

## Appendix 2 SAFETY DATA SHEETS FOR COMAH DANGEROUS SUBSTANCES

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Acetylene  
AeroShell Fluid 1  
AeroShell Fluid 41  
Corrosion Inhibitor KI-302C  
Cortron CK352  
Diesel Biocide MB-554  
Diesel  
Hydrogen  
Puraspec 5158  
Methanol  
Natural Gas Condensate  
Natural Gas  
Nitric Acid  
Nytro Lyra X  
Odourant 16410  
Oxygen Scavenger DEHA 85  
Propane  
Demulsifier - Representative  
Shell Omala 100  
Shell Omala 150  
Shell Omala 220  
Sodium Hypochlorite  
Tectly 502-C

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Version 1.19  
Revision Date 26.07.2010

MSDS Number 300000000002  
Print Date 13.12.2010

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

Product identifier : Acetylene

Chemical formula : C<sub>2</sub>H<sub>2</sub>

Synonyms : Acetylene (dissolved), Ethyne, welding gas

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

Use of the Substance/Mixture : General Industrial

Restrictions on Use : No data available.

Details of the supplier of the safety data sheet : Air Products Plc  
2 Millennium Gate  
Westmere Drive  
Crewe  
Cheshire

Email Address – Technical Information : GASTECH@airproducts.com

Telephone : +44(0)8457 020202

Emergency telephone number (24h) : 1. Cylinder 0500 020202 / +44 870 190 6874  
2. Bulk 0500 020202 / +44 2030 240 571  
3. Medical 0500 020202 / +44 1270 218 050

## 2. HAZARDS IDENTIFICATION

Classification according to Regulation 1272/2008 (CLP)

Flammable gases - Category 1 H220:Extremely flammable gas.

Gases under pressure - Dissolved gas H280:Contains gas under pressure; may explode if heated.

Label Elements according to Regulation 1272/2008 (CLP)

Hazard pictograms/symbols



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Signal Word: Danger

## Hazard Statements:

H220:Extremely flammable gas.  
H280:Contains gas under pressure; may explode if heated.  
EUH006:Explosive with or without contact with air.

## Precautionary Statements:

Prevention : P210:Keep away from heat/sparks/open flame/hot surface s. - No smoking.  
Response : P377 :Leaking gas fire: Do not extinguish, unless leak can be stopped safe  
P381 :Eliminate all ignition sources if safe to do so.  
Storage : P403:Store in a well-ventilated place.

## Classification (Directive)

F+ Extremely flammable

R 5 Heating may cause an explosion.  
R 6 Explosive with or without contact with air.  
R12 Extremely flammable.  
Dispose of cylinder via gas supplier only, inner porous material may contain asbestos.

## Other hazards

High pressure gas.  
Can cause rapid suffocation.  
Extremely flammable.  
May form explosive mixtures in air.  
Immediate fire and explosion hazard exists when mixed with air at concentrations exceeding the lower flammability limit (LFL).  
High concentrations that can cause rapid suffocation are within the flammable range and should not be entered.  
Avoid breathing gas.  
Self contained breathing apparatus (SCBA) may be required.

## Environmental Effects

Not harmful.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance/Mixture : Substance

Components	EINECS / ELINCS Number	CAS Number	Concentration
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			(Volume)
Acetylene	200-816-9	74-86-2	100 %

Components	Classification (Directive)	Classification (CLP)	REACH Reg. #
Acetylene	F+ R 5 ; R 6 ; R12	Flam. Gas 1 Press. Gas	

If REACH registration numbers do not appear the substance is either exempt from registration, does not meet the minimum volume threshold for registration, or the registration date has not yet come due.  
Refer to section 16 for full text of each relevant R-phrases and H-phrases.

Concentration is nominal. For the exact product composition, please refer to Air Products technical specifications.

## 4. FIRST AID MEASURES

### Description of first aid measures

- General advice : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.
- Skin contact : Not applicable.
- Ingestion : Ingestion is not considered a potential route of exposure.
- Inhalation : In case of shortness of breath, give oxygen. Move to fresh air. If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately. Seek medical advice.

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

- Symptoms : Exposure to oxygen deficient atmosphere may cause the following symptoms: Dizziness. Salivation. Nausea. Vomiting. Loss of mobility/consciousness.

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

No data available.

## 5. FIRE-FIGHTING MEASURES

### Extinguishing media

- Suitable extinguishing media : All known extinguishing media can be used.
- Extinguishing media which must not be used for safety reasons. : No data available.

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Special hazards arising from the substance or mixture	: Upon exposure to intense heat or flame, cylinder will vent rapidly and or rupture violently. Keep containers and surroundings cool with water spray. Extinguish fire only if gas flow can be stopped. If possible, shut off the source of gas and allow the fire to burn itself out. Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire. Move away from container and cool with water from a protected position. Keep adjacent cylinders cool by spraying with large amounts of water until fire burns itself out. If flames are accidentally extinguished, explosive re-ignition may occur; therefore, appropriate measures should be taken(e.g. total evacuation to protect persons from cylinder fragments and toxic fumes should a rupture occur).
Advice for fire-fighters	: Wear self contained breathing apparatus for fire fighting if necessary.
Further information	: No data available.

## 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	: Evacuate personnel to safe areas. Remove all sources of ignition. Never enter a confined space or other area where the flammable gas concentration is greater than 10% of its lower flammable limit. Ventilate the area.
Environmental precautions	: Do not discharge into any place where its accumulation could be dangerous. Should not be released into the environment. Prevent further leakage or spillage if safe to do so.
Methods and material for containment and cleaning up	: Ventilate the area. Approach suspected leak areas with caution.
Additional advice	: Increase ventilation to the release area and monitor concentrations. If leak is from cylinder or cylinder valve, call the Air Products emergency telephone number. If the leak is in the user's system, close the cylinder valve, safely vent the pressure, and purge with an inert gas before attempting repairs.

## 7. HANDLING AND STORAGE

### Precautions for safe handling

Acetylene cylinders are heavier than other cylinders because they are packed with a porous filler material and acetone. Never use acetylene in excess of 15 psig pressure. Protect cylinders from physical damage; do not drag, roll, slide or drop. Do not allow storage area temperature to exceed 50°C (122°F). Only experienced and properly instructed persons should handle compressed gases/cryogenic liquids. Before using the product, determine its identity by reading the label. Know and understand the properties and hazards of the product before use. When doubt exists as to the correct handling procedure for a particular gas, contact the supplier. 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. Use an adjustable strap wrench to remove over-tight or rusted caps. Before connecting the container, check the complete gas system for suitability, particularly for pressure rating and materials. Before connecting the container for use, ensure that back feed from the system into the container is prevented. Ensure

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the complete gas system is compatible for pressure rating and materials of construction. Ensure the complete gas system has been checked for leaks before use. Employ suitable pressure regulating devices on all containers when the gas is being emitted to systems with lower pressure rating than that of the container. Never insert an object (e.g. wrench, screwdriver, pry bar, etc.) into valve cap openings. Doing so may damage valve, causing a leak to occur. Open valve slowly. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Close container valve after each use and 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. Close valve after each use and when empty. Replace outlet caps or plugs and container caps as soon as container is disconnected from equipment. Do not subject containers to abnormal mechanical shocks which may cause damage to their valve or safety devices. Never attempt to lift a cylinder by its valve protection cap or guard. Do not use containers as rollers or supports or for any other purpose than to contain the gas as supplied. Never strike an arc on a compressed gas cylinder or make a cylinder a part of an electrical circuit. Do not smoke while handling product or cylinders. Never re-compress a gas or a gas mixture without first consulting the supplier. Never attempt to transfer gases from one cylinder/container to another. Always use backflow protective device in piping. Purge air from system before introducing gas. When returning cylinder install valve outlet cap or plug leak tight. Never use direct flame or electrical heating devices to raise the pressure of a container. Containers should not be subjected to temperatures above 50°C (122°F). Prolonged periods of cold temperature below -30°C (-20°F) should be avoided. Ensure equipment is adequately earthed.

## Conditions for safe storage, including any incompatibilities

Containers should be stored in a purpose build compound which should be well ventilated, preferably in the open air. Observe all regulations and local requirements regarding storage of containers. Stored containers should be periodically checked for general condition and leakage. Protect containers stored in the open against rusting and extremes of weather. Containers should not be stored in conditions likely to encourage corrosion. Containers should be stored in the vertical position and properly secured to prevent toppling. The container valves should be tightly closed and where appropriate valve outlets should be capped or plugged. Container valve guards or caps should be in place. Keep containers tightly closed in a cool, well-ventilated place. Store containers in location free from fire risk and away from sources of heat and ignition. Full and empty cylinders should be segregated. Do not allow storage temperature to exceed 50°C (122°F). Smoking should be prohibited within storage areas or while handling product or containers. Display "No Smoking or Open Flames" signs in the storage areas. The amounts of flammable or toxic gases in storage should be kept to a minimum. Return empty containers in a timely manner.

## Technical measures/Precautions

Containers should be segregated in the storage area according to the various categories (e.g. flammable, toxic, etc.) and in accordance with local regulations. Keep away from combustible material. All electrical equipment in the storage areas should be compatible with flammable materials stored. Containers containing flammable gases should be stored away from other combustible materials. Where necessary containers containing oxygen and oxidants should be separated from flammable gases by a fire resistant partition.

## Specific end use(s)

Refer to section 1 or the extended SDS if applicable

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## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

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## Control parameters

If applicable, refer to the extended section of the SDS for further information on CSA.

## Exposure controls

### Engineering measures

Provide natural or explosion-proof ventilation that is adequate to ensure flammable gas does not reach its lower explosive limit.

### Personal protective equipment

- |   |  |
|---|--|
| Respiratory protection                          | : High concentrations that can cause rapid suffocation are within the flammable range and should not be entered.   |
| Hand protection                                 | : Sturdy work gloves are recommended for handling cylinders.<br>The breakthrough time of the selected glove(s) must be greater than the intended use period. |
| Eye protection                                  | : Safety glasses recommended when handling cylinders.  |
| Skin and body protection                        | : Safety shoes are recommended when handling cylinders.<br>Wear as appropriate:<br>Flame retardant protective clothing.                                      |
| Special instructions for protection and hygiene | : Ensure adequate ventilation, especially in confined areas.   |

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

- |  |   |
|--|---|
| Appearance                               | : Dissolved gas. Colorless gas                                |
| Odor                                     | : Poor warning properties at low concentrations. Garlic-like. |
| Odor threshold                           | : No data available.  |
| pH                                       | : Not applicable.   |
| Melting point/range                      | : -113 °F (-80.8 °C)  |
| Boiling point/range                      | : -120 °F (-84.2 °C)  |
| Flash point                              | : 0 °F (-18 °C)   |
| Evaporation rate                         | : Not applicable.   |
| Flammability (solid, gas)                | : No data available.  |
| Upper/lower explosion/flammability limit | : 83 %(V) / 2.4 %(V)  |

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Vapor pressure	: 638.14 psia (44.00 bar) at 68 °F (20 °C)
Water solubility	: 1.185 g/l
Relative vapor density	: 0.899 (air = 1)
Relative density	: No data available.
Partition coefficient (n-octanol/water)	: Not applicable.
Autoignition temperature	: 325 °C
Decomposition temperature	: No data available.
Viscosity	: Not applicable.
Explosive properties	: No data available.
Oxidizing properties	: No data available.
Molecular Weight	: 26.04 g/mol
Density	: 0.0011 g/cm <sup>3</sup> (0.069 lb/ft <sup>3</sup> ) at 21 °C ( 70 °F) Note: (as vapor)
Specific Volume	: 0.9221 m <sup>3</sup> /kg (14.77 ft <sup>3</sup> /lb) at 21 °C ( 70 °F)
Upper flammability limit	: 83 %(V)
Lower flammability limit	: 2.4 %(V)

## 10. STABILITY AND REACTIVITY

Reactivity	: Refer to possibility of hazardous reactions and/or incompatible materials sections
Chemical Stability	: Stable under normal conditions.
Possibility of hazardous reactions	: Unstable. Stable as shipped. Do not use at pressure above 15 psig.
Conditions to avoid	: Cylinders should not be exposed to sudden shock or sources of heat. Heat, flames and sparks. May form explosive mixtures with air and oxidizing agents.
Incompatible materials	: Under certain conditions, acetylene can react with copper, silver, and mercury to form acetylides, compounds which can act as ignition sources. Brasses containing less than 65% copper in the alloy and certain nickel alloys are suitable for acetylene service under normal conditions. Acetylene can react explosively when combined with oxygen and other oxidizers including all halogens and



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halogen compounds. The presence of moisture, certain acids, or alkaline materials tends to enhance the formation of copper acetylides.  
Oxygen.  
Oxidizing agents.

Hazardous decomposition products : No data available.

## 11. TOXICOLOGICAL INFORMATION

### Information on toxicological effects

#### Likely routes of exposure

- |                    |   |   |
|--------------------|---|---|
| Effects on Eye     | : | No data available.  |
| Effects on Skin    | : | No adverse effect.  |
| Inhalation Effects | : | May cause anesthetic effects. In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. Asphyxiation may bring about unconsciousness without warning and so rapidly that victim may be unable to protect themselves. |
| Ingestion Effects  | : | Ingestion is not considered a potential route of exposure.  |
| Symptoms           | : | Exposure to oxygen deficient atmosphere may cause the following symptoms: Dizziness. Salivation. Nausea. Vomiting. Loss of mobility/consciousness.  |

#### Acute toxicity

- |                                   |   |   |
|-----------------------------------|---|---|
| Acute Oral Toxicity               | : | No data is available on the product itself. |
| Inhalation                        | : | No data is available on the product itself. |
| Acute Dermal Toxicity             | : | No data is available on the product itself. |
| Skin corrosion/irritation         | : | No data available.                          |
| Serious eye damage/eye irritation | : | No data available.                          |
| Sensitization.                    | : | No data available.                          |

#### Chronic toxicity or effects from long term exposures

- |                        |   |   |
|------------------------|---|---|
| Carcinogenicity        | : | No data available.                          |
| Reproductive toxicity  | : | No data is available on the product itself. |
| Germ cell mutagenicity | : | No data is available on the product itself. |

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Specific target organ systemic toxicity (single exposure) : No data available.

Specific target organ systemic toxicity (repeated exposure) : No data available.

Aspiration hazard : No data available.

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## 12. ECOLOGICAL INFORMATION

### Toxicity

Aquatic toxicity : No data is available on the product itself.

Toxicity to other organisms : No data is available on the product itself.

### Persistence and degradability

No data available.

### Bioaccumulative potential

No data is available on the product itself.

### Mobility in soil

No data available.

### Results of PBT and vPvB assessment

If applicable, refer to the extended section of the SDS for further information on CSA.

### Other adverse effects

This product has no known eco-toxicological effects.

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## 13. DISPOSAL CONSIDERATIONS

Waste treatment methods : Contact supplier if guidance is required. Return unused product in original cylinder to supplier. Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste gas should be flared through a suitable burner with flash back arrestor.

Contaminated packaging : Return cylinder to supplier.

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## 14. TRANSPORT INFORMATION

### ADR

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UN/ID No. : UN1001  
Proper shipping name : ACETYLENE, DISSOLVED  
Class or Division : 2  
Tunnel Code : (B/D)  
Label(s) : 2.1  
ADR/RID Hazard ID no. : 239

## IATA

Transport Forbidden

## IMDG

UN/ID No. : UN1001  
Proper shipping name : ACETYLENE, DISSOLVED  
Class or Division : 2.1  
Label(s) : 2.1

## RID

UN/ID No. : UN1001  
Proper shipping name : ACETYLENE, DISSOLVED  
Class or Division : 2  
Label(s) : 2.1

### Further 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. The transportation information is not intended to convey all specific regulatory data relating to this material. For complete transportation information, contact an Air Products customer service representative.

## 15. REGULATORY INFORMATION

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

Country	Regulatory list	Notification
USA	TSCA	Included on Inventory.
EU	EINECS	Included on Inventory.
Canada	DSL	Included on Inventory.
Australia	AICS	Included on Inventory.
Japan	ENCS	Included on Inventory.
South Korea	ECL	Included on Inventory.
China	SEPA	Included on Inventory.
Philippines	PICCS	Included on Inventory.

WGK Identification Number: : Not water endangering.

## Chemical Safety Assessment

Refer to extended SDS for CSA information

This product is either exempt from REACH, does not meet the minimum volume threshold for a CSA, or the CSA has not yet been completed.

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## 16. OTHER INFORMATION

Ensure all national/local regulations are observed.

R-phrases - Components

R 5 Heating may cause an explosion.

R 6 Explosive with or without contact with air.

R12 Extremely flammable.

Hazard Statements:

EUH006 Explosive with or without contact with air.

H220 Extremely flammable gas.

Prepared by : Air Products and Chemicals, Inc. Global EH&S Product Safety Department

For additional information, please visit our Product Stewardship web site at  
<http://www.airproducts.com/productstewardship/>

This Safety Data Sheet has been established in accordance with the applicable European Directives and applies to all countries that have translated the Directives in their national laws. Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC.

Details given in this document are believed to be correct at the time of going to press. 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.

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**Safety Data Sheet**

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**SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING****1.1 Product Identifier**

**Material Name** : AeroShell Fluid 1  
**Product Code** : 001A0039

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

**Product Use** : Mineral lubricating oil for general purpose aircraft use. For further details consult the AeroShell Book on [www.shell.com/aviation](http://www.shell.com/aviation).

**Uses Advised Against** : This product must be used, handled and applied in accordance with the requirements of the equipment manufacturer's manuals, bulletins and other documentation. Not to be used as an engine lubricating oil.

**1.3 Details of the Supplier of the safety data sheet**

**Manufacturer/Supplier** : Shell UK Oil Products Limited  
Shell Centre  
London  
SE1 7NA  
United Kingdom

**Telephone** : (+44) 08708500939

**Email Contact for Safety Data Sheet** : If you have any enquiries about the content of this SDS please email [lubricantSDS@shell.com](mailto:lubricantSDS@shell.com)

**1.4 Emergency Telephone Number**

: +44-(0) 151-350-4595

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

1999/45/EC	
Hazard Characteristics	R-phrases(s)
Not classified as dangerous under EC criteria.;	

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### 2.2 Label Elements

#### Labeling according to Directive 1999/45/EC

EC Symbols : No Hazard Symbol required

EC Classification : Not classified as dangerous under EC criteria.

EC Risk Phrases : Not classified.

EC Safety Phrases : Not classified.

### 2.3 Other Hazards

**Health Hazards** : Not expected to be a health hazard when used under normal conditions. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis. Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.  
Used oil may contain harmful impurities.

**Safety Hazards** : Not classified as flammable but will burn.

**Environmental Hazards** : Not classified as dangerous for the environment.

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## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1 Substance

**Material Name** : Not applicable.

### 3.2 Mixtures

**Mixture Description** : Highly refined mineral oils and additives.

#### Hazardous Components

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

Chemical Name	CAS No.	EC Number	REACH Registration No.	Conc.
Distillates, petroleum,	64742-56-9	265-159-2	Not available / Not	1.00 - 5.00%

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solvent-dewaxed light paraffinic			applicable.	
Distillates (petroleum), hydrotreated light naphthenic	64742-53-6	265-156-6	01-2119480375-34	60.00 - 70.00%

Chemical Name	Hazard Class & Category	Hazard Statement
Distillates, petroleum, solvent-dewaxed light paraffinic	Asp. Tox., 1;	H304;
Distillates (petroleum), hydrotreated light naphthenic	Asp. Tox., 1;	H304;

**Classification of components according to 67/548/EEC**

Chemical Name	CAS No.	EC Number	REACH Registration No.	Symbol(s)	R-phrase(s)	Conc.
Distillates, petroleum, solvent-dewaxed light paraffinic	64742-56-9	265-159-2	Not available / Not applicable.	Xn	R65	1.00 - 5.00%

**Additional Information** : The highly refined mineral oil contains <3% (w/w) DMSO-extract, according to IP346.

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.

**SECTION 4. FIRST AID MEASURES****4.1 Description of First Aid Measures**

- Inhalation** : No treatment necessary under normal conditions of use. If symptoms persist, obtain medical advice.
- Skin Contact** : Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available. If persistent irritation occurs, obtain medical attention.
- Eye Contact** : Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.
- Ingestion** : If swallowed, do not induce vomiting; transport to nearest

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- medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. If any of the following delayed signs and symptoms appear within the next 6 hours, transport to the nearest medical facility: fever greater than 101° F (38.3°C), shortness of breath, chest congestion or continued coughing or wheezing.
- 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** : If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath, and/or fever. The onset of respiratory symptoms may be delayed for several hours after exposure. Oil acne/folliculitis signs and symptoms may include formation of black pustules and spots on the skin of exposed areas. Ingestion may result in nausea, vomiting and/or diarrhoea.
- 4.3 Indication of any immediate medical attention and special treatment needed** : Notes to doctor/physician:  
Treat symptomatically.  
Call a doctor or poison control center for guidance.

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### SECTION 5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

- 5.1 Extinguishing Media** : Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
- Unsuitable Extinguishing Media** : Do not use water in a jet.
- 5.2 Special hazards arising from the substance or mixture** : Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds.
- 5.3 Advice for firefighters** : Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to relevant Standards (e.g. Europe: EN469).

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### SECTION 6. ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled or released material. For guidance on selection of personal protective



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equipment see Chapter 8 of this Material Safety Data Sheet. Observe the relevant local and international regulations.

- 6.1 Personal Precautions, Protective Equipment and Emergency Procedures** : 6.1.1 For non emergency personnel: Avoid contact with skin and eyes.  
6.1.2 For emergency responders: Avoid contact with skin and eyes.
- 6.2 Environmental Precautions** : Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers.
- 6.3 Methods and Material for Containment and Cleaning Up** : Slippery when spilt. Avoid accidents, clean up immediately. Prevent from spreading by making a barrier with sand, earth or other containment material. Reclaim liquid directly or in an absorbent. Soak up residue with an absorbent such as clay, sand or other suitable material and dispose of properly.
- Additional Advice** : Local authorities should be advised if significant spillages cannot be contained.
- 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.

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## SECTION 7. HANDLING AND STORAGE

- General Precautions** : Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. 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.
- 7.1 Precautions for Safe Handling** : Avoid prolonged or repeated contact with skin. Avoid inhaling vapour and/or mists. When handling product in drums, safety footwear should be worn and proper handling equipment should be used. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires. Keep container tightly closed and in a cool, well-ventilated place. Use properly labelled and closeable containers.
- Product Transfer** : This material has the potential to be a static accumulator. Proper grounding and bonding procedures should be used during all bulk transfer operations.
- 7.2 Conditions for safe storage, including any incompatibilities** : Storage Temperature: -50 - 50°C / -58 - 122°F

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- Refer to section 15 for any additional specific legislation covering the packaging and storage of this product.  
The storage of this product may be subject to the Control of Pollution (Oil Storage) (England) Regulations. Further guidance may be obtained from the local environmental agency office.
- Recommended Materials** : For containers or container linings, use mild steel or high density polyethylene.
- Unsuitable Materials** : PVC.
- 7.3 Specific end use(s)** : Not applicable
- Additional Information** : Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion.  
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".

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**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
Oil mist, mineral	ACGIH	TWA(Inhalable fraction.)		5 mg/m3	

**Biological Exposure Index (BEI)**

No biological limit allocated.

**PNEC related information** : Data not available

**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

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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/>

Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substances  
<http://www.hse.gov.uk/>

Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA), Germany.  
<http://www.dguv.de/inhalt/index.jsp>

L'Institut National de Recherche et de Sécurité, (INRS), France  
<http://www.inrs.fr/accueil>

### 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: Adequate ventilation to control airborne concentrations. Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

Define procedures for safe handling and maintenance of controls. Educate and train workers in the hazards and control measures relevant to normal activities associated with this product. Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation. Drain down system prior to equipment break-in or maintenance. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash

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work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

### Occupational Exposure Controls

- Personal Protective Equipment** : The provided information is made in consideration of the PPE directive (Council Directive 89/686/EEC) and the CEN European Committee for Standardisation (CEN) standards. Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.
- Eye Protection** : Wear safety glasses or full face shield if splashes are likely to occur. Approved to EU Standard EN166.
- Hand Protection** : 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: PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended. 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.
- Body protection** : Skin protection is not required under normal conditions of use. It is good practice to wear chemical resistant gloves.
- Respiratory Protection** : No respiratory protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material. 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.

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Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for combined particulate/organic gases and vapours [boiling point >65 °C (149 °F)] meeting EN14387.

**Thermal Hazards** : Not applicable.

**Environmental Exposure Controls**

**Environmental exposure control measures** : Minimise release to the environment. An environmental assessment must be made to ensure compliance with local environmental legislation. Information on accidental release measures are to be found in section 6.

