systemic effects | Long term, local effects |
|--|------------------------------|---------------------------|-----------------------------|--------------------------|
| Kerosine (petroleum), sweetened 91770-15-9 | | | - | |
| Kerosine (petroleum), hydrodesulfurized 64742-81-0 | | | - | |
| Kerosine (petroleum) 8008-20-6 | | | - | |

DNEL General population

| Chemical Name | Short term, systemic effects | Short term, local effects | Long term, systemic effects | Long term, local effects |
|--|------------------------------|---------------------------|-----------------------------|--------------------------|
| Kerosine (petroleum), sweetened 91770-15-9 | | | 19 mg/kg/24h (oral) | |
| Kerosine (petroleum), hydrodesulfurized 64742-81-0 | | | 19 mg/kg/24h (oral) | |



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| | | | | |
|-----------------------------------|--|--|---------------------|--|
| Kerosine (petroleum) 8008-20-6 | | | 19 mg/kg/24h (oral) | |
|-----------------------------------|--|--|---------------------|--|

8.2. Exposure controls**Occupational Exposure Controls****Engineering Measures**

Ensure adequate ventilation. Do not enter empty storage tanks until measurements of available oxygen have been carried out.
When working in confined spaces (tanks, containers, etc.), ensure that there is a supply of air suitable for breathing and wear the recommended equipment.

Personal Protective Equipment**General Information**

Protective engineering solutions should be implemented and in use before personal protective equipment is considered.

Respiratory protection

To enter tankers, tanks, reservoirs where the oxygen content is too low, wear insulating respiratory apparatus.
In an emergency or for exceptional short-lasting jobs in an atmosphere polluted by the product, it is necessary to wear protective respiratory equipment. When using a mask or half mask :. Full face piece respirator with organic vapor/acid gas cartridge or canister: Type A. The use of breathing apparatus must comply strictly with the manufacturer's instructions and the regulations governing their choices and uses.

Eye Protection

If splashes are likely to occur, wear:. Safety glasses with side-shields. or. Face-shield.

Skin and body protection

Wear suitable protective clothing: hydrocarbon-proof clothing. Protective shoes or boots.

Hand Protection

Hydrocarbon-proof gloves for aromatic hydrocarbons. 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.
Note: Gloves made of PVA are not water-resistant, and are not suitable for emergency use.

| Repeated or prolonged exposure | | | |
|---------------------------------------|-----------------|--------------------|--------------------------|
| Glove material | Glove thickness | Break through time | Remarks |
| PVA | (*) | > 480 min | EN 374 (*) any thickness |
| Fluorinated rubber | (*) | > 480 min | EN 374 (*) any thickness |
| Nitrile rubber | > 0.45 mm | > 480 min | EN 374 |

| In case of contact through splashing: | | | |
|--|-----------------|--------------------|---------|
| Glove material | Glove thickness | Break through time | Remarks |
| Neoprene | > 0.5 mm | > 60 min | EN 374 |
| PVC | > 0.2 mm | > 60 mn | EN 374 |
| Nitrile rubber | > 0.3 | > 60min | EN 374 |

Environmental exposure controls**General Information**

The product should not be allowed to enter drains, water courses or the soil.

9. PHYSICAL AND CHEMICAL PROPERTIES**9.1. Information on basic physical and chemical properties**



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| | | | |
|---|--|---------------------------|-------------------------|
| Appearance | | limpid | |
| Color | | colorless To light yellow | |
| Physical State @20°C | | liquid | |
| Odor | | Characteristic | |
| Property | Values | Remarks | Method |
| pH | | Not applicable | |
| Boiling point/boiling range | 130 - 300 °C 266 - 572 °F | | ASTM D 86 ASTM D 86 |
| Flash point | >= 38 °C >= 100 °F | | IP 170 IP 170. |
| Evaporation rate | | Not applicable | |
| Flammability Limits in Air | | | |
| upper | 8.8 % | | |
| Lower | 1.2 % | | |
| Vapor Pressure | < 8 hPa | @ 20 °C | EN 13012-1 - ASTMD 5191 |
| Vapor Pressure | < 36 hPa | @ 37.8 °C | EN 13012-1 - ASTMD 5191 |
| Vapor density | > 1 | | |
| Density | 775 - 840 kg/m ³ | @ 15 °C | ASTMD 1298 / D 4052 |
| Water solubility | | Not applicable | |
| Solubility in other solvents | | No information available | |
| logPow | | Not applicable | |
| Autoignition temperature | > 230 °C > 446 °F | | IP170 IP170 |
| Viscosity, kinematic | < 8 mm ² /s | @ - 20 °C | ASTM D445 |
| Explosive properties | Not considered explosive based on chemical structure and oxygen balance considerations | | |
| Oxidizing Properties | This product is not considered oxidising based on chemical structure considerations | | |
| Possibility of hazardous reactions | No data available | | |

