

Safety Data Sheet

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING**1.1 Product Identifier****Material Name** : **Shell LNG 3****Product Code** : 002D3596**1.2 Relevant identified uses of the substance or mixture and uses advised against****Product Use** : Use only as a fuel.**Uses Advised Against** : This product must not be used in applications other than those recommended in Section 1, without first seeking the advice of the supplier.**1.3 Details of the Supplier of the safety data sheet****Manufacturer/Supplier** : **A/S Norske Shell**
PO Box 1154 Sentrum
Drammensveien 134
N-0107 Oslo**Telephone** : (+47) 22665000**Fax** : (+47) 22665148**Email Contact for Safety Data Sheet** : If you have any enquiries about the content of this SDS please email fuelSDS@shell.com**1.4 Emergency Telephone Number**

: Giftinformasjonen: 22 59 13 00. Beredskapsvakt: 22 66 50 00.

Other Information : This product is exempt from the obligation to register under REACH in accordance with Article 2(7)(b).

SECTION 2. HAZARDS IDENTIFICATION**2.1 Classification of the substance or mixture**

| Regulation (EC) No 1272/2008 (CLP) | |
|------------------------------------|------------------|
| Hazard classes / Hazard categories | Hazard Statement |
| Flammable gas., Category 1 | H220 |

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| | |
|----------------------------|--------------|
| Refrigerated liquefied gas | H281 |
| 67/548/EEC or 1999/45/EC | |
| Hazard Characteristics | R-phrases(s) |
| | R12 |

2.2 Label Elements

Labeling according to Regulation (EC) No 1272/2008

Hazard pictograms :



Signal Words : Danger

CLP Hazard Statements : PHYSICAL HAZARDS:
H220: Extremely flammable gas.
H281: Contains refrigerated gas; may cause cryogenic burns or injury.

HEALTH HAZARDS:
Not classified as a health hazard under CLP criteria.

ENVIRONMENTAL HAZARDS:
Not classified as environmental hazard according to CLP criteria.

CLP Precautionary statements

Prevention : P210: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P243: Take precautionary measures against static discharge.

Response : P377: Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381: Eliminate all ignition sources if safe to do so.

Storage : P403: Store in a well-ventilated place.

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2.3 Other Hazards

- Health Hazards** : High gas concentrations will displace available oxygen from the air; unconsciousness and death may occur suddenly from lack of oxygen.
Exposure to high gas/vapour concentrations may lead to narcotic or anaesthetic effects that may impair judgement or lead to central nervous system depression.
Exposure to rapidly expanding gases may cause frost burns to eyes and/or skin.
- Safety Hazards** : Vapours are heavier than air. Vapours may travel across the ground and reach remote ignition sources causing a flashback fire danger. Under conditions of high temperatures and humidity, vapours may dilute and become buoyant. In general these diluted vapours will be dispersed at or below the Lower Flammability Limit. This material is a static accumulator. Even with proper grounding and bonding, this material can still accumulate an electrostatic charge. If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can occur.
- Environmental Hazards** : Not classified as dangerous for the environment.
- Other Information** : The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not considered to be PBT or vPvB.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

- Mixture Description** : Complex mixture of hydrocarbons, predominantly methane with some other lower alkanes. It may also contain trace amounts of mercury (unlikely) and different sulphur compounds.
Product is not a mixture according to regulation 1907/2006/EC.

Hazardous Components

Classification of components according to Regulation (EC) No 1272/2008

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| Chemical Name | CAS No. | EC Number | REACH Registration No. | Conc. |
|-----------------------|-----------|-----------|---------------------------------|-----------------|
| Liquefied Natural Gas | 8006-14-2 | 232-343-9 | Exempt | >= 99,00% |
| CONTAINS: | . | . | . | % |
| Methane | 74-82-8 | 200-812-7 | Not available / Not applicable. | 80,00 - 100,00% |
| Ethane | 74-84-0 | 200-814-8 | 01-2119486765-21 | 0,00 - 10,00% |
| Propane | 74-98-6 | 200-827-9 | Exempt | 0,00 - 4,00% |
| Butane | 106-97-8 | 203-448-7 | Exempt | 0,00 - 2,00% |

| Chemical Name | Hazard Class & Category | Hazard Statement |
|-----------------------|---------------------------------------------------|------------------|
| Liquefied Natural Gas | Flam. Gas, 1; Refrig. Liq. Gas, Refrig. Liq. Gas; | H220; H281; |
| CONTAINS: | | |
| Methane | Flam. Gas, 1; Press. Gas, ; | H220; H280; |
| Ethane | Flam. Gas, 1; Press. Gas, ; | H220; H280; |
| Propane | Flam. Gas, 1; | H220; |
| Butane | Flam. Gas, 1; | H220; |

Classification of components according to 67/548/EEC

| Chemical Name | CAS No. | EC Number | REACH Registration No. | Symbol(s) | R-phrases | Conc. |
|-----------------------|-----------|-----------|---------------------------------|-----------|-----------|-----------------|
| Liquefied Natural Gas | 8006-14-2 | 232-343-9 | Exempt | F+ | R12 | >= 99,00% |
| CONTAINS: | . | . | . | | | % |
| Methane | 74-82-8 | 200-812-7 | Not available / Not applicable. | F+ | R12 | 80,00 - 100,00% |
| Ethane | 74-84-0 | 200-814-8 | 01-2119486765-21 | F+ | R12 | 0,00 - 10,00% |
| Propane | 74-98-6 | 200-827-9 | Exempt | F+ | R12 | 0,00 - 4,00% |
| Butane | 106-97-8 | 203-448-7 | Exempt | F+ | R12 | 0,00 - 2,00% |

Additional Information : Refer to Ch 16 for full text of R- and H- phrases.

This mixture does not contain any REACH registered substances that are assessed to be a PBT or a vPvB.

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SECTION 4. FIRST-AID MEASURES

4.1 Description of First Aid Measures

- Inhalation** : Remove to fresh air. Do not attempt to rescue the victim unless proper respiratory protection is worn. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting, or unresponsive, give 100% oxygen with rescue breathing or Cardiopulmonary Resuscitation (CPR) as required and transport to the nearest medical facility. In the unlikely event of dizziness or nausea, remove casualty to fresh air.
- Skin Contact** : Do not remove clothing that adheres to skin due to freezing. In the event of frostbite, slowly warm the exposed area by rinsing with warm water. Otherwise: Obtain medical treatment immediately. Loosen tight clothing. Keep warm and at rest.
- Eye Contact** : If persistent irritation occurs, obtain medical attention. Cold product - All burns should receive medical attention.
- Ingestion** : In the unlikely event of ingestion, obtain medical attention immediately.
- Self-protection of the first aider** : When administering first aid, ensure that you are wearing the appropriate personal protective equipment according to the incident, injury and surroundings.
- 4.2 Most important symptoms and effects, both acute and delayed** : High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued exposure may result in unconsciousness and/or death.
- 4.3 Indication of any immediate medical attention and special treatment needed** : Treat symptomatically.
Administer oxygen if necessary.

SECTION 5. FIRE-FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

- 5.1 Extinguishing Media** : Shut off supply. If not possible and no risk to surroundings, let the fire burn itself out.
- Unsuitable Extinguishing Media** : Do not use direct water jets on the burning product as they could cause a steam explosion and spread of the fire.
- 5.2 Special hazards arising from the substance or mixture** : Forms flammable mixture with air. If released, the resulting vapours will disperse with the prevailing wind. If a source of ignition is present where the vapour exists at 5-15% concentration in air, the vapour will burn along the flame front

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- toward the source of the fuel. Under conditions of high temperatures and humidity, vapours may dilute and become buoyant. In general these diluted vapours will be dispersed at or below the Lower Flammability Limit.
- 5.3 Advice for firefighters** : Wear full protective clothing and self-contained breathing apparatus.
- Additional Advice** : Keep storage tanks, pipelines, fire exposed surfaces cool with water delivered as a fine spray.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Evacuate the area of all non-essential personnel. Ventilate contaminated area thoroughly. Avoid contact with spilled or released material. Immediately remove all contaminated clothing. Do not attempt to do so if clothing is adhering to skin. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Material Safety Data Sheet.

- 6.1 Personal Precautions, Protective Equipment and Emergency Procedures** :
- 6.1.1 For non emergency personnel: Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area and evacuate all personnel. Attempt to disperse the gas or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Monitor area with combustible gas meter.
 - 6.1.2 For emergency responders: Attempt to disperse vapour or to direct its flow to a safe location for example using fog sprays. Take precautionary measures against static discharges.
- 6.2 Environmental Precautions** : Use appropriate containment to avoid environmental contamination.
- 6.3 Methods and Material for Containment and Cleaning Up** : Take precautionary measures against static discharges. Allow to evaporate. Attempt to disperse the gas or to direct its flow to a safe location, for example by using fog sprays.
- Additional Advice** : Notify authorities if any exposure to the general public or the environment occurs or is likely to occur.
- 6.4 Reference to other sections** : For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Material Safety Data Sheet.

SECTION 7. HANDLING AND STORAGE

- General Precautions** : Avoid breathing vapours or contact with material. Only use in

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well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material. Air-dry contaminated clothing in a well-ventilated area before laundering. Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols.

7.1 Precautions for Safe Handling

: This product can create a low temperature exposure hazard when released as a liquid. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Earth all equipment. Even with proper grounding and bonding, this material can still accumulate an electrostatic charge. If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can occur. Be aware of handling operations that may give rise to additional hazards that result from the accumulation of static charges.

Product Transfer

: Earth all equipment. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Delivery lines may become cold enough to present a cold burns hazard. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge.

7.2 Conditions for safe storage, including any incompatibilities

: Keep away from sources of ignition - No smoking. Keep container tightly closed and in a cool, well-ventilated place. Cleaning, inspection and maintenance of storage tanks is a specialist operation, which requires the implementation of strict procedures and precautions. These include issuing of work permits, gas-freeing of tanks, using a manned harness and lifelines and wearing air-supplied breathing apparatus. Refer to section 15 for any additional specific legislation covering the packaging and storage of this product. Prior to entry and whilst cleaning is underway, the atmosphere within the tank must be monitored using an oxygen meter and explosimeter. Electrostatic charges will be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment to reduce the risk. The vapours in the head space of the storage vessel may lie in the flammable/explosive range and hence may be flammable.

Recommended Materials

: For containers or container linings, use stainless steel. For lines and fittings, use mild steel, stainless steel.

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- Unsuitable Materials** : Elastomers (gaskets, seals): Natural rubber (NR). Nitrile rubber (NBR), Ethylene propylene rubber (EPDM), Butyl rubber (IIR), Chlorosulphonated polyethylene (CSM), Styrene butadiene rubber (SBR), Neoprene rubber (CR). PVC.
- Container Advice** : Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers.
- 7.3 Specific end use(s)** : See additional references that provide safe handling practices: American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practices on Static Electricity). CENELEC CLC/TR 50404 (Electrostatics – Code of practice for the avoidance of hazards due to static electricity).
- Additional Information** : This product is intended for use in closed systems only. Ensure that all local regulations regarding handling and storage facilities are followed.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

If the American Conference of Governmental Industrial Hygienists (ACGIH) value is provided on this document, it is provided for information only.

8.1 Control Parameters**Occupational Exposure Limits**

| Material | Source | Type | ppm | mg/m3 | Notation |
|----------|----------|--------|-----------|-----------|----------------------------------------------------------------------------------------|
| Methane | ACGIH | TWA | 1.000 ppm | | |
| Ethane | ACGIH | | | | Included in the regulation but with no data values. See regulation for further details |
| Propane | ELV (NO) | NORMEN | 500 ppm | 900 mg/m3 | |

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| | | | | | |
|--------|----------|--------|-----------|-----------|----------------------------------------------------------------------------------------|
| | ACGIH | | | | Included in the regulation but with no data values. See regulation for further details |
| Butane | ELV (NO) | NORMEN | 250 ppm | 600 mg/m3 | |
| | ACGIH | STEL | 1.000 ppm | | |

Biological Exposure Index (BEI)

No biological limit allocated.

Derived No Effect Levels (DNEL/DMEL) Table : Not applicable

PNEC related information : Exposure assessments have not been presented for the environment therefore PNEC values not required.

Monitoring Methods : Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Validated exposure measurement methods should be applied by a competent person and samples analysed by an accredited laboratory. Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.
National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods <http://www.cdc.gov/niosh/>
Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods <http://www.osha.gov/>

8.2 Exposure Controls
General Information

: Read in conjunction with the Exposure Scenario for your specific use contained in the Annex.

The level of protection and types of controls necessary will vary

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depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Use sealed systems as far as possible. Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits. Local exhaust ventilation is recommended. Exhaust emission systems should be designed in accordance with local conditions; the air should always be moved away from the source of vapour generation and the person working at this point. Firewater monitors and deluge systems are recommended. Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping. Define procedures for safe handling and maintenance of controls. Educate and train workers in the hazards and control measures relevant to normal activities associated with this product. Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation. Drain down system prior to equipment break-in or maintenance.

Occupational Exposure Controls

- | | | |
|--------------------------------------|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Personal Protective Equipment | : | Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers. The provided information is made in consideration of the PPE directive (Council Directive 89/686/EEC) and the CEN European Committee for Standardisation (CEN) standards. |
| Eye Protection | : | Chemical splash goggles (gas-tight monogoggles) and face shield with chin guard. Approved to EU Standard EN166. |
| Hand Protection | : | Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from |

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the following materials may provide suitable chemical protection: Neoprene rubber. Nitrile rubber. If contact with liquefied product is possible or anticipated, gloves should be thermally insulated to prevent cold burns. For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same, but recognise that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time may be acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material. Glove thickness should be typically greater than 0.35 mm depending on the glove make and model.

Body protection : Chemical and cold resistant gloves/gauntlets, boots, and apron.

Respiratory Protection : If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for organic gases and vapors [Type AX boiling point < 65°C (149°F)] meeting EN14387.

Thermal Hazards : When handling cold material that can cause frost burns, wear heat resistant gloves, safety hat and visor, cold resistant overalls (with cuffs over gloves and legs over boots) and heavy duty boots e.g. leather for cold resistance.

Environmental Exposure Controls

Environmental exposure control measures : Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour. Information on accidental release measures are to be found in section 6.
Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour. Take appropriate measures to fulfil the requirements of

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relevant environmental protection legislation. Avoid contamination of the environment by following advice given in Chapter 6. If necessary, prevent undissolved material from being discharged to waste water. Waste water should be treated in a municipal or industrial waste water treatment plant before discharge to surface water.

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

| | |
|-------------------------------------------------|-----------------------------------------------------------------------------------------|
| Appearance | : Colourless. Refrigerated liquefied gas |
| Odour | : Odourless. |
| Odour threshold | : Data not available |
| pH | : Not applicable. |
| Initial Boiling Point and Boiling Range | : Typical -161,5 °C / -258,7 °F |
| Freezing Point | : Data not available |
| Flash point | : Typical -187 °C / -305 °F |
| Upper / lower Flammability or Explosion limits | : Typical 5 - 15 %(V) |
| Auto-ignition temperature | : 537 °C / 999 °F |
| Vapour pressure | : Data not available |
| Density | : 420 - 480 kg/m ³ at -165,5 °C / -265,9 °F Liquid methane at boiling point. |
| Water solubility | : 0,08 g/l at 25 °C / 77 °F |
| Solubility in other solvents | : Data not available |
| n-octanol/water partition coefficient (log Pow) | : Data not available |
| Dynamic viscosity | : Data not available |
| Kinematic viscosity | : Not applicable. |
| Vapour density (air=1) | : Typical 0,58 |
| Evaporation rate (nBuAc=1) | : Data not available |
| Flammability | : Flammable Gas |
| Oxidizing Properties | : Not applicable. |
| Explosive Properties | : Not classified |

9.2 Other Information

| | |
|-------------------------|--------------------------------|
| Electrical conductivity | : Low conductivity: < 100 pS/m |
| Other Information | : Not applicable. |

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SECTION 10. STABILITY AND REACTIVITY

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|------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| 10.1 Reactivity | : Release of LNG into water may cause explosive boiling due to rapid phase transition (liquid to gas). |
| 10.2 Chemical stability | : Stable under normal conditions of use. |
| 10.3 Possibility of Hazardous Reactions | : Release of LNG into water may cause explosive boiling due to rapid phase transition (liquid to gas). |
| 10.4 Conditions to Avoid | : Heat, flames, and sparks. May form explosive mixture on contact with air. |
| 10.5 Incompatible Materials | : Strong oxidising agents. |
| 10.6 Hazardous Decomposition Products | : Hazardous decomposition products are not expected to form during normal storage. |
| Other Information | |
| Hazardous Polymerisation | : No, hazardous, exothermic polymerization cannot occur. |
| Sensitivity to Mechanical Impact | : No, product will not become self-reactive. |
| Sensitivity to Static Discharge | : Yes, in certain circumstances product can ignite due to static electricity. |

SECTION 11. TOXICOLOGICAL INFORMATION**11.1 Information on Toxicological effects**

| | |
|------------------------------------------|--------------------------------------------------------------------------------------------------------|
| Basis for Assessment | : Information given is based on product testing. |
| Likely Routes of Exposure | : Inhalation is the primary route of exposure although exposure may occur through skin or eye contact. |
| Acute Oral Toxicity | : Not applicable. |
| Acute Dermal Toxicity | : Not applicable. |
| Acute Inhalation Toxicity | : Expected to be of low toxicity if inhaled. |
| Skin corrosion/irritation | : Expected to be non-irritating to skin. |
| Serious eye damage/irritation | : Essentially non-irritating to eyes. |
| Respiratory Irritation | : Inhalation of vapours or mists may cause irritation to the respiratory system. |
| Respiratory or skin sensitisation | : Not expected to be a sensitiser. |
| Aspiration Hazard | : Not considered an aspiration hazard. |

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Germ cell mutagenicity : Not considered a mutagenic hazard.