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

Appearance : Pale yellow. Liquid at room temperature.  
 Odour : Slight hydrocarbon.  
 Odour threshold : Data not available  
 pH : Not applicable.  
 Initial Boiling Point and Boiling Range : > 280 °C / 536 °F estimated value(s)  
 Pour point : < -45 °C / -49 °F  
 Flash point : Typical 150 °C / 302 °F (PMCC / ASTM D93)  
 Upper / lower Flammability or Explosion limits : Typical 1 - 10 %(V) (based on mineral oil)  
 Auto-ignition temperature : > 320 °C / 608 °F  
 Vapour pressure : < 0.5 Pa at 20 °C / 68 °F (estimated value(s))  
 Relative Density : Typical 0.873 at 15 °C / 59 °F  
 Density : Typical 873 kg/m<sup>3</sup> at 15 °C / 59 °F  
 Water solubility : Negligible.  
 Solubility in other solvents : Data not available  
  
 n-octanol/water partition coefficient (log Pow) : > 6 (based on information on similar products)  
 Dynamic viscosity : Data not available  
 Kinematic viscosity : Typical 12 mm<sup>2</sup>/s at 40 °C / 104 °F  
 Vapour density (air=1) : > 1 (estimated value(s))  
 Evaporation rate (nBuAc=1) : Data not available  
 Decomposition : Data not available  
 Temperature :  
 Flammability : Data not available  
 Oxidizing Properties : Data not available

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Explosive Properties : Not classified

### 9.2 Other Information

Electrical conductivity : This material is not expected to be a static accumulator.

Other Information : not a VOC

Volatile organic compound : 0 %

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## SECTION 10. STABILITY AND REACTIVITY

- 10.1 Reactivity** : The product does not pose any further reactivity hazards in addition to those listed in the following sub-paragraph.
- 10.2 Chemical stability** : No hazardous reaction is expected when handled and stored according to provisions.
- 10.3 Possibility of Hazardous Reactions** : Reacts with strong oxidising agents.
- 10.4 Conditions to Avoid** : Extremes of temperature and direct sunlight.
- 10.5 Incompatible Materials** : Strong oxidising agents.
- 10.6 Hazardous Decomposition Products** : Hazardous decomposition products are not expected to form during normal storage.

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## SECTION 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on Toxicological effects

- Basis for Assessment** : Information given is based on data on the components and the toxicology of similar products.  
Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).
- Likely Routes of Exposure** : Skin and eye contact are the primary routes of exposure although exposure may occur following accidental ingestion.
- Acute Oral Toxicity** : Expected to be of low toxicity: LD50 > 5000 mg/kg , Rat  
Aspiration into the lungs may cause chemical pneumonitis which can be fatal.
- Acute Dermal Toxicity** : Expected to be of low toxicity: LD50 > 5000 mg/kg , Rabbit
- Acute Inhalation Toxicity** : Not considered to be an inhalation hazard under normal conditions of use.
- Skin corrosion/irritation** : Expected to be slightly irritating. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin

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<b>Serious eye damage/irritation</b>	: resulting in disorders such as oil acne/folliculitis.
<b>Respiratory Irritation</b>	: Expected to be slightly irritating.
<b>Respiratory or skin sensitisation</b>	: Inhalation of vapours or mists may cause irritation.
<b>Aspiration Hazard</b>	: For respiratory and skin sensitisation: Not expected to be a sensitiser.
	: Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.
<b>Germ cell mutagenicity</b>	: Not considered a mutagenic hazard.
<b>Carcinogenicity</b>	: Not expected to be carcinogenic. Product contains mineral oils of types shown to be non-carcinogenic in animal skin-painting studies. Highly refined mineral oils are not classified as carcinogenic by the International Agency for Research on Cancer (IARC).

Material		Carcinogenicity Classification
Highly refined mineral oil (IP346 <3%)	:	ACGIH Group A4: Not classifiable as a human carcinogen.
Highly refined mineral oil (IP346 <3%)	:	IARC 3: Not classifiable as to carcinogenicity to humans.
Highly refined mineral oil (IP346 <3%)	:	GHS / CLP: No carcinogenicity classification

<b>Reproductive and Developmental Toxicity</b>	: Not expected to be a hazard.
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**Summary on evaluation of the CMR properties**

<b>Carcinogenicity</b>	: This product does not meet the criteria for classification in categories 1A/1B.,
<b>Mutagenicity</b>	: This product does not meet the criteria for classification in categories 1A/1B.
<b>Reproductive Toxicity (fertility)</b>	: This product does not meet the criteria for classification in categories 1A/1B.

<b>Specific target organ toxicity - single exposure</b>	: Not expected to be a hazard.
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<b>Specific target organ toxicity - repeated exposure</b>	: Not expected to be a hazard.
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<b>Additional Information</b>	: Used oils may contain harmful impurities that have accumulated during use. The concentration of such impurities will depend on use and they may present risks to health and the environment on disposal. ALL used oil should be handled
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with caution and skin contact avoided as far as possible.  
Classifications by other authorities under varying regulatory frameworks may exist.

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**SECTION 12. ECOLOGICAL INFORMATION**

- Basis for Assessment** : Ecotoxicological data have not been determined specifically for this product. Information given is based 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** : Poorly soluble mixture. May cause physical fouling of aquatic organisms. Expected to be practically non toxic: LL/EL/IL50 > 100 mg/l (to aquatic organisms) LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract. Mineral oil is not expected to cause any chronic effects to aquatic organisms at concentrations less than 1 mg/l.
- 12.2 Persistence and degradability** : Expected to be not readily biodegradable. Major constituents are expected to be inherently biodegradable, but the product contains components that may persist in the environment.
- 12.3 Bioaccumulative Potential** : Contains components with the potential to bioaccumulate.
- 12.4 Mobility in Soil** : Liquid under most environmental conditions. If it enters soil, it will adsorb to soil particles and will not be mobile. Floats on water.
- 12.5 Result of PBT and vPvB assesment** : This mixture does not contain any REACH registered substances that are assessed to be a PBT or a vPvB.
- 12.6 Other Adverse Effects** : Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities. Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential.

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**SECTION 13. DISPOSAL CONSIDERATIONS****13.1 Waste Treatment Methods**



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- Material Disposal** : Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses.
- Container Disposal** : 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.  
EU Waste Disposal Code (EWC): 13 02 05 mineral-based non-chlorinated engine, gear and lubricating oils. Classification of waste is always the responsibility of the end user.

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### SECTION 14. TRANSPORT INFORMATION

#### Land transport (ADR/RID):

##### ADR

This product is not classified as dangerous for this mode of transport. Therefore 14.1 UN Number, 14.2 UN Proper Shipping name, 14.3 Transport hazard class(es), 14.4 Packing group, 14.5 Environmental hazards, 14.6 Special precautions for user do not apply.

##### RID

This product is not classified as dangerous for this mode of transport. Therefore 14.1 UN Number, 14.2 UN Proper Shipping name, 14.3 Transport hazard class(es), 14.4 Packing group, 14.5 Environmental hazards, 14.6 Special precautions for user do not apply.

#### Inland waterways transport (ADN):

This product is not classified as dangerous for this mode of transport. Therefore 14.1 UN Number, 14.2 UN Proper Shipping name, 14.3 Transport hazard class(es), 14.4 Packing group, 14.5 Environmental hazards, 14.6 Special precautions for user do not apply.

#### Sea transport (IMDG Code):

This product is not classified as dangerous for this mode of transport. Therefore 14.1 UN Number, 14.2 UN Proper Shipping name, 14.3 Transport hazard class(es), 14.4 Packing group, 14.5 Environmental hazards, 14.6 Special precautions for user do not apply.

#### Air transport (IATA):

This product is not classified as dangerous for this mode of transport. Therefore 14.1 UN Number, 14.2 UN Proper Shipping name, 14.3 Transport hazard class(es), 14.4 Packing group, 14.5 Environmental hazards, 14.6 Special precautions for user do not apply.

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

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

**Additional Information** : MARPOL Annex 1 rules apply for bulk shipments by sea.

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### 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

**Authorisations and/or restrictions on use** : Product is not subject to Authorisation under REACH.

**Recommended Restrictions on Use (Advice Against)** : This product must be used, handled and applied in accordance with the requirements of the equipment manufacturer's manuals, bulletins and other documentation. Not to be used as an engine lubricating oil.

##### Chemical Inventory Status

EINECS : All components listed or polymer exempt.  
TSCA : All components listed.

**Other Information** : Environmental Protection Act 1990 (as amended).  
Health and Safety at Work etc. Act 1974.  
Consumers Protection Act 1987.  
Pollution Prevention and Control Act 1999.  
Environment Act 1995.  
Factories Act 1961.  
The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment (Amendment) Regulations 2011.  
Chemicals (Hazard Information and Packaging for Supply) Regulations 2009.  
Control of Substances Hazardous to Health Regulations 2002

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(as amended).  
Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations 1997.  
Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (as amended).  
Personal Protective Equipment Regulations 2002.  
Personal Protective Equipment at Work Regulations 1992.  
Hazardous Waste (England and Wales) Regulations 2005(as amended).  
Control of Major Accident Hazards Regulations 1999 (as amended).  
Renewable Transport Fuel Obligations Order 2007 (as amended).  
Energy Act 2011.  
Environmental Permitting (England and Wales) Regulations 2010 (as amended).  
Waste (England and Wales) Regulations 2011 (as amended).  
Planning (Hazardous Substances) Act 1990 and associated regulations.  
The Environmental Protection (Controls on Ozone-Depleting Substances) Regulations 2011.

**15.2 Chemical Safety Assessment** : No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

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

R65 Not classified.  
Harmful: may cause lung damage if swallowed.

**CLP Hazard Statements**

H304 May be fatal if swallowed and enters airways.

**Other Information****Abbreviations and Acronyms**

: Acute Tox. = Acute toxicity  
Asp. Tox. = Aspiration hazard  
Aquatic Acute = Acute hazards to the aquatic environment  
Aquatic Chronic = Hazardous to the aquatic environment - Long-term Hazard  
Eye Dam. = Serious eye damage/eye irritation  
Flam. Liq. = Flammable liquids

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Skin Corr. = Skin corrosion/irritation

Skin Sens. = Skin sensitizer

STOT SE = Specific target organ toxicity - single exposure

STOT RE = Specific target organ toxicity - repeated exposure

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

ACGIH = American Conference of Governmental Industrial Hygienists

ADR = European Agreement concerning the International 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

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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  
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

<b>SDS Distribution</b>	:	The information in this document should be made available to all who may handle the product.
<b>SDS Version Number</b>	:	2.1
<b>SDS Effective Date</b>	:	06.02.2013
<b>SDS Revisions</b>	:	A vertical bar ( ) in the left margin indicates an amendment from the previous version.
<b>SDS Regulation</b>	:	Regulation 1907/2006/EC as amended by Regulation (EU) 453/2010
<b>Disclaimer</b>	:	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** : AeroShell Fluid 41  
**Product Code** : 001A0050

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

**Product Use** : Mineral hydraulic fluid for aircraft. For further details consult the AeroShell Book on [www.shell.com/aviation](http://www.shell.com/aviation).

**Uses Advised Against** : Not to be used as an engine lubricating oil. This product must not be used in systems incorporating natural rubber. This product must be used, handled and applied in accordance with the requirements of the equipment manufacturer's manuals, bulletins and other documentation.

**1.3 Details of the Supplier of the safety data sheet**

**Manufacturer/Supplier** : **Shell UK Oil Products Limited**  
Shell Centre  
London  
SE1 7NA  
United Kingdom

**Telephone** : (+44) 08708500939  
**Email Contact for Safety Data Sheet** : If you have any enquiries about the content of this MSDS please email [lubricantSDS@shell.com](mailto:lubricantSDS@shell.com)

**1.4 Emergency Telephone Number**

: +44-(0) 151-350-4595

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

67/548/EEC or 1999/45/EC	
Hazard Characteristics	R-phrases(s)
Harmful.; Irritant.; Dangerous for the environment.	R20; R38; R51/53

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Classification triggering components : Contains Gas oils (petroleum), hydrodesulphurised.

### Labeling according to Directive 1999/45/EC / 67/548/EEC

EC Symbols : Xn Harmful.  
N Dangerous for the environment.



EC Classification : Harmful. Irritant. Dangerous for the environment.  
EC Risk Phrases : R20 Harmful by inhalation.  
R38 Irritating to skin.  
R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.  
EC Safety Phrases : S23 Do not breathe gas/fumes/vapour/spray.  
S24 Avoid contact with skin.  
S37 Wear suitable gloves.  
S61 Avoid release to the environment. Refer to special instructions/safety data sheets.  
S62 If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

### 2.3 Other Hazards

**Health Hazards** : Harmful by inhalation.  
Irritating to skin. Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal. High-pressure injection under the skin may cause serious damage including local necrosis. Used oil may contain harmful impurities.

**Safety Hazards** : Not classified as flammable but will burn.

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

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## 3. COMPOSITION/INFORMATION ON INGREDIENTS

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### 3.2 Mixtures

**Mixture Description** : Highly refined mineral oils and additives.

#### Hazardous Components

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

Chemical Name	CAS No.	EINECS	REACH Registration No.	Conc.
Gas oils (petroleum), hydrodesulfurized	64742-79-6	265-182-8	01-2119471311-49	80.00 - 90.00%
Butylated hydroxytoluene	128-37-0	204-881-4	01-2119565113-46	0.25 - 0.50%

Chemical Name	Hazard Class & Category	Hazard Statement
Gas oils (petroleum), hydrodesulfurized	Asp. Tox., 1; Acute Tox., 4; Skin Corr., 2; Aquatic Chronic, 2;	H304; H332; H315; H411;
Butylated hydroxytoluene	Aquatic Chronic, 1;	H410;

#### Classification of components according to 67/548/EEC

Chemical Name	CAS No.	EINECS	REACH Registration No.	Symbol(s)	R-phrases(s)	Conc.
Gas oils (petroleum), hydrodesulfurized	64742-79-6	265-182-8	01-2119471311-49	N, Xn	R20; R38; R51/53; R65	80.00 - 90.00%
Butylated hydroxytoluene	128-37-0	204-881-4	01-2119565113-46	N	R50/53	0.25 - 0.50%

**Additional Information** : The highly refined mineral oil contains <3% (w/w) DMSO-extract, according to IP346.

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

## 4. FIRST AID MEASURES

### 4.1 Description of First Aid Measures

**Inhalation** : Remove to fresh air. Do not attempt to rescue the victim unless



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### Skin Contact

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 CPR as required and transport to the nearest medical facility.

: Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available. If persistent irritation occurs, obtain medical attention. When using high pressure equipment, injection of product under the skin can occur. If high pressure injuries occur, the casualty should be sent immediately to a hospital. Do not wait for symptoms to develop. Obtain medical attention even in the absence of apparent wounds.

### Eye Contact

: Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.

### Ingestion

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

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

: If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath, and/or fever. The onset of respiratory symptoms may be delayed for several hours after exposure. Skin irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blisters. Oil acne/folliculitis signs and symptoms may include formation of black pustules and spots on the skin of exposed areas. Local necrosis is evidenced by delayed onset of pain and tissue damage a few hours following injection. Ingestion may result in nausea, vomiting and/or diarrhoea.

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

: Treat symptomatically.  
Potential for chemical pneumonitis. Consider: gastric lavage with protected airway, administration of activated charcoal. High pressure injection injuries require prompt surgical intervention and possibly steroid therapy, to minimise tissue damage and loss of function.  
Because entry wounds are small and do not reflect the seriousness of the underlying damage, surgical exploration to determine the extent of involvement may be necessary. Local anaesthetics or hot soaks should be avoided because they can contribute to swelling, vasospasm and ischaemia. Prompt surgical decompression, debridement and evacuation of

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foreign material should be performed under general anaesthetics, and wide exploration is essential. Call a doctor or poison control center for guidance.

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### 5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

- 5.1 Extinguishing Media** : Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
- Unsuitable Extinguishing Media** : Do not use water in a jet.
- 5.2 Special hazards arising from the substance or mixture** : Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds.
- 5.3 Advice for firefighters** : Proper protective equipment including breathing apparatus must be worn when approaching a fire in a confined space.

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### 6. ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. See Chapter 13 for information on disposal. Observe the relevant local and international regulations.

- 6.1 Personal Precautions, Protective Equipment and Emergency Procedures** : Avoid contact with skin and eyes.
- 6.2 Environmental Precautions** : Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers.
- 6.3 Methods and Material for Containment and Clean Up** : Slippery when spilt. Avoid accidents, clean up immediately. Prevent from spreading by making a barrier with sand, earth or other containment material. Reclaim liquid directly or in an absorbent. Soak up residue with an absorbent such as clay, sand or other suitable material and dispose of properly.
- Additional Advice** : Local authorities should be advised if significant spillages cannot be contained.
- 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.

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**7. HANDLING AND STORAGE**

- General Precautions** : Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires. 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.
- 7.1 Precautions for Safe Handling** : Avoid prolonged or repeated contact with skin. Avoid inhaling vapour and/or mists. When handling product in drums, safety footwear should be worn and proper handling equipment should be used.
- 7.2 Conditions for safe storage, including any incompatibilities** : Keep container tightly closed and in a cool, well-ventilated place. Use properly labelled and closeable containers. Must be stored in a diked (bunded) area. Storage Temperature: -50 - 50°C / -58 - 122°F  
The storage of this product may be subject to the Control of Pollution (Oil Storage) (England) Regulations. Further guidance may be obtained from the local environmental agency office.
- Additional Information** : Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion. 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".
- Recommended Materials** : For containers or container linings, use mild steel or high density polyethylene.
- Unsuitable Materials** : PVC.

---

**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**

- Additional Information** : Do not ingest. If swallowed then seek immediate medical

## Safety Data Sheet

assistance.

### Biological Exposure Index (BEI)

Data not available

### 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: Adequate ventilation to control airborne concentrations. Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

### Occupational Exposure Controls

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

**Eye Protection** : Wear safety glasses or full face shield if splashes are likely to occur. Approved to EU Standard EN166.

**Hand Protection** : 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: PVC, neoprene or nitrile rubber gloves. 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. 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.

**Body protection** : Skin protection not ordinarily required beyond standard issue work clothes. It is good practice to wear chemical resistant gloves.

**Respiratory Protection** : No respiratory protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material. If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker

## Safety Data Sheet

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 suitable, select an appropriate combination of mask and filter. Select a filter suitable for combined particulate/organic gases and vapours [boiling point >65 °C (149 °F)] meeting EN14387.

**Thermal Hazards** : Not applicable.

**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** : Minimise release to the environment. An environmental assessment must be made to ensure compliance with local environmental legislation.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

Appearance	: Red. Liquid at room temperature.
Odour	: Slight hydrocarbon.
pH	: Not applicable.
Initial Boiling Point and Boiling Range	: > 170 °C / 338 °F estimated value(s)
Pour point	: < -60 °C / -76 °F
Flash point	: Typical 105 °C / 221 °F (PMCC / ASTM D93)
Upper / lower Flammability or Explosion limits	: Typical 1 - 6 %(V)
Auto-ignition temperature	: > 220 °C / 428 °F
Vapour pressure	: ca. 0.1 hPa at 20 °C / 68 °F (estimated value(s))
Specific gravity	: Typical 0.87 at 15 °C / 59 °F
Density	: Typical 870 kg/m <sup>3</sup> at 15 °C / 59 °F
Water solubility	: Negligible.
Solubility in other solvents	: Data not available
n-octanol/water partition coefficient (log Pow)	: > 3 (based on information on similar products)
Dynamic viscosity	: Data not available
Kinematic viscosity	: Typical 14 mm <sup>2</sup> /s at 40 °C / 104 °F
Vapour density (air=1)	: Data not available

## Safety Data Sheet

Evaporation rate (nBuAc=1) : Data not available  
Decomposition : Data not available  
Temperature  
Flammability : Data not available

### 9.2 Other Information

Other Information : not a VOC  
Volatile organic carbon : 0 %  
content

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## 10. STABILITY AND REACTIVITY

**10.1 Reactivity** : The product does not pose any further reactivity hazards in addition to those listed in the following sub-paragraph.  
**10.2 Chemical stability** : Stable.  
**10.3 Possibility of Hazardous Reactions** : Reacts with strong oxidising agents.  
**10.4 Conditions to Avoid** : Extremes of temperature and direct sunlight.  
**10.5 Incompatible Materials** : Strong oxidising agents.  
**10.6 Hazardous Decomposition Products** : Hazardous decomposition products are not expected to form during normal storage.

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## 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on Toxicological effects

**Basis for Assessment** : Information given is based on data on the components and the toxicology of similar products.  
**Likely Routes of Exposure** : Skin and eye contact are the primary routes of exposure although exposure may occur following accidental ingestion.  
**Acute Oral Toxicity** : Low toxicity: LD50 > 5000 mg/kg , Rat  
**Acute Dermal Toxicity** : May be harmful in contact with skin. LD50 > 2000 - <= 5000 mg/kg , Rabbit  
**Acute Inhalation Toxicity** : Harmful if inhaled. LC50 > 1.0 - <= 5.0 mg/l / 4 h, Rat  
**Skin corrosion/irritation** : Causes skin irritation.  
**Serious eye damage/irritation** : Expected to be non-irritating to eyes.  
**Respiratory Irritation** : Inhalation of vapours or mists may cause irritation to the respiratory system.  
**Respiratory or skin** : Not expected to be a sensitiser.

## Safety Data Sheet

<b>sensitisation</b>	
<b>Aspiration Hazard</b>	: Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.
<b>Germ cell mutagenicity</b>	: Not expected to be mutagenic.
<b>Carcinogenicity</b>	: Not expected to be carcinogenic.
<b>Reproductive and Developmental Toxicity</b>	: Not expected to be a developmental toxicant. Not expected to impair fertility.
<b>Specific target organ toxicity - single exposure</b>	: Not expected to be a hazard.
<b>Specific target organ toxicity - repeated exposure</b>	: Not expected to be a hazard.

## 12. ECOLOGICAL INFORMATION

<b>Basis for Assessment</b>	: Ecotoxicological data have not been determined specifically for this product. Information given is based on a knowledge of the components and the ecotoxicology of similar products.
<b>12.1 Toxicity</b>	
<b>Acute Toxicity</b>	: Poorly soluble mixture. May cause physical fouling of aquatic organisms. Expected to be toxic: LL/EL/IL50 1-10 mg/l (to aquatic organisms) LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract.
<b>12.2 Persistence and degradability</b>	: Expected to be not readily biodegradable. Major constituents are expected to be inherently biodegradable, but the product contains components that may persist in the environment.
<b>12.3 Bioaccumulative Potential</b>	: Contains constituents with the potential to bioaccumulate.
<b>12.4 Mobility</b>	: Liquid under most environmental conditions. Floats on water. If it enters soil, it will adsorb to soil particles and will not be mobile.
<b>12.5 Result of PBT and vPvB assesment</b>	: The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not considered to be PBT or vPvB.
<b>12.6 Other Adverse Effects</b>	: Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities. Not expected to have ozone depletion potential, photochemical

## Safety Data Sheet

ozone creation potential or global warming potential.

Contains butylated hydroxytoluene. Very toxic: LC/EC/IC50 0.1  
- 1 mg/l (to aquatic organisms)

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### 13. DISPOSAL CONSIDERATIONS

#### 13.1 Waste Treatment Methods

- Material Disposal** : Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses.
- Container Disposal** : 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.  
EU Waste Disposal Code (EWC): 13 01 10 mineral based non-chlorinated hydraulic oils. Classification of waste is always the responsibility of the end user.  
Hazardous Waste (England and Wales) Regulations 2005.

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### 14. TRANSPORT INFORMATION

#### Land transport (ADR/RID):

##### ADR

- 14.1 UN number : 3082
- 14.2 UN proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Gas oils, (petroleum), hydrodesulphurised)
- 14.3 Transport hazard class(es) : 9
- 14.4 Packing group : III
- Danger label (primary risk) : 9
- 14.5 Environmental hazards : Environmentally Hazardous
- 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



## Safety Data Sheet

14.1 UN number : 3082  
14.2 UN proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Gas oils, (petroleum), hydrodesulphurised)  
14.3 Transport hazard class(es) : 9  
14.4 Packing group : III  
Danger label (primary risk) : 9  
14.5 Environmental hazards : Environmentally Hazardous

### Sea transport (IMDG Code):

14.1 UN number : UN 3082  
14.2 UN proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.  
Technical name : (Gas oils, (petroleum), hydrodesulphurised)  
14.3 Transport hazard class(es) : 9  
14.4 Packing group : III  
14.5 Marine pollutant : Yes

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.

### Air transport (IATA):

14.1 UN number : 3082  
14.2 UN proper shipping name : Environmentally hazardous substance, liquid, n.o.s.  
Technical name : (Gas oils, (petroleum), hydrodesulphurised )  
14.3 Transport hazard class(es) : 9  
14.4 Packing group : III  
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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## 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

## Safety Data Sheet

**Authorisations and/or restrictions on use** : Product is not subject to Authorisation under REACh.

### Chemical Inventory Status

EINECS : All components listed or polymer exempt.  
TSCA : All components listed.