9.2. Other information

No information available

10. STABILITY AND REACTIVITY10.1. Reactivity**General Information** No information available.10.2. Chemical stability**Stability** Stable under recommended storage conditions.10.3. Possibility of hazardous reactions**Hazardous Reactions** None under normal processing.10.4. Conditions to Avoid**Conditions to Avoid** Heat (temperatures above flash point), sparks, ignition points, flames, static electricity.



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10.5. Incompatible Materials**Materials to Avoid** Strong oxidizing agents. Strong acids. Strong bases. (herbicides...). Halogens.10.6. Hazardous Decomposition Products**Hazardous Decomposition Products** None under normal use.**11. TOXICOLOGICAL INFORMATION**11.1. Information on toxicological effects**Acute toxicity Local effects Product Information**

| | |
|----------------------------|---|
| General Information | The acute toxicity has been adequately characterised in a large number of GLP-compliant guideline investigations following oral, dermal or inhalation exposure. |
| Skin contact | Samples of the substance have been tested in skin irritation studies. There was no evidence of skin corrosion. May cause skin irritation and/or dermatitis. |
| Eye contact | This product does not meet the EU criteria for classification. Key study indicated that the material is not irritating to the eye. May cause slight irritation. |
| Inhalation | . Inhalation of vapors in high concentration may cause irritation of respiratory system. May cause central nervous system depression with nausea, headache, dizziness, vomiting, and incoordination. |
| Ingestion | . Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. May cause central nervous system depression. Harmful: If swallowed accidentally, the product may enter the lungs due to its low viscosity and lead to the rapid development of very serious inhalation pulmonary lesions (medical survey during 48 hours). |

Acute toxicity - Component Information

| Chemical Name | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|---|--|---|---|
| Kerosine (petroleum), sweetened | LD50 > 5000 mg/kg bw (rat - OECD TG 420) | LD50 > 2000 mg/kg bw (rabbit - OECD TG 402) | LC50 (4h) > 5.28 mg/l (vapour) (rat - OECD 403) |
| Kerosine (petroleum), hydrodesulfurized | LD50 > 5000 mg/kg bw (rat - OECD TG 420) | LD50 > 2000 mg/kg bw (rabbit - OECD TG 402) | LC50 (4h) > 5.28 mg/l (vapour) (rat - OECD 403) |
| Kerosine (petroleum) | LD50 > 5000 mg/kg bw (rat - OECD TG 420) | LD50 > 2000 mg/kg bw (rabbit - OECD TG 402) | LC50 (4h) > 5.28 mg/l (vapour) (rat - OECD 403) |

Sensitization**Sensitization** There are no reports available to indicate that the substance has the potential to cause skin and respiratory sensitisation.**Specific effects**



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| Carcinogenicity | The product is not carcinogenic when animal are exposed via the oral or inhalation route. However, chronic skin contact may lead to tumour formation as a consequence of irritation and not a consequence of the product. This substance does not meet the EU criteria for classification. |
| Mutagenicity Germ Cell Mutagenicity | . The mutagenic potential of the substance has been extensively studied in a range of in-vivo and in-vitro assays. The majority of the studies showed no evidence of mutagenic activity. The weight of evidence from in vivo and in vitro mutagenic studies indicates that this substance does not meet the EU criteria for classification. |
| Reproductive toxicity | . All animals studies show that this substance has no effect on development and has no adverse reproductive effect. This product does not meet the EU criteria for classification. |
| Repeated Dose Toxicity | |
| Target Organ Effects (STOT) | |
| Specific target organ systemic toxicity (single exposure) | Acute exposure studies show no evidence of systemic toxicity, other than a potential to cause narcosis / CNS depression at higher exposure concentrations. |
| Specific target organ systemic toxicity (repeated exposure) | The repeat dose toxicity of the substance has been studied following oral, dermal and inhalation exposure for different periods. The only effect observed was moderate to severe dermal irritation. |
| Aspiration toxicity | The fluid can enter the lungs and cause damage (chemical pneumonitis, potentially fatal). |
| Other information | |
| Other information | Not relevant. |