Carcinogenicity : Not expected to be carcinogenic.

| | | |
|-----------------------|---|----------------------------------------------|
| Methane | : | GHS / CLP: No carcinogenicity classification |
| Ethane | : | GHS / CLP: No carcinogenicity classification |
| Propane | : | GHS / CLP: No carcinogenicity classification |
| Butane | : | GHS / CLP: No carcinogenicity classification |
| Liquefied Natural Gas | : | GHS / CLP: No carcinogenicity classification |

Reproductive and Developmental Toxicity : Not expected to impair fertility. Not a developmental toxicant.

Summary on evaluation of the CMR properties

Carcinogenicity : This product does not meet the criteria for classification in categories 1A/1B.,

Mutagenicity : This product does not meet the criteria for classification in categories 1A/1B.

Reproductive Toxicity (fertility) : This product does not meet the criteria for classification in categories 1A/1B.

Specific target organ toxicity - single exposure : High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death.

Specific target organ toxicity - repeated exposure : Low systemic toxicity on repeated exposure.

Additional Information : Rapid release of gases which are liquids under pressure may cause frost burns of exposed tissues (skin, eye) due to evaporative cooling. High gas concentrations will displace available oxygen from the air; unconsciousness and death may occur suddenly from lack of oxygen.

SECTION 12. ECOLOGICAL INFORMATION

Basis for Assessment : Incomplete ecotoxicological data are available for this product. The information given below is based partly on a knowledge of the components and the ecotoxicology of similar products. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

12.1 Toxicity
Acute Toxicity : Physical properties indicate that hydrocarbon gases will rapidly volatilise from the aquatic environment and that acute and

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| | |
|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| | chronic effects would not be observed in practice. |
| Fish | : Expected to be practically non toxic: LL/EL/IL50 > 100 mg/l |
| Aquatic crustacea | : Expected to be practically non toxic: LL/EL/IL50 > 100 mg/l |
| Algae/aquatic plants | : Expected to be practically non toxic: LL/EL/IL50 > 100 mg/l |
| Microorganisms | : Expected to be practically non toxic: LL/EL/IL50 > 100 mg/l |
| Chronic Toxicity | |
| Fish | : Data not available |
| Aquatic crustacea | : Data not available |
| 12.2 Persistence and degradability | : Expected to be readily biodegradable. Oxidises rapidly by photo-chemical reactions in air. |
| 12.3 Bioaccumulative Potential | : Not expected to bioaccumulate significantly. |
| 12.4 Mobility in Soil | : Because of their extreme volatility, air is the only environmental compartment that hydrocarbon gases will be found. |
| 12.5 Result of PBT and vPvB assesment | : The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not considered to be PBT or vPvB. |
| 12.6 Other Adverse Effects | : In view of the high rate of loss from solution, the product is unlikely to pose a significant hazard to aquatic life. |

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods

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|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Material Disposal | : Do not discharge into areas where there is a risk of forming an explosive mixture with air. |
| Container Disposal | : In commercial premises empty containers should be disposed of to a recognised waste contractor. Do not pierce or burn empty containers. |
| Local Legislation | : Disposal should be in accordance with applicable regional, national, and local laws and regulations. Local regulations may be more stringent than regional or national requirements and must be in compliance. Classification of waste is always the responsibility of the end user. |

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SECTION 14. TRANSPORT INFORMATION**Land transport (ADR/RID):****ADR**

- 14.1 UN number : 1972
14.2 UN proper shipping name : NATURAL GAS, REFRIGERATED LIQUID
14.3 Transport hazard class(es) : 2
14.4 Packing group : Not applicable.
Danger label (primary risk) : 2.1
14.5 Environmental hazards : No
14.6 Special precautions for user : Special Precautions: Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

RID

- 14.1 UN number : 1972
14.2 UN proper shipping name : NATURAL GAS, REFRIGERATED LIQUID
14.3 Transport hazard class(es) : 2
14.4 Packing group : Not applicable.
Danger label (primary risk) : 2.1
14.5 Environmental hazards : No
14.6 Special precautions for user : Special Precautions: Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

Sea transport (IMDG Code):

- 14.1 UN number : UN 1972
14.2 UN proper shipping name : NATURAL GAS, REFRIGERATED LIQUID
14.3 Transport hazard class(es) : 2.1
14.4 Packing group : Not applicable.
14.5 Environmental hazards : No
14.6 Special precautions for user : Special Precautions: Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

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Air transport (IATA):

- 14.1 UN number : 1972
14.2 UN proper shipping name : Natural gas, refrigerated liquid
14.3 Transport hazard class(es) : 2.1
14.4 Packing group : Not applicable.
14.6 Special precautions for user : Special Precautions: Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

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

- Pollution Category : Not applicable.
Ship Type : Not applicable.
Product Name : Not applicable.
Special Precaution : Not applicable.

Additional Information : IATA - Forbidden for transport on passenger and cargo aircraft.

SECTION 15. REGULATORY INFORMATION

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

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**Other regulatory Information**

- Recommended Restrictions on Use (Advice Against)** : This product must not be used in applications other than those recommended in Section 1, without first seeking the advice of the supplier.

Chemical Inventory Status

- EINECS : All components listed or polymer exempt.

- Other Information : Norwegian list of Dangerous Substances. Regulations relating to the classification, labelling etc. of dangerous chemicals.
Regulations relating to the recycling of waste (Waste

Safety Data Sheet**15.2 Chemical Safety Assessment**

Regulations) Norwegian OEL-list. Regulations relating to the compilation and distribution of safety data sheets for dangerous chemicals.

: A Chemical Safety Assessment was not performed for this substance, as this substance was not required to be registered under REACH.

SECTION 16. OTHER INFORMATION**R-phrases(s)**

R12 Extremely flammable.

CLP Hazard Statements

H220 Extremely flammable gas.

H280 Contains gas under pressure; may explode if heated.

H281 Contains refrigerated gas; may cause cryogenic burns or injury.

Additional Information : This document contains important information to ensure the safe storage, handling and use of this product. The information in this document should be brought to the attention of the person in your organisation responsible for advising on safety matters.

Other Information

Further Information : The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not considered to be PBT or vPvB.

Abbreviations and Acronyms

: The standard abbreviations and acronyms used in this document can be looked up in reference literature (e.g. scientific dictionaries) and/or websites.

Flam. Gas = Flammable gas.

Press. Gas = Gases under pressure

Liq. Gas = Liquefied gas

ACGIH = American Conference of Governmental Industrial Hygienists

ADR = European Agreement concerning the International

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Carriage of Dangerous Goods by Road

AICS = Australian Inventory of Chemical Substances

ASTM = American Society for Testing and Materials

BEL = Biological exposure limits

BTEX = Benzene, Toluene, Ethylbenzene, Xylenes

CAS = Chemical Abstracts Service

CEFIC = European Chemical Industry Council

CLP = Classification Packaging and Labelling

COC = Cleveland Open-Cup

DIN = Deutsches Institut für Normung

DMEL = Derived Minimal Effect Level

DNEL = Derived No Effect Level

DSL = Canada Domestic Substance List

EC = European Commission

EC50 = Effective Concentration fifty

ECETOC = European Center on Ecotoxicology and Toxicology
Of Chemicals

ECHA = European Chemicals Agency

EINECS = The European Inventory of Existing Commercial
Chemical Substances

EL50 = Effective Loading fifty

ENCS = Japanese Existing and New Chemical Substances
Inventory

EWC = European Waste Code

GHS = Globally Harmonised System of Classification and
Labelling of Chemicals

IARC = International Agency for Research on Cancer

IATA = International Air Transport Association

IC50 = Inhibitory Concentration fifty

IL50 = Inhibitory Level fifty

IMDG = International Maritime Dangerous Goods

INV = Chinese Chemicals Inventory

IP346 = Institute of Petroleum test method N° 346 for the
determination of polycyclic aromatics DMSO-extractables

KECI = Korea Existing Chemicals Inventory

LC50 = Lethal Concentration fifty

LD50 = Lethal Dose fifty per cent.

LL/EL/IL = Lethal Loading/Effective Loading/Inhibitory loading

LL50 = Lethal Loading fifty

MARPOL = International Convention for the Prevention of
Pollution From Ships

NOEC/NOEL = No Observed Effect Concentration / No
Observed Effect Level

OE_HP V = Occupational Exposure - High Production Volume

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PBT = Persistent, Bioaccumulative and Toxic
PICCS = Philippine Inventory of Chemicals and Chemical Substances
PNEC = Predicted No Effect Concentration
REACH = Registration Evaluation And Authorisation Of Chemicals
RID = Regulations Relating to International Carriage of Dangerous Goods by Rail
SKIN_DES = Skin Designation
STEL = Short term exposure limit
TRA = Targeted Risk Assessment
TSCA = US Toxic Substances Control Act
TWA = Time-Weighted Average
vPvB = very Persistent and very Bioaccumulative

- Key literature references and sources for data** : The quoted data are from, but not limited to, one or more sources of information (e.g. toxicological data from Shell Health Services, material suppliers' data, CONCAWE, EU IUCLID date base, EC 1272 regulation, etc).
- SDS Distribution** : The information in this document should be made available to all who may handle the product.
- SDS Version Number** : 1.0
- SDS Effective Date** : 31.03.2014
- SDS Revisions** : A vertical bar (|) in the left margin indicates an amendment from the previous version.
- SDS Regulation** : Regulation 1907/2006/EC as amended by Regulation (EU) 453/2010
- Disclaimer** : This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

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

1.1 Product Identifier

Material Name : Propane (CAS 74-98-6)

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

Product Use : Used as a domestic, commercial, industrial and automotive fuel, a feedstock in chemical processes.

Uses Advised Against : This product must not be used in applications other than those recommended in Section 1, without first seeking the advice of the supplier.

1.3 Details of the supplier of the substance or mixture

Manufacturer/Supplier : Shell Trading International Limited
80 Strand
London,
WC2R 0ZA
United Kingdom

Telephone : +44 (0) 20 7546 5000

Email Contact for MSDS : TRsds@shell.com

1.4 Emergency Telephone Number

: +44 (0)151 350 4595

1.5 Other Information

: This product is exempt from the obligation to register under REACH in accordance with Article 2(7)(b).

2. HAZARDS IDENTIFICATION

2.1 Classification of substance or mixture

| Regulation (EC) No 1272/2008 (CLP) | |
|------------------------------------|------------------|
| Hazard classes / Hazard categories | Hazard Statement |
| Flammable Gas, Category 1 | H220 |
| Gases under pressure | H280 |

| 67/548/EEC or 1999/45/EC | |
|--------------------------|--------------|
| Hazard Characteristics | R-phrases(s) |
| Extremely flammable. | R12 |

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2.2 Label Elements

Labeling according to Regulation (EC) No 1272/2008

Symbol(s) : 

Signal Words : Danger

CLP Hazard Statements : PHYSICAL HAZARDS:
H220: Extremely flammable gas.
H280: Contains gas under pressure; may explode if heated.

HEALTH HAZARDS:
Not classified as a health hazard under GHS criteria.

ENVIRONMENTAL HAZARDS:
Not classified as an environmental hazard under GHS criteria.

CLP Precautionary statements

Prevention : P102: Keep out of reach of children.
P210: Keep away from heat/sparks/open flames/hot surfaces.
– No smoking.
P243: Take precautionary measures against static discharge.

Response : P377: Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381: Eliminate all ignition sources if safe to do so.

Storage : P410+P403: Protect from sunlight. Store in a well-ventilated place.

Labeling according to Directive 1999/45/EC

EC Symbols : F+ Extremely flammable.



EC Classification : Extremely flammable.
EC Risk Phrases : R12 Extremely flammable.
EC Safety Phrases : P102 Keep out of reach of children.
S9 Keep container in a well-ventilated place.

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S16 Keep away from sources of ignition - no smoking.
S33 Take precautionary measures against static discharges.

2.3 Other Hazards

Health Hazards : Breathing of high vapour concentrations may cause central nervous system (CNS) depression resulting in dizziness, light-headedness, headache and nausea.
High gas concentrations will displace available oxygen from the air; unconsciousness and death may occur suddenly from lack of oxygen.
Exposure to rapidly expanding gases may cause frost burns to eyes and/or skin.

Safety Hazards : Vapours are heavier than air. Vapours may travel across the ground and reach remote ignition sources causing a flashback fire danger. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance

CAS No. : 74-98-6

3.2 Mixtures

Preparation Description : Contains >80% Propane
Product is not a mixture according regulation 1907/2006/EC.

Hazardous Components

Classification of components according to Regulation (EC) No 1272/2008

| Chemical Name | CAS No. | EINECS | REACH Registration No. | Conc. |
|---------------|---------|-----------|------------------------|-----------|
| Propane | 74-98-6 | 200-827-9 | Exempt | >= 80.00% |

| Chemical Name | Hazard Class & Category | Hazard Statement |
|---------------|-------------------------------------|------------------|
| Propane | Flam. Gas, 1; Press. Gas, Liq. Gas; | H220; H280; |

Classification of components according to 67/548/EEC

| Chemical Name | CAS No. | EINECS | REACH Registration No. | Symbol(s) | R-phrases(s) | Conc. |
|---------------|---------|-----------|------------------------|-----------|--------------|-----------|
| Propane | 74-98-6 | 200-827-9 | Exempt | F+ | R12 | >= 80.00% |

Additional Information : Refer to chapter 16 for full text of EC R-phrases.

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4. FIRST AID MEASURES

4.1 Description of First Aid Measures

- Inhalation** : Remove to fresh air. If breathing but unconscious, place in the recovery position. If breathing has stopped, apply artificial respiration. If heartbeat absent, give external cardiac compression. Monitor breathing and pulse. Seek urgent medical advice.
- Skin Contact** : Do not remove clothing that adheres to skin due to freezing. In the event of frostbite, slowly warm the exposed area by rinsing with warm water. Otherwise: Obtain medical treatment immediately. Contaminated clothing may be a fire hazard and therefore should be soaked with water before being removed. Loosen tight clothing. Keep warm and at rest.
- Eye Contact** : DO NOT DELAY. Obtain medical treatment immediately. Remove contact lenses, if present and easy to do. Continue rinsing. Flush eye with copious quantities of water.
- Ingestion** : In the unlikely event of ingestion, obtain medical attention immediately.
- 4.2 Most important symptoms/effects, acute & delayed** : High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued exposure may result in unconsciousness and/or death.
- 4.3 Indication of immediate medical attention and special treatment needed** : Treat symptomatically. Administer oxygen if necessary.