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.

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## 16. OTHER INFORMATION

### R-phrases(s)

R20	Harmful by inhalation.
R38	Irritating to skin.
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R65	Harmful: may cause lung damage if swallowed.

## Safety Data Sheet

### CLP Hazard Statements

H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H332	Harmful if inhaled.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.

### Identified Uses according to the Use Descriptor System

<b>Recommended Restrictions on Use (Advice Against)</b>	: Not to be used as an engine lubricating oil. This product must not be used in systems incorporating natural rubber. This product must be used, handled and applied in accordance with the requirements of the equipment manufacturer's manuals, bulletins and other documentation.
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### Other Information

<b>MSDS Distribution</b>	: The information in this document should be made available to all who may handle the product.
<b>MSDS Version Number</b>	: 3.0
<b>MSDS Effective Date</b>	: 14.06.2012
<b>MSDS Revisions</b>	: A vertical bar ( ) in the left margin indicates an amendment from the previous version.
<b>MSDS Regulation</b>	: Regulation 1907/2006/EC
<b>Disclaimer</b>	: 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

### KI-302C

#### 1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

PRODUCT NAME KI-302C

PRODUCT NO. 81006539, 81006540, 81006538, 81006537

APPLICATION Corrosion inhibitor

SUPPLIER M-I SWACO  
Gamle Forusvei 43  
4033 Stavanger  
NORWAY.  
Tel.: +47 51 57 73 00  
Fax.: +47 51 57 73 98  
SDS@miswaco.com

CONTACT PERSON Ingrid Helland, telephone: +47 51 57 74 24

EMERGENCY TELEPHONE (24 Hour) Europe +44 (0) 208 762 8322, Asia Pacific +65 633 44 177, China +86 10 5100 3039, Middle East and Africa +961 3 487 287.

#### 2 HAZARDS IDENTIFICATION

Toxic if swallowed.

Irritating to eyes and skin.

CLASSIFICATION T;R25. Xi;R36/38.

#### 3 COMPOSITION/INFORMATION ON INGREDIENTS

Name	EC No.	CAS-No.	Content	Classification
SODIUM NITRITE	231-555-9	7632-00-0	10-30%	O;R8 T;R25 N;R50
DISODIUM TETRABORATE DECAHYDRATE	215-540-4	1303-96-4	1-5%	Repr. Cat. 2;R60,R61

The Full Text for all R-Phrases are Displayed in Section 16

#### COMPOSITION COMMENTS

The data shown is in accordance with the latest EC Directives.

#### 4 FIRST-AID MEASURES

##### INHALATION

Move the exposed person to fresh air at once. If respiratory problems, artificial respiration/oxygen. Get medical attention if any discomfort continues.

##### INGESTION

DO NOT INDUCE VOMITING! Immediately give a couple of glasses of water or milk, provided the victim is fully conscious. Do not give victim anything to drink if they are unconscious. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical attention.

##### SKIN CONTACT

Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention promptly if symptoms occur after washing.

##### EYE CONTACT

Make sure to remove any contact lenses from the eyes before rinsing. Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

#### 5 FIRE-FIGHTING MEASURES

**KI-302C****EXTINGUISHING MEDIA**

Water spray, foam, dry powder or carbon dioxide. Dry chemicals, sand, dolomite etc.

**SPECIAL FIRE FIGHTING PROCEDURES**

Containers close to fire should be removed immediately or cooled with water.

**SPECIFIC HAZARDS**

Fire or high temperatures create: Oxides of: Nitrogen.

**PROTECTIVE MEASURES IN FIRE**

Self contained breathing apparatus and full protective clothing must be worn in case of fire.

**6 ACCIDENTAL RELEASE MEASURES****PERSONAL PRECAUTIONS**

Wear protective clothing as described in Section 8 of this safety data sheet.

**ENVIRONMENTAL PRECAUTIONS**

Do not allow to enter drains, sewers or watercourses.

**SPILL CLEAN UP METHODS**

Stop leak if possible without risk. Dike far ahead of larger spills for later disposal. Absorb spillage with suitable absorbent material. Shovel into dry containers. Cover and move the containers. Flush the area with water.

**7 HANDLING AND STORAGE****USAGE PRECAUTIONS**

AVOID ALL CONTACT! Avoid spilling, skin and eye contact.

**STORAGE PRECAUTIONS**

Store in tightly closed original container in a dry, cool and well-ventilated place. Avoid contact with acids. In contact with metals generates hydrogen gas, which together with air can form explosive mixtures.

**8 EXPOSURE CONTROLS/PERSONAL PROTECTION****INGREDIENT COMMENTS**

WEL = Workplace Exposure Limits

**PROTECTIVE EQUIPMENT****ENGINEERING MEASURES**

Provide adequate general and local exhaust ventilation.

**RESPIRATORY EQUIPMENT**

Suitable respiratory protection must be used at high concentrations. Wear mask supplied with: Use respiratory equipment with gas filter, type B. At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

**HAND PROTECTION**

Use protective gloves made of: Nitrile. Rubber, neoprene or PVC. Be aware that the liquid may penetrate the gloves. Frequent change is advisable.

**EYE PROTECTION**

Wear approved safety goggles.

**OTHER PROTECTION**

Wear appropriate clothing to prevent any possibility of skin contact. Provide eyewash station and safety shower.

**HYGIENE MEASURES**

Promptly remove any clothing that becomes wet or contaminated. Change work clothing daily if there is any possibility of contamination. Wash hands after handling. Wash at the end of each work shift and before eating, smoking and using the toilet.

**9 PHYSICAL AND CHEMICAL PROPERTIES**

**KI-302C**

APPEARANCE	Liquid		
COLOUR	Colourless to pale yellow		
ODOUR	No characteristic odour.		
SOLUBILITY	Soluble in water		
BOILING POINT (°C)	100 °C	MELTING POINT (°C)	- 13 °C
RELATIVE DENSITY	1,148 - 1,180 20 °C	VAPOUR PRESSURE	2,1 kPa 20 °C
pH-VALUE, CONC. SOLUTION	9-11	pH-VALUE, DILUTED SOLUTION	8,8 - 10,5 1%- solution
VISCOSITY	10 cps 20 °C	FLASH POINT (°C)	> 70 °C Sh CC (Setaflash closed cup).

**10 STABILITY AND REACTIVITY****STABILITY**

Stable under normal temperature conditions and recommended use.

**CONDITIONS TO AVOID**

In contact with metals generates hydrogen gas, which together with air can form explosive mixtures.

**MATERIALS TO AVOID**

Acids.

**11 TOXICOLOGICAL INFORMATION****INHALATION**

May cause irritation to the respiratory system.

**INGESTION**

Toxic if swallowed. May cause severe internal injury.

**SKIN CONTACT**

Irritating to skin. Prolonged contact may cause redness, irritation and dry skin.

**EYE CONTACT**

Irritating to eyes. Spray and vapour in the eyes may cause irritation and smarting.

**12 ECOLOGICAL INFORMATION****ECOTOXICITY**

The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.

IC 50, 72 Hrs, ALGAE, mg/l 100-1000 mg/l

**MOBILITY**

The product is soluble in water.

**BIOACCUMULATION**

The product is not bioaccumulating.

**DEGRADABILITY**

The product is biodegradable.

**13 DISPOSAL CONSIDERATIONS****DISPOSAL METHODS**

Recover and reclaim or recycle, if practical. Dispose of waste and residues in accordance with local authority requirements.

**WASTE CLASS**

The definitive European Waste code for this product will depend upon the final use that is made of this material. EWC-code: 06 02 05

Waste number: 7097. Inorganic solutions and liquids.

**14 TRANSPORT INFORMATION**

## KI-302C



UK ROAD CLASS	6.1		
PROPER SHIPPING NAME	TOXIC LIQUID, INORGANIC, N.O.S. (Sodium Nitrite)		
UN NO. ROAD	3287	UK ROAD PACK GR.	II
ADR CLASS NO.	6.1	ADR CLASS	Class 6.1: Toxic substances.
ADR PACK GROUP	II	HAZARD No. (ADR)	60
HAZCHEM CODE	2X	CEPIC TEC(R) NO.	61GT4-II
RID CLASS NO.	6.1	RID PACK GROUP	II
UN NO. SEA	3287	IMDG CLASS	6.1
IMDG PACK GR.	II	EMS	F-A, S-A
MARINE POLLUTANT	No.	UN NO. AIR	3287
AIR CLASS	6.1	AIR PACK GR.	II

## 15 REGULATORY INFORMATION

## LABELLING



Toxic

CONTAINS SODIUM NITRITE

## RISK PHRASES

R25	Toxic if swallowed.
R36/38	Irritating to eyes and skin.

## SAFETY PHRASES

S24/25	Avoid contact with skin and eyes.
S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37/39	Wear suitable gloves and eye/face protection.
S38	In case of insufficient ventilation, wear suitable respiratory equipment.
S45	In case of accident or if you feel unwell, seek medical advice immediately (show label where possible).
S60	This material and its container must be disposed of as hazardous waste.

## UK REGULATORY REFERENCES

Chemicals (Hazard Information &amp; Packaging) Regulations.

## EU DIRECTIVES

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, including amendments.

## GUIDANCE NOTES

Workplace Exposure Limits EH40.

## INTERNATIONAL CHEMICAL INVENTORIES

Complies with the following national/regional chemical inventory requirements: EINECS, Contact REACH@miswaco.com for REACH information.

## KI-302C

**16 OTHER INFORMATION**

## INFORMATION SOURCES

Product information provided by the commercial vendor(s). Material Safety Data Sheet, Misc. manufacturers. Micromedex. European Chemicals Bureau - ESIS (European Chemical Substances Information).

## REVISION COMMENTS

The following sections have been revised: 1, 9, 15 Revised by Ingrid Helland

## ISSUED BY

Bente K. Sando

REVISION DATE 25.01.2010

REV. NO./REPL. SDS GENERATED 6 / 29.05.2009

## SAFETY DATA SHEET STATUS

Approved.

DATE 21.05.2002

SIGNATURE Bente K. Sandoe

SIGNATURE 2 Ingrid Helland

## RISK PHRASES IN FULL

R25	Toxic if swallowed.
R50	Very toxic to aquatic organisms.
R60	May impair fertility.
R61	May cause harm to the unborn child.
R8	Contact with combustible material may cause fire.

## DISCLAIMER

MSDS furnished independent of product sale. While every effort has been made to accurately describe this product, some of the data are obtained from sources beyond our direct supervision. We cannot make any assertions as to its reliability or completeness; therefore, user may rely only at user's risk. We have made no effort to censor or conceal deleterious aspects of this product. Since we cannot anticipate or control the conditions under which this information and product may be used, we make no guarantee that the precautions we have suggested will be adequate for all individuals and/or situations. It is the obligation of each user of this product to comply with the requirements of all applicable laws regarding use and disposal of this product. Additional information will be furnished upon request to assist the user; however, no warranty, either expressed or implied, nor liability of any nature with respect to this product or to the data herein is made or incurred hereunder.



## Cortron® CK352

Ver: 1.1

Revision Date: 22.06.2012

Print Date 24.03.2014

### 1. Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier

Product name Cortron® CK352

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

Product use Corrosion Inhibitor

#### 1.3 Details of the supplier of the safety data sheet

Company : Champion Technologies  
Minto Avenue  
Altens Industrial Estate  
Aberdeen, UK AB12 3JZ  
Telephone : 00 44 1224 879022 (Champion)  
Telefax :  
E-mail address : eh.productstewardship@champ-tech.com  
Responsible/issuing person

#### 1.4 Emergency telephone number

00 44 1224 879022  
Out of hours: 00 44 1224 879022 (Champion)

### 2. Hazards identification

#### 2.1 Classification of the substance or mixture

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

Skin irritation, Category 2	H315: Causes skin irritation.
Serious eye damage, Category 1	H318: Causes serious eye damage.
Specific target organ toxicity - single exposure, Category 3	H336: May cause drowsiness or dizziness.
Aspiration hazard, Category 1	H304: May be fatal if swallowed and enters airways.
Chronic aquatic toxicity, Category 2	H411: Toxic to aquatic life with long lasting effects.

##### Classification (67/548/EEC, 1999/45/EC)

Harmful.	R65: Harmful: may cause lung damage if swallowed.
Irritant.	R38: Irritating to skin. R41: Risk of serious damage to eyes.
Dangerous for the environment	R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. R67: Vapours may cause drowsiness and dizziness.

#### 2.2 Label elements

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

Hazard pictograms :



## Cortron® CK352

Ver: 1.1

Revision Date: 22.06.2012

Print Date 24.03.2014

Signal word : Danger

Hazard statements : H304 May be fatal if swallowed and enters airways.  
H315 Causes skin irritation.  
H318 Causes serious eye damage.  
H336 May cause drowsiness or dizziness.  
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**

P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.

P280 Wear protective gloves/ eye protection/ face protection.

**Response:**

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

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

P310 Immediately call a POISON CENTER or doctor/ physician.

P331 Do NOT induce vomiting.

Hazardous components which must be listed on the label:

kerosine - unspecified

isotridecyl alcohol ethoxylated, phosphated, neutralized with imidazoline

### 2.3 Other hazards

Not Classified as PBT/vPvB by current EU criteria.

## 3. Composition/information on ingredients

### 3.2 Mixtures

#### Hazardous components

Chemical Name	CAS-No. EC-No. REACH Registration Number	Classification (REGULATION (EC) No 1272/2008)	Classification (67/548/EEC)	Concentration [%]
kerosine - unspecified	64742-94-5 265-198-5	STOT SE 3; H336 Asp. Tox. 1; H304 Aquatic Chronic 2; H411	Xn; R65-R66-R67- R51/53	>= 30 - < 60
isotridecyl alcohol ethoxylated, phosphated, neutralized with imidazoline	405212-91-1	Skin Irrit. 2; H315 Eye Dam. 1; H318	Xi; R38-R41	>= 30 - < 60
naphthalene	91-20-3 202-049-5	Carc. 2; H351 Acute Tox. 4; H302 Aquatic Acute 1; H400 Aquatic Chronic 1; H410	Carc. Cat. 3; R40 Xn; R22 N; R50-R53	>= 0.25 - < 1

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

### 4. First aid measures

#### 4.1 Description of first aid measures

- |                         |   |
|-------------------------|---|
| If inhaled              | : Remove to fresh air.<br>Oxygen or artificial respiration if needed.<br>If symptoms persist, call a physician.   |
| In case of skin contact | : In case of contact, immediately flush skin with plenty of water.<br>Remove contaminated clothing and shoes.<br>If skin irritation persists, call a physician.   |
| In case of eye contact  | : Immediately flush eyes for at least 15 minutes. Get medical attention.<br>Take victim immediately to hospital.<br>Continue rinsing eyes during transport to hospital.<br>Remove contact lenses.   |
| If swallowed            | : Never give anything by mouth to an unconscious person.<br>Clean mouth with water and drink afterwards plenty of water.<br>Do NOT induce vomiting.<br>Obtain medical attention.<br>If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. |

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

- |       |  |
|-------|--|
| Risks | : If you feel unwell, seek medical advice (show the label where possible). |
|-------|--|

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

- |           |   |
|-----------|---|
| Treatment | : No recommendation given, but first aid may still be required in case of accidental exposure, inhalation or ingestion of this chemical. If in doubt, GET MEDICAL ATTENTION PROMPTLY! |
|-----------|---|

### 5. Firefighting measures

#### 5.1 Extinguishing media

- |                              |   |
|------------------------------|---|
| Suitable extinguishing media | : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.<br>Alcohol-resistant foam<br>Carbon dioxide (CO <sub>2</sub> )<br>Dry chemical<br>Aqueous film forming foam (AFFF). |
|------------------------------|---|

#### 5.2 Special hazards arising from the substance or mixture

- |                                      |  |
|--------------------------------------|--|
| Specific hazards during firefighting | : Flammable or combustible, may be ignited by heat, sparks or flames.  |
| Hazardous decomposition products     | : In case of fire hazardous decomposition products may be produced such as:<br>Carbon oxides.<br>nitrogen oxides (NO <sub>x</sub> ).<br>phosphorus oxides. |

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### 5.3 Advice for firefighters

- Special protective equipment for firefighters : Use personal protective equipment.  
In the event of fire, wear self-contained breathing apparatus.
- Further information : In the event of fire and/or explosion do not breathe fumes.  
Stay upwind/ keep distance from source. Use water spray to cool unopened containers. Do not allow run-off from fire fighting to enter drains or water courses.

---

## 6. Accidental release measures

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

- Personal precautions : Refer to protective measures listed in sections 7 and 8.  
Ensure adequate ventilation.  
Use the indicated respiratory protection if the occupational exposure limit is exceeded and/or in case of product release (dust).  
Avoid inhalation, ingestion and contact with skin and eyes.  
Remove all sources of ignition.

### 6.2 Environmental precautions

- Environmental precautions : Do not allow contact with soil, surface or ground water.

### 6.3 Methods and materials for containment and cleaning up

- Methods for cleaning up : Stop leak if safe to do so.  
Eliminate all ignition sources if safe to do so.  
Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).  
Pick up and transfer to properly labelled containers.  
Do not flush into surface water or sanitary sewer system.

### 6.4 Reference to other sections

- For personal protection see section 8.  
See section 13 for waste disposal information.

---

## 7. Handling and storage

### 7.1 Precautions for safe handling

- Advice on safe handling : Avoid inhalation, ingestion and contact with skin and eyes.  
Use only with adequate ventilation/personal protection.  
In case of insufficient ventilation, wear suitable respiratory equipment.  
Ensure that eyewash stations and safety showers are close to the workstation location.  
Smoking, eating and drinking should be prohibited in the application area.
- Advice on protection against fire and explosion : Keep away from open flames, hot surfaces and sources of ignition.  
Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours).  
Use only explosion-proof equipment.

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

Requirements for storage areas and containers : Keep container tightly closed in a dry and well-ventilated place.

### 7.3 Specific end uses

The identified uses of this product are detailed in section 1.2

## 8. Exposure controls/personal protection

### 8.1 Control parameters

Components	CAS-No.	Value type	Control parameters	Update	Basis
naphthalene	91-20-3	TWA	10 ppm 50 mg/m3	1991-07-05	91/322/EEC
Further information:	Indicative				

### 8.2 Exposure controls

#### Engineering measures

Effective exhaust ventilation system

#### Personal protective equipment

- Respiratory protection : In case of insufficient ventilation, wear suitable respiratory equipment.  
Respirator with filter for organic vapour
- Hand protection : Wear protective gloves.  
Nitrile rubber.  
Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.  
Breakthrough time is not determined for the product. Change gloves often!  
Use a high fat protective cream after cleaning skin.
- Eye protection : Tightly fitting safety goggles.  
Face-shield.  
Do not wear contact lenses.
- Skin and body protection : Protective suit.
- Hygiene measures : Avoid contact with skin, eyes and clothing.  
Wash hands before breaks and at the end of workday.  
Wash hands before eating, drinking, or smoking.  
Handle in accordance with good industrial hygiene and safety practice.

#### Environmental exposure controls

General advice : Do not allow contact with soil, surface or ground water.

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### 9. Physical and chemical properties

#### 9.1 Information on basic physical and chemical properties

Appearance	: liquid
Colour	: Clear.
Odour	: characteristic
Odour Threshold	: not determined
pH	: 6 - 7.5
Melting point	: not determined
Boiling point	: > 175 °C
Flash point	: ca. 65 °C
Evaporation rate	: not determined
Flammability (solid, gas)	: not determined
Lower explosion limit	: < 0.01 %(V)
Upper explosion limit	: 7 %(V)
Vapour pressure	: 1 hPa, 20 °C
Relative vapour density	: > 1, Air = 1
Relative density	: 0.915 - 0.945, 20 °C
Solubility (qualitative)	: soluble
Partition coefficient: n-octanol/water	: log Pow: > 3
Autoignition temperature	: > 320 °C
Thermal decomposition	: > 170 °C
Viscosity, dynamic	: < 25 mPa.s, 20 °C
Viscosity, kinematic	: not determined
Explosive properties	: not applicable
Oxidizing properties	: not determined

### 10. Stability and reactivity

#### 10.1 Reactivity

No dangerous reaction known under conditions of normal use.

#### 10.2 Chemical stability

Stable under normal conditions.

#### 10.3 Possibility of hazardous reactions

Hazardous reactions : Not relevant

#### 10.4 Conditions to avoid

Conditions to avoid : Heat, flames and sparks.

#### 10.5 Incompatible materials

Materials to avoid : Strong acids.

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Strong bases.  
Strong oxidizing agents.

### 10.6 Hazardous decomposition products

Hazardous decomposition products : In case of fire hazardous decomposition products may be produced such as:  
Carbon oxides.  
nitrogen oxides (NO<sub>x</sub>).  
phosphorus oxides.

## 11. Toxicological information

### 11.1 Information on toxicological effects

Further information : no data available

#### Components:

##### naphthalene :

Acute oral toxicity : LD50: 316 mg/kg, mouse  
: LD50: 490 mg/kg, rat  
: LD50: 1,200 mg/kg, guinea pig  
: Acute toxicity estimate: 500 mg/kg, Converted acute toxicity point estimate  
Acute inhalation toxicity : LC50: > 340 mg/m<sup>3</sup>, 1 h, rat,  
Acute dermal toxicity : LD50: > 2,000 mg/kg, rabbit  
: LD50: > 2,500 mg/kg, rat

## 12. Ecological information

### 12.1 Toxicity

#### Product:

Toxicity to fish : no data available

### 12.2 Persistence and degradability

#### Product:

Biodegradability : no data available  
Physico-chemical : no data available  
removability

### 12.3 Bioaccumulative potential

#### Product:

Bioaccumulation : no data available

### 12.4 Mobility in soil

no data available

### 12.5 Results of PBT and vPvB assessment

Not Classified as PBT/vPvB by current EU criteria.

### 12.6 Other adverse effects

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### Product:

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

---

## 13. Disposal considerations

### 13.1 Waste treatment methods

Product : Where possible recycling is preferred to disposal or incineration.  
If recycling is not practicable, dispose of in compliance with local regulations.  
Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities.

---

## 14. Transport information

### 14.1 UN number

ADR : 3082  
IMDG : 3082  
IATA : 3082

### 14.2 Proper shipping name

ADR : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Heavy aromatic naphtha)  
IMDG : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Heavy aromatic naphtha)  
IATA : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Heavy aromatic naphtha)

### 14.3 Transport hazard class

ADR : 9  
IMDG : 9  
IATA : 9

### 14.4 Packing group

ADR  
Packaging group : III  
Classification Code : M6  
Hazard identification No : 90  
Labels : 9  
Tunnel restriction code : (E), full load, tank-container  
IMDG  
Packaging group : III  
Labels : 9  
EmS Number : F-A, S-F  
IATA  
Packing instruction (cargo) : 964



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aircraft)

Packaging group : III

Labels : 9

### 14.5 Environmental hazards

#### ADR

Environmentally hazardous : yes

#### IMDG

Marine pollutant : yes

#### IATA

Environmentally hazardous : yes

### 14.6 Special precautions for user

Not relevant

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

This material may require an IBC code if carried according to the "International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk. Please contact Champion Technologies Product Stewardship Team if you need further information.

## 15. Regulatory information

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

#### Notification status

US.TSCA : Not On TSCA Inventory  
DSL : This product contains the following components that are not on the Canadian DSL nor NDSL lists.  
AICS : Not in compliance with the inventory  
NZIoC : Not in compliance with the inventory

EU. REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT of 16 December 2008 on classification, labelling and packaging of substances and mixtures

REGULATION (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH). Annex IV: Exemptions from the obligation to register

### 15.2 Chemical Safety Assessment

No chemical safety assessment has been carried out.

## 16. Other information

Full text of R-phrases referred to under sections 2 and 3

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006



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R22	Harmful if swallowed.
R38	Irritating to skin.
R40	Limited evidence of a carcinogenic effect.
R41	Risk of serious damage to eyes.
R50	Very toxic to aquatic organisms.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R53	May cause long-term adverse effects in the aquatic environment.
R65	Harmful: may cause lung damage if swallowed.
R66	Repeated exposure may cause skin dryness or cracking.
R67	Vapours may cause drowsiness and dizziness.

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

H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H336	May cause drowsiness or dizziness.
H351	Suspected of causing cancer.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.

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

**SAFETY DATA SHEET**  
**MB-554****1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING**

PRODUCT NAME	MB-554
APPLICATION	Microbiocide
SUPPLIER	M-I SWACO A Schlumberger Company Koppholen 23 4313 Sandnes NORWAY Tel.: +47 51 57 73 00 SDS@miswaco.slb.com
CONTACT PERSON	Ingrid Helland, telephone: +47 51 57 74 24
EMERGENCY TELEPHONE	(24 Hour) Australia +61 2801 44558, Asia Pacific +65 3158 1074, China +86 10 5100 3039, Europe +44 (0) 1235 239 670, Middle East and Africa +44 (0) 1235 239 671, USA 001 281 561 1600.