| |
|----------------------------|
| 12. ECOLOGICAL INFORMATION |
|----------------------------|

12.1. Toxicity

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Acute aquatic toxicity - Product Information**Acute aquatic toxicity - Component Information**

| Chemical Name | Toxicity to algae | Toxicity to daphnia and other aquatic invertebrates | Toxicity to fish | Toxicity to microorganisms |
|---|---|---|--|----------------------------|
| Kerosine (petroleum), sweetened 91770-15-9 | EL50 (72 h) 1-3 mg/l (Pseudokirchnerella subcapitata - OECD 201) | EL50 (48 h) 1.4 mg/l (Daphnia magna - OECD 202) | LL50 (96 h) 2-5 mg/l (Oncorhynchus mykiss - OECD 203) | |
| Kerosine (petroleum), hydrodesulfurized 64742-81-0 | EL50 (72 h) 1-3 mg/l (Pseudokirchnerella subcapitata - OECD 201) | EL50 (48 h) 1.4 mg/l (Daphnia magna - OECD 202) | LL50 (96 h) 2-5 mg/l (Oncorhynchus mykiss - OECD 203) | |
| Kerosine (petroleum) 8008-20-6 | EL50 (72 h) 1-3 mg/l (Pseudokirchnerella subcapitata - OECD 201) | EL50 (48 h) 1.4 mg/l (Daphnia magna - OECD 202) | LL50 (96 h) 2-5 mg/l (Oncorhynchus mykiss - OECD 203) | |

Chronic aquatic toxicity - Product Information**Chronic aquatic toxicity - Component Information**



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| Chemical Name | Toxicity to algae | Toxicity to daphnia and other aquatic invertebrates | Toxicity to fish | Toxicity to microorganisms |
|---|-------------------|---|---|----------------------------|
| Kerosine (petroleum), sweetened 91770-15-9 | | NOEL (21d) 0.89 mg/l (Daphnia magna - OECD 211) | NOEL (14/28d) 0.098 mg/l (Oncorhynchus mykiss - QSAR Petrotox) | |
| Kerosine (petroleum), hydrodesulfurized 64742-81-0 | | NOEL (21d) 0.89 mg/l (Daphnia magna - OECD 211) | NOEL (14/28d) 0.098 mg/l (Oncorhynchus mykiss - QSAR Petrotox) | |
| Kerosine (petroleum) 8008-20-6 | | NOEL (21d) 0.89 mg/l (Daphnia magna - OECD 211) | NOEL (14/28d) 0.098 mg/l (Oncorhynchus mykiss - QSAR Petrotox) | |

Effects on terrestrial organisms12.2. Persistence and degradability**General Information**

Substance is a UVCB. Standard tests for this endpoint are not appropriate.

12.3. Bioaccumulative potential**Product Information**

Substance is a UVCB. Standard tests for this endpoint are not appropriate.

logPow

Not applicable

Component Information12.4. Mobility in soil

| Mobility | | | | |
|---|-------------|--------|-------|---------|
| Method | Compartment | Result | (%) | Remarks |
| Percent distribution in media (Calculation according to Mackay, Level III) | Soil | | 0.34 | |
| Percent distribution in media (Calculation according to Mackay, Level III) | Sediment | | 0.81 | |
| Percent distribution in media (Calculation according to Mackay, Level III) | Water | | 5.83 | |
| Percent distribution in media (Calculation according to Mackay, Level III) | Air | | 93.02 | |

Soil

Substance is a UVCB. Standard tests for this endpoint are not appropriate.

Air

Volatilisation is dependent on Henry's Constant which is not applicable to UVCB.

Water

The product spreads on the surface of the water. May exhibit slight solubility in water.

12.5. Results of PBT and vPvB assessment



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PBT and vPvB assessment This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). Anthracene is not present in this substance at greater than 0.1% (CONCAWE 2010). No other representative hydrocarbon structure were found to meet the PBT/vPvB criteria.

12.6. Other adverse effects

General Information No information available.

13. DISPOSAL CONSIDERATIONS13.1. Waste treatment methods

Waste from Residues / Unused Products Dispose of in accordance with the European Directives on waste and hazardous waste.

Contaminated packaging Empty containers may contain flammable or explosive vapors. Do not cut, weld, bore, burn or incinerate emptied containers, unless they have been cleaned and declared safe. Empty containers should be taken to an approved waste handling site for recycling or disposal.

EWC Waste Disposal No. According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste codes should be assigned by the user based on the application for which the product was used.