5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

- 5.1 Extinguishing Media** : Shut off supply. If not possible and no risk to surroundings, let the fire burn itself out. Use foam, water fog for major fires. Use dry chemical powder, carbon dioxide, sand or earth for minor fires.
- Unsuitable Extinguishing Media** : Do not use direct water jets on the burning product as they could cause a steam explosion and spread of the 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 substance or mixture** : Hazardous combustion products may include: Carbon monoxide. Unidentified organic and inorganic compounds. Sustained fire attack on vessels may result in a Boiling Liquid Expanding Vapour Explosion (BLEVE). Contents are under pressure and can explode when exposed to heat or flames. The vapour is heavier than air, spreads along the ground and distant ignition is possible.
- 5.3 Advice for fire-fighters** : Wear full protective clothing and self-contained breathing apparatus.

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Additional Advice : Keep adjacent containers cool by spraying with water.

6. ACCIDENTAL RELEASE MEASURES

Evacuate the area of all non-essential personnel. Ventilate contaminated area thoroughly. Avoid contact with spilled or released material. Immediately remove all contaminated clothing. Do not attempt to do so if clothing is adhering to skin. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Material Safety Data Sheet.

6.1 Personal Precautions, Protective Equipment and Emergency Procedures : Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area and evacuate all personnel. Attempt to disperse the gas or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Monitor area with combustible gas meter. Use appropriate containment to avoid environmental contamination. Test atmosphere for flammable gas concentrations to ensure safe working conditions before personnel are allowed to enter the area.

6.2 Environmental Precautions : Use appropriate containment to avoid environmental contamination.

6.3 Methods and Material for Containment and Clean Up : Allow to evaporate. Attempt to disperse the vapour or to direct its flow to a safe location, for example by using fog sprays. Otherwise treat as for small spillage.

Additional Advice : Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Vapour may form an explosive mixture with air. Risk of explosion. Inform the emergency services if product enters surface water drains.

7. HANDLING AND STORAGE

General Precautions : Avoid breathing vapours or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material. Contaminated leather articles including shoes cannot be decontaminated and should be destroyed to prevent reuse. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires. Air-dry contaminated clothing in a well-ventilated area before laundering. Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols.

7.1 Precautions for Safe Handling : This product can create a low temperature exposure hazard when released as a liquid. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Avoid

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- prolonged or repeated contact with skin. Electrostatic charges may be generated during handling. Electrostatic discharge may cause fire. Earth all equipment.
- 7.2 Conditions for safe storage, including any incompatibilities** : Store only in purpose-designed, appropriately labelled pressure vessels or cylinders. Must be stored in a well-ventilated area, away from sunlight, ignition sources and other sources of heat. Do not store near cylinders containing compressed oxygen or other strong oxidizers.
- 7.3 Specific End Uses** : Not applicable
- Additional Information** : This product is intended for use in closed systems only. Ensure that all local regulations regarding handling and storage facilities are followed.
- Exposure to this product should be reduced as low as reasonably practicable. Reference should be made to the Health and Safety Executive's publication "COSHH Essentials".
- Product Transfer** : Do not use compressed air for filling, discharging or handling. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Delivery lines may become cold enough to present a cold burns hazard.
- Recommended Materials** : For containers and container linings, use materials specifically approved for use with this product. Examples of suitable materials are: PA-11, PEEK, PVDF, PTFE, GRE (Epoxy), GRVE (vinyl ester), Viton (FKM), type F and GB, Neoprene (CR).
- Unsuitable Materials** : Some forms of cast iron. Examples of materials to avoid are: ABS, polymethyl methacrylate (PMMA), polyethylene (PE / HDPE), polypropylene (PP), PVC, natural rubber (NR), Nitrile (NBR) ethylene propylene rubber (EPDM), Butyl (IIR), Hypalon (CSM), polystyrene, polyvinyl chloride (PVC), polyisobutylene. For containers and container linings, aluminium should not be used if there is a risk of caustic contamination of the product.
- Container Advice** : Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

If the American Conference of Governmental Industrial Hygienists (ACGIH) value is provided on this document, it is provided for information only.

8.1 Control Parameters**Occupational Exposure Limits**

| Material | Source | Type | ppm | mg/m3 | Notation |
|----------|----------|------|-----|-------|----------------------------------------------------------------------------------------|
| Propane | EH40 WEL | | | | Included in the regulation but with no data values. See regulation for further details |

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| | | | | | |
|--|-------|-----|--------------|--|--|
| | ACGIH | TWA | 1,000 ppm | | |
|--|-------|-----|--------------|--|--|

| Material | Source | Hazard Designation |
|----------|----------|--------------------|
| Propane | EH40 WEL | Asphyxiant. |

Biological Exposure Index (BEI)

No biological limit allocated.

Derived No Effect Levels (DNEL) : Not applicable.

PNEC related information : Exposure assessments have not been presented for the environment therefore PNEC values not required.

8.2 Exposure Controls

General Information : The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Use sealed systems as far as possible. Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits. Local exhaust ventilation is recommended.

Occupational Exposure Controls

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

Eye Protection : Chemical splash goggles (gas-tight monogoggles) and face shield with chin guard.
Approved to EU Standard EN166.

Hand Protection : Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection: Neoprene rubber. Nitrile rubber. If contact with liquefied product is possible or anticipated, gloves should be thermally insulated to prevent cold burns.

Body protection : Chemical and cold resistant gloves/gauntlets, boots, and apron.

Respiratory Protection : If engineering controls do not maintain airborne concentrations

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- to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for organic gases and vapours [boiling point <65 °C (149 °F)]
- Thermal Hazards** : When handling cold material that can cause frost burns, wear heat resistant gloves, safety hat and visor, cold resistant overalls (with cuffs over gloves and legs over boots) and heavy duty boots e.g. leather for cold resistance.
- Monitoring Methods** : Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate.
- Environmental Exposure Controls**
- Environmental exposure control measures** : Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

- Appearance : Colourless. Liquid under pressure.
- Odour : Distinctive and unpleasant if stench, odourless if unstench.
- pH : Not applicable
- Initial Boiling Point and Boiling Range : Typical -42.1 °C / -43.8 °F 1,013 hPa
- Freezing Point : Typical -187.6 °C / -305.7 °F
- Flash point : Typical -104 °C / -155 °F
- Upper / lower Flammability or Explosion limits : Typical 2.1 - 9.5 % (V)
- Auto-ignition temperature : Typical 450 °C / 842 °F
- Vapour pressure : Data not available
- Density : Typical 493 kg/m³ at 25 °C / 77 °F
- Water solubility : Negligible.
- Solubility in other solvents : Data not available
- n-octanol/water partition coefficient (log Pow) : Typical 1.815
- Dynamic viscosity : Not applicable.
- Kinematic viscosity : Not applicable.
- Vapour density (air=1) : < 1
- Evaporation rate (nBuAc=1) : Data not available

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Flammability : Extremely flammable.

9.2 Other Information

Other Information : Not applicable.

10. STABILITY AND REACTIVITY

10.1 Reactivity : No, product will not become self-reactive.

10.2 Chemical Stability : Stable.

10.3 Possibility of Hazardous Reactions : No, hazardous, exothermic polymerization cannot occur.

10.4 Conditions to Avoid : Heat, open flames, sparks and flammable atmospheres.

10.5 Incompatible Materials : Strong oxidising agents.

10.6 Hazardous Decomposition Products : Hazardous decomposition products are not expected to form during normal storage.

11. TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological effects

Basis for Assessment : Information given is based on product data, a knowledge of the components and the toxicology of similar products.

Likely Routes of Exposure : Inhalation is the primary route of exposure although exposure may occur through skin or eye contact.

Acute Oral Toxicity : Not applicable.

Acute Dermal Toxicity : Not applicable.

Acute Inhalation Toxicity : Low toxicity: LC50 >20 mg/l / 4.00 h, Rat

Skin Corrosion/Irritation : Not irritating to skin.

Serious Eye Damage/Irritation : Essentially non-irritating to eyes.

Respiratory Irritation : Inhalation of vapours or mists may cause irritation to the respiratory system.

Respiratory or Skin Sensitisation : Not expected to be a sensitiser.

Aspiration Hazard : Not considered an aspiration hazard.

Germ Cell Mutagenicity : Not considered a mutagenic hazard.

Carcinogenicity : Not expected to be carcinogenic.

Reproductive and Developmental Toxicity : Not expected to impair fertility. Not a developmental toxicant.

Specific target organ toxicity - single exposure : High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death.

Specific target organ toxicity - repeated : Low systemic toxicity on repeated exposure.

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exposure**Additional Information**

: Rapid release of gases which are liquids under pressure may cause frost burns of exposed tissues (skin, eye) due to evaporative cooling. High gas concentrations will displace available oxygen from the air; unconsciousness and death may occur suddenly from lack of oxygen. Exposure to very high concentrations of similar materials has been associated with irregular heart rhythms and cardiac arrest.

12. ECOLOGICAL INFORMATION

Basis for Assessment

: Information given is based on product testing, and/or similar products, and/or components.

12.1 Toxicity**Acute Toxicity**

: Physical properties indicate that petroleum gases will rapidly volatilise from the aquatic environment and that acute and chronic effects would not be observed in practice.

12.2 Persistence and degradability

: Expected to be readily biodegradable. Oxidises rapidly by photo-chemical reactions in air.

12.3 Bioaccumulative Potential

: Not expected to bioaccumulate significantly.

12.4 Mobility

: Because of their extreme volatility, air is the only environmental compartment that hydrocarbon gases will be found.

12.5 Result of the PBT and vPvB assessment

: The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not considered to be PBT or vPvB.

12.6 Other Adverse Effects

: In view of the high rate of loss from solution, the product is unlikely to pose a significant hazard to aquatic life.

13. DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods**Material Disposal**

: It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Waste arising from a spillage or tank cleaning should be disposed of in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand. Do not dispose into the environment, in drains or in water courses. Given the nature and uses of this product, the need for

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- disposal seldom arises. If necessary, dispose by controlled combustion in purpose-designed equipment. If this is not possible, contact the supplier.
- Container Disposal** : Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Residues may cause an explosion hazard. Do not pollute the soil, water or environment with the waste container. Return part-used or empty cylinders to the supplier. For tanks seek specialist advice from suppliers. Dispose in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.
- Local Legislation** : Disposal should be in accordance with applicable regional, national, and local laws and regulations. Local regulations may be more stringent than regional or national requirements and must be complied with.
- EU Waste Disposal Code (EWC): 16 05 04 gases in pressure containers (including halons) containing dangerous substances.

14. TRANSPORT INFORMATION**Land transport (ADR/RID):**
ADR

- 14.1 UN No. : 1965
- 14.2 UN Proper Shipping Name : HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S. (Propane)
- 14.3 Transport Hazard Class : 2
- Danger label (primary risk) : 2.1
- 14.5 Environmental Hazard : No
- 14.6 Special Precautions for user : Special Precautions: Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

RID

- 14.1 UN No. : 1965
- 14.2 UN Proper Shipping Name : HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S. (Propane)
- 14.3 Transport Hazard Class : 2
- Danger label (primary risk) : 2.1
- 14.5 Environmental Hazard : No
- 14.6 Special Precautions for user : Special Precautions: Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

Inland waterways transport (ADN):

- 14.1 UN No. : 1965
- 14.2 UN Proper Shipping : HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S.

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Name (Propane)
14.3 Transport Hazard : 2
Class
Danger label (primary risk) : 2.1
14.5 Environmental Hazard : No

14.6 Special Precautions : Special Precautions: Refer to Chapter 7, Handling & Storage,
for user for special precautions which a user needs to be aware of or
needs to comply with in connection with transport.

Sea transport (IMDG Code):

14.1 UN No. : UN 1965
14.2 UN Proper Shipping : HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S.
Name
Technical name : (Propane)
14.3 Transport Hazard : 2.1
Class
14.5 Marine pollutant : No

14.6 Special Precautions : Special Precautions: Refer to Chapter 7, Handling & Storage,
for user for special precautions which a user needs to be aware of or
needs to comply with in connection with transport.

Air transport (IATA):

14.1 UN No. : 1965
14.2 UN Proper Shipping : Hydrocarbon gas mixture, liquefied, n.o.s.
Name
Technical name : (Propane)
14.3 Transport Hazard : 2.1
Class
14.5 Environmental Hazard : No

14.6 Special Precautions : Special Precautions: Refer to Chapter 7, Handling & Storage,
for user for special precautions which a user needs to be aware of or
needs to comply with in connection with transport.

Sea (Annex II of MARPOL 73/78 and the IBC code)

Pollution Category : Not applicable.
Ship Type : Not applicable.
Product Name : Not applicable.
Special Precaution : Not applicable.

15. REGULATORY INFORMATION

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

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

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Other regulatory Information

| | |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Other Information | : Environmental Protection Act 1990 (as amended). Health and Safety at Work Act 1974. Consumers Protection Act 1987. Control of Pollution Act 1974. Environmental Act 1995. Factories Act 1961. Carriage of Dangerous Goods by Road and Rail (Classification, Packaging and Labelling) Regulations. Chemicals (Hazard Information and Packaging for Supply) Regulations 2002. Control of Substances Hazardous to Health Regulations 1994 (as amended). Road Traffic (Carriage of Dangerous Substances in Packages) Regulations. Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations. Road Traffic (Carriage of Dangerous Substances in Road Tankers in Tank Containers) Regulations. Road Traffic (Training of Drivers of Vehicles Carrying Dangerous Goods) Regulations. Reporting of Injuries, Diseases and Dangerous Occurrences Regulations. Health and Safety (First Aid) Regulations 1981. Personal Protective Equipment (EC Directive) Regulations 1992. Personal Protective Equipment at Work Regulations 1992. |
| 15.2 Chemical Safety Assessment | : No chemical safety assessment has been performed for this substance. |

16. OTHER INFORMATION

R-phrases(s)

R12 Extremely flammable.

CLP Hazard Statements

H220 Extremely flammable gas.

H280 Contains gas under pressure; may explode if heated.

Identified Uses according to the Use Descriptor System

Recommended Restrictions on Use (Advice Against) : This product must not be used in applications other than those recommended in Section 1, without first seeking the advice of the supplier.

Additional Information : This document contains important information to ensure the safe storage, handling and use of this product. The information in this document should be brought to the attention of the person in your organisation responsible for advising on safety matters.

Other Information

MSDS Distribution : The information in this document should be made available to all who may handle the product.

MSDS Version Number : .0

Safety Data Sheet

| | |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MSDS Effective Date | : 08.03.2011 |
| MSDS Revisions | : A vertical bar () in the left margin indicates an amendment from the previous version. |
| MSDS Regulation | : Regulation 1907/2006/EC |
| Disclaimer | : This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product. |



Safety Data Sheet

MEGlobal Europe GmbH

Safety Data Sheet according to Reg. (EC) N. 453/2010

Product Name: ETHYLENE GLYCOL POLYESTER GRADE

Revision Date: 2014/09/11

Print Date: 12 Sep 2014

MEGlobal Europe GmbH encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

Section 1. Identification of the substance/preparation and of the company/undertaking

1.1 Product identifiers

Product Name

ETHYLENE GLYCOL POLYESTER GRADE

Chemical Name: Ethanediol; ethylene glycol

CAS-No. 107-21-1

EC-No. 203-473-3

REACH Registration Number

01-2119456816-28-0009
01-2119456816-28-0012
01-2119456816-28-0013
01-2119456816-28-0014
01-2119456816-28-0015
01-2119456816-28-0016
01-2119456816-28-0017
01-2119456816-28-0018
01-2119456816-28-0074

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

Identified uses

Manufacture of substances Industrial use as intermediate. Use as process chemical, industrial. Distribution of substance, industrial. Formulation & (re)packing of substances and mixtures, industrial. Polymer production, industrial. Use in paints and coatings, industrial. Use in Cleaning Agents, industrial. Use in lubricants, industrial. Use in metal-working fluids, industrial. Use in laboratories, industrial. Water treatment chemicals Production of polymers, filled polymers, foams, coatings, adhesives and sealants, industrial. Functional Fluids, industrial. Use in paints, coatings, adhesives, sealants, foams, polymers and filled polymers, professional. Use in Cleaning Agents, professional. Use in metal-working fluids, professional. Functional Fluids, professional. Use in laboratories, professional. Use in paints, coatings and surface treatment products, consumer. Use in heat transfer and hydraulic fluids, consumer. Use in adhesives and sealants, consumer. Production of rigid foam, consumer.