**2 HAZARDS IDENTIFICATION**

Flammable.

Harmful in contact with skin and if swallowed.

Irritating to respiratory system and skin.

Risk of serious damage to eyes.

May cause sensitisation by skin contact.

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

Harmful: may cause lung damage if swallowed.

Repeated exposure may cause skin dryness or cracking.

Vapours may cause drowsiness and dizziness.

CLASSIFICATION (1999/45) Xn;R21/22, R65. Xi;R37/38, R41. R43. N;R51/53. R10, R66, R67.

**3 COMPOSITION/INFORMATION ON INGREDIENTS**

Name	EC No.	CAS-No.	Content %	Classification (67/548/EEC)
SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC	265-199-0	64742-95-6	60-100%	Xn;R65. Xi;R37. N;R51/53. R10,R66,R67.
4-(2-nitrobutyl)morpholine	218-748-3	2224-44-4	10-30%	Xn;R21/22. Xi;R38,R41. N;R50/53. R43.
PROPAN-2-OL	200-661-7	67-63-0	5-10%	F;R11 Xi;R36 R67

The Full Text for all R-Phrases is Displayed in Section 16

**COMPOSITION COMMENTS**

The data shown is in accordance with the latest EC Directives.

**4 FIRST-AID MEASURES****INHALATION**

Move the exposed person to fresh air at once. If respiratory problems, artificial respiration/oxygen. Get medical attention if any discomfort continues.

**INGESTION**

DO NOT INDUCE VOMITING! Immediately give a couple of glasses of water or milk, provided the victim is fully conscious. Do not give victim anything to drink if he is unconscious. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical attention.

**SKIN CONTACT**

Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention promptly if symptoms occur after washing.

**EYE CONTACT**

Make sure to remove any contact lenses from the eyes before rinsing. Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes and get medical attention.

**MB-554****5 FIRE-FIGHTING MEASURES****EXTINGUISHING MEDIA**

Fire can be extinguished using: Water spray, foam, dry powder or carbon dioxide. Do not use water jet as an extinguisher, as this will spread the fire.

**SPECIAL FIRE FIGHTING PROCEDURES**

Containers close to fire should be removed immediately or cooled with water.

**UNUSUAL FIRE & EXPLOSION HAZARDS**

FLAMMABLE.

**PROTECTIVE MEASURES IN FIRE**

Self contained breathing apparatus and full protective clothing must be worn in case of fire.

**6 ACCIDENTAL RELEASE MEASURES****PERSONAL PRECAUTIONS**

Wear protective clothing as described in Section 8 of this safety data sheet. Avoid inhalation of vapours and contact with skin and eyes. Do not smoke, use open fire or other sources of ignition.

**ENVIRONMENTAL PRECAUTIONS**

Do not allow ANY environmental contamination. Do not allow to enter drains, sewers or watercourses. Spillages or uncontrolled discharges into watercourses must be IMMEDIATELY alerted to the Environmental Agency or other appropriate regulatory body.

**SPILL CLEAN UP METHODS**

Stop leak if possible without risk. Dike far ahead of larger spills for later disposal. Absorb spillage with suitable absorbent material. Shovel into dry containers. Cover and move the containers. Flush the area with water.

**7 HANDLING AND STORAGE****USAGE PRECAUTIONS**

Avoid spilling, skin and eye contact. Eliminate all sources of ignition. Static electricity and formation of sparks must be prevented. Storage tanks and other containers must be grounded. Persons susceptible to allergic reactions should not handle this product.

**STORAGE PRECAUTIONS**

Store in tightly closed original container in a dry, cool and well-ventilated place. Keep away from heat, sparks and open flame. Avoid contact with oxidising agents. Aluminium.

**STORAGE CLASS**

Flammable liquid storage.

**8 EXPOSURE CONTROLS/PERSONAL PROTECTION**

Name	STD	TWA - 8 Hrs		STEL - 15 Min		Notes
PROPAN-2-OL	WEL	400 ppm	999 mg/m <sup>3</sup>	500 ppm	1250 mg/m <sup>3</sup>	

WEL = Workplace Exposure Limit.

**PROTECTIVE EQUIPMENT****ENGINEERING MEASURES**

Provide adequate general and local exhaust ventilation.

**RESPIRATORY EQUIPMENT**

Suitable respiratory protection must be used at high concentrations. Use respiratory equipment with combination filter, type A2/P3. At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

**HAND PROTECTION**

Use protective gloves. Nitrile gloves are recommended, but be aware that the liquid may penetrate the gloves. Frequent change is advisable.

**EYE PROTECTION**

Wear tight-fitting goggles or face shield.

**OTHER PROTECTION**

Wear appropriate clothing to prevent any possibility of skin contact. Provide eyewash station and safety shower.

**MB-554****HYGIENE MEASURES**

Promptly remove any clothing that becomes wet or contaminated. Change work clothing daily if there is any possibility of contamination. Wash hands after handling. Wash at the end of each work shift and before eating, smoking and using the toilet.

**9 PHYSICAL AND CHEMICAL PROPERTIES**

APPEARANCE	Clear liquid
COLOUR	Light (or pale) Yellow
ODOUR	Aromatic. Organic solvents.
SOLUBILITY	Insoluble in water
RELATIVE DENSITY	0.920 ± 0.03 g/ml 25 °C
VISCOSITY	< 25 cps 20 °C
FLASH POINT (°C)	25 °C

**10 STABILITY AND REACTIVITY****STABILITY**

Stable under normal temperature conditions and recommended use.

**CONDITIONS TO AVOID**

Avoid heat, flames and other sources of ignition.

**MATERIALS TO AVOID**

Strong oxidising substances. Aluminum.

**11 TOXICOLOGICAL INFORMATION****GENERAL INFORMATION**

Prolonged and repeated contact with solvents over a long period may lead to permanent health problems. Risk of sensitisation or allergic reactions among sensitive individuals.

**INHALATION**

Irritating to respiratory system. Vapours may cause drowsiness and dizziness.

**INGESTION**

Harmful if swallowed. Harmful: may cause lung damage if swallowed. Pneumonia may be the result if vomited material containing solvents reaches the lungs.

**SKIN CONTACT**

Harmful in contact with skin. May be absorbed through the skin. Irritating to skin. May cause sensitisation by skin contact. Repeated exposure may cause skin dryness or cracking.

**EYE CONTACT**

Risk of serious damage to eyes. Risk of corneal damage.

**ROUTE OF ENTRY**

Inhalation. Ingestion. Skin and/or eye contact.

**12 ECOLOGICAL INFORMATION****ECOTOXICITY**

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

**MOBILITY**

The product is insoluble in water and will spread on the water surface.

**BIOACCUMULATION**

The product contains potentially bioaccumulating substances.

**DEGRADABILITY**

The product contains substances which are not expected to be biodegradable.

**13 DISPOSAL CONSIDERATIONS****DISPOSAL METHODS**

Recover and reclaim or recycle, if practical. Dispose of waste and residues in accordance with local authority requirements.

**WASTE CLASS**

The definitive European Waste code for this product will depend upon the final use that is made of this material. EWC-code: 07 01 04. Waste number: 7152. Organic waste without halogen.

**14 TRANSPORT INFORMATION**

## MB-554



PROPER SHIPPING NAME	FLAMMABLE LIQUID, N.O.S. (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC, PROPAN-2-OL)
ENVIRONMENTALLY HAZARDOUS SUBSTANCE/MARINE POLLUTANT	No.
UN NO. ROAD	1993
ADR CLASS NO.	3
ADR CLASS	Class 3: Flammable liquids.
ADR PACK GROUP	III
TUNNEL RESTRICTION CODE	(D/E)
HAZARD No. (ADR)	30
HAZCHEM CODE	•3YE
UN NO. SEA	1993
IMDG CLASS	3
IMDG PACK GR.	III
EMS	F-E, S-E
UN NO. AIR	1993
AIR CLASS	3
AIR PACK GR.	III

## 15 REGULATORY INFORMATION

## LABELLING



Harmful



Dangerous for the environment

CONTAINS	SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC 4-(2-nitrobutyl)morpholine
----------	---

## RISK PHRASES

R10	Flammable.
R21/22	Harmful in contact with skin and if swallowed.
R37/38	Irritating to respiratory system and skin.
R41	Risk of serious damage to eyes.
R43	May cause sensitisation by skin contact.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R65	Harmful: may cause lung damage if swallowed.
R66	Repeated exposure may cause skin dryness or cracking.
R67	Vapours may cause drowsiness and dizziness.

## SAFETY PHRASES

S25	Avoid contact with eyes.
S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39	Wear suitable protective clothing, gloves and eye/face protection.
S51	Use only in well-ventilated areas.
S57	Use appropriate containment to avoid environmental contamination.
S60	This material and its container must be disposed of as hazardous waste.
S61	Avoid release to the environment. Refer to special instructions/safety data sheets.

**MB-554**

S62

If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

**UK REGULATORY REFERENCES**

Chemicals (Hazard Information & Packaging) Regulations.

**EU DIRECTIVES**

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, including amendments.

**GUIDANCE NOTES**

Workplace Exposure Limits EH40.

**INTERNATIONAL CHEMICAL INVENTORIES**

Directive 98/8/EC of the European Parliament and of the Council of 16 February 1998 concerning the placing of biocidal products on the market with amendments.

Contact REACH@miswaco.com for REACH information. Complies with the following national/regional chemical inventory requirements: EINECS / ELINCS, AICS, DSL / NDSL, IECSC, ENCS, ECL, NZIoC, PICCS,

**16 OTHER INFORMATION****GENERAL INFORMATION**

Only trained personnel should use this material.

**INFORMATION SOURCES**

Product information provided by the commercial vendor(s). Material Safety Data Sheet, Misc. manufacturers. LOLI. European Chemicals Bureau - ESIS (European Chemical Substances Information).

**REVISION COMMENTS**

Classification updated. Revised by Nina B. Øvrehus

**ISSUED BY**

Ingrid Helland

REVISION DATE 29.04.2011

REV. NO./REPL. SDS GENERATED 7/05.11.2010

**SAFETY DATA SHEET STATUS**

Approved.

DATE 24.11.2004

SIGNATURE Ingrid Helland

SIGNATURE 2 Nina B. Øvrehus

**RISK PHRASES IN FULL**

R10	Flammable.
R21/22	Harmful in contact with skin and if swallowed.
R65	Harmful: may cause lung damage if swallowed.
R11	Highly flammable.
R36	Irritating to eyes.
R37	Irritating to respiratory system.
R38	Irritating to skin.
R43	May cause sensitisation by skin contact.
R66	Repeated exposure may cause skin dryness or cracking.
R41	Risk of serious damage to eyes.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R67	Vapours may cause drowsiness and dizziness.
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**DISCLAIMER**

MSDS furnished independent of product sale. While every effort has been made to accurately describe this product, some of the data are obtained from sources beyond our direct supervision. We cannot make any assertions as to its reliability or completeness; therefore, user may rely only at user's risk. We have made no effort to censor or conceal deleterious aspects of this product. Since we cannot anticipate or control the conditions under which this information and product may be used, we make no guarantee that the precautions we have suggested will be adequate for all individuals and/or situations. It is the obligation of each user of this product to comply with the requirements of all applicable laws regarding use and disposal of this product. Additional information will be furnished upon request to assist the user; however, no warranty, either expressed or implied, nor liability of any nature with respect to this product or to the data herein is made or incurred hereunder.




## TEDCASTLES OIL PRODUCTS LTD SAFETY DATA SHEET

### 1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND COMPANY / UNDERTAKING

<b>1.1 Product Name:</b>	<b>DERV/AUTO DIESEL/ULTRA LOW SULPHUR DIESEL (ULSD)</b>
<b>1.2 Intended Use:</b>	Fuel for use in stationary diesel engines in industrial markets, for off-road use and fuel for boilers and gas turbines. ULSD is a gas oil for use in on-road automotive vehicles.
<b>1.3 Name of Distributor:</b>	Tedcastles Oil Products Ltd Promenade Road Dublin Port Dublin 3  Phone: 00353-1-8198000 Fax: 00353-1-8786635  safety@top.ie
<b>1.4 Emergency Contact Details:</b>	Day: 00353-1-8198000 (Office hours 09:00 – 17:00)

### 2. HAZARD IDENTIFICATION

<b>2.1 Classification</b>	<p><b>CLP Classification (EC No 1272/2008)</b>  H226 – Flammable Liquids – Category 3  H304 – Aspiration Hazard – Category 1  H315 – Skin Corrosion/Irritation Hazard – Category 2  H332 – Acute Toxicity Inhalation – Category 4  H350 – Carcinogenicity – Category 1B  H373 - Specific target organ toxicity (repeated exposure) – Category 2  H411 - Hazardous to the aquatic environment, chronic toxicity – Category 2</p> <p><b>Supersedes DSD Classification (67/548/EEC and 1999/45/EC):</b>  R10, Xn; R20, Xi; R38, Carc Cat1; R45, Xn; R48/21, Xn; R65, N; R51/53</p>
<b>2.2 Label Elements</b>	
<b>Signal Word</b>	Danger
<b>Hazard Statements</b>	H226 - Flammable liquid and vapour. H351 - Suspected of causing cancer when inhaled H332 - Harmful if inhaled. H304 - May be fatal if swallowed and enters airways. H315 - Causes skin irritation. H373 - May cause damage to organs through prolonged or repeated exposure. H411 - Toxic to aquatic life with long lasting effects.



	P201 - Obtain special instructions before use P210 - Keep away from heat/sparks/open flames, hot surfaces – no smoking P260 - Do not breathe dust/fumes/mist/vapour/spray P301 + P310 - IF SWALLOWED. Immediately call a POISON CENTER, Doctor/Physician P331 - Do NOT induce vomiting P501 - Dispose of contents to approved disposal facility					
2.3 Other hazards		Does not meet the criteria for persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB) substances.				
3. COMPOSITION/INFORMATION ON INGREDIENTS						
3.2 Mixture						
Name	Conc. <sup>1</sup>	CAS No.	EINECS No.	REACH No.	CLP <sup>2</sup> Classification	DSD <sup>3</sup> Classification
Diesel Oil C9-20	90 – 100	68334-30-5	269-822-7	01-2119484 664-27	H351	Carc Cat 3;R40
Fatty acids, tallow, Me esters	0 – 10	61788-61-2	262-989-7		—	—
Fatty acids, vegetable oil, Me esters	0 – 10	68990-52-3	262-989-7		—	—
Naphthalene	<1	91-20-3	202-049-5		H351, H302 H410	Carc Cat 3;R40, Xn; R22, N; R50-53
<sup>1</sup> All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are a percent by volume. <sup>2</sup> Regulation EC1272/2001 <sup>3</sup> Superseded Directives 67/548/EEC and 1999/45/EC						
Total Sulfur: < 0.1 wt%						
4. FIRST AID MEASURES						
4.1 Description of first aid measures						
<b>Eyes:</b> <i>Contact with eyes may cause irritation with short-term redness and stinging.</i>			<b>First Aid-Eyes:</b> If redness and/or irritation develops from exposure flush eyes with clean water. If symptoms persist, seek medical attention.			
<b>Skin:</b> <i>Unlikely to cause irritation on single contact. Prolonged and repeated exposure may cause dermatitis and there is a possible risk of irreversible skin disorders unless good handling precautions and good personal hygiene are observed.</i>			<b>First Aid-Skin:</b> Remove contaminated clothing, and flush affected area(s) immediately with large amounts of water. If skin surface is damaged, apply a clean dressing and seek medical attention. If skin surface is not damaged, cleanse affected area(s) thoroughly by washing with mild soap and water or a waterless hand cleaner. If irritation or redness develops, seek medical attention. Wash contaminated clothing before re-use. 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. (See note to physician)			
<b>Inhalation (Breathing):</b> <i>Inhalation of fumes or vapours may cause irritation to eyes and mucous membranes, and drowsiness leading to loss of consciousness.</i>			<b>First Aid-Inhalation:</b> If respiratory symptoms or other symptoms of exposure develop, move victim away from the source of exposure and into fresh air in a position comfortable for breathing. If symptoms persist seek medical attention. If victim is not breathing, clear airway and immediately begin artificial respiration. If breathing difficulties develop, only qualified personnel should administer oxygen. Seek immediate medical attention.			

<b>Ingestion (Swallowing):</b> <i>Ingestion of product may cause irritation with diarrhoea. Aspiration of liquid into the lungs directly or as a result of vomiting following ingestion of the liquid can cause severe lung damage and death.</i> <i>Important Symptoms</i>	<b>First Aid-Ingestion:</b> <b>ASPIRATION HAZARD.</b> DO NOT INDUCE VOMITING OR GIVE ANYTHING BY MOUTH because this material can enter the lungs and cause severe lung damage. If victim is drowsy or unconscious and vomiting, place on the left side with the head down. Observe closely for adequacy of breathing and seek medical attention.
<b>4.2 Most important symptoms and effects</b>	
<b>Acute</b>	Minor respiratory irritation at high vapour concentrations
<b>Delayed</b>	Dry skin and possible irritation with repeated or prolonged exposure.
<b>4.3 Indication of immediate medical attention and special treatment needed</b>	
<b>Note to Physician:</b> When using high-pressure equipment, injection of product under the skin can occur. In this case, the casualty should be sent immediately to hospital. Do not wait for the symptoms to develop. High-pressure hydrocarbon injection injuries may produce substantial necrosis of underlying tissue despite an innocuous appearing external wound. These injuries often require extensive emergency surgical debridement and all injuries should be evaluated by a specialist, in order to assess the extent of injury. Early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.	
<b>5. FIRE-FIGHTING MEASURES</b>	
<b>5.1 Extinguishing Media:</b>	Dry chemical, carbon dioxide, or foam is recommended. Water spray is recommended to cool or protect exposed materials or structures. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Simultaneous extinguishment, unless used under favourable conditions by experienced fire fighters.
<b>5.2 Fire and Explosion Hazards:</b>	Unusual fire & explosion hazards: Flammable. This material can be ignited by heat, sparks, flames, or other sources of ignition (e.g. static electricity, pilot lights, mechanical/electrical equipment, and electronic devices such as cell phones, computers, calculators, and pagers which have not been certified as intrinsically safe). Vapours may travel considerable distances to a sources of ignition where they can ignite, flash back, or explode. May create vapour/air explosion hazard indoors, in confined spaces, outdoors or in sewers. This product will float and can be reignited on surface water. Vapours are heavier than air and can accumulate in low areas. If container is not properly cooled, it can rupture in the heat of a fire.
<b>5.3 Special Protective Equipment for Fire Fighters:</b>	<p>For fires beyond the initial stage, emergency responders in the immediate hazard area should wear protective clothing. When the potential chemical hazard is unknown, in enclosed or confined spaces, a self-contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8)</p> <p>Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapours and to protect personnel. Avoid spreading burning liquid with water used for cooling purposes. Cool equipment exposed to fire with water, if it can be done safely.</p>

**6. ACCIDENTAL RELEASE MEASURES**

**6.1 Personal Precautions:** Flammable. Spillages of liquid product will create a fire hazed and may form an explosive atmosphere. Keep all sources of ignition and hot metal surfaces away from spill/release if safe to do so. The use of explosion proof equipment is recommended. Stay upwind and away from spill/release. Avoid direct contact with material. For large spills, notify persons down wind of the spill/release, isolate immediate hazard area and keep in authorized personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Section 2 and 7 for additional information on hazards.

**6.2 Environmental Precautions:** Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Use foam on spills to minimize vapours. Use water sparingly to minimize environmental contamination and reduce disposal requirements. If spill occurs on water notify appropriate authorities and advise shipping of any hazard.

**6.3 Methods for Cleaning Up:** Notify relevant authorities in accordance with all appropriate regulations. Immediate clean up of any spill is recommended. Dike far ahead of spill for later recovery or disposal. Absorb spill with inert material such as sand or vermiculite, and place in suitable container for disposal. If spilled on water remove with appropriate methods (e.g. skimming, booms or absorbents), In case of soil contamination, remove contaminated soil for remediation or disposal, in accordance with local regulations.

Recommended measures are based on the most likely spill scenarios for this material however local conditions and regulations may influence or limit the choice of appropriate actions to be taken.

**7. HANDLING AND STORAGE**

**7.1 Precautions for safe handling:** Keep away from ignition sources such as heat/sparks/open flame – No smoking. Take precautionary measures against static discharge. Non-sparking tools should be used. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/clothing and eye/face protection. Do not breathe vapours or mists. Use only outdoors or in well-ventilated area. Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment.

Flammable. May vaporize easily at ambient temperatures. The vapour is heavier than air and may create an explosive mixture of vapour and air. Beware of accumulation in confined spaces and low-lying area. Open container slowly to relieve any pressure. Electrostatic charge may accumulate and create a hazardous condition when handling or processing this material. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. The use of explosion proof electrical equipment is recommended and may be required (see appropriate fire codes for specific bonding/grounding requirements). Do not enter confined spaces such as tanks or pits without following proper entry procedures. Do not wear contaminated clothing or shoes. Keep contaminated clothing away from sources of ignition such as sparks or open flames

For use as motor fuel only. Do not use as a solvent due to its flammable and potentially toxic properties. Siphoning by mouth can result in lung aspiration, which can be harmful or fatal.

The use of hydrocarbon fuel in an area without adequate ventilation may result in hazardous levels of incomplete combustion products (e.g. carbon monoxide, oxides of sulphur and nitrogen, benzene and other hydrocarbons) and/or dangerously low oxygen levels.

Diesel engine exhaust contains hazardous combustion products and has been classified as a probable cancer hazard in humans.

<p>High-pressure injection of hydrocarbon fuels, hydraulic oils or greases under the skin may have serious consequences even though no symptoms or injury may be apparent. This can happen accidentally when using high-pressure equipment such as high-pressure greases guns, fuel injection apparatus or from pinhole leaks in tubing of high-pressure hydraulic oil equipment.</p>		
<p><b>7.2 Conditions for safe storage:</b></p> <p>Keep containers tightly closed and properly labelled. Use and store this material in cool dry well-ventilated areas away from heat, direct sunlight, hot metal surfaces, and all sources of ignition. Store only in approved containers. Post area "No smoking or Open Flame". Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage.</p> <p>"Empty" containers retain residue and maybe dangerous, Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks, which contain or have contained this material, refer to appropriate guidance pertaining to cleaning, repairing, welding or other contemplated operations. Outdoor or detached storage is preferred. Indoor storage should meet Country or Committee standards and appropriate fire codes.</p>		
<p><b>7.3 Specific End Use(s)</b>      Refer to supplemental exposure scenarios if attached.</p>		
<p><b>8. EXPOSURE CONTROLS/ PERSONAL PROTECTION</b></p>		
<p><b>8.1 Control Parameters</b></p>		
<b>Component</b>	<b>US-ACGIH</b>	<b>H.S.A.</b>
DIESEL OIL.C9-C20	TWA: 100mg/m3 Sk	None
Fatty acids, tallow, Me esters	None	None
Fatty acids, vegetable- oil, Me esters	None	None
Naphthalene	STEL: 15ppm TWA: 10ppm Skin	None
<p><b>No Biological Limit Values</b></p> <p><b>Relevant DNEC and PNEC: Pending</b></p> <p><b>Abbreviations:</b>  <b>STEL</b> = Short Term Exposure Limit (15 minutes); <b>TWA</b> = Time Weighted Average (8 hours); <b>None</b> = No occupational Limit; <b>Sk</b>= Substances which have the capacity to penetrate intact skin when they come in contact with it, and be absorbed into the body;</p>		

**8.2 Exposure Controls****Engineering Controls**

current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

**Eye/Face Protection:**

the use of eye protection that meets or exceeds EN 166 is recommended to protect against potential eye contact, irritation, or injury. Depending on conditions of use, close fitting eye protection and a face shield may be necessary.

**Skin Protection:**

the use of gloves impervious to the specific material handled is advised to prevent skin contact. Users should check with manufacturers to confirm the breakthrough performance of their products. Depending on exposure and use conditions, additional protection may be necessary to prevent skin contact including use of items such as chemical resistant boots, apron, arm covers, hoods, coveralls, or encapsulated suits. Suggested protective materials: Nitrile

**Respiratory Protection:**

where there is potential for airborne exposure above the exposure limit an approved air purifying respirator equipped with Type A, organic gases and vapour filters (as specified by the manufacturer) may be used. A respiratory protection program that follows recommendations for the selection, use, care and maintenance of respiratory protective devices in EN 529:2005 should be followed whenever workplace conditions warrant a respirator's use. Air purifying respirators provide limited protection and cannot be used in atmospheres that exceed the maximum use concentration (as directed by regulation or the manufacturers instructions), in oxygen deficient (less than 19.5 percent oxygen) situations, or under conditions that are immediately dangerous to life and health.

**Other Protective Equipment**

eyewash and quick drench shower facilities should be available in the work area. Thoroughly clean shoes and wash contaminated clothing before reuse.