14. TRANSPORT INFORMATION

Note This dangerous good could also be transported under UN code 1223

ADR/RID

| | |
|---------------------------------------|---|
| UN/ID No | UN1863 |
| Proper shipping name | FUEL, AVIATION, TURBINE ENGINE |
| Proper shipping name | FUEL, AVIATION, TURBINE ENGINE |
| Hazard class | 3 |
| Packing Group | III |
| ADR/RID-Labels | 3 |
| Environmental hazard | Yes |
| Classification Code | F1 |
| Special Provisions | 363 |
| Tunnel Restriction Code | (D/E) |
| ADR Hazard Id (Kemmler Number) | 30 |
| Description | UN1863, FUEL, AVIATION, TURBINE ENGINE, 3, III, (D/E) |
| Excepted Quantity | E1 |
| Limited quantity | 5 L |
| Hazchem Code | 3Y (for UK) |

IMDG/IMO

| | |
|-----------------------------|--------------------------------|
| UN/ID No | UN1863 |
| Proper shipping name | Fuel, aviation, turbine engine |
| Hazard class | 3 |
| Packing Group | III |
| Marine pollutant | P |



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| | |
|---------------------------|---|
| EmS No. | F-E, S-E |
| Description | UN1863, Fuel, aviation, turbine engine, 3, III, (38°C c.c.) |
| Special Provisions | 223, 363 |
| Excepted Quantity | E1 |
| Limited quantity | 5 L |

ICAO/IATA

| | |
|-----------------------------|--|
| UN/ID No | UN1863 |
| Proper shipping name | Fuel, aviation, turbine engine |
| Hazard class | 3 |
| Packing Group | III |
| ERG Code | 3L |
| Special Provisions | A3 |
| Description | UN1863, Fuel, aviation, turbine engine, 3, III |
| Excepted Quantity | E1 |
| Limited quantity | 10 L |

ADN

| | |
|-----------------------------|--|
| UN/ID No | UN1863 |
| Proper shipping name | FUEL, AVIATION, TURBINE ENGINE |
| Proper shipping name | FUEL, AVIATION, TURBINE ENGINE |
| Hazard class | 3 |
| Packing Group | III |
| Environmental hazard | Yes |
| Classification Code | F1 |
| Special Provisions | 363 |
| Description | UN1863, FUEL, AVIATION, TURBINE ENGINE, 3, III |
| Excepted Quantity | E1 |
| Limited quantity | 5 L |
| Ventilation | VE01 |

15. REGULATORY INFORMATION

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

European Union

REACH

This substance has been registered according to Regulation (EU) No. 1907/2006 (REACH).

International Inventories

| | |
|----------------------|----------|
| EINECS/ELINCS | Complies |
| TSCA | Complies |
| DSL | Complies |
| ENCS | Complies |
| IECSC | Complies |



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KECL Complies
PICCS Complies
AICS Complies
NZIoC Complies

Legend

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances
NZIoC - New Zealand Inventory of Chemicals

Further information

15.2. Chemical Safety Assessment

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

15.3. National regulatory information**France**

- FR - ICPE : rubrique 1430-1432 (liquide inflammable 1ère catégorie)
- FR - Decree of July 1st 2004 concerning technical and safety rules for the storage of petroleum product in collective or individual "non targeted" buildings
- FR - Decree n° 2003-1254 of December 23rd 2003 concerning the chemical risk prevention (JORF of march, 3rd 2004)
-
- French labor code
- FR - Art. R. 4624-19 to 4624-20 and decree of november, 7th 1977 (Special medical surveillance).
-
- French social security code
- FR - Art. L 461-6, Art. D.461-1, annexe A, n° 601 (Table of occupational illnesses and diseases)

| Chemical Name | Occupational Illnesses |
|---|------------------------|
| Kerosine (petroleum), hydrodesulfurized 64742-81-0 | RG 4bis |

16. OTHER INFORMATION**Full text of R-phrases referred to under sections 2 and 3**

R10 - Flammable
 R38 - Irritating to skin
 R65 - Harmful: may cause lung damage if swallowed
 R51/53 - Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment



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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
 H336 - May cause drowsiness or dizziness
 H411 - Toxic to aquatic life with long lasting effects

Abbreviations, acronyms

GLP = Good Laboratory Practice
 bw = body weight
 bw/day = body weight/day

Legend Section 8

| | | | |
|----|--------------------|----|-----------------------|
| + | Sensitizer | * | Skin designation |
| ** | Hazard Designation | C: | Carcinogen |
| M: | Mutagen | R: | Toxic to reproduction |

Revision Date: 2014-02-20
Revision Note Exposure scenario.