Uses advised against

Production of tobacco products Generation of artificial smoke Electronic cigarettes (e-cigarettes) Applications with direct or indirect food or potable water contact Any application where the product is to be purposely used as a non-reactant component where the potential for sufficient human contact and/or ingestion exists Freezer gel packs and heating packs Glues and pastes Manufacturing of munitions Sprinkler systems Deicing of road or sidewalks Deicing of aircraft lavatories Consumer or hospital usage for deodorizing or air "purifying" purposes by spraying as an aerosol Fluid for pressure testing piping Pharmaceutical Use Treatment of wood rot and fungus in marine applications

1.3 Details of the supplier of the safety data sheet

COMPANY IDENTIFICATION

MEGlobal Europe GmbH
Bachtobelstrasse 3
8810 Horgen
Switzerland

Customer Information Number:

+41 44728 2077

[http://www.meglobal.biz/
SDSQuestion@dow.com](http://www.meglobal.biz/SDSQuestion@dow.com)

1.4 EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact:

0041 447 28 2820

Local Emergency Contact:

00 31 115 69 4982

Section 2. Hazards Identification

2.1 Classification of the substance or mixture

Classification - REGULATION (EC) No 1272/2008

| | | | |
|-----------------------------------------------------------|------------|------|---------------------------------------------------------------------------------|
| Acute toxicity (Oral) | Category 4 | H302 | Harmful if swallowed. |
| Specific target organ toxicity - repeated exposure (Oral) | Category 2 | H373 | May cause damage to organs through prolonged or repeated exposure if swallowed. |

Classification according to EU Directives 67/548/EEC or 1999/45/EC

Xn

R48/22

Harmful: danger of serious damage to health by prolonged exposure if swallowed.

2.2 Label elements

Labelling - REGULATION (EC) No 1272/2008

Hazard pictograms



Signal Word: Warning

Hazard statements:

H302 Harmful if swallowed.

H373 May cause damage to organs through prolonged or repeated exposure.

Precautionary Statements:

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

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

P264 Wash hands thoroughly after handling.

P301 + P330 + P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

P314 Get medical advice/ attention if you feel unwell.

P501 Dispose of contents and container to licensed, permitted incinerator, or other thermal destruction device.

2.3 Other Hazards

No information available.

Section 3. Composition/information on ingredients

3.1 Substance

This product is a substance.

| CAS-No. / EC-No. / Index | REACH No. | Amount | Component | Classification: REGULATION (EC) No 1272/2008 |
|---------------------------------------------------------------------|--------------------------|----------|--------------------------------|----------------------------------------------|
| CAS-No. 107-21-1 EC-No. 203-473-3 Index 603-027-00-1 | 01- 2119456816- 28 | > 99.0 % | Ethanediol; ethylene glycol | Acute Tox., 4, H302 STOT RE, 2, H373 |

| CAS-No. / EC-No. / Index | Amount | Component | Classification: 67/548/EEC |
|---------------------------------------------------------------------|----------|-----------------------------|----------------------------|
| CAS-No. 107-21-1 EC-No. 203-473-3 Index 603-027-00-1 | > 99.0 % | Ethanediol; ethylene glycol | Xn: R48/22 |

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

Section 4. First-aid measures

4.1 Description of first aid measures

General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air; if effects occur, consult a physician.

Skin Contact: Immediately flush skin with water while removing contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Destroy contaminated leather items such as shoes, belts, and watchbands. Suitable emergency safety shower facility should be immediately available.

Eye Contact: Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

Ingestion: Do not induce vomiting. Seek medical attention immediately. If person is fully conscious give 1 cup or 8 ounces (240 ml) of water. If medical advice is delayed and if an adult has swallowed several ounces of chemical, then give 3-4 ounces (1/3-1/2 Cup) (90-120 ml) of hard liquor such as 80 proof whiskey. For children, give proportionally less liquor at a dose of 0.3 ounce (1 1/2 tsp.) (8 ml) liquor for each 10 pounds of body weight, or 2 ml per kg body weight [e.g., 1.2 ounce (2 1/3 tbsp.) for a 40 pound child or 36 ml for an 18 kg child].

4.2 Most important symptoms and effects, both acute and delayed

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

4.3 Indication of immediate medical attention and special treatment needed

If several ounces (60 - 100 ml) of ethylene glycol have been ingested, early administration of ethanol may counter the toxic effects (metabolic acidosis, renal damage). Consider hemodialysis or peritoneal

dialysis & thiamine 100 mg plus pyridoxine 50 mg intravenously every 6 hours. If ethanol is used, a therapeutically effective blood concentration in the range of 100 - 150 mg/dl may be achieved by a rapid loading dose followed by a continuous intravenous infusion. Consult standard literature for details of treatment. 4-Methyl pyrazole (Antizol®) is an effective blocker of alcohol dehydrogenase and should be used in the treatment of ethylene glycol (EG), di- or triethylene glycol (DEG, TEG), ethylene glycol butyl ether (EGBE), or methanol intoxication if available. Fomepizole protocol (Brent, J. et al., New England Journal of Medicine, Feb. 8, 2001, 344:6, p. 424-9): loading dose 15 mg/kg intravenously, follow by bolus dose of 10 mg/kg every 12 hours; after 48 hours, increase bolus dose to 15 mg/kg every 12 hours. Continue fomepizole until serum methanol, EG, DEG, TEG or EGBE are undetectable. The signs and symptoms of poisoning include anion gap metabolic acidosis, CNS depression, renal tubular injury, and possible late stage cranial nerve involvement. Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. In severe poisoning, respiratory support with mechanical ventilation and positive end expiratory pressure may be required. Maintain adequate ventilation and oxygenation of the patient. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. If burn is present, treat as any thermal burn, after decontamination. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

Section 5. Fire Fighting Measures

5.1 Extinguishing Media

Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Extinguishing Media to Avoid: Do not use direct water stream. May spread fire.

5.2 Special hazards arising from the substance or mixture

Hazardous Combustion Products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide. Nitrogen oxides.

Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

5.3 Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage.

Special Protective Equipment for Firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

Section 6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to Section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

6.2 Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

6.3 Methods and materials for containment and cleaning up: Contain spilled material if possible. Collect in suitable and properly labeled containers. Small spills: Absorb with materials such as: Cat litter. Sand. Sawdust. Zorb-all®. Hazorb®. Large spills: Dike area to contain spill. Pump into suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

Section 7. Handling and Storage

7.1 Precautions for safe handling

Handling

General Handling: Do not swallow. Avoid contact with eyes. Wash thoroughly after handling. Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

7.2 Conditions for safe storage, including any incompatibilities

Storage

Do not store near food, foodstuffs, drugs or potable water supplies. Additional storage and handling information on this product may be obtained by calling your sales or customer service contact. Ask for a product brochure.

7.3 Specific end uses

See the technical data sheet on this product for further information.

Section 8. Exposure Controls / Personal Protection

8.1 Control parameters

Exposure Limits

| Component | List | Type | Value |
|-----------------------------|--------------|-----------------|-----------------------------------|
| Ethanediol; ethylene glycol | ACGIH | Ceiling | 100 mg/m ³ |
| | EU IOELV | Aerosol. | |
| | | TWA | 52 mg/m ³ 20 ppm SKIN |
| | EU IOELV | STEL | 104 mg/m ³ 40 ppm SKIN |
| | UK WEL | TWA | 10 mg/m ³ SKIN |
| | | Particulate. | |
| | UK WEL | TWA Vapor. | 52 mg/m ³ 20 ppm SKIN |
| | UK WEL | STEL Vapor. | 104 mg/m ³ 40 ppm SKIN |
| | Ireland OELV | TWA Vapor. | 52 mg/m ³ 20 ppm SKIN |
| | | Indicative OELV | |
| | Ireland OELV | TWA | 10 mg/m ³ SKIN |
| | | Particulate. | Indicative OELV |
| | Ireland OELV | STEL Vapor. | 104 mg/m ³ 40 ppm SKIN |
| | | Indicative OELV | |

A "skin" notation following the inhalation exposure guideline refers to the potential for dermal absorption of the material including mucous membranes and the eyes either by contact with vapors or by direct skin contact.

It is intended to alert the reader that inhalation may not be the only route of exposure and that measures to minimize dermal exposures should be considered.

Derived No Effect Level (DNEL)

Workers

| Potential Health Effects | Possible route(s) of exposure: | Value |
|--------------------------|--------------------------------|-------|
|--------------------------|--------------------------------|-------|

| | | |
|------------------------------|--------------|------------------|
| Acute - systemic effects | Skin contact | Not available |
| Acute - systemic effects | Inhalation | Not available |
| Acute - local effects | Skin contact | Not available |
| Acute - local effects | Inhalation | Not available |
| Long-term - systemic effects | Skin contact | 106 mg/kg bw/day |
| Long-term - systemic effects | Inhalation | Not available |
| Long-term - local effects | Skin contact | Not available |
| Long-term - local effects | Inhalation | 35 mg/m3 |

Consumers

| Potential Health Effects | Possible route(s) of exposure: | Value |
|------------------------------|--------------------------------|-----------------|
| Acute - systemic effects | Skin contact | Not available |
| Acute - systemic effects | Inhalation | Not available |
| Acute - local effects | Skin contact | Not available |
| Acute - local effects | Inhalation | Not available |
| Long-term - systemic effects | Skin contact | 53 mg/kg bw/day |
| Long-term - systemic effects | Inhalation | Not available |
| Long-term - local effects | Skin contact | Not available |
| Long-term - local effects | Inhalation | 7 mg/m3 |

Predicted No Effect Concentration (PNEC)

| Compartment | Value | Remarks |
|-----------------------|-----------------|---------|
| Fresh water | 10 mg/l | |
| Marine water | 1 mg/l | |
| Intermittent releases | 10 mg/l | |
| Fresh water sediment | 20.9 mg/kg | |
| Soil | 1.53 mg/kg d.w. | |
| STP | 199.5 mg/l | |

8.2 Exposure controls

Personal Protection

Eye/Face Protection: Use safety glasses (with side shields). Safety glasses (with side shields) should be consistent with EN 166 or equivalent. If there is a potential for exposure to particles which could cause eye discomfort, wear chemical goggles. Chemical goggles should be consistent with EN 166 or equivalent. If exposure causes eye discomfort, use a full-face respirator.

Skin Protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task. When handling hot material, protect skin from thermal burns as well as from skin absorption.

Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. If hands are cut or scratched, use gloves chemically resistant to this material even for brief exposures. Use gloves with insulation for thermal protection (EN 407), when needed. Examples of preferred glove barrier materials include: Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl alcohol ("PVA"). Polyvinyl chloride ("PVC" or "vinyl"). When prolonged or frequently repeated contact may occur, a glove with a protection class of 6 (breakthrough time greater than 480 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 2 or higher (breakthrough time greater than 30 minutes according to EN 374) is recommended. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Respiratory Protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions, no respiratory protection should be needed; however, if material is heated or sprayed, use

an approved air-purifying respirator. Use the following CE approved air-purifying respirator: Organic vapor cartridge with a particulate pre-filter, type AP2.

Ingestion: Avoid ingestion of even very small amounts; do not consume or store food or tobacco in the work area; wash hands and face before smoking or eating.

Engineering Controls

Ventilation: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Section 9. Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

Appearance

| | |
|--------------------------------------------------|---------------------------------------------------------------------------------------|
| Physical State | Liquid. |
| Color | Colorless |
| Odor | Sweet |
| Odor Threshold | No test data available |
| pH | 9 <i>Literature</i> |
| Melting Point | Not applicable to liquids |
| Freezing Point | -11.2 °C <i>Literature</i> |
| Boiling Point (760 mmHg) | 197.4 °C <i>Literature</i> |
| Flash Point - Closed Cup | 111 °C <i>Literature</i> |
| Evaporation Rate (Butyl Acetate = 1) | 0.01 <i>Literature</i> |
| Flammability (solid, gas) | No |
| Flammable Limits In Air | Lower: 3.2 %(V) <i>Literature</i> Upper: 15.3 %(V) <i>Literature</i> |
| Vapor Pressure | 0.067 hPa @ 20 °C <i>Literature</i> |
| Vapor Density (air = 1) | 2.1 <i>Literature</i> |
| Specific Gravity (H ₂ O = 1) | 1.115 20 °C/20 °C <i>Literature</i> |
| Solubility in water (by weight) | 100 % <i>Literature</i> |
| Partition coefficient, n-octanol/water (log Pow) | -1.36 <i>Measured</i> |
| Autoignition Temperature | 398 °C <i>Literature</i> |
| Decomposition Temperature | No test data available |
| Dynamic Viscosity | 19.83 mPa.s @ 20 °C <i>Literature</i> |
| Explosive properties | no data available |
| Oxidizing properties | no data available |

9.2 Other information

| | |
|--------------------------|-----------------------------------------------------|
| Solubility in Solvents | not applicable |
| Molecular Weight | 62 g/mol <i>Literature</i> |
| Molecular Formula | HOC ₂ H ₄ OH |
| Henry's Law Constant (H) | 8.05E-09 atm*m ³ /mole; 25 °C Estimated. |

Section 10. Stability and Reactivity

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

Thermally stable at recommended temperatures and pressures.

10.3 Possibility of hazardous reactions

Polymerization will not occur.

10.4 Conditions to Avoid: Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems.

10.5 Incompatible Materials: Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

10.6 Hazardous decomposition products

Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Aldehydes. Alcohols. Ethers.

Section 11. Toxicological Information

11.1 Information on toxicological effects

Acute Toxicity

Ingestion

Oral toxicity is expected to be moderate in humans due to ethylene glycol even though tests with animals show a lower degree of toxicity. Ingestion of quantities (approximately 65 mL (2 oz.) for diethylene glycol or 100 mL (3 oz.) for ethylene glycol) has caused death in humans. May cause nausea and vomiting. May cause abdominal discomfort or diarrhea. Excessive exposure may cause central nervous system effects, cardiopulmonary effects (metabolic acidosis), and kidney failure.

For Ethylene glycol: Lethal Dose, Human, adult 100 ml

LD50, rat, male and female 7,712 mg/kg

Aspiration hazard

Based on physical properties, not likely to be an aspiration hazard.

Dermal

Prolonged skin contact is unlikely to result in absorption of harmful amounts. Repeated skin exposure to large quantities may result in absorption of harmful amounts. Massive contact with damaged skin or of material sufficiently hot to burn skin may result in absorption of potentially lethal amounts.

LD50, rabbit > 10,600 mg/kg

LD50, mouse, male and female > 3,500 mg/kg

Inhalation

At room temperature, exposure to vapor is minimal due to low volatility. With good ventilation, single exposure is not expected to cause adverse effects. If material is heated or areas are poorly ventilated, vapor/mist may accumulate and cause respiratory irritation and symptoms such as headache and nausea.

LC50, 6 h, Aerosol, rat, male and female > 2.5 mg/l

Eye damage/eye irritation

May cause slight eye irritation. Corneal injury is unlikely. Vapor or mist may cause eye irritation.

Skin corrosion/irritation

Brief contact is essentially nonirritating to skin. Prolonged contact may cause slight skin irritation with local redness. Repeated contact may cause skin irritation with local redness.

Sensitization

Skin

Did not cause allergic skin reactions when tested in guinea pigs.

Respiratory

No relevant data found.

Repeated Dose Toxicity

Observations in humans include: Nystagmus (involuntary eye movement). In animals, effects have been reported on the following organs: Kidney. Liver.

Chronic Toxicity and Carcinogenicity

Ethylene glycol did not cause cancer in long-term animal studies.

Developmental Toxicity

Based on animal studies, ingestion of very large amounts of ethylene glycol appears to be the major and possibly only route of exposure to produce birth defects. Exposures by inhalation or skin contact, the primary routes of occupational exposure, had minimal effect on the fetus, in animal studies.

Reproductive Toxicity

Ingestion of large amounts of ethylene glycol has been shown to interfere with reproduction in animals.

Genetic Toxicology

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Section 12. Ecological Information

12.1 Toxicity

Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).

Fish Acute & Prolonged Toxicity

LC50, Pimephales promelas (fathead minnow), static test, 96 h: 72,860 mg/l

Aquatic Invertebrate Acute Toxicity

EC50, Daphnia magna (Water flea), static test, 48 h, immobilization: > 100 mg/l

Aquatic Plant Toxicity

ErC50, Pseudokirchneriella subcapitata (green algae), Growth rate inhibition, 96 h: 6,500 - 13,000 mg/l

Toxicity to Micro-organisms

EC50, activated sludge test (OECD 209), Respiration inhibition, 30 min: 225 mg/l

12.2 Persistence and Degradability

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material is ultimately biodegradable (reaches > 70% biodegradation in OECD test(s) for inherent biodegradability).