**Environmental Exposure Controls:**

Refer to Sections 6, 7, 12 and 13

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

Data represent typical values and are not intended to be specifications.

<b>Appearance:</b>	Clear straw coloured
<b>Physical Form</b>	Liquid
<b>Odour:</b>	Diesel fuel
<b>Odour Threshold:</b>	Not Detected
<b>pH:</b>	Not Applicable
<b>Melting/Freezing Point</b>	Not Detected
<b>Initial Boiling Point/Range (°C):</b>	160-375 °C
<b>Flash Point (Closed Cup), °C</b>	> 55
<b>Evaporation Rate (nBuAc=1)</b>	Not Detected
<b>Flammability Limits, in Air, % by volume:</b>	Upper Explosive Limit: 6.0 Lower Explosive Limit: 0.5
<b>Vapour Pressure:</b>	<0.3 KPA @20 °C
<b>Relative Vapour Density (air=1)</b>	>1
<b>Relative Density (water=1)</b>	0.82-0.845@15 °C
<b>Solubility</b>	Solubility In Water: Negligible @20 °C
<b>Partition Coefficient: n-octanol/water:</b>	Not Detected
<b>Auto-Ignition Temperature, °C:</b>	250-270 °C
<b>Decomposition Temperature</b>	Not Detected
<b>Viscosity</b>	4.8 mm <sup>2</sup> /s @ 20 °C; 2-4.mm <sup>2</sup> /s @40 °C

Explosive Properties		Not Applicable	
Oxidizing properties:		Not Applicable	
9.2 Other Information			
Pour Point		-24 °C	
10. STABILITY AND REACTIVITY			
10.1 Reactivity		Not chemically reactive	
10.2 Stability:		Stable under normal ambient conditions of use.	
10.3 Possibility of hazardous reactions		Hazardous reactions not anticipated	
10.4 Conditions to Avoid:		Avoid high temperatures and all sources of ignition. Prevent vapour accumulation.	
10.5 Materials to Avoid:		Avoid contact with strong oxidizing agents and strong reducing agents.	
10.6 Hazardous Decomposition Products:		Not anticipated under normal conditions of use.	
11. TOXICOLOGICAL INFORMATION			
11.1 Information on Toxicological Effects of Substances/Mixture			
Acute Toxicity	Hazard	Additional Information	LC50/LD50 Data
Inhalation	Harmful if inhaled		>4.65 mg/l (mist)
Skin Absorption	Unlikely to be harmful		>4.1 g/kg
Ingestion (Swallowing)	Unlikely to be harmful		>5 g/kg
Aspiration Hazard	May be fatal if swallowed and enters airways		
Skin: Corrosion/Irritation	Causes skin irritation. Repeated exposure may cause skin dryness or cracking		
Serious Eye damage/irritation	Causes mild eye irritation		
Signs and symptoms	While significant vapour concentrations are not likely, high concentrations can cause minor respiratory irritation, headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue. Ingestion can cause irritation of the digestive tract, nausea, diarrhoea and vomiting.		
Skin sensitization	No information available. Not expected to be a skin sensitizer		
Respiratory sensitization	No information available.		
Specific Target Organ Toxicity (Single Exposure)	Not expected to cause organ effects from single exposure		
Specific Target Organ Toxicity (Repeated Exposure)	May cause damage to organs through prolonged or repeated exposure. Dermal application of a distillate fuel component at doses >125 mg/kg, 5 d/wk, for 13 weeks resulted in decreased liver, thymus, and spleen weights and altered bone marrow function. Microscopic alterations included liver hypertrophy and necrosis, decreased haematopoiesis and lymphocyte depletion.		
Carcinogenicity	May cause cancer. Petroleum middle distillates have been shown to cause skin tumours in mice following repeated and prolonged skin contact. Follow up studies have shown that these tumours are produced through a non-genotoxic mechanism associated with frequent cell damage and repair. and that they are not likely to caus		

<b>Germ Cell Mutagenicity</b>	tumours in the absence of prolonged skin irritation. Middle distillates with low polynuclear aromatic hydrocarbon content have not been identified as a carcinogen by IARC.
<b>Reproductive Toxicity</b>	Not expected to cause heritable genetic effects  Not expected to cause reproductive toxicity
<b>11.2 Information on Hazardous Components</b>	
<b>Naphthalene</b>	<b>Carcinogenicity:</b> Naphthalene has been evaluated in two-year inhalation studies in both rats and mice. The US National Toxicology Program (NTP) concluded that there is clear evidence of carcinogenicity in male and female rats based on increased incidences of respiratory epithelial adenomas and olfactory epithelial neuroblastomas of the nose. NTP found some evidence of carcinogenicity in female mice (alveolar adenomas) and no evidence of carcinogenicity in male mice. Naphthalene has been identified as a carcinogen by IARC and NTP.
<b>12. ECOLOGICAL INFORMATION</b>	
<b>12.1 Toxicity:</b>	Experimental studies of gas oils show that acute aquatic toxicity values are typically in the range 2-20 mg/l. These values are consistent with the predicted aquatic toxicity of these substances based on their hydrocarbon compositions. They should be regarded as toxic to aquatic organisms, with the potential to cause long-term adverse effects in the aquatic environment. Classification: H411; Chronic Cat 2.
<b>12.2 Persistence and degradability</b>	Gas oils are complex combinations of individual hydrocarbon species. Based on the known or expected properties of individual constituents, category members are not predicted to be readily biodegradable. Some hydrocarbon constituents of gas oils are predicted to meet the criteria for persistence; on the other hand, some components can be easily degraded by microorganisms under aerobic conditions.  <b>Persistence per IOPC Fund definition:</b> Non- Persistent
<b>12.3 Bioaccumulative potential</b>	Gas oil components have measured or calculated Log Kow values in the range of 3.9 to 6, which indicates a high potential to bioaccumulate. Lower molecular weight compounds are readily metabolized and the actual bioaccumulation potential of higher molecular weight compounds is limited by the low water solubility and large molecular size.
<b>12.4 Mobility in soil and environmental fate</b>	Releases to water will result in a hydrocarbon film floating and spreading on the surface. For the lighter components, volatilization is an important loss process and reduces the hazard to aquatic organisms. In air, the hydrocarbon vapours react readily with hydroxyl radicals with half-lives of less than one day. Photooxidation on the water surface is also a significant loss process particularly for polycyclic aromatic compounds. In water, the majority of components will be adsorbed on sediment. Adsorption is the most predominant physical process on release to soil. Adsorbed hydrocarbons will slowly degrade in both water and soil.
<b>12.5 Results of PBT and vPvB Assessment</b>	Not a PBT or vPvB substance
<b>12.6 Other Adverse Effects</b>	None anticipated.

**13. DISPOSAL CONSIDERATIONS****13.1 Waste Treatment Methods****European Waste Code: 13 07 01\* fuel oil and diesel**

This material if discarded as produced, would be 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. This code has been assigned based upon the most common uses for this material and may not reflect contaminants resulting from actual use. Waste generators/producers are responsible for assessing the actual process used when generating the waste and its contaminants in order to assign the proper waste disposal code.

Disposal must be in accordance with Directive 2006/12/EC and other applicable national or regional provisions, and based upon material characteristics at time of disposal. For incineration of waste, follow Directive 2000/76/EC. For landfill of waste, follow Directive 1999/31/EC. Product is suitable for burning in an enclosed controlled burner for fuel value if >5000 BTU, or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products. Follow Directive 2000/76/EC.

**Empty Containers:** Container contents should be completely used and containers emptied prior to discard. Empty drums should be properly sealed and promptly returned to a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with applicable regulations.

**14. TRANSPORT INFORMATION****14.1 UN Number:**

UN 1202

**14.2 Proper Shipping Name:**

GAS OIL/DIESEL FUEL/HEATING OIL, LIGHT

**14.3 Classification for Transport:**

Class 3

**14.4 Packaging Group:**

III

**14.5 Environmental Hazards**

Marine Pollutant

**14.6 Special Precautions for User**

If transported in bulk by marine vessel in international waters, product is being carried under the scope of MARPOL Annex I

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

Note Applicable

**15. REGULATORY INFORMATION****EC Directives:**

EC1907/2006

Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

EC1272/2008

Classification, labelling and packaging of substances and mixtures

91/689/EEC

Hazardous Waste (European Waste Codes)

2000/76/EC

Incineration of Waste

1999/31/EC

Landfill of Waste

**Statutory Information:**

Safety Health and Welfare at Work Act, 2005

Safety Health and Welfare at Work (Chemical Agents) Regulations, 2001

**Standards**

EN166: 2002

Eye Protection

EN529: 2005

Respiratory Protective Devices

BS EN 374-1:2003

Protective gloves against chemicals and micro-organisms

**Export Rating**

NLR (No Licence Required)

**Chemical Safety Assessment**

A chemical safety assessment has been carried out for the substance/mixture



**16. OTHER INFORMATION**

<b>Date of Issue:</b>	March 2011
<b>Status:</b>	Live
<b>Previous Issue Date:</b>	April 2005
<b>Revised Sections or Basis for Revision</b>	Changes to take account of Safety Data Sheets changed to comply with Classification, Labelling & Packaging Regulations and Regulation (EC) No 1907/2006 (REACH)
<b>Language:</b>	English
<b>List of Relevant Hazard Statements:</b>	<p>H226 – Flammable liquid and vapour  H302 – Harmful if swallowed  H304 – May be fatal if swallowed and enters airways  H315 – Causes skin irritation.  H332 – Harmful if inhaled  H351 – Suspected of causing cancer when inhaled  H373: May cause damage to organs through prolonged or repeated exposure  H410 – Very toxic to aquatic life with long lasting effects.  H411 – Toxic to aquatic life with long lasting effects.</p> <p>R10 – Flammable  R20 - Harmful by inhalation  R22 - Harmful if swallowed  R38 - Irritating to skin  R40 - Limited evidence of carcinogenic effect  R48/21 - Harmful: danger of serious damage to health by prolonged exposure in contact with skin  R65 - Harmful: may cause lung damage if swallowed  R66 - Repeated exposure may cause skin dryness or cracking  R50/53: Very toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment  R51/53 - Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.</p>

**Guide to Abbreviations:**

ACGIH = American Conference of Governmental Industrial Hygienists; ADR = Agreement on Dangerous Goods by Road; BMGN = Biological Monitoring Guidance Value; CAS RN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit (15 minutes); EINECS = European Inventory of Existing Commercial Chemical Substances; EPA= (US Environmental Protection Agency); Germany-TRGS = Technical Rules for Dangerous Substances; IARC = International Agency for Research on Cancer; ICAO/IATA = International Civil Aviation Organisation/International Air Transport Association; IMDG = International Maritime Dangerous Goods; Ireland-H.S.A. = Irelands Health & Safety Authority, LEL = Lower Explosion Limit; N/A= Not Applicable; N/D = Not Determined; NTP = (US) National Toxicology Program; PBT = Persistent Bioaccumulative and Toxic; RID = Regulations Concerning International Transport of Dangerous Goods by Rail; STEL = Short Term Exposure Limit (15 minutes); TLV=Threshold Limit Value, TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; UK-EH40= United Kingdom EH40/2005 Workplace Exposure Limits; vPvB = very Persistent, very Bioaccumulative

The data and advice given apply when this product is used for the stated applications. The product is not sold as suitable for any other application. Use of this product for applications other than as stated in this sheet may give rise to risks not mentioned in this sheet. DO NOT use as a solvent or cleaning agent.

**DISCLAIMER:** The information presented in this Safety Data Sheet is based on data believed to be accurate as of the date this Safety Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorisation is given nor implied to practice any patented invention without a licence.

# SAFETY DATA SHEET

Version 1.19  
Revision Date 24.07.2010

MSDS Number 300000000074  
Print Date 11.12.2010

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Product identifier : Hydrogen

Chemical formula : H<sub>2</sub>

Synonyms : Hydrogen

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

Use of the Substance/Mixture : General Industrial

Restrictions on Use : No data available.

Details of the supplier of the safety data sheet : Air Products Plc  
2 Millennium Gate  
Westmere Drive  
Crewe  
Cheshire

Email Address – Technical Information : GASTECH@airproducts.com

Telephone : +44(0)8457 020202

Emergency telephone number (24h) : 1. Cylinder 0500 020202 / +44 870 190 6874  
2. Bulk 0500 020202 / +44 2030 240 571  
3. Medical 0500 020202 / +44 1270 218 050

## 2. HAZARDS IDENTIFICATION

Classification according to Regulation 1272/2008 (CLP)

Flammable gases - Category 1 H220:Extremely flammable gas.

Gases under pressure - Compressed gas. H280:Contains gas under pressure; may explode if heated.

Label Elements according to Regulation 1272/2008 (CLP)

Hazard pictograms/symbols



# SAFETY DATA SHEET

Version 1.19  
Revision Date 24.07.2010

MSDS Number 300000000074  
Print Date 11.12.2010

Signal Word: Danger

## Hazard Statements:

H220:Extremely flammable gas.  
H280:Contains gas under pressure; may explode if heated.

## Precautionary Statements:

Prevention : P210:Keep away from heat/sparks/open flame/hot surface s. - No smoking.  
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.

## Classification (Directive)

F+ Extremely flammable  
R12 Extremely flammable.

## Other hazards

Burns with an invisible flame.  
Can ignite on contact with air.  
High pressure gas.  
Can cause rapid suffocation.  
Extremely flammable.  
May form explosive mixtures in air.  
Immediate fire and explosion hazard exists when mixed with air at concentrations exceeding the lower flammability limit (LFL).  
High concentrations that can cause rapid suffocation are within the flammable range and should not be entered.  
Avoid breathing gas.  
Self contained breathing apparatus (SCBA) may be required.

## Environmental Effects

Not harmful.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance/Mixture : Substance

Components	EINECS / ELINCS Number	CAS Number	Concentration (Volume)
Hydrogen	215-605-7	1333-74-0	100 %

# SAFETY DATA SHEET

Version 1.19  
Revision Date 24.07.2010

MSDS Number 300000000074  
Print Date 11.12.2010

Components	Classification (Directive)	Classification (CLP)	REACH Reg. #
Hydrogen	F+ R12	Flam. Gas 1 Press. Gas	

If REACH registration numbers do not appear the substance is either exempt from registration, does not meet the minimum volume threshold for registration, or the registration date has not yet come due.  
Refer to section 16 for full text of each relevant R-phrases and H-phrases.

Concentration is nominal. For the exact product composition, please refer to Air Products technical specifications.

## 4. FIRST AID MEASURES

### Description of first aid measures

- General advice : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.
- Skin contact : Not applicable.
- Ingestion : Ingestion is not considered a potential route of exposure.
- Inhalation : In case of shortness of breath, give oxygen. Move to fresh air. If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately. Seek medical advice.

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

- Symptoms : Exposure to oxygen deficient atmosphere may cause the following symptoms: Dizziness. Salivation. Nausea. Vomiting. Loss of mobility/consciousness.

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

No data available.

## 5. FIRE-FIGHTING MEASURES

### Extinguishing media

- Suitable extinguishing media : All known extinguishing media can be used.
- Extinguishing media which must not be used for safety reasons. : No data available.
- Special hazards arising from the substance or : Ignitable by static electricity. Burns with an invisible flame. Gas is lighter than air and can accumulate in the upper sections of enclosed spaces. Upon exposure to intense heat or flame, cylinder will vent rapidly and or rupture violently. Keep

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mixture	containers and surroundings cool with water spray. Extinguish fire only if gas flow can be stopped. If possible, shut off the source of gas and allow the fire to burn itself out. Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire. Move away from container and cool with water from a protected position. Keep adjacent cylinders cool by spraying with large amounts of water until fire burns itself out. If flames are accidentally extinguished, explosive re-ignition may occur; therefore, appropriate measures should be taken(e.g. total evacuation to protect persons from cylinder fragments and toxic fumes should a rupture occur).
Advice for fire-fighters	: Wear self contained breathing apparatus for fire fighting if necessary.
Further information	: The presence of a hydrogen flame can be detected by approaching cautiously with an outstretched straw broom to make the flame visible.

## 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	: Evacuate personnel to safe areas. Remove all sources of ignition. Never enter a confined space or other area where the flammable gas concentration is greater than 10% of its lower flammable limit. Ventilate the area.
Environmental precautions	: Do not discharge into any place where its accumulation could be dangerous. Should not be released into the environment. Prevent further leakage or spillage if safe to do so.
Methods and material for containment and cleaning up	: Ventilate the area. Approach suspected leak areas with caution.
Additional advice	: Increase ventilation to the release area and monitor concentrations. If leak is from cylinder or cylinder valve, call the Air Products emergency telephone number. If the leak is in the user's system, close the cylinder valve, safely vent the pressure, and purge with an inert gas before attempting repairs.

## 7. HANDLING AND STORAGE

### Precautions for safe handling

May ignite if valve is opened to air. Protect cylinders from physical damage; do not drag, roll, slide or drop. Do not allow storage area temperature to exceed 50°C (122° F). Only experienced and properly instructed persons should handle compressed gases/cryogenic liquids. Before using the product, determine its identity by reading the label. Know and understand the properties and hazards of the product before use. When doubt exists as to the correct handling procedure for a particular gas, contact the supplier. 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. Use an adjustable strap wrench to remove over-tight or rusted caps. Before connecting the container, check the complete gas system for suitability, particularly for pressure rating and materials. Before connecting the container for use, ensure that back feed from the system into the container is prevented. Ensure the complete gas system is compatible for pressure rating and materials of construction. Ensure the complete gas system has been checked for leaks before use. Employ suitable pressure regulating devices on all containers when the gas is being emitted.

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to systems with lower pressure rating than that of the container. Never insert an object (e.g. wrench, screwdriver, pry bar, etc.) into valve cap openings. Doing so may damage valve, causing a leak to occur. Open valve slowly. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Close container valve after each use and 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. Close valve after each use and when empty. Replace outlet caps or plugs and container caps as soon as container is disconnected from equipment. Do not subject containers to abnormal mechanical shocks which may cause damage to their valve or safety devices. Never attempt to lift a cylinder by its valve protection cap or guard. Do not use containers as rollers or supports or for any other purpose than to contain the gas as supplied. Never strike an arc on a compressed gas cylinder or make a cylinder a part of an electrical circuit. Do not smoke while handling product or cylinders. Never re-compress a gas or a gas mixture without first consulting the supplier. Never attempt to transfer gases from one cylinder/container to another. Always use backflow protective device in piping. Purge air from system before introducing gas. When returning cylinder install valve outlet cap or plug leak tight. Never use direct flame or electrical heating devices to raise the pressure of a container. Containers should not be subjected to temperatures above 50°C (122°F). Prolonged periods of cold temperature below -30°C (-20°F) should be avoided. Ensure equipment is adequately earthed.

## Conditions for safe storage, including any incompatibilities

Containers should be stored in a purpose build compound which should be well ventilated, preferably in the open air. Observe all regulations and local requirements regarding storage of containers. Stored containers should be periodically checked for general condition and leakage. Protect containers stored in the open against rusting and extremes of weather. Containers should not be stored in conditions likely to encourage corrosion. Containers should be stored in the vertical position and properly secured to prevent toppling. The container valves should be tightly closed and where appropriate valve outlets should be capped or plugged. Container valve guards or caps should be in place. Keep containers tightly closed in a cool, well-ventilated place. Store containers in location free from fire risk and away from sources of heat and ignition. Full and empty cylinders should be segregated. Do not allow storage temperature to exceed 50°C (122°F). Smoking should be prohibited within storage areas or while handling product or containers. Display "No Smoking or Open Flames" signs in the storage areas. The amounts of flammable or toxic gases in storage should be kept to a minimum. Return empty containers in a timely manner.

## Technical measures/Precautions

Containers should be segregated in the storage area according to the various categories (e.g. flammable, toxic, etc.) and in accordance with local regulations. Keep away from combustible material. All electrical equipment in the storage areas should be compatible with flammable materials stored. Containers containing flammable gases should be stored away from other combustible materials. Where necessary containers containing oxygen and oxidants should be separated from flammable gases by a fire resistant partition.

## Specific end use(s)

Refer to section 1 or the extended SDS if applicable

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## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### Control parameters

If applicable, refer to the extended section of the SDS for further information on CSA.

### Exposure controls

#### Engineering measures

Provide natural or explosion-proof ventilation that is adequate to ensure flammable gas does not reach its lower explosive limit.

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## Personal protective equipment

- |   |  |
|---|--|
| Respiratory protection                          | : High concentrations that can cause rapid suffocation are within the flammable range and should not be entered.   |
| Hand protection                                 | : Sturdy work gloves are recommended for handling cylinders.<br>The breakthrough time of the selected glove(s) must be greater than the intended use period. |
| Eye protection                                  | : Safety glasses recommended when handling cylinders.  |
| Skin and body protection                        | : Safety shoes are recommended when handling cylinders.<br>Wear as appropriate:<br>Flame retardant protective clothing.                                      |
| Special instructions for protection and hygiene | : Ensure adequate ventilation, especially in confined areas.   |

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

- |  |                                 |
|--|---------------------------------|
| Appearance                               | : Compressed gas. Colorless gas |
| Odor                                     | : None.                         |
| Odor threshold                           | : No data available.            |
| pH                                       | : Not applicable.               |
| Melting point/range                      | : -435 °F (-259.2 °C)           |
| Boiling point/range                      | : -423 °F (-252.9 °C)           |
| Flash point                              | : Not applicable.               |
| Evaporation rate                         | : Not applicable.               |
| Flammability (solid, gas)                | : No data available.            |
| Upper/lower explosion/flammability limit | : 75 %(V) / 4 %(V)              |
| Vapor pressure                           | : Not applicable.               |
| Water solubility                         | : 0.0016 g/l                    |
| Relative vapor density                   | : 0.07 (air = 1)                |
| Relative density                         | : 0.07 (water = 1)              |

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Partition coefficient (n-octanol/water)	: Not applicable.
Autoignition temperature	: 560 °C
Decomposition temperature	: No data available.
Viscosity	: Not applicable.
Explosive properties	: No data available.
Oxidizing properties	: No data available.
Molecular Weight	: 2.02 g/mol
Density	: 0.0001 g/cm <sup>3</sup> (0.006 lb/ft <sup>3</sup> ) at 21 °C ( 70 °F) Note: (as vapor)
Specific Volume	: 11.9830 m <sup>3</sup> /kg (191.97 ft <sup>3</sup> /lb) at 21 °C ( 70 °F)
Upper flammability limit	: 75 %(V)
Lower flammability limit	: 4 %(V)

## 10. STABILITY AND REACTIVITY

Reactivity	: Refer to possibility of hazardous reactions and/or incompatible materials sections
Chemical Stability	: Stable under normal conditions.
Possibility of hazardous reactions	: No data available.
Conditions to avoid	: Heat, flames and sparks. May form explosive mixtures with air and oxidizing agents.
Incompatible materials	: Oxygen. Oxidizing agents.
Hazardous decomposition products	: No data available.

## 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Likely routes of exposure



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Effects on Eye	:	No data available.
Effects on Skin	:	No adverse effect.
Inhalation Effects	:	In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. Asphyxiation may bring about unconsciousness without warning and so rapidly that victim may be unable to protect themselves.
Ingestion Effects	:	Ingestion is not considered a potential route of exposure.
Symptoms	:	Exposure to oxygen deficient atmosphere may cause the following symptoms: Dizziness. Salivation. Nausea. Vomiting. Loss of mobility/consciousness.

## Acute toxicity

Acute Oral Toxicity	:	No data is available on the product itself.
Inhalation	:	No data is available on the product itself.
Acute Dermal Toxicity	:	No data is available on the product itself.
Skin corrosion/irritation	:	No data available.
Serious eye damage/eye irritation	:	No data available.
Sensitization.	:	No data available.

## Chronic toxicity or effects from long term exposures

Carcinogenicity	:	No data available.
Reproductive toxicity	:	No data is available on the product itself.
Germ cell mutagenicity	:	No data is available on the product itself.
Specific target organ systemic toxicity (single exposure)	:	No data available.
Specific target organ systemic toxicity (repeated exposure)	:	No data available.
Aspiration hazard	:	No data available.

## 12. ECOLOGICAL INFORMATION

### Toxicity

Aquatic toxicity	:	No data is available on the product itself.
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Toxicity to other organisms : No data is available on the product itself.

## Persistence and degradability

No data available.

## Bioaccumulative potential

No data is available on the product itself.

## Mobility in soil

No data available.

## Results of PBT and vPvB assessment

If applicable, refer to the extended section of the SDS for further information on CSA.

## Other adverse effects

This product has no known eco-toxicological effects.

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## 13. DISPOSAL CONSIDERATIONS

Waste treatment methods : Contact supplier if guidance is required. Return unused product in original cylinder to supplier. Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste gas should be flared through a suitable burner with flash back arrestor.

Contaminated packaging : Return cylinder to supplier.