Further information Other uses than these listed under section 1.2 may have been foreseen for the substance(s) contained in the product. Please contact us if your use is not listed under section 1.2

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

This safety data sheet serves to complete but not to replace the technical product sheets. The information contained herein is given in good faith and is accurate to the best of knowledge at the date indicated above. It is understood by the user that any use of the product for purposes other than those for which it was designed entails potential risk. The information given herein in no way dispenses the user from knowing and applying all provisions regulating his activity. The user bears sole liability for the precautions required when using the product. The regulatory texts indicated herein are intended to aid the user to fulfil his obligations. This list is not to be considered complete and exhaustive. It is the user's responsibility to ensure that he is subject to no other obligations than those mentioned.

End of the safety data sheet



ES03001

Version 1.0

Trade name / designation KEROSINE

1. Exposure scenario

Manufacture of substance, Industrial.

Use Descriptor

Sector of use

SU3 - Industrial Manufacturing (all)

SU8 - Manufacture of bulk, large scale chemicals (including petroleum products)

SU9 - Manufacture of fine chemicals

Process Category

PROC1 - Use in closed process, no likelihood of exposure

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

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

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

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

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

PROC15 - Use as a laboratory reagent

Environmental Release Category

ERC1 - Manufacture of substances

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

Specific Environmental Release Category

ESVOC SpERC 1.1.v1.

Processes, tasks, activities covered

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

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics

Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

:

Fraction of EU tonnage used in region: 0.1

Regional use tonnage (tonnes/year): 5.4E+6

Fraction of Regional tonnage used locally: 0.11

Annual site tonnage (tonnes/year): 6.0E+5

Maximum daily site tonnage (kg/day): 2.0E+6

Frequency and duration of use

 Continuous release

Emission Days (days/year): 300

Environment factors not influenced by risk management -

Local freshwater dilution factor: 10

Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure

-



TOTAL

Release fraction to air from process (initial release prior to RMM): 1.0E-2
 Release fraction to wastewater from process (initial release prior to RMM): 3.0E-4
 Release fraction to soil from process (initial release prior to RMM): 0.0001

Technical conditions and measures at process level to prevent release

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

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Risk from environmental exposure is driven by freshwater sediment
 Prevent discharge of undissolved substance to or recover from onsite wastewater
 Onsite wastewater treatment required
 Treat air emission to provide a typical removal efficiency of (%): 90
 Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): >=97.7
 If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): >=56.1

Organizational measures to prevent/limit release from the site

Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant :

Estimated substance removal from wastewater via domestic sewage treatment (%): 94.7
 Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 97.7
 Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 2.0E+6
 Assumed domestic sewage treatment plant flow (m3/d): 10000

Conditions and measures related to external treatment of waste for disposal

During manufacturing no waste of the substance is generated.

Conditions and measures related to external recovery of waste

During manufacturing no waste of the substance is generated.

Remarks

Additional information on the basis for the allocation of the identified OCs (operating conditions) and RMMs (Risk Management Measures) is contained in Petrorisk file

2.2. Control of exposure - Workers / Consumers

Product characteristics

Physical State

Liquid, vapour pressure 0.5 - 10 kPa at STP

Concentration of substance in product

Covers percentage substance in the product up to 100 % (unless stated differently).

Frequency and duration of use

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

Other operational conditions affecting exposure

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



| 2.2a. Control of worker exposure | |
|---|--|
| Contributing Scenarios | Operational conditions and risk management measures. |
| General measures (skin irritants) | Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. |
| General exposures (closed systems) | No other specific measures identified. |
| General exposures (open systems) | No other specific measures identified. |
| Bulk transfers | No other specific measures identified. |
| Process sampling | No other specific measures identified. |
| Laboratory activities | No other specific measures identified. |
| Equipment cleaning and maintenance | No other specific measures identified. |
| Storage | No other specific measures identified. |

| 2.2b. Control of consumer exposure | |
|---|---|
| Product Category(ies) | Operational conditions and risk management measures. |
| Not applicable | |

3. Exposure estimation and references

Health

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

Environment

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

4. Guidance for Downstream User to check compliance with the Exposure scenario

Health

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterisation. Available hazard data do not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>). Scaled local assessments for EU refineries have been performed using site-specific data and are attached in PETRORISK file – “Site-Specific Production” worksheet.



ES03003

Version 1.0

Trade name / designation KEROSINE

1. Exposure scenario

Industrial, Distribution of substance.