OECD Biodegradation Tests:

| Biodegradation | Exposure Time | Method | 10 Day Window |
|----------------|---------------|----------------|----------------|
| 90 - 100 % | 10 d | OECD 301A Test | pass |
| 90 % | 1 d | OECD 302B Test | Not applicable |

12.3 Bioaccumulative potential

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Partition coefficient, n-octanol/water (log Pow): -1.36 Measured

12.4 Mobility in soil

Mobility in soil: Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process., Potential for mobility in soil is very high (Koc between 0 and 50).

Partition coefficient, soil organic carbon/water (Koc): 1 Estimated.

Henry's Law Constant (H): 8.05E-09 atm*m3/mole; 25 °C Estimated.

12.5 Results of PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

12.6 Other adverse effects

This substance is not in Annex I of Regulation (EC) No 1005/2009 on substances that deplete the ozone layer.

Section 13. Disposal Considerations

13.1 Waste treatment methods

This product, when being disposed of in its unused and uncontaminated state should be treated as a hazardous waste according to EC Directive 2008/98/EC. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. For used, contaminated and residual materials additional evaluations may be required. Do not dump into any sewers, on the ground, or into any body of water.

Section 14. Transport Information

ADR/RID

14.1 UN number

Not applicable

14.2 UN proper shipping name

Proper Shipping Name: NOT REGULATED

14.3 Transport hazard class(es)

Not applicable

14.4 Packing Group

Not applicable

14.5 Environmental hazards

Not considered environmentally hazardous based on available data

14.6 Special precautions for user

Special Provisions: no data available

Hazard identification No: no data available

ADNR / ADN

14.1 UN number

Not applicable

14.2 UN proper shipping name

Proper Shipping Name: NOT REGULATED

14.3 Transport hazard class(es)

Not applicable

14.4 Packing Group

Not applicable

14.5 Environmental hazards

Not considered environmentally hazardous based on available data

14.6 Special precautions for user

no data available

IMDG

14.1 UN number

Not applicable

14.2 UN proper shipping name

Proper Shipping Name: NOT REGULATED

14.3 Transport hazard class(es)

Not applicable

14.4 Packing Group

Not applicable

14.5 Environmental hazards

Not considered environmentally hazardous based on available data

14.6 Special precautions for user

EMS Number: Not applicable

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

Product Name: ETHYLENE GLYCOL

Ship Type: 3

Pollution Category: Y

ICAO/IATA

14.1 UN number

Not applicable

14.2 UN proper shipping name

Proper Shipping Name: NOT REGULATED

14.3 Transport hazard class(es)

Not applicable

14.4 Packing Group

Not applicable

14.5 Environmental hazards

Not considered environmentally hazardous based on available data

14.6 Special precautions for user

no data available

Section 15. Regulatory Information**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****European Inventory of Existing Commercial Chemical Substances (EINECS)**

This product is on the EINECS inventory.

15.2 Chemical Safety Assessment

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

Section 16. Other Information**Hazard statement in the composition section**

| | |
|------|---------------------------------------------------------------------------------|
| H302 | Harmful if swallowed. |
| H373 | May cause damage to organs through prolonged or repeated exposure if swallowed. |

Risk-phrases in the Composition section

| | |
|--------|---------------------------------------------------------------------------------|
| R48/22 | Harmful: danger of serious damage to health by prolonged exposure if swallowed. |
|--------|---------------------------------------------------------------------------------|

Restrictions in Usage:

Production of tobacco products Generation of artificial smoke Electronic cigarettes (e-cigarettes)
Applications with direct or indirect food or potable water contact Any application where the product is to be purposely used as a non-reactant component where the potential for sufficient human contact and/or ingestion exists Freezer gel packs and heating packs Glues and pastes Manufacturing of munitions Sprinkler systems Deicing of road or sidewalks Deicing of aircraft lavatories Consumer or hospital usage for deodorizing or air "purifying" purposes by spraying as an aerosol Fluid for pressure testing piping Pharmaceutical Use Treatment of wood rot and fungus in marine applications

Revision

Identification Number: 23826 / 3945 / Issue Date 2014/09/11 / Version: 12.0

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

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Safety data sheet

Nitrogen, compressed.

Creation date : 27.01.2005
Revision date : 12.04.2011

Version : 1.3

GB / E

SDS No. : 8347
page 1 / 4

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

1.1. Product identifier

Product name

Nitrogen, compressed.

EC No (from EINECS): 231-783-9

CAS No: 7727-37-9

Index-Nr. -

Chemical formula N₂

REACH Registration number:

Listed in Annex IV/V of Regulation (EC) No 1907/2006 (REACH),
exempted from registration.

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

Relevant identified uses

Industrial and professional. Perform risk assessment prior to use.

Uses advised against

Consumer use.

1.3. Details of the supplier of the safety data sheet

Company identification

BOC, Priestley Road, Worsley, Manchester M28 2UT

E-Mail Address ReachSDS@boc.com

1.4. Emergency telephone number

Emergency phone numbers (24h): 0800 111 333

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification acc. to Regulation (EC) No 1272/2008/EC (CLP/GHS)

Press. Gas (Compressed gas) - Contains gas under pressure; may explode if heated.

Classification acc. to Directive 67/548/EEC & 1999/45/EC

Not classified as hazardous to health.

Asphyxiant in high concentrations.

Risk advice to man and the environment

In high concentrations may cause asphyxiation.

Compressed gas.

2.2. Label elements

- Labelling Pictograms



- Signal word

Warning

- Hazard Statements

H280

Contains gas under pressure; may explode if heated.

EIGA-As

Asphyxiant in high concentrations.

- Precautionary Statements

Precautionary Statement Prevention

None.

Precautionary Statement Response

None.

Precautionary Statement Storage

P403

Store in a well-ventilated place.

Precautionary Statement Disposal

None.

2.3. Other hazards

None.

SECTION 3: Composition/information on ingredients

Substance / Mixture: Substance.

3.1. Substances

Nitrogen, compressed.

CAS No: 7727-37-9

Index-Nr.: -

EC No (from EINECS): 231-783-9

REACH Registration number:

Listed in Annex IV/V of Regulation (EC) No 1907/2006 (REACH),
exempted from registration.

Contains no other components or impurities which will influence the classification of the product.

3.2. Mixtures

Not applicable.

SECTION 4: First aid measures

4.1. Description of first aid measures

First Aid General Information:

Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

First Aid Inhalation:

Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

First Aid Skin / Eye:

Adverse effects not expected from this product.

First Aid Ingestion:

Ingestion is not considered a potential route of exposure.

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

In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation.

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

None.

SECTION 5: Fire fighting measures

5.1. Extinguishing media

Suitable extinguishing media

All known extinguishants can be used.

5.2. Special hazards arising from the substance or mixture

Specific hazards

Exposure to fire may cause containers to rupture/explode.

Hazardous combustion products

None.

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5.3. Advice for fire-fighters

Specific methods

If possible, stop flow of product. Move container away or cool with water from a protected position.

Special protective equipment for fire-fighters

In confined space use self-contained breathing apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Evacuate area. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Ensure adequate air ventilation. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

6.2. Environmental precautions

Try to stop release.

6.3. Methods and material for containment and cleaning up

Ventilate area.

6.4. Reference to other sections

See also sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Suck back of water into the container must be prevented. Do not allow backfeed into the container. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. Refer to supplier's handling instructions. Only experienced and properly instructed persons should handle gases under pressure. Protect cylinders from physical damage; do not drag, roll, slide or drop. Never use direct flame or electrical heating devices to raise the pressure of a container. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use. Ensure the complete gas system has been (or is regularly) checked for leaks before use. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Close container valve after each use when empty, even if still connected to equipment. Never attempt to repair or modify container valves or safety relief devices. Damaged valves should be reported immediately to the supplier. Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment. Keep container valve outlets clean and free from contaminants particularly oil and water. Never attempt to transfer gases from one cylinder/container to another. Do not smoke while handling product. The substance must be handled in accordance with good industrial hygiene and safety procedures.

7.2. Conditions for safe storage, including any incompatibilities

Keep container below 50°C in a well ventilated place. Observe all regulations and local requirements regarding storage of containers. Containers should not be stored in conditions likely to encourage corrosion. Containers should be stored in the vertical position and properly secured to prevent falling over. Stored containers should be periodically checked for general conditions and leakage. Container valve guards or caps should be in place. Store containers in location free from fire risk and away from sources of heat and ignition. Keep

away from ignition sources (including static discharges). Keep away from combustible materials. Secure cylinders to prevent them from falling.

7.3. Specific end use(s)

None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No occupational exposure limit.

8.2. Exposure controls

Appropriate engineering controls

Product to be handled in a closed system. The substance must be handled in accordance with good industrial hygiene and safety procedures. Consider work permit system e.g. for maintenance activities. Systems under pressure should be regularly checked for leakages. Provide adequate general or local ventilation. Oxygen detectors should be used when asphyxiating gases may be released.

Personal protective equipment

Eye and face protection

Wear eye protection to EN 166 when using gases.

Skin protection

Other protection

Wear leather safety gloves and safety shoes when handling cylinders.

Respiratory protection

Not required

Thermal hazards

Not required

Environmental Exposure Controls

Specific risk management measures are not required beyond good industrial hygiene and safety procedures. Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

General information

Appearance/Colour: Colourless gas.

Odour: None.

Melting point: -210 °C

Boiling point: -196 °C

Flash point: Not applicable for gases and gas mixtures.

Flammability range: Non flammable.

Vapour Pressure 20 °C: Not applicable.

Relative density, gas: 0,97

Solubility in water: 20 mg/l

Autoignition temperature: Not applicable.

Explosive properties:

Explosive acc. EU legislation: Not explosive.

Explosive acc. transp. reg.: Not explosive.

Oxidising properties: Not applicable.

Molecular weight: 28 g/mol

Critical temperature: -147 °C

Relative density, liquid: 0,8

9.2. Other information

None.

SECTION 10: Stability and reactivity

Safety data sheet

Nitrogen, compressed.

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10.1. Reactivity

Unreactive under normal conditions.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

None.

10.4. Conditions to avoid

None.

10.5. Incompatible materials

No reaction with any common materials in dry or wet conditions.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

General

No known toxicological effects from this product.

SECTION 12: Ecological information

12.1. Toxicity

No ecological damage caused by this product.

12.2. Persistence and degradability

The substance is naturally occurring.

12.3. Bioaccumulative potential

Not applicable.

12.4. Mobility in soil

The substance is a gas, not applicable.

12.5. Results of PBT and vPvB assessment

Not classified as PBT or vPvB.

12.6. Other adverse effects

Not applicable.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Do not discharge into any place where its accumulation could be dangerous. Vent to atmosphere in a well ventilated place. Contact supplier if guidance is required.

EWC Nr. 16 05 05

SECTION 14: Transport information

ADR/RID

14.1. UN number

1066

14.2. UN proper shipping name

Nitrogen, compressed

14.3. Transport hazard class(es)

Class: 2

Classification Code: 1A

Labels: 2.2

Hazard number: 20

Emergency Action Code: 2T

14.4. Packing group (Packing Instruction)

P200

14.5. Environmental hazards

None.

14.6. Special precautions for user

None.

IMDG

14.1. UN number

1066

14.2. UN proper shipping name

Nitrogen, compressed

14.3. Transport hazard class(es)

Class: 2.2

Labels: 2.2

EmS: FC, SV,

14.4. Packing group (Packing Instruction)

P200

14.5. Environmental hazards

None.

14.6. Special precautions for user

None.

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not applicable.

IATA

14.1. UN number

1066

14.2. UN proper shipping name

Nitrogen, compressed

14.3. Transport hazard class(es)

Class: 2.2

Labels: 2.2

14.4. Packing group (Packing Instruction)

P200

14.5. Environmental hazards

None.

14.6. Special precautions for user

None.

Other transport information

Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers ensure that they are firmly secured. Ensure that the cylinder valve is closed and not leaking. Ensure that the valve outlet cap nut or plug (where provided) is correctly fitted. Ensure that the

Safety data sheet Nitrogen, compressed.

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valve protection device (where provided) is correctly fitted. Ensure adequate ventilation. Ensure compliance with applicable regulations.

SECTION 15: Regulatory information

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

Seveso Directive 96/82/EC: Not covered.

15.2. Chemical safety assessment

A CSA does not need to be carried out for this product.

SECTION 16: Other information

Ensure all national/local regulations are observed. The hazard of asphyxiation is often overlooked and must be stressed during operator training. Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.

Advice

Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted. Details given in this document are believed to be correct at the time of going to press.

Further information

Note:

When using this document care should be taken, as the decimal sign and its position complies with rules for the structure and drafting of international standards, and is a comma on the line. As an example 2,000 is two (to three decimal places) and not two thousand, whilst 1.000 is one thousand and not one (to three decimal places).

End of document

Nytro Taurus

SAFETY DATA SHEET



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

Identification of the substance or mixture

Product name : Nytro Taurus
Product type : Insulating oil
Distributor : NYNAS-TECHNOL Handels-GmbH
Grieskai 16
A-8020 Graz
+43 316 734 600
www.nynas.com/Naphthenics

Distributor

Emergency telephone number : +44 (0)208 762 8322
e-mail address of person responsible for this SDS : ProductHSE@nynas.com

2. HAZARDS IDENTIFICATION

Classification and labeling have been determined according to EU Directives 67/548/EEC and 1999/45/EC (including amendments) and take into account the intended product use.

Classification : Not classified.

Classification according to Regulation (EC) 1272/2008 (CLP)

Classification : ASPIRATION HAZARD - Category 1

See section 11 for more detailed information on health effects and symptoms.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance/mixture : Mixture

| Ingredient name | CAS number | % | EC number | Classification |
|------------------------------------------------------------|-----------------------|---------|-----------|-----------------|
| Distillates (petroleum), hydrotreated light naphthenic | 64742-53-6 | 40 - 58 | 265-156-6 | Not classified. |
| Lubricating oil OR Hyrotreated Light Paraffinic Distillate | 72623-87-1/64742-54-7 | 22 - 45 | | Not classified. |
| Distillates (petroleum), solvent-refined light naphthenic | 64741-97-5 | <5 | 265-098-1 | Not classified. |

Annex I Nota L applies to the base oil(s) in this product. Nota L - The classification as a carcinogen need not apply if it can be shown that the substance contains less than 3 % DMSO extract as measured by IP 346.

If applicable :

[1] Substance classified with a health or environmental hazard

[2] Substance with a workplace exposure limit

[3] PBT-substance

[4] vPvB-substance

Occupational exposure limits, if available, are listed in section 8.