---

## 14. TRANSPORT INFORMATION

### ADR

UN/ID No. : UN1049  
Proper shipping name : HYDROGEN, COMPRESSED  
Class or Division : 2  
Tunnel Code : (B/D)  
Label(s) : 2.1  
ADR/RID Hazard ID no. : 23

### IATA

UN/ID No. : UN1049  
Proper shipping name : Hydrogen, compressed  
Class or Division : 2.1  
Label(s) : 2.1

### IMDG

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UN/ID No. : UN1049  
Proper shipping name : HYDROGEN, COMPRESSED  
Class or Division : 2.1  
Label(s) : 2.1

## RID

UN/ID No. : UN1049  
Proper shipping name : HYDROGEN, COMPRESSED  
Class or Division : 2  
Label(s) : 2.1

### Further 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. The transportation information is not intended to convey all specific regulatory data relating to this material. For complete transportation information, contact an Air Products customer service representative.

## 15. REGULATORY INFORMATION

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

Country	Regulatory list	Notification
USA	TSCA	Included on Inventory.
EU	EINECS	Included on Inventory.
Canada	DSL	Included on Inventory.
Australia	AICS	Included on Inventory.
South Korea	ECL	Included on Inventory.
China	SEPA	Included on Inventory.
Philippines	PICCS	Included on Inventory.
Japan	ENCS	Included on Inventory.

WGK Identification Number: : Not water endangering.

## Chemical Safety Assessment

Refer to extended SDS for CSA information

This product is either exempt from REACH, does not meet the minimum volume threshold for a CSA, or the CSA has not yet been completed.

## 16. OTHER INFORMATION

Ensure all national/local regulations are observed.

R-phrases - Components

R12 Extremely flammable.

Hazard Statements:

H220 Extremely flammable gas.

Prepared by : Air Products and Chemicals, Inc. Global EH&S Product Safety Department

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For additional information, please visit our Product Stewardship web site at  
<http://www.airproducts.com/productstewardship/>

This Safety Data Sheet has been established in accordance with the applicable European Directives and applies to all countries that have translated the Directives in their national laws. Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC.

Details given in this document are believed to be correct at the time of going to press. 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.

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## SAFETY DATA SHEET

Version : 4  
 Date of issue/ Date of revision : 28/06/2012.  
 Date of previous issue : 13/01/2012.  
 Prepared by : Johnson Matthey Catalysts Regulatory Affairs Department

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

#### 1.1 Product identifier

Product name : PURASPEC<sub>JM</sub> 5158  
 Product type : Mixture  
 Classification according to Directive 1999/45/EC [DPD]

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

Specific uses : Mercury removal

#### 1.3 Details of the supplier of the safety data sheet

Supplier : Johnson Matthey Catalysts  
 PO Box No 1, Billingham  
 Stockton on Tees, TS23 1LB  
 UNITED KINGDOM  
 +44 (0) 1642 523343

e-mail address of person responsible for this SDS : jmcptsds@matthey.com

#### 1.4 Emergency telephone number

Emergency telephone number (with hours of operation) : SembCorp Utilities, Middlesbrough, UK  
 +44 (0) 1642 452461 (24 hours)

Information limitations : None.

### SECTION 2: Hazards identification

#### 2.1 Classification of the substance or mixture

This health hazard assessment is based on results obtained on an analogous preparation.

Product definition : Mixture

#### Classification according to Directive 1999/45/EC [DPD]

The product is classified as dangerous according to Directive 1999/45/EC and its amendments.

Classification : N; R50

Environmental hazards : Very toxic to aquatic organisms.

See Section 16 for the full text of the R phrases or H statements declared above.

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

#### 2.2 Label elements

Hazard symbol or symbols :



Indication of danger : Dangerous for the environment.

Risk phrases : R50- Very toxic to aquatic organisms.

Safety phrases : S60- This material and its container must be disposed of as hazardous waste.  
 S61- Avoid release to the environment. Refer to special instructions/safety data sheet.

Hazardous ingredients : Not applicable.

PURASPEC<sub>JM</sub><sup>TM</sup> 5158**SECTION 2: Hazards identification**Special packaging requirements

Containers to be fitted with child-resistant fastenings : Not applicable.

Tactile warning of danger : Not applicable.

**2.3 Other hazards**

Other hazards which do not result in classification : Liable to self-heating in contact with air, without energy supply.

**SECTION 3: Composition/information on ingredients****3.2 Mixtures**

Substance/mixture : Mixture

Product/ingredient name	Identifiers	%	<u>Classification</u>		Type
			67/548/EEC	Regulation (EC) No. 1272/2008 [CLP]	
copper sulphide	EC: 215-271-2 CAS: 1317-40-4	25-35	Not classified.	Not classified.	[2]
copper(II) carbonate-- copper(II) hydroxide (1:1)	REACH #: 01- 2119513711-50 EC: 235-113-6 CAS: 12069-69-1	25-35	Xn; R22  N; R50	Acute Tox. 4, H302  Aquatic Acute 1, H400	[1] [2]
hydrozincite	EC: 235-179-6 CAS: 12122-17-7	<25	N; R50	Aquatic Acute 1, H400	[1]
aluminium oxide	REACH #: 01- 2119529248-35 EC: 215-691-6 CAS: 1344-28-1	10-15	Not classified.  <b>See Section 16 for the full text of the R- phrases declared above.</b>	Not classified.  <b>See Section 16 for the full text of the H statements declared above.</b>	[2]

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Type

[1] Substance classified with a health or environmental hazard

[2] Substance with a workplace exposure limit

[3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII

[4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII

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

**SECTION 4: First aid measures****4.1 Description of first aid measures**

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

**SECTION 4: First aid measures**

- Ingestion** : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

**4.2 Most important symptoms and effects, both acute and delayed****Potential acute health effects**

- Inhalation** : In the metals industry, high concentrations of very finely divided dust containing copper and/or zinc compounds have been known to produce the symptoms of metal fume fever. This condition is characterised by influenza type symptoms occurring a few hours after exposure and lasting for up to 48 hours. However, the handling and use of this product in line with Section 7 is not expected to pose such a risk. Unlikely to be hazardous by inhalation unless present as a dust. High concentrations of dust may be irritant to the upper respiratory tract. Dust may enter the lung and be slow to clear.
- Ingestion** : Ingestion may cause irritation of the gastrointestinal tract.
- Skin contact** : Repeated or prolonged skin contact may cause irritation. May cause physical abrasion in contact with skin.

- Eye contact** : Dust may cause irritation to eyes.

**Over-exposure signs/symptoms**

- Eye contact** : No specific data.
- Inhalation** : No specific data.
- Skin contact** : No specific data.
- Ingestion** : No specific data.


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

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments** : No specific treatment.

**SECTION 5: Firefighting measures****5.1 Extinguishing media**

- Suitable extinguishing media** : Use water spray or fog.
- Unsuitable extinguishing media** : Do not use water jet.

**5.2 Special hazards arising from the substance or mixture**

- Hazards from the substance or mixture** : Self heating at (Deg C): >50 Liable to self-heating in contact with air, without energy supply. Discharged material may be liable to self heating (See Process Hazards) 
- Hazardous combustion products** : Decomposition products may include the following materials:  
carbon dioxide  
carbon monoxide  
sulfur oxides  
metal oxide/oxides  
Thermal decomposition will evolve toxic and irritant vapours.

## SECTION 5: Firefighting measures

### 5.3 Advice for firefighters

- Special precautions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. This material is very toxic to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
- 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. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

## SECTION 6: Accidental release measures

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

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also Section 8 for additional information on hygiene measures.

### 6.2 Environmental precautions

- : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

### 6.3 Methods and materials for containment and cleaning up

- Small spill** : Move containers from spill area. Vacuum or sweep up material and place in a designated, labelled waste container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labelled waste container. Dispose of via a licensed waste disposal contractor.

### 6.4 Reference to other sections

- : See Section 1 for emergency contact information.  
See Section 8 for information on appropriate personal protective equipment.  
See Section 13 for additional waste treatment information.

## SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

### 7.1 Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing dust. Avoid release to the environment. Refer to special instructions/safety data sheet. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.



**PURASPEC<sup>TM</sup> 5158****SECTION 7: Handling and storage**

**Process hazards** : Prior to discharge the material may contain residual hydrocarbons. The material should be purged free of hydrocarbons and cooled with an inert gas before it is discharged. The material may also contain deposited carbon and should be regarded as potentially pyrophoric. The material should not be exposed to a reducing atmosphere. Reduction can result in the evolution of large quantities of heat and once reduced, the material should be regarded as pyrophoric. The spent material will be liable to self-heating in contact with air. Pyrophoric and self-heating materials can act as sources of ignition and should be kept away from combustible materials. Contact with air should be minimized. During discharge it is recommended that foam or dry powder fire extinguishers are available to blanket the material if it self-heats. As a minimum, water sprays should be available to cool the material. The action of water on the reduced material may result in the evolution of small quantities of hydrogen. Keep the discharged material away from mineral acids to avoid the generation of hydrogen sulphide.

**7.2 Conditions for safe storage, including any incompatibilities** : Do not store above the following temperature: 50°C (122°F). Store in accordance with local regulations. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. Keep product dry. Keep away from heat and direct sunlight. Keep container in a cool, well-ventilated area. Contact with combustible material may cause fire.

**Additional information** : Further advice given in the Puraspec Operating Manual.

**7.3 Specific end use(s)**

**Recommendations** : Not available.

**Industrial sector specific solutions** : Not available.

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

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

**8.1 Control parameters****Occupational exposure limits**

Product/ingredient name	Exposure limit values
copper sulphide	<b>EH40/2005 WELs (United Kingdom (UK), 3/2012).</b> TWA: 1 mg/m <sup>3</sup> , (As Cu) 8 hour(s). Form: Dusts and mists STEL: 2 mg/m <sup>3</sup> , (As Cu) 15 minute(s). Form: Dusts and mists
copper(II) carbonate--copper(II) hydroxide (1:1)	<b>EH40/2005 WELs (United Kingdom (UK), 3/2012).</b> TWA: 1 mg/m <sup>3</sup> , (As Cu) 8 hour(s). Form: Dusts and mists STEL: 2 mg/m <sup>3</sup> , (As Cu) 15 minute(s). Form: Dusts and mists
aluminium oxide	<b>EH40/2005 WELs (United Kingdom (UK), 8/2007).</b> TWA: 10 mg/m <sup>3</sup> 8 hour(s). Form: inhalable dust

**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.

**DNELs**

DNELs - Not available.

**PNECs**

PNECs -Not available.

**8.2 Exposure controls**

## SECTION 8: Exposure controls/personal protection

<b>Appropriate engineering controls</b>	: No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.
<b><u>Individual protection measures</u></b>	
<b>Hygiene measures</b>	: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
<b>Eye/face protection</b>	: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.
<b><u>Skin protection</u></b>	
<b>Hand protection</b>	: Chemical-resistant, impervious gloves complying with an approved standard (EN 374) should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Gloves should be changed regularly to avoid permeation problems.
<b>Body protection</b>	: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
<b>Other skin protection</b>	: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
<b>Respiratory protection</b>	: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
<b>Environmental exposure controls</b>	: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

#### Appearance

<b>Physical state</b>	: Solid. [Granular solid.]
<b>Colour</b>	: Black.
<b>Odour</b>	: Sulphurous. [Slight]
<b>Odour threshold</b>	: Not applicable.
<b>pH</b>	: Not applicable.
<b>Melting point/freezing point</b>	: Not determined.
<b>Initial boiling point and boiling range</b>	: Not applicable.
<b>Flash point</b>	: Not applicable.
<b>Evaporation rate (butyl acetate = 1)</b>	: Not applicable.
<b>Flammability (solid, gas)</b>	: Not classified.
<b>Upper/lower flammability or explosive limits</b>	: Not applicable.
<b>Vapour pressure ( mm Hg )</b>	: Not applicable.
<b>Vapour density</b>	: Not applicable.
<b>Relative density</b>	: Not applicable.
<b>Bulk Density ( g/ml )</b>	: 0.8 - 1.3
<b>Solubility(ies)</b>	: Soluble in the following materials: strong acids
<b>Solubility - Water</b>	: insoluble in water.

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## SECTION 9: Physical and chemical properties

Partition coefficient: n-octanol/water	: Not applicable.
Auto-ignition temperature	: Not applicable.
Decomposition temperature	: Not available.
Viscosity (m.Pa.s)	: Not applicable.
Explosive properties	: Not available.
Oxidising properties	: Not available.

### 9.2 Other information

No additional information.

## SECTION 10: Stability and reactivity

10.1 Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
10.2 Chemical stability	: The product is stable.
10.3 Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.  See Process Hazards section for hazards associated with the discharged material resulting from its intended use.
10.4 Conditions to avoid	: No specific data.
10.5 Incompatible materials	: Reactive or incompatible with the following materials: Water moisture Oxidising agent. Can react with mineral acids to liberate hydrogen sulphide and sulphur dioxide.
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

#### Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
copper(II) carbonate-- copper(II) hydroxide (1:1)	LD50 Oral	Rat	1350 mg/kg	-

**Conclusion/Summary** : Not classified.

#### Irritation/Corrosion

##### Conclusion/Summary

Skin	: Not classified.
Eyes	: Not classified.
Respiratory	: Not classified.

#### Sensitiser

##### Conclusion/Summary

Skin	: Not classified.
Respiratory	: Not classified.

#### Mutagenicity

**Conclusion/Summary** : Not classified.

#### Carcinogenicity

**Conclusion/Summary** : Not classified.

**SECTION 11: Toxicological information**Reproductive toxicity

**Conclusion/Summary** : Not classified.

Teratogenicity

**Conclusion/Summary** : Not classified.

**Information on the likely routes of exposure** : Routes of entry anticipated: Dermal, Inhalation.

Potential acute health effects

**Inhalation** : In the metals industry, high concentrations of very finely divided dust containing copper and/or zinc compounds have been known to produce the symptoms of metal fume fever. This condition is characterised by influenza type symptoms occurring a few hours after exposure and lasting for up to 48 hours. However, the handling and use of this product in line with Section 7 is not expected to pose such a risk. Unlikely to be hazardous by inhalation unless present as a dust. High concentrations of dust may be irritant to the upper respiratory tract. Dust may enter the lung and be slow to clear.

**Ingestion** : Ingestion may cause irritation of the gastrointestinal tract.

**Skin contact** : Repeated or prolonged skin contact may cause irritation. May cause physical abrasion in contact with skin.

**Eye contact** : Dust may cause irritation to eyes.

Symptoms related to the physical, chemical and toxicological characteristics

**Inhalation** : No specific data.

**Ingestion** : No specific data.

**Skin contact** : No specific data.

**Eye contact** : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposureShort term exposure

**Potential immediate effects** : Not available.

**Potential delayed effects** : Not available.

Long term exposure

**Potential immediate effects** : Not available.

**Potential delayed effects** : Not available.

Potential chronic health effects

**Conclusion/Summary** : Not classified.

**General** : No known significant effects or critical hazards.

**Carcinogenicity** : No known significant effects or critical hazards.

**Mutagenicity** : No known significant effects or critical hazards.

**Teratogenicity** : No known significant effects or critical hazards.

**Developmental effects** : No known significant effects or critical hazards.

**Fertility effects** : No known significant effects or critical hazards.

**Other information** : Not available.

**SECTION 12: Ecological information****12.1 Toxicity**

**Conclusion/Summary** : Very toxic to aquatic life.

**12.2 Persistence and degradability**

**Conclusion/Summary** : Not available.

**12.3 Bioaccumulative potential**

Not available.

**12.4 Mobility in soil**

PURASPEC<sub>JM</sub><sup>TM</sup> 5158**SECTION 12: Ecological information**Soil/water partition coefficient (K<sub>oc</sub>) : Not available.

Mobility : Not available.

**12.5 Results of PBT and vPvB assessment**

PBT : Not applicable.

vPvB : Not applicable.

**12.6 Other adverse effects** : No known significant effects or critical hazards.**SECTION 13: Disposal considerations**

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

Used material may have different hazards or properties from the new material. This safety data sheet does not apply to the used material.

In all cases where a EWC code is given, this applies to the material under normal conditions of use and may not be appropriate for used material where the properties may have changed. It is the responsibility of the user to check that any waste code recommendation is appropriate to their material in accordance with the recommendation of the European Waste Catalogue.

**13.1 Waste treatment methods**Product

**Methods of disposal** : 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.

Dispose of through the metal recovery industry or through the Johnson Matthey 'Catalyst Care' programme.

**Container information:** : Since the emptied container retains product residue, follow label warnings even after it has been emptied.

**Hazardous waste** : The classification of the product may meet the criteria for a hazardous waste.









**European waste catalogue (EWC)** : The user should assign a waste code to the material in accordance with the recommendations of the European Waste Catalogue.

Packaging

**Methods of disposal** : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

**Special precautions** : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

**SECTION 14: Transport information**

	ADR/RID	ADN/ADNR	IMDG	IATA
<b>14.1 UN number</b>	UN3190	UN3190	UN3190	UN3190
<b>14.2 UN proper shipping name</b>	Self-heating solid, inorganic, n.o.s. (copper sulphide)	Self-heating solid, inorganic, n.o.s. (copper sulphide)	Self-heating solid, inorganic, n.o.s. (copper sulphide). Marine pollutant (copper(II) carbonate--copper(II) hydroxide (1:1), hydrozincite)	Self-heating solid, inorganic, n.o.s. (copper sulphide)
<b>14.3 Transport hazard class(es)</b>	4.2  	4.2  	4.2  	4.2  

PURASPEC<sub>JM</sub><sup>TM</sup> 5158**SECTION 14: Transport information**

<b>14.4 Packing group</b>	III	III	III	III
<b>14.5 Environmental hazards</b>	Yes.	Yes.	Yes.	Yes.
<b>14.6 Special precautions for user</b>	Not applicable	Not applicable	Not applicable	Not applicable
<b>Additional information</b>	<u><b>Hazard identification number</b></u> 40  <u><b>Limited quantity</b></u> 0  <u><b>Special provisions</b></u> 274  <u><b>Tunnel code</b></u> (E)	-	<u><b>Emergency schedules (EmS)</b></u> F-A, S-J	<u><b>Passenger and Cargo Aircraft</b></u> Quantity limitation: 25 kg Packaging instructions: 469 <u><b>Cargo Aircraft Only</b></u> Quantity limitation: 100 kg Packaging instructions: 471 <u><b>Limited Quantities - Passenger Aircraft</b></u> Quantity limitation: Forbidden Packaging instructions: Forbidden

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

**SECTION 15: Regulatory information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****EU Regulation (EC) No. 1907/2006 (REACH)****Annex XIV - List of substances subject to authorisation****Substances of very high concern**

None of the components are listed.

**Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles** : Not applicable.

**Other EU regulations****Europe inventory** : All components are listed or exempted.**Black List Chemicals** : Not listed**Priority List Chemicals** : Not listed**Integrated pollution prevention and control list (IPPC) - Air** : Not listed**Integrated pollution prevention and control list (IPPC) - Water** : Not listed**International regulations**

**Chemical Weapons Convention List Schedule I Chemicals** : Not listed

**PURASPEC<sub>JM</sub><sup>TM</sup> 5158****SECTION 15: Regulatory information**

**Chemical Weapons Convention List Schedule II Chemicals** : Not listed

**Chemical Weapons Convention List Schedule III Chemicals** : Not listed

**15.2 Chemical Safety Assessment** : This product contains substances for which Chemical Safety Assessments are still required.

**SECTION 16: Other information**

 Indicates information that has changed from previously issued version.

**Abbreviations and acronyms** : ATE = Acute Toxicity Estimate  
 CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]  
 DNEL = Derived No Effect Level  
 EUH statement = CLP-specific Hazard statement  
 PNEC = Predicted No Effect Concentration  
 RRN = REACH Registration Number

**Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]**

Self-heat. 2, H252

Aquatic Acute 1, H400

**Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]**

Classification	Justification
Self-heat. 2, H252 Aquatic Acute 1, H400	Expert judgment Calculation method

**Full text of abbreviated H statements** : H252 Self-heating in large quantities; may catch fire.  
 H302 Harmful if swallowed.  
 H400 Very toxic to aquatic life.

**Full text of classifications [CLP/GHS]** : Acute Tox. 4, H302 ACUTE TOXICITY: ORAL - Category 4  
 Aquatic Acute 1, H400 AQUATIC TOXICITY (ACUTE) - Category 1  
 Self-heat. 2, H252 SELF-HEATING SUBSTANCES AND MIXTURES - Category 2

**Full text of abbreviated R phrases** : R22- Harmful if swallowed.  
 R50- Very toxic to aquatic organisms.

**Full text of classifications [DSD/DPD]** : Xn - Harmful  
 N - Dangerous for the environment

**Notice to reader**

Information in this publication is believed to be accurate and is given in good faith, but it is for the Customer to satisfy itself of the suitability for its own particular purpose. Accordingly, Johnson Matthey plc gives no warranty as to the fitness of the Product for any particular purpose and any implied warranty or condition (statutory or otherwise) is excluded except to the extent that such exclusion is prevented by law. Freedom under Patent, Copyright and Designs cannot be assumed.

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## SAFETY DATA SHEET METHANOL

### 1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

PRODUCT NAME	METHANOL
APPLICATION	Miscellaneous
SUPPLIER	M-I SWACO Gamle Forusvei 43 4033 Stavanger NORWAY. Tel.: +47 51 57 73 00 Fax.: +47 51 57 73 98 SDS@miswaco.com
CONTACT PERSON	Ingrid Helland, telephone: +47 51 57 74 24
EMERGENCY TELEPHONE	(24 Hour) Europe +44 (0) 208 762 8322, Asia Pacific +65 633 44 177, China +86 10 5100 3039, Middle East and Africa +961 3 487 287.

### 2 HAZARDS IDENTIFICATION

Highly flammable.

Toxic by inhalation, in contact with skin and if swallowed.

Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.

CLASSIFICATION T;R23/24/25, R39/23/24/25. F;R11.

### 3 COMPOSITION/INFORMATION ON INGREDIENTS

Name	EC No.	CAS-No.	Content	Classification
METHANOL	200-659-6	67-56-1	60-100%	F;R11 T;R23/24/25,R39/23/24/25

The Full Text for all R-Phrases are Displayed in Section 16

### 4 FIRST-AID MEASURES

#### INHALATION

Move the exposed person to fresh air at once. If respiratory problems, artificial respiration/oxygen. Get medical attention if any discomfort continues.

#### INGESTION

DO NOT INDUCE VOMITING! Immediately give a couple of glasses of water or milk, provided the victim is fully conscious. Do not give victim anything to drink if they are unconscious. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical attention.

#### SKIN CONTACT

Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention promptly if symptoms occur after washing.

#### EYE CONTACT

Make sure to remove any contact lenses from the eyes before rinsing. Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

### 5 FIRE-FIGHTING MEASURES

#### EXTINGUISHING MEDIA

Use fire-extinguishing media appropriate for surrounding materials.

#### SPECIAL FIRE FIGHTING PROCEDURES

Containers close to fire should be removed immediately or cooled with water.



**METHANOL****UNUSUAL FIRE & EXPLOSION HAZARDS**

Vapours may form explosive mixture with air at room temperature. Solvent vapours may form explosive mixtures with air. Vapours are heavier than air and may spread near ground to sources of ignition.

**PROTECTIVE MEASURES IN FIRE**

Self contained breathing apparatus and full protective clothing must be worn in case of fire.

**6 ACCIDENTAL RELEASE MEASURES****PERSONAL PRECAUTIONS**

Wear protective clothing as described in Section 8 of this safety data sheet.

**ENVIRONMENTAL PRECAUTIONS**

Do not allow to enter drains, sewers or watercourses.

**SPILL CLEAN UP METHODS**

Stop leak if possible without risk. Dike far ahead of larger spills for later disposal. Absorb spillage with suitable absorbent material. Shovel into dry containers. Cover and move the containers. Flush the area with water.

**7 HANDLING AND STORAGE****USAGE PRECAUTIONS**

AVOID ALL CONTACT! Avoid spilling, skin and eye contact. Static electricity and formation of sparks must be prevented.

**STORAGE PRECAUTIONS**

Store in tightly closed original container in a dry, cool and well-ventilated place. Keep away from heat, sparks and open flame.

**8 EXPOSURE CONTROLS/PERSONAL PROTECTION**

Name	Std	TWA - 8 hrs		STEL - 15 min		Notes
METHANOL	WEL	200 ppm	266 mg/m <sup>3</sup>	250 ppm	333 mg/m <sup>3</sup>	Sk

WEL = Workplace Exposure Limit.

Sk = Can be absorbed through skin.

**INGREDIENT COMMENTS**

WEL = Workplace Exposure Limits

(Sk) - can be absorbed through the skin.

**PROTECTIVE EQUIPMENT****ENGINEERING MEASURES**

Provide adequate general and local exhaust ventilation.