Use Descriptor

Sector of use

SU3 - Industrial Manufacturing (all)

Process Category

PROC1 - Use in closed process, no likelihood of exposure

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

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

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

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

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

PROC9 - Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

PROC15 - Use as a laboratory reagent

Environmental Release Category

ERC1 - Manufacture of substances

ERC2 - Formulation of mixtures

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 polymerization processes in production of resins, rubbers, polymers

ERC7 - Industrial use of substances in closed systems

Specific Environmental Release Category

ESVOC SpERC 1.1b. v1.

Processes, tasks, activities covered

Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading distribution and associated laboratory activities.

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics

Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

:

Fraction of EU tonnage used in region: 0.1

Regional use tonnage (tonnes/year): 5.4E+6

Fraction of Regional tonnage used locally: 2.0E-3

Annual site tonnage (tonnes/year): 1.1E+4

Maximum daily site tonnage (kg/day): 3.6E+4

Frequency and duration of use

Continuous release
Emission Days (days/year): 300



TOTAL

Environment factors not influenced by risk management -

Local freshwater dilution factor: 10

Local marine water dilution factor: 100

Release fraction to air from process (initial release prior to RMM): 1.0E-3

Release fraction to wastewater from process (initial release prior to RMM): 1.0E-5

Release fraction to soil from process (initial release prior to RMM): 0.00001

Technical conditions and measures at process level to prevent release

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

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Risk from environmental exposure is driven by freshwater

No wastewater treatment required

Treat air emission to provide a typical removal efficiency of (%): 90

Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): ≥ 0

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): ≥ 0

Organizational measures to prevent/limit release from the site

Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant :

Estimated substance removal from wastewater via domestic sewage treatment (%): 94.7

Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 94.7

Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 2.6E+6

Assumed domestic sewage treatment plant flow (m³/d): 2000

Conditions and measures related to external treatment of waste for disposal

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

Conditions and measures related to external recovery of waste

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

Remarks

Additional information on the basis for the allocation of the identified OCs (operating conditions) and RMMs (Risk Management Measures) is contained in Petrorisk file

2.2. Control of exposure - Workers / Consumers

Product characteristics

Physical State

Liquid, vapour pressure 0.5 - 10 kPa at STP

Concentration of substance in product

Covers percentage substance in the product up to 100 % (unless stated differently).

Amounts used

not applicable.

Frequency and duration of use

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

Human factors not influenced by risk management

not applicable

Other operational conditions affecting exposure

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



| 2.2a. Control of worker exposure | |
|---|--|
| Contributing Scenarios | Operational conditions and risk management measures. |
| General measures (skin irritants) | Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. |
| General exposures (closed systems) | No other specific measures identified. |
| General exposures (open systems) | No other specific measures identified. |
| Process sampling | No other specific measures identified. |
| Laboratory activities | No other specific measures identified. |
| Bulk transfers | No other specific measures identified. |
| Drum and small package filling | No other specific measures identified. |
| Equipment cleaning and maintenance | No other specific measures identified. |
| Bulk product storage | No other specific measures identified. |

| 2.2b. Control of consumer exposure | |
|---|---|
| Product Category(ies) | Operational conditions and risk management measures. |
| Not applicable | |

3. Exposure estimation and references

Health

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

Environment

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

4. Guidance for Downstream User to check compliance with the Exposure scenario

Health

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterisation. Available hazard data do not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).



ES03004

Version 1.0

Trade name / designation KEROSINE

1. Exposure scenario

Formulation & (re)packing of substances and mixtures, Industrial.

Use Descriptor

Sector of use

SU3 - Industrial Manufacturing (all)

SU10 - Formulation [mixing] of preparations and/or re-packaging (excluding alloys)

Process Category

PROC1 - Use in closed process, no likelihood of exposure

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

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

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

PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)

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

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

PROC9 - Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

PROC14 - Production of mixtures or articles by tableting, compression, extrusion, pelletization

PROC15 - Use as a laboratory reagent

Environmental Release Category

ERC2 - Formulation of mixtures

Specific Environmental Release Category

ESVOC SpERC 2.2.v1.