4. FIRST AID MEASURES

| | |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Inhalation | : Move exposed person to fresh air. Inhalation of vapours and/or mists might irritate respiratory tract. Get medical attention if symptoms occur. |
| Ingestion | : Wash out mouth with water. Do not induce vomiting. Get medical attention if symptoms occur. |
| Skin contact | : Remove contaminated clothing and shoes. Wash contaminated skin with soap and water. Get medical attention if symptoms occur. |
| Eye contact | : Check for and remove any contact lenses. Immediately flush eyes with running water for at least 5 minutes, keeping eyelids open. Seek medical attention if irritation persists. |
| Protection of first-aiders | No action shall be taken involving any personal risk or without suitable training. |
| See section 11 for more detailed information on health effects and symptoms. | |

5. FIRE-FIGHTING MEASURES

| | |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Suitable | : Use dry chemical, CO ₂ , water spray (fog) or foam. |
| Not suitable | : Do not use water jet. |
| Special protective equipment for fire-fighters | : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. |

6. ACCIDENTAL RELEASE MEASURES

| | |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Personal precautions | No action shall be taken involving any personal risk or without suitable training. Put on appropriate personal protective equipment (see section 8). |
| Environmental precautions | Prevent entry into sewers, water courses, basements or confined areas. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). |
| Small spill | Smaller spillage can be wiped up with paper cloths. |
| Large spill | Stop leak if without risk. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). |

7. HANDLING AND STORAGE

| | |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Handling | Put on appropriate personal protective equipment (see section 8). Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Do not ingest. Wash hands after handling. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. If handled at elevated temperatures or with high speed mechanical equipment, vapours or mists might be released and require a well ventilated workplace. |
| Storage | Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. |
| <u>Packaging materials</u> | |
| Recommended | : Use original container. |

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit values

| Ingredient name | Occupational exposure limits |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Oil mist | EU OEL (Europe). Notes: In absence of national occupational exposure limits, following controls are recommended: (ACGIH) STEL: 10 mg/m ³ 15 minute(s). TWA: 5 mg/m ³ 8 hour(s). |

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

| | |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended monitoring procedures | : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to European Standard EN 689 for methods for the assessment of exposure by inhalation to chemical agents and national guidance documents for methods for the determination of hazardous substances. |
| Occupational exposure controls | Mechanical ventilation and local exhaust will reduce exposure via the air. Use oil resistant material in construction of handling equipment. Store under recommended conditions and if heated, temperature control equipment should be used to avoid overheating. |
| Hygiene measures | Handle in accordance with good industrial hygiene and safety practices. |
| Respiratory protection | If the product is heated under manual handling, use suitable mask with filter A1P2 or A2P2. Handling in automatic production lines, with exhaust or ventilation, will not require mask. |
| Hand protection | Wear oil-resistant protective gloves (e.g. nitril rubber), neoprene PVC |
| Eye protection | If potential exists for splashing, use goggles. |
| Skin protection | Wear protective clothing if there is a risk of skin contact. Wash contaminated clothing before reuse. |

9. PHYSICAL AND CHEMICAL PROPERTIES

General information

Appearance

| | |
|-----------------------|------------------------------|
| Physical state | : Liquid. |
| Colour | : Light yellow |
| Odour | : Odourless/Light petroleum. |

Important health, safety and environmental information

| | |
|--------------------------------------------------------------------------------|------------------------------------------------------------|
| Boiling point | : >250°C |
| Melting point / Pour point | : -54°C |
| Decomposition temperature | : 280 °C |
| Flash point | : Closed cup: >140°C [Pensky-Martens.] |
| Vapour pressure | : 160 Pa @ 100 °C |
| Relative density | : 0,87 g/cm ³ [15°C] |
| Solubility | : Insoluble in water. Soluble in most organic solvents. |
| Viscosity | : Kinematic (40°C): 0,1 cm ² /s (10 cSt) |
| DMSO extractable compounds for base oil substance(s) according to IP346 | : < 3% |
| Auto-ignition temperature | : >270°C |

10. STABILITY AND REACTIVITY

| | |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------|
| Chemical stability | : Stable under normal conditions. |
| Conditions to avoid | : Oxidising agent. |
| Hazardous decomposition products | : This may result in the evolution of harmful and flammable gases or vapours. |
| Materials to avoid | : No specific data. |
| Hazardous decomposition products | : Under normal conditions of storage and use, hazardous decomposition products should not be produced. |

11. TOXICOLOGICAL INFORMATION

Potential acute health effects

| | |
|-----------------------|------------------------------------------------------------------------------------------------|
| Acute toxicity | : Low acute toxicity. |
| Ingestion | : Ingestion may cause nausea and eventually vomiting and diarrhoea. |
| Inhalation | : Inhalation of oil mist or vapours at elevated temperatures may cause respiratory irritation. |
| Skin | : Repeated exposure may cause skin dryness or cracking. |
| Eyes | : Eye contact may cause redness and transient pain. |

Potential chronic health effects

| | |
|------------------------|------------------------------------------------------------------------------------------------|
| Chronic effects | : Inhalation of oil mist or vapours at elevated temperatures may cause respiratory irritation. |
|------------------------|------------------------------------------------------------------------------------------------|

12. ECOLOGICAL INFORMATION

| | |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------|
| Ecotoxicity | : Aquatic toxicity data on base oils indicate LC50 values of > 1000 mg/l, which is considered as low toxicity. |
| Mobility | : Low mobility due to low water solubility and high viscosity. |
| Persistence/degradability | : Inherently biodegradable. |
| Bioaccumulative potential | : Models suggest that petroleum oils may bioaccumulate but the bioavailability limitations may reduce this potential. |
| Other adverse effects | Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired. |

13. DISPOSAL CONSIDERATIONS

| | |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Methods of disposal | : The generation of waste should be avoided or minimised wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

14. TRANSPORT INFORMATION

International transport regulations

This product is not regulated for carriage according to ADR/RID, IMDG, ICAO/IATA.

15. REGULATORY INFORMATION

EU regulations

Classification and labeling according to Regulation (EC) 1907/2006 (REACH)

Classification and labeling have been determined according to EU Directives 67/548/EEC and 1999/45/EC (including amendments) and take into account the intended product use.

Risk phrases : This product is not classified according to EU legislation.

Classification and labeling according to Regulation (EC) 1272/2008 (CLP)

Classification and labeling have been determined according to Regulation (EC) 1272/2008 (including amendments) and take into account the intended product use.

Signal word : Danger

Hazard statements : May be fatal if swallowed and enters airways.

Precautionary statements

Hazard symbol or symbols :



Europe inventory : Not determined.

Date of issue/Date of revision : 2010-07-07.

15. REGULATORY INFORMATION

TSCA 8(b) inventory : Not determined.

National regulations

Limitation of the use of organic solvents : Permitted.

16. OTHER INFORMATION

History

Date of printing : 2010-07-07.

Date of issue/ Date of revision : 2010-07-07.

Date of previous issue : No previous validation.

Version : 1

Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Nytro Lyra X

SAFETY DATA SHEET



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

Identification of the substance or mixture

Product name : Nytro Lyra X
Product type : Insulating oil
Supplier : Nynas AB
P.O. Box 10700
SE-121 29 Stockholm
+46 8 602 12 00
www.nynas.com/Naphthenics
Emergency telephone number : +44 (0)208 762 8322
Local Poison Center : 020-99 60 00 (Kemiakuten)
e-mail address of person responsible for this SDS : ProductHSE@nynas.com

2. HAZARDS IDENTIFICATION

Classification and labeling have been determined according to EU Directives 67/548/EEC and 1999/45/EC (including amendments) and take into account the intended product use.

Classification : Not classified.

Classification according to Regulation (EC) 1272/2008 (CLP)

Classification : ASPIRATION HAZARD - Category 1

See section 11 for more detailed information on health effects and symptoms.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance/mixture : Mixture

| Ingredient name | CAS number | % | EC number | Classification |
|----------------------------------------------------------------------|------------|----------|-----------|-----------------|
| Distillates (petroleum), hydrotreated light naphthenic | 64742-53-6 | 50 - 100 | 265-156-6 | Not classified. |
| Lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based | 72623-87-1 | 0 - 50 | 276-738-4 | Not classified. |
| Distillates (petroleum), hydrotreated light paraffinic | 64742-55-8 | 0 - 50 | 265-158-7 | Not classified. |
| Distillates (petroleum), hydrotreated heavy paraffinic | 64742-54-7 | 0 - 50 | 265-157-1 | Not classified. |
| 2,6-di-tert-butyl-p-cresol | 128-37-0 | <0.4 | 204-881-4 | N; R51/53 [1] |

Annex I Nota L applies to the base oil(s) in this product. Nota L - The classification as a carcinogen need not apply if it can be shown that the substance contains less than 3 % DMSO extract as measured by IP 346.

If applicable :

[1] Substance classified with a health or environmental hazard

[2] Substance with a workplace exposure limit

[3] PBT-substance

[4] vPvB-substance

Occupational exposure limits, if available, are listed in section 8.

4. FIRST AID MEASURES

| | |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Inhalation | : Move exposed person to fresh air. Inhalation of vapours and/or mists might irritate respiratory tract. Get medical attention if symptoms occur. |
| Ingestion | : Wash out mouth with water. Do not induce vomiting. Get medical attention if symptoms occur. |
| Skin contact | : Remove contaminated clothing and shoes. Wash contaminated skin with soap and water. Get medical attention if symptoms occur. |
| Eye contact | : Check for and remove any contact lenses. Immediately flush eyes with running water for at least 5 minutes, keeping eyelids open. Seek medical attention if irritation persists. |

Protection of first-aiders

See section 11 for more detailed information on health effects and symptoms.

5. FIRE-FIGHTING MEASURES

| | |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Suitable | : Use dry chemical, CO ₂ , water spray (fog) or foam. |
| Not suitable | : Do not use water jet. |
| Special protective equipment for fire-fighters | : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. |

6. ACCIDENTAL RELEASE MEASURES

| | |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Personal precautions | No action shall be taken involving any personal risk or without suitable training. Put on appropriate personal protective equipment (see section 8). |
| Environmental precautions | Prevent entry into sewers, water courses, basements or confined areas. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). |
| Small spill | Smaller spillage can be wiped up with paper cloths. |
| Large spill | Stop leak if without risk. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). |

7. HANDLING AND STORAGE

| | |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Handling | Put on appropriate personal protective equipment (see section 8). Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Do not ingest. Wash hands after handling. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. If handled at elevated temperatures or with high speed mechanical equipment, vapours or mists might be released and require a well ventilated workplace. |
| Storage | Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. |
| Packaging materials | |
| Recommended | : Use original container. |

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit values

| Ingredient name | Occupational exposure limits |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Oil mist | AFS (Sweden, 6/2005). STEL: 3 mg/m ³ 15 minute(s). Form: Mist and Fume TWA: 1 mg/m ³ 8 hour(s). Form: Mist and Fume |

| | |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended monitoring procedures | : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to European Standard EN 689 for methods for the assessment of exposure by inhalation to chemical agents and national guidance documents for methods for the determination of hazardous substances. |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

| | |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Occupational exposure controls | Mechanical ventilation and local exhaust will reduce exposure via the air. Use oil resistant material in construction of handling equipment. Store under recommended conditions and if heated, temperature control equipment should be used to avoid overheating. |
| Hygiene measures | Handle in accordance with good industrial hygiene and safety practices. |
| Respiratory protection | If the product is heated under manual handling, use suitable mask with filter A1P2 or A2P2. Handling in automatic production lines, with exhaust or ventilation, will not require mask. |
| Hand protection | Wear oil-resistant protective gloves (e.g. nitril rubber). neoprene PVC |
| Eye protection | If potential exists for splashing, use goggles. |
| Skin protection | Wear protective clothing if there is a risk of skin contact. Wash contaminated clothing before reuse. |

9. PHYSICAL AND CHEMICAL PROPERTIES

General information

Appearance

| | |
|-----------------------|------------------------------|
| Physical state | : Liquid. |
| Colour | : Light yellow |
| Odour | : Odourless/Light petroleum. |

Important health, safety and environmental information

| | |
|-------------------------------------------------------------------------------|------------------------------------------------------------|
| Boiling point | : >250°C |
| Melting point / Pour point | : -60°C |
| Decomposition temperature | : >280 °C |
| Flash point | : Closed cup: >140°C [Pensky-Martens.] |
| Vapour pressure | : 160 Pa @ 100 °C |
| Relative density | : 0,87 g/cm ³ [15°C] |
| Solubility | : Insoluble in water. Soluble in most organic solvents. |
| Viscosity | : Kinematic (40°C): 0,094 cm ² /s (9,4 cSt) |
| DMSO extractible compounds for base oil substenc(s) according to IP346 | : < 3% |
| Auto-ignition temperature | : >270°C |

10. STABILITY AND REACTIVITY

| | |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------|
| Chemical stability | : Stable under normal conditions. |
| Conditions to avoid | : Oxidising agent. |
| Hazardous decomposition products | : This may result in the evolution of harmful and flammable gases or vapours. |
| Materials to avoid | : No specific data. |
| Hazardous decomposition products | : Under normal conditions of storage and use, hazardous decomposition products should not be produced. |

11. TOXICOLOGICAL INFORMATION

Potential acute health effects

| | |
|-----------------------|------------------------------------------------------------------------------------------------|
| Acute toxicity | : Low acute toxicity. |
| Ingestion | : Ingestion may cause nausea and eventually vomiting and diarrhoea. |
| Inhalation | : Inhalation of oil mist or vapours at elevated temperatures may cause respiratory irritation. |
| Skin | : Repeated exposure may cause skin dryness or cracking. |
| Eyes | : Eye contact may cause redness and transient pain. |

Potential chronic health effects

11. TOXICOLOGICAL INFORMATION

Chronic effects : Inhalation of oil mist or vapours at elevated temperatures may cause respiratory irritation.

12. ECOLOGICAL INFORMATION

Ecotoxicity : Aquatic toxicity data on base oils indicate LC50 values of > 1000 mg/l, which is considered as low toxicity.

Mobility : Low mobility due to low water solubility and high viscosity.

Persistence/degradability : Inherently biodegradable.

Bioaccumulative potential : Models suggest that petroleum oils may bioaccumulate but the bioavailability limitations may reduce this potential.

Other adverse effects : Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

13. DISPOSAL CONSIDERATIONS

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

14. TRANSPORT INFORMATION

International transport regulations

This product is not regulated for carriage according to ADR/RID, IMDG, ICAO/IATA.

15. REGULATORY INFORMATION

EU regulations

Classification and labeling according to Regulation (EC) 1907/2006 (REACH)

Classification and labeling have been determined according to EU Directives 67/548/EEC and 1999/45/EC (including amendments) and take into account the intended product use.

Risk phrases : This product is not classified according to EU legislation.

Classification and labeling according to Regulation (EC) 1272/2008 (CLP)

Classification and labeling have been determined according to Regulation (EC) 1272/2008 (including amendments) and take into account the intended product use.

Signal word : Danger

Hazard statements : May be fatal if swallowed and enters airways.

Precautionary statements

Hazard symbol or symbols :



Europe inventory : All components are listed or exempted.

TSCA 8(b) inventory : All components are listed or exempted.

16. OTHER INFORMATION

History

Date of printing : 2010-06-08.

Date of issue/ Date of revision : 2010-06-08.

Date of previous issue : No previous validation.

Version : 2

Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Product Name: MOBIL DTE 846
Revision Date: 06 Dec 2014
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SAFETY DATA SHEET

| SECTION 1 | IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING |
|-----------|----------------------------------------------------------------------------|
|-----------|----------------------------------------------------------------------------|

As of the revision date above, this (M)SDS meets the regulations in the United Kingdom & Ireland.

1.1. PRODUCT IDENTIFIER

Product Name: MOBIL DTE 846
Product Description: Base Oil and Additives
Product Code: 201560303020, 404917, 600239-60

1.2. RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST

Intended Use: Turbine oil

Uses advised against: None unless specified elsewhere in this SDS.

1.3. DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

Supplier: ExxonMobil Petroleum & Chemical BVBA
POLDERDIJKWEG
B-2030 Antwerpen
Belgium

MSDS Internet Address:

www.msds.exxonmobil.com

E-Mail:

sds.uk@exxonmobil.com

Supplier / Registrant:

(BE) 32 35433111

1.4. EMERGENCY TELEPHONE NUMBER

24 Hour Environmental / Health Emergency Telephone:

(UK) 01372 222 000 / (IRELAND) 44 1372 222 000

| SECTION 2 | HAZARDS IDENTIFICATION |
|-----------|------------------------|
|-----------|------------------------|

2.1. CLASSIFICATION OF SUBSTANCE OR MIXTURE

Classification according to Regulation (EC) No 1272/2008

Not Classified

Product Name: MOBIL DTE 846

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Classification according to EU Directive 67/548/EEC / 1999/45 EC

Not Classified

2.2. LABEL ELEMENTS

No Label elements according to Regulation (EC) No 1272/2008

2.3. OTHER HAZARDS**Physical / Chemical Hazards:**

No significant hazards.

Health Hazards:

High-pressure injection under skin may cause serious damage. Excessive exposure may result in eye, skin, or respiratory irritation.

Environmental Hazards:

No significant hazards. Material does not meet the criteria for PBT or vPvB in accordance with REACH Annex XIII.

SECTION 3**COMPOSITION / INFORMATION ON INGREDIENTS**

3.1. SUBSTANCES Not Applicable. This material is regulated as a mixture.

3.2. MIXTURES

This material is defined as a mixture.

Reportable hazardous substance(s) complying with the classification criteria and/or with an exposure limit (OEL)

| Name | CAS# | EC# | Registration# | Concentration* | GHS/CLP classification |
|---------------------|----------|-----------|---------------|----------------|---------------------------------------------------------------------------|
| TRIPHENYL PHOSPHATE | 115-86-6 | 204-112-2 | NE | 0.1 - < 1% | Aquatic Acute 1 H400 (M factor 1), Aquatic Chronic 1 H410 (M factor 1) |

Note - any classification in brackets is a GHS building block that was not adopted by the EU in the CLP regulation (No 1272/2008) and therefore is not applicable in the EU or in non-EU countries which have implemented the CLP regulation and is shown for informational purposes only.