**RESPIRATORY EQUIPMENT**

Suitable respiratory protection must be used at high concentrations. Wear mask supplied with: Chemical respirator with organic vapour cartridge. At work in confined or poorly ventilated spaces, respiratory protection with air supply must be used.

**HAND PROTECTION**

Use suitable protective gloves if risk of skin contact. For exposure of 4 to 8 hours use gloves made of: Butyl rubber. Be aware that the liquid may penetrate the gloves. Frequent change is advisable.

**EYE PROTECTION**

Wear approved safety goggles.

**OTHER PROTECTION**

Wear appropriate clothing to prevent any possibility of skin contact. Provide eyewash station and safety shower.

**HYGIENE MEASURES**

Promptly remove any clothing that becomes wet or contaminated. Change work clothing daily if there is any possibility of contamination. Wash hands after handling. Wash at the end of each work shift and before eating, smoking and using the toilet.

**METHANOL****9 PHYSICAL AND CHEMICAL PROPERTIES**

APPEARANCE	Clear liquid		
ODOUR	Odour of alcohol		
RELATIVE DENSITY	0,792 20 °C	FLASH POINT (°C)	11 °C

**10 STABILITY AND REACTIVITY****STABILITY**

Stable under normal temperature conditions and recommended use.

**CONDITIONS TO AVOID**

Avoid heat, flames and other sources of ignition.

**MATERIALS TO AVOID**

Strong acids. Strong oxidising substances. Strong alkalis.

**11 TOXICOLOGICAL INFORMATION****GENERAL INFORMATION**

Prolonged and repeated contact with solvents over a long period may lead to permanent health problems.

**INHALATION**

Toxic by inhalation. Toxic: danger of serious damage to health by prolonged exposure through inhalation.

**INGESTION**

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

**SKIN CONTACT**

Toxic in contact with skin. Toxic: danger of serious damage to health by prolonged exposure in contact with skin.

**EYE CONTACT**

Spray and vapour in the eyes may cause irritation and smarting.

**12 ECOLOGICAL INFORMATION****MOBILITY**

The product is soluble in water.

**BIOACCUMULATION**

The product is not bioaccumulating.

**DEGRADABILITY**

The product is easily biodegradable.

**ACUTE FISH TOXICITY**

Not considered toxic to fish.

**13 DISPOSAL CONSIDERATIONS****DISPOSAL METHODS**

Recover and reclaim or recycle, if practical. Dispose of waste and residues in accordance with local authority requirements.

**WASTE CLASS**

The definitive European Waste code for this product will depend upon the final use that is made of this material. EWC-code: 07 01 04.  
Waste number: 7152. Organic waste without halogen.

**14 TRANSPORT INFORMATION**

**METHANOL**

UK ROAD CLASS	3	UK ROAD PACK GR.	II
PROPER SHIPPING NAME	METHANOL	ADR CLASS	Class 3: Flammable liquids.
UN NO. ROAD	1230	ADR PACK GROUP	II
ADR CLASS NO.	3	HAZCHEM CODE	2WE
ADR SUB CLASS	6.1	RID CLASS NO.	3
HAZARD No. (ADR)	336	UN NO. SEA	1230
CEPIC TEC(R) NO.	30GFT1-II	IMDG SUB CLASS	6.1
RID PACK GROUP	II	EMS	F-E, S-D
IMDG CLASS	3	UN NO. AIR	1230
IMDG PACK GR.	II	AIR SUB CLASS	6.1
MARINE POLLUTANT	No.		
AIR CLASS	3		
AIR PACK GR.	II		

**15 REGULATORY INFORMATION**

## LABELLING



Toxic



Highly Flammable

CONTAINS METHANOL

## RISK PHRASES

R11	Highly flammable.
R23/24/25	Toxic by inhalation, in contact with skin and if swallowed.
R39/23/24/25	Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.

## SAFETY PHRASES

S9	Keep container in a well-ventilated place.
S16	Keep away from sources of ignition - No smoking.
S27	Take off immediately all contaminated clothing.
S38	In case of insufficient ventilation, wear suitable respiratory equipment.
S45	In case of accident or if you feel unwell, seek medical advice immediately (show label where possible).
S36/37/39	Wear suitable protective clothing, gloves and eye/face protection.

## UK REGULATORY REFERENCES

Chemicals (Hazard Information &amp; Packaging) Regulations.

## EU DIRECTIVES

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, including amendments.

## GUIDANCE NOTES

Workplace Exposure Limits EH40.

**METHANOL****16 OTHER INFORMATION****INFORMATION SOURCES**

Product information provided by the commercial vendor(s). Material Safety Data Sheet, Misc. manufacturers. Micromedex. European Chemicals Bureau - ESIS (European Chemical Substances Information).

**ISSUED BY**

Ingrid Helland

REVISION DATE 08.08.2008

REV. NO./REPL. SDS GENERATED 1

**SAFETY DATA SHEET STATUS**

Approved.

DATE 08.08.2008

SIGNATURE Ingrid Helland

SIGNATURE 2 Bente K. Sandoe

**RISK PHRASES IN FULL**

R11 Highly flammable.

R23/24/25 Toxic by inhalation, in contact with skin and if swallowed.

R39/23/24/25 Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.

**DISCLAIMER**

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## Safety Data Sheet

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

#### 1.1 Product Identifier

**Material Name** : Natural gas condensates (Sweet)

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

**Product Use** : Refinery Feedstock.

**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. This product is not to be used as a solvent or cleaning agent; for lighting or brightening fires; as a skin cleanser.

#### 1.3 Details of the Supplier of the safety data sheet

**Manufacturer/Supplier** : Shell U.K. Exploration and Production  
1 Altens Farm Road  
Nigg  
Aberdeen, AB12 3FY  
United Kingdom

**Telephone** : +44 (0)1224 882000  
**Fax** : +44 (0)1224 881617  
**Email Contact for MSDS** : epeREACH@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).

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### 2. HAZARDS IDENTIFICATION

#### 2.1 Classification of the substance or mixture

Regulation (EC) No 1272/2008 (CLP)
------------------------------------

## Safety Data Sheet

Hazard classes / Hazard categories	Hazard Statement
Flammable liquids, Category 1	H224
Skin corrosion/irritation, Category 2	H315
Carcinogenicity, Category 1B	H350
Germ cell mutagenicity, Category 1B	H340
Aspiration hazard, Category 1	H304
Specific target organ toxicity - single exposure, Category 3; Narcotic effects.	H336
Chronic hazards to the aquatic environment, Category 2	H411
Toxic to reproduction, Category 2	H361

67/548/EEC or 1999/45/EC	
Hazard Characteristics	R-phrases(s)
Extremely flammable.; Carcinogenic, category 2.; Mutagenic, category 2.; Toxic to Reproduction, category 3.; Irritant.; Harmful.; Dangerous for the environment.	R12; R38; R45; R46; R62; R63; R65; R67; R51/53

Classification triggering components : Contains petroleum distillates.

## 2.2 Label Elements

## Labeling according to Regulation (EC) No 1272/2008

Symbol(s)



Signal Words

: Danger

CLP Hazard Statements

: PHYSICAL HAZARDS:  
H224: Extremely flammable liquid and vapour.

HEALTH HAZARDS:

H315: Causes skin irritation.

H340: May cause genetic defects.

H350: May cause cancer.

## Safety Data Sheet

H361: Suspected of damaging fertility or the unborn child.

H336: May cause drowsiness or dizziness.

H304: May be fatal if swallowed and enters airways.

### ENVIRONMENTAL HAZARDS:

H411: Toxic to aquatic life with long lasting effects.

### CLP Precautionary statements

- Prevention** : P201: Obtain special instructions before use.  
P210: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.  
P280: Wear protective gloves/protective clothing/eye protection/face protection.
- Response** : P301+P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
- Storage** : P403+P233: Store in a well-ventilated place. Keep container tightly closed.
- Disposal** : P501: Dispose of contents and container to appropriate waste site or reclaimer in accordance with local and national regulations.

### Labeling according to Directive 1999/45/EC / 67/548/EEC

- EC Symbols : F+ Extremely flammable.  
T Toxic.  
N Dangerous for the environment.



- EC Classification : Extremely flammable. Carcinogenic, category 2. Mutagenic, category 2. Toxic to Reproduction, category 3. Irritant. Harmful. Dangerous for the environment.
- EC Risk Phrases : R12 Extremely flammable.

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### EC Safety Phrases

R38 Irritating to skin.  
 R45 May cause cancer.  
 R46 May cause heritable genetic damage.  
 R62 Possible risk of impaired fertility.  
 R63 Possible risk of harm to the unborn child.  
 R65 Harmful: may cause lung damage if swallowed.  
 R67 Vapours may cause drowsiness and dizziness.  
 R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.  
 : S2 Keep out of the reach of children.  
 S23 Do not breathe vapour.  
 S24/25 Avoid contact with skin and eyes.  
 S29 Do not empty into drains.  
 S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.  
 S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).  
 S53 Avoid exposure. Obtain special instructions before use.  
 S61 Avoid release to the environment. Refer to special instructions/Safety data sheets.  
 S62 If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

### 2.3 Other Hazards

: Slightly irritating to respiratory system. Possibility of organ or organ system damage from prolonged exposure; see Chapter 11 for details. Target organ(s): Blood-forming organs.

Liquid evaporates quickly and can ignite leading to a flash fire, or an explosion in a confined space.

Electrostatic charges may be generated during handling.  
 Electrostatic discharge may cause fire.

### Health Hazards

: Vapours may cause drowsiness and dizziness.  
 Irritating to skin. Moderately irritating to eyes. Harmful: may cause lung damage if swallowed.  
 May cause heritable genetic damage.

Possible risk of harm to the unborn child.

A component or components of this material may cause cancer.



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This product contains benzene which may cause leukaemia (AML - acute myelogenous leukaemia). May cause MDS (Myelodysplastic Syndrome).

Possibility of organ or organ system damage from prolonged exposure; see Chapter 11 for details. Target organ(s): Blood-forming organs.

**Aggravated Medical Conditions** : Skin.

**Safety Hazards** : Extremely flammable. Electrostatic charges may be generated during handling. Electrostatic discharge may cause fire. Liquid evaporates quickly and can ignite leading to a flash fire, or an explosion in a confined space. The vapour is heavier than air, spreads along the ground and distant ignition is possible. Will float and can be reignited on surface water.

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

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**3. COMPOSITION/INFORMATION ON INGREDIENTS****3.1 Substance**

**CAS No.** : 64741-47-5

**3.2 Mixtures**

**Mixture Description** : Streams obtained by processes such as steam and hydrocracking and sweetening, and containing mainly saturated, olefinic and aromatic hydrocarbons, mainly in the range C4 to C12 and boiling in the range ca. -20 to 230°C. Product is not a mixture according to 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.
Natural gas condensate	64741-47-5	265-047-3		90.00 - 100.00%

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Chemical Name	Hazard Class & Category	Hazard Statement
Natural gas condensate	Flam. Liq., 1; Asp. Tox., 1; Muta., 1B; Carc., 1; Skin Corr., 2; STOT SE, 3; Repr., 2; Aquatic Chronic, 2;	H224; H304; H340; H350; H315; H336; H361; H411;

## Classification of components according to 67/548/EEC

Chemical Name	CAS No.	EINECS	REACH Registration No.	Symbol(s)	R-phrases	Conc.
Natural gas condensate	64741-47-5	265-047-3		F+, T, N	R12; R38; R45; R46; R51/53; R62; R63; R65; R67	90.00 - 100.00%

**Additional Information** : Contains, iso-Octane, CAS# 26635-64-3 Contains n-Heptane, CAS # 142-82-5. Contains n-Hexane, CAS # 110-54-3. Contains Benzene, CAS # 71-43-2. Contains methyl cyclohexane, CAS No 108-87-2. Contains Toluene, CAS # 108-88-3. Contains Pentane, CAS # 109-66-0 Contains Cyclohexane, CAS# 110-82-7. Contains Ethylbenzene, CAS # 100-41-4. Contains Xylene (Mixed Isomers), CAS # 1330-20-7.

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

## 4. FIRST AID MEASURES

## 4.1 Description of First Aid Measures

**Inhalation** : Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.

**Skin Contact** : Contaminated clothing may be a fire hazard and therefore should be soaked with water before being removed. Remove contaminated clothing. Immediately flush skin with large amounts of water for at least 15 minutes, and follow by washing with soap and water if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.

**Eye Contact** : Flush eye with copious quantities of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If persistent irritation occurs, obtain medical attention.

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

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- medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. If any of the following delayed signs and symptoms appear within the next 6 hours, transport to the nearest medical facility: fever greater than 101° F (38.3°C), shortness of breath, chest congestion or continued coughing or wheezing.
- 4.2 Most important symptoms and effects, both acute and delayed** : Skin irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blisters. Eye irritation signs and symptoms may include a burning sensation and a temporary redness of the eye. If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath, and/or fever. The onset of respiratory symptoms may be delayed for several hours after exposure. Breathing of high vapour concentrations may cause central nervous system (CNS) depression resulting in dizziness, light-headedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness and death. Damage to blood-forming organs may be evidenced by: a) fatigue and anemia (RBC), b) decreased resistance to infection, and/or excessive bruising and bleeding (platelet effect). Auditory system effects may include temporary hearing loss and/or ringing in the ears. Defatting dermatitis signs and symptoms may include a burning sensation and/or a dried/cracked appearance.
- 4.3 Indication of any immediate medical attention and special treatment needed** : Treat symptomatically.  
Potential for chemical pneumonitis.  
Hydrogen sulphide (H<sub>2</sub>S) - CNS asphyxiant. May cause rhinitis, bronchitis and occasionally pulmonary oedema after severe exposure. CONSIDER: Oxygen therapy. Consult a Poison Control Center for guidance.

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5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

- 5.1 Extinguishing Media** : Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
- Unsuitable Extinguishing Media** : Do not use water in a jet.
- 5.2 Special hazards arising from the substance or mixture** : Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds. The vapour is heavier than air, spreads along the

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- ground and distant ignition is possible. Will float and can be reignited on surface water.
- 5.3 Advice for firefighters** : Proper protective equipment including breathing apparatus must be worn when approaching a fire in a confined space.
- Additional Advice** : If the fire cannot be extinguished the only course of action is to evacuate immediately. Keep adjacent containers cool by spraying with water. If possible remove containers from the danger zone. Contain residual material at affected sites to prevent material from entering drains (sewers), ditches, and waterways.

## 6. ACCIDENTAL RELEASE MEASURES

Observe the relevant local and international regulations. Avoid contact with skin, eyes and clothing. Evacuate the area of all non-essential personnel. Ventilate contaminated area thoroughly. Avoid contact with spilled or released material. Immediately remove all contaminated clothing. 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. If contamination of sites occurs remediation may require specialist advice. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Take precautionary measures against static discharges.

- 6.1 Personal Precautions, Protective Equipment and Emergency Procedures** : Vapour can travel for considerable distances both above and below the ground surface. Underground services (drains, pipelines, cable ducts) can provide preferential flow paths. Do not breathe fumes, vapour. Take measures to minimise the effects on groundwater. Contain residual material at affected sites to prevent material from entering drains (sewers), ditches, and waterways.
- 6.2 Environmental Precautions** : Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area. Use appropriate containment (of product and fire fighting water) to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. Attempt to disperse the vapour or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment.
- 6.3 Methods and Material for Containment and Cleaning up** : For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.

**Safety Data Sheet****Additional Advice**

- For small liquid spills (< 1 drum), transfer by mechanical means to a labelled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.
- : Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Local authorities should be advised if significant spillages cannot be contained. Maritime spillages should be dealt with using a Shipboard Oil Pollution Emergency Plan (SOPEP), as required by MARPOL Annex 1 Regulation 26.

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**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. Air-dry contaminated clothing in a well-ventilated area before laundering. 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. Prevent spillages. For comprehensive advice on handling, product transfer, storage and tank cleaning refer to the product supplier. Do not use as a cleaning solvent or other non-motor fuel uses.

**7.1 Precautions for Safe Handling**

- : When using do not eat or drink. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Never siphon by mouth. The vapour is heavier than air, spreads along the ground and distant ignition is possible. Avoid exposure. Use only non-sparking tools.

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

- : Drum and small container storage: Keep containers closed when not in use. Drums should be stacked to a maximum of 3 high. Use properly labelled and closeable containers. Packaged product must be kept tightly closed and stored in a diked (bunded) well-ventilated area, away from, ignition sources and other sources of heat. Take suitable precautions when opening sealed containers, as pressure can build up during storage. Tank storage: Tanks must be specifically designed for use with this product. Bulk storage tanks should be diked (bunded). Locate tanks away from heat and other sources of ignition. Cleaning, inspection and maintenance of

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<b>7.3 Specific end use(s)</b>	storage tanks is a specialist operation, which requires the implementation of strict procedures and precautions.
<b>Additional Information</b>	: Not applicable : 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".
<b>Product Transfer</b>	: Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge ( $\leq 1$ m/sec until fill pipe submerged to twice its diameter, then $\leq 7$ m/sec). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations. Wait 2 minutes after tank filling (for tanks such as those on road tanker vehicles) before opening hatches or manholes. Wait 30 minutes after tank filling (for large storage tanks) before opening hatches or manholes.
<b>Recommended Materials</b>	: For container and container linings, use mild steel or aluminium. Aluminium may also be used for applications where it does not present an unnecessary fire hazard. Examples of suitable materials are: high density polyethylene (HDPE), polypropylene (PP), and Viton (FKM), which have been specifically tested for compatibility with this product. For container linings, use amine-adduct cured epoxy paint. For seals and gaskets use: graphite, PTFE, Viton A, Viton B.
<b>Unsuitable Materials</b>	: Some synthetic materials may be unsuitable for containers or container linings depending on the material specification and intended use. Examples of materials to avoid are: natural rubber (NR), nitrile rubber (NBR), ethylene propylene rubber (EPDM), polymethyl methacrylate (PMMA), polystyrene, polyvinyl chloride (PVC), polyisobutylene. However, some may be suitable for glove materials.
<b>Container Advice</b>	: Do not cut, drill, grind, weld or perform similar operations on or near containers. Containers, even those that have been emptied, can contain explosive vapours.

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**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**

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## Occupational Exposure Limits

Material	Source	Type	ppm	mg/m3	Notation
Heptane	EH40 WEL	TWA	500 ppm		
	ACGIH	TWA	400 ppm		
	ACGIH	STEL	500 ppm		
Octane	ACGIH	TWA	300 ppm		
Pentane	ACGIH	TWA	600 ppm		
	EH40 WEL	TWA	600 ppm	1,800 mg/m3	
Benzene	EH40 WEL	TWA	1 ppm		
	EH40 WEL	SKIN_DES			Can be absorbed through the skin.
	ACGIH	TWA	0.5 ppm		
	ACGIH	STEL	2.5 ppm		
	ACGIH	SKIN_DES			Can be absorbed through the skin.
	SHELL IS	TWA	0.5 ppm	1.6 mg/m3	
	SHELL IS	STEL	2.5 ppm	8 mg/m3	
Methyl cyclohexane	ACGIH	TWA	400 ppm		
Cyclohexane	EH40 WEL	TWA	100 ppm	350 mg/m3	
	EH40 WEL	STEL	300 ppm	1,050 mg/m3	
	ACGIH	TWA	100 ppm		
Toluene	EH40 WEL	TWA	50 ppm	191 mg/m3	

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	EH40 WEL	STEL	100 ppm	384 mg/m3	
	EH40 WEL	SKIN_DES			Can be absorbed through the skin.
	ACGIH	TWA	20 ppm		
Xylene	EH40 WEL	TWA	50 ppm	220 mg/m3	
	EH40 WEL	STEL	100 ppm	441 mg/m3	
	EH40 WEL	SKIN_DES			Can be absorbed through the skin.
	ACGIH	TWA	100 ppm		
	ACGIH	STEL	150 ppm		

**Additional Information** : In the absence of a national exposure limit, the American Conference of Governmental Industrial Hygienists (ACGIH) recommends the following values for Gasoline low boiling point naphtha: TWA - 300 ppm STEL - 500 ppm Critical effects based on Irritation and Central Nervous System.

SHELL IS is the Shell Internal Standard. Skin notation means that significant exposure can also occur by absorption of liquid through the skin and of vapour through the eyes or mucous membranes.

Material	Source	Hazard Designation
Natural gas condensate	EH40 (UK)	Carcinogenic.
Benzene	EH40 (UK)	Carcinogenic.

## Biological Exposure Index (BEI)

Material	Determinant	Sampling Time	BEI	Reference
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Xylene	Methylhippuric acids in Creatinine in urine	Sampling time: End of shift.	1.5 g/g	ACGIH BEL (2011)
	Methylhippuric acids in Creatinine in urine	Sampling time: End of shift.	650 mmol/mol	UKEH40BMGV (2005)
Toluene	toluene in Urine	Sampling time: End of shift.	0.03 mg/l	ACGIH BEL (2011)
	toluene in Blood	Sampling time: Prior to last shift of work week.	0.02 mg/l	ACGIH BEL (2011)
	o-Cresol, with hydrolysis in Creatinine in urine	Sampling time: End of shift.	0.3 mg/g	ACGIH BEL (2011)
Benzene	S-Phenylmercapturic acid in Creatinine in urine	Sampling time: End of shift.	25 µg/g	ACGIH BEL (2011)
	t,t-Muconic acid in Creatinine in urine	Sampling time: End of shift.	500 µg/g	ACGIH BEL (2011)
Ethylbenzene	Sum of mandelic acid and phenylglyoxylic acid in Creatinine in urine	Sampling time: End of shift at end of work week.	0.7 g/g	ACGIH BEL (2011)
	Ethyl benzene in End-exhaled air	Sampling time: Not critical.		ACGIH BEL (2011)

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n-hexane	2,5-Hexanedion, without hydrolysis in Urine	Sampling time: End of shift at end of work week.	0.4 mg/l	ACGIH BEL (2011)
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**PNEC related information** : Substance is a hydrocarbon with a complex, unknown or variable composition. Conventional methods of deriving PNECs are not appropriate and it is not possible to identify a single representative PNEC for such substances.

**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. Eye washes and showers for emergency use.

Do not ingest. If swallowed then seek immediate medical assistance.

**Occupational Exposure Controls****Personal Protective Equipment**

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

**Eye Protection**

: Chemical splash goggles (chemical monogoggles). 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. Select gloves tested to a relevant standard (e.g. Europe EN374, US F739). When prolonged or frequent repeated contact occurs, Viton and nitrile gloves may be suitable. (Breakthrough time of > 240 minutes.) For incidental contact/splash protection Neoprene, PVC gloves may be

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	suitable.
<b>Body protection</b>	: Chemical resistant gloves/gauntlets, boots, and apron (where risk of splashing).
<b>Respiratory Protection</b>	: If technical measures are not sufficient to keep the concentration in the air to an acceptable level to protect the workers health, use a full face mask with a suitable filter cartridge, for example ABEKHg/P3. Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus. All respiratory protection equipment and use must be in accordance with local regulations. Check with respiratory protective equipment suppliers.
<b>Monitoring Methods</b>	: 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.
<b>Environmental Exposure Controls</b>	
<b>Environmental exposure control measures</b>	: Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour.

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

Appearance	: Clear to dark brown. Liquid.
Odour	: Mild hydrocarbon.
pH	: Not applicable
Initial Boiling Point and Boiling Range	: ca. 35 - 350 °C / 95 - 662 °F
Melting / freezing point	: Not applicable
Flash point	: < 0 °C / 32 °F
Upper / lower Flammability or Explosion limits	: 0.6 - 8.7 %(V)
Ignition temperature	: > 200 °C / 392 °F
Auto-ignition temperature	: > 200 °C / 392 °F
Vapour pressure	: Data not available
Specific gravity	: < 1
Density	: 0.700 - 0.870 g/cm <sup>3</sup> at 15 °C / 59 °F
Water solubility	: Data not available
Solubility in other solvents	: Data not available
n-octanol/water partition	: 1.9 - 6

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coefficient (log Pow)  
Dynamic viscosity : Data not available  
Kinematic viscosity : < 7 cSt at 40 °C / 104 °F  
Vapour density (air=1) : < 4  
Evaporation rate (nBuAc=1) : > 1

### 9.2 Other Information

Other Information : Not applicable.

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## 10. STABILITY AND REACTIVITY

**10.1 Reactivity** : May oxidise in the presence of air.  
**10.2 Chemical stability** : Stable under normal conditions of use.  
**10.3 Possibility of Hazardous Reactions** : May oxidise in the presence of air.  
**10.4 Conditions to Avoid** : Avoid heat, sparks, open flames and other ignition sources.  
**10.5 Incompatible Materials** : Strong oxidising agents.  
**10.6 Hazardous Decomposition Products** : Hazardous decomposition products are not expected to form during normal storage. Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases, including carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

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## 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on Toxicological effects

**Basis for Assessment** : Information given is based on product testing.  
**Likely Routes of Exposure** : Exposure may occur via inhalation, ingestion, skin absorption, skin or eye contact, and accidental ingestion.  
**Acute Oral Toxicity** : Low toxicity: LD50 > 5000 mg/kg , Rat  
Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.  
**Acute Dermal Toxicity** : Low toxicity: LD50 >2000 mg/kg , Rabbit  
**Acute Inhalation Toxicity** : Low toxicity: LC50 >5 mg/l / 4.00 h, Rat  
**Skin Corrosion/Irritation** : Irritating to skin.  
**Serious Eye Damage/Irritation** : Expected to be slightly irritating.