Processes, tasks, activities covered

Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics

Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

:

Fraction of EU tonnage used in region: 0.1

Regional use tonnage (tonnes/year): 5.2E+6

Fraction of Regional tonnage used locally: 5.8E-3

Annual site tonnage (tonnes/year): 3.0E+4

Maximum daily site tonnage (kg/day): 1.0E+5

Frequency and duration of use

Continuous release
Emission Days (days/year): 300

Environment factors not influenced by risk management -

Local freshwater dilution factor: 10

Local marine water dilution factor: 100

Release fraction to air from process (initial release prior to RMM): 1.0E-2



TOTAL

Release fraction to wastewater from process (initial release prior to RMM): 2.0E-4

Release fraction to soil from process (initial release prior to RMM): 0.0001

Technical conditions and measures at process level to prevent release

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

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Risk from environmental exposure is driven by freshwater sediment

Prevent discharge of undissolved substance to or recover from onsite wastewater

If discharging to domestic sewage treatment plant, no onsite wastewater treatment required

Treat air emission to provide a typical removal efficiency of (%): 0

Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): ≥ 86

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): ≥ 0

Organizational measures to prevent/limit release from the site

Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant :

Estimated substance removal from wastewater via domestic sewage treatment (%): 94.7

Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 94.7

Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 2.6E+5

Assumed domestic sewage treatment plant flow (m³/d): 2000

Conditions and measures related to external treatment of waste for disposal

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

Conditions and measures related to external recovery of waste

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

Remarks

Additional information on the basis for the allocation of the identified OCs (operating conditions) and RMMs (Risk Management Measures) is contained in Petrorisk file

2.2. Control of exposure - Workers / Consumers

Product characteristics

Physical State

Liquid, vapour pressure 0.5 - 10 kPa at STP

Concentration of substance in product

Covers percentage substance in the product up to 100 % (unless stated differently).

Amounts used

not applicable.

Frequency and duration of use

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

Human factors not influenced by risk management

not applicable

Other operational conditions affecting exposure

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



| 2.2a. Control of worker exposure | |
|--|--|
| Contributing Scenarios | Operational conditions and risk management measures. |
| General measures (skin irritants) | Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. |
| General exposures (closed systems) | No other specific measures identified. |
| General exposures (open systems) | No other specific measures identified. |
| Product sampling | No other specific measures identified. |
| Laboratory activities | No other specific measures identified. |
| Bulk transfers | No other specific measures identified. |
| Mixing operations (open systems) | No other specific measures identified. |
| Manual: Transfer from/pouring from containers | No other specific measures identified. |
| Drum/batch transfers | No other specific measures identified. |
| Tabletting, compression, extrusion or pelletisation | No other specific measures identified. |
| Drum and small package filling | No other specific measures identified. |
| Equipment cleaning and maintenance | No other specific measures identified. |
| Bulk product storage | No other specific measures identified. |

| 2.2b. Control of consumer exposure | |
|---|---|
| Product Category(ies) | Operational conditions and risk management measures. |
| Not applicable | |

3. Exposure estimation and references

Health

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

Environment

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

4. Guidance for Downstream User to check compliance with the Exposure scenario

Health

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterisation. Available hazard data do not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

**TOTAL****Environment**

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).



ES03022
Version 1.0

1. Exposure scenario

Use as a fuel, Industrial.

Use Descriptor

Sector of use

SU3 - Industrial Manufacturing (all)

Process Category

PROC1 - Use in closed process, no likelihood of exposure

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

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

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

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

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

Environmental Release Category

ERC7 - Industrial use of substances in closed systems

Specific Environmental Release Category

ESVOC SpERC 7.12a.v1.

Processes, tasks, activities covered

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

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics

Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

:

Fraction of EU tonnage used in region: 0.1

Regional use tonnage (tonnes/year): 5.5E+5

Fraction of Regional tonnage used locally: 1

Annual site tonnage (tonnes/year): 5.5E+5

Maximum daily site tonnage (kg/day): 1.8E+6

Frequency and duration of use

Continuous release
Emission Days (days/year): 300

Environment factors not influenced by risk management

Local freshwater dilution factor: 10

Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure

.

Release fraction to air from process (initial release prior to RMM): 5.0E-3

Release fraction to wastewater from process (initial release prior to RMM): 0.00001

Release fraction to soil from process (initial release prior to RMM): 0

Technical conditions and measures at process level to prevent release

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



Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Risk from environmental exposure is driven by freshwater sediment

If discharging to domestic sewage treatment plant, no onsite wastewater treatment required

Treat air emission to provide a typical removal efficiency of (%): 95

Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): ≥ 84.6

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): ≥ 0

Organizational measures to prevent/limit release from the site

Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 94.7

Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 94.7

Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): $5.3E+6$

Assumed domestic sewage treatment plant flow (m³/d): 2000

Conditions and measures related to external treatment of waste for disposal

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

Conditions and measures related to external recovery of waste

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

Remarks

Additional information on the basis for the allocation of the identified OCs (operating conditions) and RMMs (Risk Management Measures) is contained in Petrorisk file

2.2. Control of exposure - Workers / Consumers

Product characteristics

Physical State

Liquid, vapour pressure 0.5 - 10 kPa at STP

Concentration of substance in product

Covers percentage substance in the product up to 100 % (unless stated differently).