Note: See (M)SDS Section 16 for full text of hazard statements.

Product Name: MOBIL DTE 846

Revision Date: 06 Dec 2014

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| | |
|------------------|---------------------------|
| SECTION 4 | FIRST AID MEASURES |
|------------------|---------------------------|

4.1. DESCRIPTION OF FIRST AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

4.2. MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

Local necrosis as evidenced by delayed onset of pain and tissue damage a few hours after injection.

4.3. INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

The need to have special means for providing specific and immediate medical treatment available in the workplace is not expected.

| | |
|------------------|-------------------------------|
| SECTION 5 | FIRE FIGHTING MEASURES |
|------------------|-------------------------------|

5.1. EXTINGUISHING MEDIA

Suitable Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

Unsuitable Extinguishing Media: Straight streams of water

5.2. SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

Hazardous Combustion Products: Oxides of carbon, Smoke, Fume, Sulphur oxides, Aldehydes, Incomplete combustion products

5.3. ADVICE FOR FIRE FIGHTERS

Fire Fighting Instructions: Evacuate area. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. Fire-fighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

FLAMMABILITY PROPERTIES

Flash Point [Method]: >215°C (419°F) [ASTM D-92]

Upper/Lower Flammable Limits (Approximate volume % in air): UEL: 7.0 LEL: 0.9 [Estimated]

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Autoignition Temperature: No data available

SECTION 6

ACCIDENTAL RELEASE MEASURES

6.1. PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

PROTECTIVE MEASURES

Avoid contact with spilled material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

For emergency responders: Respiratory protection: respiratory protection will be necessary only in special cases, e.g., formation of mists. Half-face or full-face respirator with filter(s) for dust/organic vapor or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to hydrocarbons are recommended. Gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

6.2. ENVIRONMENTAL PRECAUTIONS

Large Spills: Dyke far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

6.3. METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP

Land Spill: Stop leak if you can do so without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do so without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

6.4. REFERENCES TO OTHER SECTIONS

See Sections 8 and 13.

SECTION 7

HANDLING AND STORAGE

7.1. PRECAUTIONS FOR SAFE HANDLING

Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). When the material is handled in bulk, an electrical spark could

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ignite any flammable vapors from liquids or residues that may be present (e.g., during switch-loading operations). Use proper bonding and/or earthing procedures. However, bonding and earthing may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

Static Accumulator: This material is a static accumulator.

7.2. CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

The container choice, for example storage vessel, may effect static accumulation and dissipation. Do not store in open or unlabelled containers. Keep away from incompatible materials.

7.3. SPECIFIC END USES: Section 1 informs about identified end-uses. No industrial or sector specific guidance available.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. CONTROL PARAMETERS

EXPOSURE LIMIT VALUES

Exposure limits/standards (Note: Exposure limits are not additive)

| Substance Name | Form | Limit/Standard | | | Note | Source |
|---------------------|------|----------------|---------------------|--|------|---------|
| TRIPHENYL PHOSPHATE | | STEL | 6 mg/m ³ | | | UK EH40 |
| TRIPHENYL PHOSPHATE | | TWA | 3 mg/m ³ | | | UK EH40 |
| TRIPHENYL PHOSPHATE | | TWA | 3 mg/m ³ | | | ACGIH |

UK EH40 Workplace Exposure Limits. Exposure limits for use with Control of Substances Hazardous to Health Regulations 2002 (as amended)

Exposure limits/standards for materials that can be formed when handling this product: When mists/aerosols can occur the following is recommended: 5 mg/m³ - ACGIH TLV (inhalable fraction).

Note: Information about recommended monitoring procedures can be obtained from the relevant agency(ies)/institute(s):

UK Health and Safety Executive (HSE)

8.2. EXPOSURE CONTROLS

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ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapour warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

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

ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

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SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

9.1. INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid

Colour: Pale Yellow

Odour: Characteristic

Odour Threshold: No data available

pH: Not technically feasible

Melting Point: Not technically feasible

Freezing Point: No data available

Initial Boiling Point / and Boiling Range: > 316°C (600°F) [Estimated]

Flash Point [Method]: >215°C (419°F) [ASTM D-92]

Evaporation Rate (n-butyl acetate = 1): No data available

Flammability (Solid, Gas): Not technically feasible

Upper/Lower Flammable Limits (Approximate volume % in air): UEL: 7.0 LEL: 0.9 [Estimated]

Vapour Pressure: < 0.013 kPa (0.1 mm Hg) at 20 °C [Estimated]

Vapour Density (Air = 1): > 2 at 101 kPa [Estimated]

Relative Density (at 15 °C): 0.873 [test method unavailable]

Solubility(ies): water Negligible

Partition coefficient (n-Octanol/Water Partition Coefficient): > 3.5 [Estimated]

Autoignition Temperature: No data available

Decomposition Temperature: No data available

Viscosity: 44.8 cSt (44.8 mm²/sec) at 40°C | 6.04 cSt (6.04 mm²/sec) at 100°C [test method unavailable]

Explosive Properties: None

Oxidizing Properties: None

9.2. OTHER INFORMATION

Pour Point: -27°C (-17°F) [test method unavailable]

DMSO Extract (mineral oil only), IP-346: < 3 %wt

SECTION 10 STABILITY AND REACTIVITY

10.1. REACTIVITY: See sub-sections below.

10.2. CHEMICAL STABILITY: Material is stable under normal conditions.

10.3. POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

10.4. CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

10.5. INCOMPATIBLE MATERIALS: Strong oxidisers

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10.6. HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

| | |
|-------------------|----------------------------------|
| SECTION 11 | TOXICOLOGICAL INFORMATION |
|-------------------|----------------------------------|

11.1. INFORMATION ON TOXICOLOGICAL EFFECTS

| Hazard Class | Conclusion / Remarks |
|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Inhalation | |
| Acute Toxicity: No end point data for material. | Minimally Toxic. Based on assessment of the components. |
| Irritation: No end point data for material. | Negligible hazard at ambient/normal handling temperatures. |
| Ingestion | |
| Acute Toxicity: No end point data for material. | Minimally Toxic. Based on assessment of the components. |
| Skin | |
| Acute Toxicity: No end point data for material. | Minimally Toxic. Based on assessment of the components. |
| Skin Corrosion/Irritation: No end point data for material. | Negligible irritation to skin at ambient temperatures. Based on assessment of the components. |
| Eye | |
| Serious Eye Damage/Irritation: No end point data for material. | May cause mild, short-lasting discomfort to eyes. Based on assessment of the components. |
| Sensitisation | |
| Respiratory Sensitization: No end point data for material. | Not expected to be a respiratory sensitizer. |
| Skin Sensitization: No end point data for material. | Not expected to be a skin sensitizer. Based on assessment of the components. |
| Aspiration: Data available. | Not expected to be an aspiration hazard. Based on physico-chemical properties of the material. |
| Germ Cell Mutagenicity: No end point data for material. | Not expected to be a germ cell mutagen. Based on assessment of the components. |
| Carcinogenicity: No end point data for material. | Not expected to cause cancer. Based on assessment of the components. |
| Reproductive Toxicity: No end point data for material. | Not expected to be a reproductive toxicant. Based on assessment of the components. |
| Lactation: No end point data for material. | Not expected to cause harm to breast-fed children. |
| Specific Target Organ Toxicity (STOT) | |
| Single Exposure: No end point data for material. | Not expected to cause organ damage from a single exposure. |
| Repeated Exposure: No end point data for material. | Not expected to cause organ damage from prolonged or repeated exposure. Based on assessment of the components. |

OTHER INFORMATION

Contains:

Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitising in test animals.

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| SECTION 12 | ECOLOGICAL INFORMATION |
|------------|------------------------|
|------------|------------------------|

The information given is based on data available for the material, the components of the material, and similar materials.

12.1. TOXICITY

Material -- Not expected to be harmful to aquatic organisms.

12.2. PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component -- Expected to be inherently biodegradable

12.3. BIOACCUMULATIVE POTENTIAL

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

12.4. MOBILITY IN SOIL

Base oil component -- Low solubility and floats and is expected to migrate from water to the land.
Expected to partition to sediment and wastewater solids.

12.5. PERSISTENCE, BIOACCUMULATION AND TOXICITY FOR SUBSTANCE(S)

This product is not, or does not contain, a substance that is a PBT or a vPvB.

12.6. OTHER ADVERSE EFFECTS

No adverse effects are expected.

ECOLOGICAL DATA

Ecotoxicity

| Test | Duration | Organism Type | Test Results |
|--------------------------|------------|---------------------|------------------|
| Aquatic - Acute Toxicity | 96 hour(s) | Oncorhynchus mykiss | LL50 > 4954 mg/l |

| SECTION 13 | DISPOSAL CONSIDERATIONS |
|------------|-------------------------|
|------------|-------------------------|

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

13.1. WASTE TREATMENT METHODS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products. Protect the environment. Dispose of used oil at designated sites. Minimize skin contact. Do not mix used oils with solvents, brake fluids or coolants.

REGULATORY DISPOSAL INFORMATION

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European Waste Code: 13 02 05*

NOTE: These codes are assigned based upon the most common uses for this material and may not reflect contaminants resulting from actual use. Waste producers need to assess the actual process used when generating the waste and its contaminants in order to assign the proper waste disposal code(s).

This material is considered as hazardous waste pursuant to Directive 91/689/EEC on hazardous waste, and subject to the provisions of that Directive unless Article 1(5) of that Directive applies.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

| | |
|-------------------|------------------------------|
| SECTION 14 | TRANSPORT INFORMATION |
|-------------------|------------------------------|

LAND (ADR/RID): 14.1-14.6 Not Regulated for Land Transport

INLAND WATERWAYS (ADNR/ADN): 14.1-14.6 Not Regulated for Inland Waterways Transport

SEA (IMDG): 14.1-14.6 Not Regulated for Sea Transport according to IMDG-Code

SEA (MARPOL 73/78 Convention - Annex II):

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

Not classified according to Annex II

AIR (IATA): 14.1-14.6 Not Regulated for Air Transport

| | |
|-------------------|-------------------------------|
| SECTION 15 | REGULATORY INFORMATION |
|-------------------|-------------------------------|

REGULATORY STATUS AND APPLICABLE LAWS AND REGULATIONS

Listed or exempt from listing/notification on the following chemical inventories: AICS, DSL, ENCS, IECSC, KECI, PICCS, TSCA

15.1. SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE

Product Name: MOBIL DTE 846

Revision Date: 06 Dec 2014

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SUBSTANCE OR MIXTURE

Applicable EU Directives and Regulations:

1907/2006 [... on the Registration, Evaluation, Authorisation and Restriction of Chemicals ... and amendments thereto]

689/2008/EC [...concerning the export and import of dangerous substances and amendments thereto]

1272/2008 [on classification, labelling and packaging of substances and mixtures.. and amendments thereto]

Refer to the relevant EU/national regulation for details of any actions or restrictions required by the above Regulation(s)/Directive(s).

15.2. CHEMICAL SAFETY ASSESSMENT

REACH Information: A Chemical Safety Assessment has been carried out for one or more substances present in the material.

| SECTION 16 | OTHER INFORMATION |
|------------|-------------------|
|------------|-------------------|

REFERENCES: Sources of information used in preparing this SDS included one or more of the following: results from in house or supplier toxicology studies, CONCAWE Product Dossiers, publications from other trade associations, such as the EU Hydrocarbon Solvents REACH Consortium, U.S. HPV Program Robust Summaries, the EU IUCLID Data Base, U.S. NTP publications, and other sources, as appropriate.

List of abbreviations and acronyms that could be (but not necessarily are) used in this safety data sheet:

| Acronym | Full text |
|-----------|-----------------------------------------------------------------------------------------------|
| N/A | Not applicable |
| N/D | Not determined |
| NE | Not established |
| VOC | Volatile Organic Compound |
| AICS | Australian Inventory of Chemical Substances |
| AIHA WEEL | American Industrial Hygiene Association Workplace Environmental Exposure Limits |
| ASTM | ASTM International, originally known as the American Society for Testing and Materials (ASTM) |
| DSL | Domestic Substance List (Canada) |
| EINECS | European Inventory of Existing Commercial Substances |
| ELINCS | European List of Notified Chemical Substances |
| ENCS | Existing and new Chemical Substances (Japanese inventory) |
| IECSC | Inventory of Existing Chemical Substances in China |
| KECI | Korean Existing Chemicals Inventory |
| NDSL | Non-Domestic Substances List (Canada) |
| NZIoC | New Zealand Inventory of Chemicals |
| PICCS | Philippine Inventory of Chemicals and Chemical Substances |

Product Name: MOBIL DTE 846

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| | |
|-------|--------------------------------------------------------------------------------------------------|
| TLV | Threshold Limit Value (American Conference of Governmental Industrial Hygienists) |
| TSCA | Toxic Substances Control Act (U.S. inventory) |
| UVCB | Substances of Unknown or Variable composition, Complex reaction products or Biological materials |
| LC | Lethal Concentration |
| LD | Lethal Dose |
| LL | Lethal Loading |
| EC | Effective Concentration |
| EL | Effective Loading |
| NOEC | No Observable Effect Concentration |
| NOELR | No Observable Effect Loading Rate |

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):

Aquatic Acute 1 H400: Very toxic to aquatic life; Acute Env Tox, Cat 1

Aquatic Chronic 1 H410: Very toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 1

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:

Revision Changes:

Section 01: Company Mailing Address information was modified.

Section 05: Hazardous Combustion Products information was modified.

Section 15: EU Inventory Requirements - Header information was modified.

The information and recommendations contained herein are, to the best of ExxonMobil's knowledge and belief, accurate and reliable as of the date issued. You can contact ExxonMobil to insure that this document is the most current available from ExxonMobil. The information and recommendations are offered for the user's consideration and examination. It is the user's responsibility to satisfy itself that the product is suitable for the intended use. If buyer repackages this product, it is the user's responsibility to insure proper health, safety and other necessary information is included with and/or on the container. Appropriate warnings and safe-handling procedures should be provided to handlers and users. Alteration of this document is strictly prohibited. Except to the extent required by law, re-publication or retransmission of this document, in whole or in part, is not permitted. The term, "ExxonMobil" is used for convenience, and may include any one or more of ExxonMobil Chemical Company, Exxon Mobil Corporation, or any affiliates in which they directly or indirectly hold any interest.

Internal Use Only

MHC: 0B, 0B, 0, 0, 0, 0

PPEC: A

DGN: 2007147XGB (547749)

| |
|--------------|
| ANNEX |
|--------------|

Annex not required for this material.



Product Name: MOBIL DTE 846

Revision Date: 06 Dec 2014

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Product Name: UNIREX N 3
Revision Date: 22 Nov 2014
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SAFETY DATA SHEET

SECTION 1

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

As of the revision date above, this (M)SDS meets the regulations in the United Kingdom & Ireland.

1.1. PRODUCT IDENTIFIER

Product Name: UNIREX N 3
Product Description: Base Oil and Additives
Product Code: 2015A0207230, 407975, 644369-00

1.2. RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST

Intended Use: Grease

Uses advised against: None unless specified elsewhere in this SDS.

1.3. DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

Supplier: ExxonMobil Petroleum & Chemical BVBA
POLDERDIJKWEG
B-2030 Antwerpen
Belgium

MSDS Internet Address:

www.msds.exxonmobil.com

E-Mail:

sds.uk@exxonmobil.com

Supplier / Registrant:

(BE) 32 35433111

1.4. EMERGENCY TELEPHONE NUMBER

24 Hour Environmental / Health Emergency Telephone:

(UK) 01372 222 000 / (IRELAND) 44 1372 222 000

SECTION 2

HAZARDS IDENTIFICATION

2.1. CLASSIFICATION OF SUBSTANCE OR MIXTURE

Classification according to Regulation (EC) No 1272/2008

Not Classified

Product Name: UNIREX N 3
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Classification according to EU Directive 67/548/EEC / 1999/45 EC

Not Classified

2.2. LABEL ELEMENTS

No Label elements according to Regulation (EC) No 1272/2008

Contains: N-PHENYL-1-NAPHTHYLAMINE, BARIUM SULPHONATE May produce an allergic reaction.

2.3. OTHER HAZARDS

Physical / Chemical Hazards:

No significant hazards.

Health Hazards:

High-pressure injection under skin may cause serious damage. Excessive exposure may result in eye, skin, or respiratory irritation.