Frequency and duration of use

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

Other operational conditions affecting exposure

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



| 2.2a. Control of worker exposure | |
|---|--|
| Contributing Scenarios | Operational conditions and risk management measures. |
| General exposures (closed systems) | No specific measures identified. |
| General measures (skin irritants) | Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. |
| Bulk transfers | No other specific measures identified. |
| Drum/batch transfers | No other specific measures identified. |
| Use as a fuel (closed systems) | No other specific measures identified. |
| Equipment cleaning and maintenance | No other specific measures identified. |
| Bulk product storage | No other specific measures identified. |

| 2.2b. Control of consumer exposure | |
|---|---|
| Product Category(ies) | Operational conditions and risk management measures. |
| Not applicable | |

3. Exposure estimation and references

Health

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

Environment

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

4. Guidance for Downstream User to check compliance with the Exposure scenario

Health

Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterisation. Available hazard data do not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).



ES03023
Version 1.0

1. Exposure scenario

Use as a fuel, Professional.

Use Descriptor

Sector of use

SU22 - Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Process Category

PROC1 - Use in closed process, no likelihood of exposure

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

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

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

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

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

Environmental Release Category

ERC9a - Wide dispersive indoor use of substances in closed systems

ERC9b - Wide dispersive outdoor use of substances in closed systems

Specific Environmental Release Category

ESVOC SpERC 9.12b.v1.

Processes, tasks, activities covered

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

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics

Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

.

Fraction of EU tonnage used in region: 0.1

Regional use tonnage (tonnes/year): 4.4E+6

Fraction of Regional tonnage used locally: 5.0E-4

Annual site tonnage (tonnes/year): 2.2E+3

Maximum daily site tonnage (kg/day): 6.1E+3

Frequency and duration of use

Continuous release
Emission Days (days/year): 365

Environment factors not influenced by risk management

Local freshwater dilution factor: 10

Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure

.

Release fraction to air from process (initial release prior to RMM): 1.0E-3

Release fraction to wastewater from process (initial release prior to RMM): 0.00001

Release fraction to soil from process (initial release prior to RMM): 0.00001



TOTAL

Technical conditions and measures at process level to prevent release

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

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Risk from environmental exposure is driven by freshwater

No wastewater treatment required

Treat air emission to provide a typical removal efficiency of (%): N/A

Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): ≥ 0

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): ≥ 0

Organizational measures to prevent/limit release from the site

Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant :

Estimated substance removal from wastewater via domestic sewage treatment (%): 94.7

Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 94.7

Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): $6.9E+5$

Assumed domestic sewage treatment plant flow (m³/d): 2000

Conditions and measures related to external treatment of waste for disposal

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

Conditions and measures related to external recovery of waste

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

Remarks

Additional information on the basis for the allocation of the identified OCs (operating conditions) and RMMs (Risk Management Measures) is contained in Petrorisk file

2.2. Control of exposure - Workers / Consumers

Product characteristics

Physical State

Liquid, vapour pressure 0.5 - 10 kPa at STP

Concentration of substance in product

Covers percentage substance in the product up to 100 % (unless stated differently).

Frequency and duration of use

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

Other operational conditions affecting exposure

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



| 2.2a. Control of worker exposure | |
|--|--|
| Contributing Scenarios | Operational conditions and risk management measures. |
| General exposures (closed systems) | No specific measures identified. |
| General measures (skin irritants) | Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. |
| Bulk transfers | No other specific measures identified. |
| Use as a fuel (closed systems) | No other specific measures identified. |
| Equipment cleaning and maintenance | No other specific measures identified. |
| Bulk product storage | No other specific measures identified. |
| Transfer from/pouring from containers | No other specific measures identified. |

| 2.2b. Control of consumer exposure | |
|---|---|
| Product Category(ies) | Operational conditions and risk management measures. |
| Not applicable | |

3. Exposure estimation and references

Health

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

Environment

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

4. Guidance for Downstream User to check compliance with the Exposure scenario

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Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Risk Management Measures are based on qualitative risk characterisation. Available hazard data do not support the need for a DNEL to be established for other health effects. Users are advised to consider national Occupational Exposure Limits or other equivalent values. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).