Environmental Hazards:

No significant hazards. Material does not meet the criteria for PBT or vPvB in accordance with REACH Annex XIII.

SECTION 3

COMPOSITION / INFORMATION ON INGREDIENTS

3.1. SUBSTANCES Not Applicable. This material is regulated as a mixture.

3.2. MIXTURES

This material is defined as a mixture.

Reportable hazardous substance(s) complying with the classification criteria and/or with an exposure limit (OEL)

| Name | CAS# | EC# | Registration# | Concentration* | GHS/CLP classification |
|------------------------------------------------|------------|-----------|---------------|----------------|-----------------------------------------------------------------------------------------------------------------------|
| N-PHENYL-1-NAPHTHYLAMINE | 90-30-2 | 201-983-0 | NE | 0.1 - < 1.0% | Acute Tox. 4 H302, Skin Sens. 1 H317, Aquatic Acute 1 H400 (M factor 1), Aquatic Chronic 1 H410 (M factor 1) |
| DINONYL NAPHTHALENESULPHONIC ACID, BARIUM SALT | 25619-56-1 | 247-132-7 | NE | 0.1 - < 1% | Acute Tox. 4 H302, Acute Tox. 4 H332, Skin Sens. 1 H317, Skin Irrit. 2 H315, Eye Dam. 1 H318 |

Note - any classification in brackets is a GHS building block that was not adopted by the EU in the CLP regulation (No 1272/2008) and therefore is not applicable in the EU or in non-EU countries which have implemented the CLP regulation and is shown for informational purposes only.

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| Name | CAS# | EC# | Registration# | Concentration* | DSD Symbols/Risk Phrases |
|------------------------------------------------|------------|-----------|---------------|----------------|-----------------------------------|
| N-PHENYL-1-NAPHTHYLAMINE | 90-30-2 | 201-983-0 | NE | 0.1 - < 1.0% | Xn;R22, Xi;R43, N;R50/53 |
| DINONYL NAPHTHALENESULPHONIC ACID, BARIUM SALT | 25619-56-1 | 247-132-7 | NE | 0.1 - < 1% | Xn;R20/22, Xi;R38, Xi;R41, Xi;R43 |

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Note: See (M)SDS Section 16 for full text of the R-Phrases. See (M)SDS Section 16 for full text of hazard statements.

SECTION 4 FIRST AID MEASURES

4.1. DESCRIPTION OF FIRST AID MEASURES

INHALATION

Under normal conditions of intended use, this material is not expected to be an inhalation hazard.

SKIN CONTACT

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

4.2. MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

Headache, dizziness, drowsiness, nausea and other CNS effects. Local necrosis as evidenced by delayed onset of pain and tissue damage a few hours after injection.

4.3. INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

The need to have special means for providing specific and immediate medical treatment available in the workplace is not expected.

SECTION 5 FIRE FIGHTING MEASURES

5.1. EXTINGUISHING MEDIA

Suitable Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

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Unsuitable Extinguishing Media: Straight streams of water

5.2. SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

Hazardous Combustion Products: Oxides of carbon, Aldehydes, Sulphur oxides, Smoke, Fume, Incomplete combustion products

5.3. ADVICE FOR FIRE FIGHTERS

Fire Fighting Instructions: Evacuate area. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. Fire-fighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

FLAMMABILITY PROPERTIES

Flash Point [Method]: >200°C (392°F) [EST. FOR OIL, ASTM D-92 (COC)]

Upper/Lower Flammable Limits (Approximate volume % in air): UEL: No data available LEL: No data available

Autoignition Temperature: No data available

SECTION 6

ACCIDENTAL RELEASE MEASURES

6.1. PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

PROTECTIVE MEASURES

Avoid contact with spilled material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

For emergency responders: Respiratory protection: respiratory protection will be necessary only in special cases, e.g., formation of mists. Half-face or full-face respirator with filter(s) for dust/organic vapor or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to hydrocarbons are recommended. Gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

6.2. ENVIRONMENTAL PRECAUTIONS

Prevent entry into waterways, sewers, basements or confined areas.

6.3. METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP

Land Spill: Stop leak if you can do so without risk. Scrape up spilled material with shovels into a suitable container for recycle or disposal.

Water Spill: Stop leak if you can do so without risk. Confine the spill immediately with booms. Warn other

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shipping. Skim from surface

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

6.4. REFERENCES TO OTHER SECTIONS

See Sections 8 and 13.

SECTION 7 HANDLING AND STORAGE

7.1. PRECAUTIONS FOR SAFE HANDLING

Avoid contact with skin. Prevent small spills and leakage to avoid slip hazard.

Static Accumulator: This material is not a static accumulator.

7.2. CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

Do not store in open or unlabelled containers.

7.3. SPECIFIC END USES: Section 1 informs about identified end-uses. No industrial or sector specific guidance available.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. CONTROL PARAMETERS

EXPOSURE LIMIT VALUES

Exposure limits/standards (Note: Exposure limits are not additive)

| Substance Name | Form | Limit/Standard | | | Note | Source |
|--------------------------------------------------------------|------|----------------|-----------|--|------|---------|
| DINONYL NAPHTHALENESULPHONIC ACID, BARIUM SALT [as Ba] | | TWA | 0.5 mg/m3 | | | UK EH40 |
| DINONYL NAPHTHALENESULPHONIC ACID, BARIUM SALT [as Ba] | | TWA | 0.5 mg/m3 | | | ACGIH |

UK EH40 Workplace Exposure Limits. Exposure limits for use with Control of Substances Hazardous to Health Regulations 2002 (as amended)

Note: Information about recommended monitoring procedures can be obtained from the relevant agency(ies)/institute(s):

UK Health and Safety Executive (HSE)

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8.2. EXPOSURE CONTROLS

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No protection is ordinarily required under normal conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapour warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

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

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ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

| | |
|------------------|-----------------------------------------|
| SECTION 9 | PHYSICAL AND CHEMICAL PROPERTIES |
|------------------|-----------------------------------------|

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

9.1. INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid

Form: Semi-fluid

Colour: Green

Odour: Characteristic

Odour Threshold: No data available

pH: Not technically feasible

Melting Point: No data available

Freezing Point: No data available

Initial Boiling Point / and Boiling Range: No data available

Flash Point [Method]: >200°C (392°F) [EST. FOR OIL, ASTM D-92 (COC)]

Evaporation Rate (n-butyl acetate = 1): No data available

Flammability (Solid, Gas): [test method unavailable]

Upper/Lower Flammable Limits (Approximate volume % in air): UEL: No data available LEL: No data available

Vapour Pressure: < 0.013 kPa (0.1 mm Hg) at 20 °C [Estimated]

Vapour Density (Air = 1): No data available

Relative Density (at 15 °C): 0.92 [test method unavailable]

Solubility(ies): water Negligible

Partition coefficient (n-Octanol/Water Partition Coefficient): No data available

Autoignition Temperature: No data available

Decomposition Temperature: No data available

Viscosity: 112.75 cSt (112.75 mm²/sec) at 40°C [Base oil] [test method unavailable]

Explosive Properties: None

Oxidizing Properties: None

9.2. OTHER INFORMATION

DMSO Extract (mineral oil only), IP-346: < 3 %wt

NOTE: Most physical properties above are for the oil component in the material.

| | |
|-------------------|---------------------------------|
| SECTION 10 | STABILITY AND REACTIVITY |
|-------------------|---------------------------------|

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10.1. REACTIVITY: See sub-sections below.

10.2. CHEMICAL STABILITY: Material is stable under normal conditions.

10.3. POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

10.4. CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

10.5. INCOMPATIBLE MATERIALS: Strong oxidisers

10.6. HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

| SECTION 11 | TOXICOLOGICAL INFORMATION |
|------------|---------------------------|
|------------|---------------------------|

11.1. INFORMATION ON TOXICOLOGICAL EFFECTS

| <u>Hazard Class</u> | <u>Conclusion / Remarks</u> |
|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Inhalation | |
| Acute Toxicity: No end point data for material. | Minimally Toxic. Based on assessment of the components. |
| Irritation: No end point data for material. | Negligible hazard at ambient/normal handling temperatures. |
| Ingestion | |
| Acute Toxicity: No end point data for material. | Minimally Toxic. Based on assessment of the components. |
| Skin | |
| Acute Toxicity: No end point data for material. | Minimally Toxic. Based on assessment of the components. |
| Skin Corrosion/Irritation: No end point data for material. | Negligible irritation to skin at ambient temperatures. Based on assessment of the components. |
| Eye | |
| Serious Eye Damage/Irritation: No end point data for material. | May cause mild, short-lasting discomfort to eyes. Based on assessment of the components. |
| Sensitisation | |
| Respiratory Sensitization: No end point data for material. | Not expected to be a respiratory sensitizer. |
| Skin Sensitization: No end point data for material. | Not expected to be a skin sensitizer. Based on assessment of the components. |
| Aspiration: Data available. | Not expected to be an aspiration hazard. Based on physico-chemical properties of the material. |
| Germ Cell Mutagenicity: No end point data for material. | Not expected to be a germ cell mutagen. Based on assessment of the components. |
| Carcinogenicity: No end point data for material. | Not expected to cause cancer. Based on assessment of the components. |
| Reproductive Toxicity: No end point data for material. | Not expected to be a reproductive toxicant. Based on assessment of the components. |
| Lactation: No end point data for material. | Not expected to cause harm to breast-fed children. |
| Specific Target Organ Toxicity (STOT) | |
| Single Exposure: No end point data for material. | Not expected to cause organ damage from a single exposure. |
| Repeated Exposure: No end point data for material. | Not expected to cause organ damage from prolonged or repeated exposure. Based on assessment of the components. |

TOXICITY FOR SUBSTANCES

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| NAME | ACUTE TOXICITY |
|--------------------------|----------------------------------------|
| N-PHENYL-1-NAPHTHYLAMINE | Oral Lethality: LD 50 1625 mg/kg (Rat) |

OTHER INFORMATION

For the product itself:

Component concentrations in this formulation would not be expected to cause skin sensitization, based on tests of the components or similar formulations.

Contains:

Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitising in test animals.

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

12.1. TOXICITY

Material -- Not expected to be harmful to aquatic organisms.

12.2. PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component -- Expected to be inherently biodegradable

12.3. BIOACCUMULATIVE POTENTIAL

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

12.4. MOBILITY IN SOIL

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

12.5. PERSISTENCE, BIOACCUMULATION AND TOXICITY FOR SUBSTANCE(S)

This product is not, or does not contain, a substance that is a PBT or a vPvB.

12.6. OTHER ADVERSE EFFECTS

No adverse effects are expected.

ECOLOGICAL DATA

Ecotoxicity

| Test | Duration | Organism Type | Test Results |
|----------------------------|-----------|---------------|------------------------------------------|
| Aquatic - Chronic Toxicity | 21 day(s) | Daphnia magna | NOELR 1 mg/l: data for similar materials |

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| | |
|-------------------|--------------------------------|
| SECTION 13 | DISPOSAL CONSIDERATIONS |
|-------------------|--------------------------------|

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

13.1. WASTE TREATMENT METHODS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION

European Waste Code: 12 01 12*

NOTE: These codes are assigned based upon the most common uses for this material and may not reflect contaminants resulting from actual use. Waste producers need to assess the actual process used when generating the waste and its contaminants in order to assign the proper waste disposal code(s).

This material is considered as hazardous waste pursuant to Directive 91/689/EEC on hazardous waste, and subject to the provisions of that Directive unless Article 1(5) of that Directive applies.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

| | |
|-------------------|------------------------------|
| SECTION 14 | TRANSPORT INFORMATION |
|-------------------|------------------------------|

LAND (ADR/RID): 14.1-14.6 Not Regulated for Land Transport

INLAND WATERWAYS (ADNR/ADN): 14.1-14.6 Not Regulated for Inland Waterways Transport

SEA (IMDG): 14.1-14.6 Not Regulated for Sea Transport according to IMDG-Code

SEA (MARPOL 73/78 Convention - Annex II):

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not classified according to Annex II

AIR (IATA): 14.1-14.6 Not Regulated for Air Transport

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SECTION 15

REGULATORY INFORMATION

REGULATORY STATUS AND APPLICABLE LAWS AND REGULATIONS

Listed or exempt from listing/notification on the following chemical inventories: DSL, IECSC, TSCA
Special Cases:

| Inventory | Status |
|-----------|--------------------|
| KECI | Restrictions Apply |

15.1. SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE

Applicable EU Directives and Regulations:

1907/2006 [... on the Registration, Evaluation, Authorisation and Restriction of Chemicals ... and amendments thereto]

1272/2008 [on classification, labelling and packaging of substances and mixtures.. and amendments thereto]

Refer to the relevant EU/national regulation for details of any actions or restrictions required by the above Regulation(s)/Directive(s).

15.2. CHEMICAL SAFETY ASSESSMENT

REACH Information: A Chemical Safety Assessment has been carried out for one or more substances present in the material.

SECTION 16

OTHER INFORMATION

REFERENCES: Sources of information used in preparing this SDS included one or more of the following: results from in house or supplier toxicology studies, CONCAWE Product Dossiers, publications from other trade associations, such as the EU Hydrocarbon Solvents REACH Consortium, U.S. HPV Program Robust Summaries, the EU IUCLID Data Base, U.S. NTP publications, and other sources, as appropriate.

List of abbreviations and acronyms that could be (but not necessarily are) used in this safety data sheet:

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| Acronym | Full text |
|-----------|--------------------------------------------------------------------------------------------------|
| N/A | Not applicable |
| N/D | Not determined |
| NE | Not established |
| VOC | Volatile Organic Compound |
| AICS | Australian Inventory of Chemical Substances |
| AIHA WEEL | American Industrial Hygiene Association Workplace Environmental Exposure Limits |
| ASTM | ASTM International, originally known as the American Society for Testing and Materials (ASTM) |
| DSL | Domestic Substance List (Canada) |
| EINECS | European Inventory of Existing Commercial Substances |
| ELINCS | European List of Notified Chemical Substances |
| ENCS | Existing and new Chemical Substances (Japanese inventory) |
| IECSC | Inventory of Existing Chemical Substances in China |
| KECI | Korean Existing Chemicals Inventory |
| NDSL | Non-Domestic Substances List (Canada) |
| NZIoC | New Zealand Inventory of Chemicals |
| PICCS | Philippine Inventory of Chemicals and Chemical Substances |
| TLV | Threshold Limit Value (American Conference of Governmental Industrial Hygienists) |
| TSCA | Toxic Substances Control Act (U.S. inventory) |
| UVCB | Substances of Unknown or Variable composition, Complex reaction products or Biological materials |
| LC | Lethal Concentration |
| LD | Lethal Dose |
| LL | Lethal Loading |
| EC | Effective Concentration |
| EL | Effective Loading |
| NOEC | No Observable Effect Concentration |
| NOELR | No Observable Effect Loading Rate |

KEY TO THE RISK CODES CONTAINED IN SECTION 2 AND 3 OF THIS DOCUMENT (for information only):

R20; Harmful by inhalation.

R22; Harmful if swallowed.

R38; Irritating to skin.

R41; Risk of serious damage to eyes.

R43; May cause sensitisation by skin contact.

R50/53; Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):

Acute Tox. 4 H302: Harmful if swallowed; Acute Tox Oral, Cat 4

Skin Irrit. 2 H315: Causes skin irritation; Skin Corr/Irritation, Cat 2

Skin Sens. 1 H317: May cause allergic skin reaction; Skin Sensitization, Cat 1

Eye Dam. 1 H318: Causes serious eye damage; Serious Eye Damage/Irr, Cat 1

Acute Tox. 4 H332: Harmful if inhaled; Acute Tox Inh, Cat 4

Aquatic Acute 1 H400: Very toxic to aquatic life; Acute Env Tox, Cat 1

Aquatic Chronic 1 H410: Very toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 1

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:

Revision Changes:

Section 01: Company Mailing Address information was modified.

Section 05: Hazardous Combustion Products information was modified.

Section 15: EU Inventory Requirements - Header information was modified.

Section 02: GHS Sensitizer Statement information was modified.

Composition: Component Table for REACH information was modified.

Composition: Component Table information was modified.

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Section 11 Substance Toxicity table - Header information was modified.

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Internal Use Only

MHC: 0B, 0B, 0, 0, 0, 0

PPEC: A

DGN: 2025681XGB (553419)

| |
|--------------|
| ANNEX |
|--------------|

Annex not required for this material.