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<b>Respiratory Irritation</b>	: Inhalation of vapours or mists may cause irritation to the respiratory system.
<b>Respiratory or Skin Sensitisation</b>	: Not expected to be a sensitiser.
<b>Aspiration Hazard</b>	: Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.
<b>Germ Cell Mutagenicity</b>	: May cause heritable genetic damage. (Benzene)
<b>Carcinogenicity</b>	: Known human carcinogen. (Benzene) May cause leukaemia (AML - acute myelogenous leukemia). (Benzene) Inhalation exposure to mice causes liver tumours, which are not considered relevant to humans.
<b>Reproductive and Developmental Toxicity</b>	: Not expected to impair fertility. Not expected to be a developmental toxicant. (Toluene)
<b>Specific target organ toxicity - single exposure</b>	: High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death.
<b>Specific target organ toxicity - repeated exposure</b>	: May cause damage to organs or organ systems through prolonged or repeated exposure. Blood-forming organs: repeated exposure affects the bone marrow.
<b>Additional Information</b>	: May cause MDS (Myelodysplastic Syndrome).

## 12. ECOLOGICAL INFORMATION

<b>Basis for Assessment</b>	: 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.
<b>12.1 Toxicity</b>	
<b>Acute Toxicity</b>	: Expected to be toxic: LL/EL/IL50 1-10 mg/l (to aquatic organisms) LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract.
<b>Fish</b>	: Expected to be toxic: LL/EL/IL50 1-10 mg/l
<b>Aquatic crustacea</b>	: Expected to be toxic: LL/EL/IL50 1-10 mg/l
<b>Algae/aquatic plants</b>	: Expected to be toxic: LL/EL/IL50 1-10 mg/l
<b>Microorganisms</b>	: Expected to be harmful: LL/EL/IL50 10-100 mg/l
<b>Chronic Toxicity</b>	
<b>Fish</b>	: NOEC/NOEL expected to be > 1.0 - <= 10 mg/l
<b>Aquatic crustacea</b>	: NOEC/NOEL expected to be > 1.0 - <= 10 mg/l
<b>12.2 Persistence and degradability</b>	: Expected to be inherently biodegradable. Oxidises rapidly by photo-chemical reactions in air.
<b>12.3 Bioaccumulative</b>	: Contains constituents with the potential to bioaccumulate.

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### Potential

- 12.4 Mobility** : Floats on water. If the product enters soil, one or more constituents will or may be mobile and may contaminate groundwater.
- 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** : Films formed on water may affect oxygen transfer and damage organisms.

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## 13. DISPOSAL CONSIDERATIONS

### 13.1 Waste Treatment Methods

- Material Disposal** : Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Waste 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. Do not dispose of tank water bottoms by allowing them to drain into the ground. This will result in soil and groundwater contamination.
- 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, puncture, cut, or weld uncleaned drums. Send to drum recoverer or metal reclaimer. Do not pollute the soil, water or environment with the waste container.
- 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): 13 07 02 petrol. The number given to waste is associated with the appropriate usage. The user must decide if their particular use results in another waste code being assigned. Classification of waste is always the

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responsibility of the end user.  
Hazardous Waste (England and Wales) Regulations 2005.

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

14.1 UN number : 1268  
14.2 UN proper shipping : PETROLEUM DISTILLATES, N.O.S. (Petroleum Condensate)  
name  
14.3 Transport hazard : 3  
class(es)  
14.4 Packing group : I  
Danger label (primary risk) : 3  
14.5 Environmental : Environmentally Hazardous  
hazards

**RID**

14.1 UN number : 1268  
14.2 UN proper shipping : PETROLEUM DISTILLATES, N.O.S. (Petroleum Condensate)  
name  
14.3 Transport hazard : 3  
class(es)  
14.4 Packing group : I  
Danger label (primary risk) : 3  
14.5 Environmental : Environmentally Hazardous  
hazards

**Sea transport (IMDG Code):**

14.1 UN number : UN 1268  
14.2 UN proper shipping : PETROLEUM DISTILLATES, N.O.S.  
name  
Technical name : (Petroleum Condensate)  
14.3 Transport hazard : 3  
class(es)  
14.4 Packing group : I  
14.5 Marine pollutant : Yes

**Air transport (IATA):**

14.1 UN number : 1268  
14.2 UN proper shipping : Petroleum distillates, n.o.s.  
name  
14.3 Transport hazard : 3  
class(es)

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14.4 Packing group : I  
**Additional Information** : MARPOL Annex 1 rules apply for bulk shipments by sea.

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**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****Chemical Inventory Status**

EINECS : All components  
listed or polymer  
exempt.

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** : A Chemical Safety Assessment was performed for this substance.

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

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**Safety Data Sheet**

R12	Extremely flammable.
R38	Irritating to skin.
R45	May cause cancer.
R46	May cause heritable genetic damage.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R62	Possible risk of impaired fertility.
R63	Possible risk of harm to the unborn child.
R65	Harmful: may cause lung damage if swallowed.
R67	Vapours may cause drowsiness and dizziness.

**CLP Hazard Statements**

H224	Extremely flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H336	May cause drowsiness or dizziness.
H340	May cause genetic defects.
H350	May cause cancer.
H361	Suspected of damaging fertility or the unborn child.
H411	Toxic to aquatic life with long lasting effects.

**Identified Uses according to the Use Descriptor System**

<b>Recommended Restrictions on Use (Advice Against)</b>	: This product must not be used in applications other than those recommended in Section 1, without first seeking the advice of the supplier. This product is not to be used as a solvent or cleaning agent; for lighting or brightening fires; as a skin cleanser.
<b>Additional Information</b>	: 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.
<b>Other Information</b>	
<b>MSDS Distribution</b>	: The information in this document should be made available to all who may handle the product.
<b>MSDS Version Number</b>	: 1.2
<b>MSDS Effective Date</b>	: 06.03.2012
<b>MSDS Revisions</b>	: A vertical bar ( ) in the left margin indicates an amendment from the previous version.

## **Safety Data Sheet**

### **MSDS Regulation Disclaimer**

- : Regulation 1907/2006/EC
- : 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**

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**1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING****1.1 Product Identifier****Material Name** : **Natural gas, dried****1.2 Relevant identified uses of the substance or mixture and uses advised against****Product Use** : Fuel. Raw material.**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 U.K. Exploration and Production**  
1 Altens Farm Road  
Nigg  
Aberdeen, AB12 3FY  
United Kingdom**Telephone** : +44 (0)1224 882000**Fax** : +44 (0)1224 881617**Email Contact for** : epeREACH@Shell.com**MSDS****1.4 Emergency Telephone Number**

: +44(0) 151 350 4595

**1.5 Other Information**

: In the case of a Gas Emergency please contact the National Gas Emergency Service on 0800 111 999 which is staffed 24 hours a day, 365 days a year; they will arrange for an engineer to visit the site and to make sure the supply is safe.

SGD Technical Help no (0207 257 0185)

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

## Safety Data Sheet

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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, Compressed gas	H280

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

## 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 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.  
P377: Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

## Safety Data Sheet

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/67/548/EEC

EC Symbols : F+ Extremely flammable.



EC Classification : Extremely flammable.  
EC Risk Phrases : R12 Extremely flammable.  
EC Safety Phrases : S9 Keep container in a well-ventilated place.  
S16 Keep away from sources of ignition - No smoking.  
S33 Take precautionary measures against static discharges.

### 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.

**Safety Hazards** : In use, may form flammable/explosive vapour-air mixture.

**Environmental Hazards** : Has the potential to contribute to Global Warming.

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## 3. COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1 Substance

CAS No. : 68410-63-9

### 3.2 Mixtures

**Preparation Description** : Product is not a mixture according to regulation 1907/2006/EC.

**Safety Data Sheet****Hazardous Components****Classification of components according to Regulation (EC) No 1272/2008**

Chemical Name	CAS No.	EINECS	REACH Registration No.	Conc.
Natural gas, dried	68410-63-9	270-085-9	Exempt	<= 100.00%

Chemical Name	Hazard Class & Category	Hazard Statement
Natural gas, dried	Flam. Gas, 1; Press. Gas, Compr. Gas;	H220; H280;

**Classification of components according to 67/548/EEC**

Chemical Name	CAS No.	EINECS	REACH Registration No.	Symbol(s)	R-phrases	Conc.
Natural gas, dried	68410-63-9	270-085-9	Exempt	F+	R12	<= 100.00%

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

Contains Methane, CAS # 74-82-8 Contains Propane, CAS # 74-98-6 Contains Ethane, CAS # 74-84-0 Contains Butane, CAS # 106-97-8 Contains Pentane, CAS # 109-66-0 Contains Nitrogen, CAS # 7727-37-9. Contains Carbon dioxide, CAS # 124-38-9.

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**4. FIRST AID MEASURES****4.1 Description of First Aid Measures**

- Inhalation** : Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.
- 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** : In the event of frostbite, slowly warm the exposed area by rinsing with warm water. Otherwise: Flush eyes with water while holding eyelids open. Rest eyes for 30 minutes. If redness, burning, blurred vision, or swelling persist transport to the nearest medical facility for additional treatment.
- Ingestion** : Not applicable.

## Safety Data Sheet

- 4.2 Most important symptoms/effects, acute & delayed** : Breathing of high vapour concentrations may cause central nervous system (CNS) depression resulting in dizziness, light-headedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness and death.
- 4.3 Indication of immediate medical attention and special treatment needed** : Treat symptomatically.  
Administer oxygen if necessary.  
Due to the risk of explosion only use oxygen outside the hazard area.

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## 5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel. In the event of fire involving gas, call the Fire Service and the National Gas Emergency Service on 0800 111 999.

- 5.1 Extinguishing Media** : Shut off supply. If not possible and no risk to surroundings, let the fire burn itself out. Dry chemical or carbon dioxide. For large fires use water spray or fog.
- Unsuitable Extinguishing Media** : Do not use water in a jet. Do not use foam.
- 5.2 Special hazards arising from 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 4-17% concentration in air, the vapour will burn along the flame front toward the source of the fuel.  
Carbon monoxide may be evolved if incomplete combustion occurs.
- 5.3 Advice for fire-fighters** : Wear full protective clothing and self-contained breathing apparatus.

---

## 6. ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. See Chapter 13 for information on disposal. Observe the relevant local and international regulations. In the event of an escape, contact the Emergency Service on 0800 111 999.

- 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.

## Safety Data Sheet

- 6.2 Environmental Precautions** : Has the potential to contribute to Global Warming.
- 6.3 Methods and Material for Containment and Clean Up** : 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.

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## 7. HANDLING AND STORAGE

- General Precautions** : Take precautionary measures against static discharges.
- 7.1 Precautions for Safe Handling** : Avoid contact with skin, eyes and clothing. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks.
- 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. Lighter than air. Intended release of the gas shall be made only by qualified personnel.  
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. Prior to entry and whilst cleaning is underway, the atmosphere within the tank must be monitored using an oxygen meter and explosimeter.
- 7.3 Specific End Uses** : Not applicable
- Additional Information** : Stored and transported in closed systems (pipes, pressure container). Ensure that all local regulations regarding handling and storage facilities are followed.
- Product Transfer** : Earth all equipment.

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## 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



## Safety Data Sheet

## Occupational Exposure Limits

Material	Source	Type	ppm	mg/m3	Notation
Natural gas, dried	ACGIH	TWA	1,000 ppm		
Methane	EH40 WEL				Included in the regulation but with no data values. See regulation for further details
	ACGIH	TWA	1,000 ppm		
Ethane	EH40 WEL				Included in the regulation but with no data values. See regulation for further details
	ACGIH	TWA	1,000 ppm		
Propane	EH40 WEL				Included in the regulation but with no data values. See regulation for further details
	ACGIH	TWA	1,000 ppm		
Butane	EH40 WEL	TWA	600 ppm	1,450 mg/m3	
	EH40 WEL	STEL	750 ppm	1,810 mg/m3	
	ACGIH	TWA	1,000 ppm		
Pentane	ACGIH	TWA	600 ppm		
	EH40 WEL	TWA	600 ppm	1,800 mg/m3	

## Safety Data Sheet

Nitrogen	EH40 WEL				Included in the regulation but with no data values. See regulation for further details
	ACGIH				Included in the regulation but with no data values. See regulation for further details
Carbon dioxide	EH40 WEL	TWA	5,000 ppm	9,150 mg/m3	
	EH40 WEL	STEL	15,000 ppm	27,400 mg/m3	
	ACGIH	TWA	5,000 ppm		
	ACGIH	STEL	30,000 ppm		

Material	Source	Hazard Designation
Methane	EH40 WEL	Asphyxiant.
Ethane	EH40 WEL	Asphyxiant.
Propane	EH40 WEL	Asphyxiant.
Nitrogen	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

**Safety Data Sheet**

depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances.

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

**Occupational Exposure Controls**

- Personal Protective Equipment** : Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.
- Eye Protection** : Eye protection is not required under normal conditions of use.
- Hand Protection** : Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact. Always seek advice from glove suppliers. 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.
- Body protection** : Wear antistatic and flame retardant clothing.
- 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 respiratory protective equipment is required, use a full-face mask. All respiratory protection equipment and use must be in accordance with local regulations. 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)] meeting EN14387.
- Thermal Hazards** : Not applicable.
- Monitoring Methods** : Monitoring the oxygen content of the air is often the best means of ensuring safety. There are substantial risks if the concentration of oxygen in the atmosphere varies from the normal (20.8%) under normal atmospheric pressure.

**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.

**Safety Data Sheet**

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

Appearance	: Colourless.
Odour	: Odourless.
pH	: Not applicable.
Initial Boiling Point and Boiling Range	: -195 °C / -319 °F
Freezing Point	: -155 °C / -247 °F
Flash point	: Data not available
Upper / lower Flammability or Explosion limits	: -187 °C / -305 °F
Auto-ignition temperature	: >= 4 %(V)
Vapour pressure	: <= 17 %(V)
Specific gravity	: 575 - 640 °C / 1,067 - 1,184 °F
Density	: Data not available
Bulk density	: >= 0.54
Water solubility	: <= 0.75
Solubility in other solvents	: 0.7 - 1.0 kg/m3
n-octanol/water partition coefficient (log Pow)	: Data not available
Dynamic viscosity	: Data not available
Kinematic viscosity	: Not applicable.
Evaporation rate (nBuAc=1)	: Data not available
Flammability	: Data not available

**9.2 Other Information**

Other Information	: Not applicable.
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**10. STABILITY AND REACTIVITY**

<b>10.1 Reactivity</b>	: No, product will not become self-reactive.
<b>10.2 Chemical Stability</b>	: Stable under normal use conditions.
<b>10.3 Possibility of Hazardous Reactions</b>	:
<b>10.4 Conditions to Avoid</b>	: No, hazardous, exothermic polymerization cannot occur.
	: Heat, flames, and sparks. May form explosive mixture on

## Safety Data Sheet

	contact with air.
<b>10.5 Incompatible Materials</b>	: Strong oxidising agents.
<b>10.6 Hazardous Decomposition Products</b>	: Hazardous decomposition products are not expected to form during normal storage.

## 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on Toxicological effects

<b>Basis for Assessment</b>	: Information given is based on product testing.
<b>Likely Routes of Exposure</b>	: Inhalation is the primary route of exposure although exposure may occur through skin or eye contact.
<b>Acute Oral Toxicity</b>	: Not applicable.
<b>Acute Dermal Toxicity</b>	: Not applicable.
<b>Acute Inhalation Toxicity</b>	: LC50 >20 mg/l / 4 h, Rat
<b>Skin Corrosion/Irritation</b>	: Not expected to be a hazard.
<b>Serious Eye Damage/Irritation</b>	: Essentially non-irritating to eyes.
<b>Respiratory Irritation</b>	: Not expected to be a respiratory irritant.
<b>Respiratory or Skin Sensitisation</b>	: Not expected to be a sensitiser.
<b>Aspiration Hazard</b>	: Not considered an aspiration hazard.
<b>Germ Cell Mutagenicity</b>	: Not considered a mutagenic hazard.
<b>Carcinogenicity</b>	: Not expected to be carcinogenic.
<b>Reproductive and Developmental Toxicity</b>	: Not expected to impair fertility. Not a developmental toxicant.
<b>Specific target organ toxicity - single exposure</b>	: High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death.
<b>Specific target organ toxicity - repeated exposure</b>	: Low systemic toxicity on repeated exposure.
<b>Additional Information</b>	: 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

<b>Basis for Assessment</b>	: Incomplete ecotoxicological data are available for this product.
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## Safety Data Sheet

The information given below is based partly on a knowledge of the components and the ecotoxicology of similar products.

### 12.1 Toxicity Acute Toxicity

: Physical properties indicate that hydrocarbon 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 inherently 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

: Has the potential to contribute to Global Warming.

---

## 13. DISPOSAL CONSIDERATIONS

### 13.1 Waste Treatment Methods

#### Material Disposal

: Do not discharge into areas where there is a risk of forming an explosive mixture with air.

#### 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.  
Classification of waste is always the responsibility of the end user.

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## 14. TRANSPORT INFORMATION

### Land transport (ADR/RID):

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**Safety Data Sheet****ADR**

- 14.1 UN No. : 1971  
14.2 UN Proper Shipping Name : NATURAL GAS, COMPRESSED  
14.3 Transport Hazard Class : 2  
14.4 Packing group : Not applicable.  
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. : 1971  
14.2 UN Proper Shipping Name : NATURAL GAS, COMPRESSED  
14.3 Transport Hazard Class : 2  
14.4 Packing group : Not applicable.  
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. : 1971  
14.2 UN Proper Shipping Name : NATURAL GAS, COMPRESSED  
14.3 Transport Hazard Class : 2  
14.4 Packing group : Not applicable.  
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.

**Sea transport (IMDG Code):**

- 14.1 UN No. : UN 1971

**Safety Data Sheet**

14.2 UN Proper Shipping Name : NATURAL GAS, COMPRESSED  
14.3 Transport Hazard Class : 2.1  
14.4 Packing group : Not applicable.  
14.5 Marine pollutant : 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.

**Air transport (IATA):**

14.1 UN No. : 1971  
14.2 UN Proper Shipping Name : Natural gas, compressed  
14.3 Transport Hazard Class : 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.

**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.

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**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**

**15.2 Chemical Safety Assessment** : No chemical safety assessment has been performed for this substance.



**Safety Data Sheet**

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**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.

**Other Information**

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

**MSDS Version Number**                      : 1.0

**MSDS Effective Date**                      : 21.11.2011

**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

according to Regulation (EC) No. 1907/2006

Version 3.4 Revision Date 03.12.2011

Print Date 15.08.2012

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

#### 1.1 Product identifiers

Product name : Nitric acid, >90%

Product Number : 364576  
Brand : Sigma-Aldrich  
Index-No. : 007-004-00-1  
CAS-No. : 7697-37-2

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

Identified uses : Laboratory chemicals, Manufacture of substances

#### 1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Company Ltd.  
The Old Brickyard  
NEW ROAD, GILLINGHAM  
Dorset  
SP8 4XT  
UNITED KINGDOM

Telephone : +44 (0)1747 833000  
Fax : +44 (0)1747 833313  
E-mail address : [eurtechserv@sial.com](mailto:eurtechserv@sial.com)

#### 1.4 Emergency telephone number

Emergency Phone # : +44 (0)1747 833100

### 2. HAZARDS IDENTIFICATION

#### 2.1 Classification of the substance or mixture

**Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]**

Oxidizing liquids (Category 3)  
Skin corrosion (Category 1A)

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

Contact with combustible material may cause fire. Causes severe burns.

#### 2.2 Label elements

**Labelling according Regulation (EC) No 1272/2008 [CLP]**

Pictogram



Signal word : Danger

Hazard statement(s)

H272

May intensify fire; oxidiser.

H314

Causes severe skin burns and eye damage.

Precautionary statement(s)

P220

Keep/Store away from clothing/ combustible materials.

P280

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

P305 + P351 + P338

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

P310 Immediately call a POISON CENTER or doctor/ physician.

Supplemental Hazard Statements none

**According to European Directive 67/548/EEC as amended.**

Hazard symbol(s)



R-phrase(s)

R 8 Contact with combustible material may cause fire.

R35 Causes severe burns.

S-phrase(s)

S23 Do not breathe gas/fumes/vapour/spray.

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S36 Wear suitable protective clothing.

S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

**2.3 Other hazards - none**

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**3. COMPOSITION/INFORMATION ON INGREDIENTS**

**3.2 Mixtures**

Formula :  $\text{HNO}_3$

Molecular Weight : 63.01 g/mol

Component		Classification	Concentration
<b>Nitric acid</b>			
CAS-No.	7697-37-2	Ox. Liq. 3; Skin Corr. 1A; H272, H314 O, C, R 8 - R35	-
EC-No.	231-714-2		
Index-No.	007-004-00-1		

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

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**4. FIRST AID MEASURES**

**4.1 Description of first aid measures**

**General advice**

Consult a physician. Show this safety data sheet to the doctor in attendance.

**If inhaled**

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

**In case of skin contact**

Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.

**In case of eye contact**

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

**If swallowed**

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

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

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., Inhalation may provoke the following symptoms:, spasm, inflammation and edema of the bronchi, spasm, inflammation and edema of the larynx, pneumonitis, Symptoms and signs of poisoning are:, burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, Vomiting, Pulmonary edema. Effects may be delayed., Large doses may cause: conversion of hemoglobin to methemoglobin, producing cyanosis; marked fall in blood pressure, leading to collapse, coma, and possibly death.

- 4.3 Indication of any immediate medical attention and special treatment needed**  
no data available

---

**5. FIREFIGHTING MEASURES**

**5.1 Extinguishing media**

**Suitable extinguishing media**

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

**5.2 Special hazards arising from the substance or mixture**

nitrogen oxides (NO<sub>x</sub>)

**5.3 Advice for firefighters**

Wear self contained breathing apparatus for fire fighting if necessary.

**5.4 Further information**

Use water spray to cool unopened containers.

---

**6. ACCIDENTAL RELEASE MEASURES**

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

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

**6.2 Environmental precautions**

Do not let product enter drains.

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

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

**6.4 Reference to other sections**

For disposal see section 13.

---

**7. HANDLING AND STORAGE**

**7.1 Precautions for safe handling**

Avoid inhalation of vapour or mist.

Keep away from sources of ignition - No smoking. Keep away from heat and sources of ignition.

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

Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

**7.3 Specific end uses**

no data available

---

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**8.1 Control parameters**

**Components with workplace control parameters**

Component	CAS-No.	Value	Control parameters	Basis
Nitric acid	7697-37-2	STEL	1 ppm 2.6 mg/m <sup>3</sup>	UK. EH40 WEL - Workplace Exposure Limits
		STEL	1 ppm 2.6 mg/m <sup>3</sup>	Europe. Indicative occupational exposure limit values
	Remarks	Indicative		

**8.2 Exposure controls**

**Appropriate engineering controls**

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

## Personal protective equipment

### Eye/face protection

Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

### Skin protection

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

### Body Protection

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

### Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

---

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

a) Appearance	Form: liquid Colour: colourless
b) Odour	no data available
c) Odour Threshold	no data available
d) pH	< 1 at 20 °C
e) Melting point/freezing point	no data available
f) Initial boiling point and boiling range	120.5 °C - lit.
g) Flash point	not applicable
h) Evaporation rate	no data available
i) Flammability (solid, gas)	no data available
j) Upper/lower flammability or explosive limits	no data available
k) Vapour pressure	11 hPa at 20 °C
l) Vapour density	no data available
m) Relative density	1.48 g/cm <sup>3</sup> at 20 °C
n) Water solubility	completely soluble
o) Partition coefficient: n-octanol/water	no data available
p) Autoignition temperature	no data available
q) Decomposition temperature	no data available

- r) Viscosity no data available  
s) Explosive properties no data available  
t) Oxidizing properties The substance or mixture is classified as oxidizing with the subcategory 2.

**9.2 Other safety information**  
no data available

---

**10. STABILITY AND REACTIVITY**

**10.1 Reactivity**  
no data available

**10.2 Chemical stability**  
no data available

**10.3 Possibility of hazardous reactions**  
no data available

**10.4 Conditions to avoid**  
May discolor on exposure to air and light.

**10.5 Incompatible materials**  
Alkali metals, Organic materials, Acetic anhydride, Acetonitrile, Alcohols, Acrylonitrile

**10.6 Hazardous decomposition products**  
Other decomposition products - no data available

---

**11. TOXICOLOGICAL INFORMATION**

**11.1 Information on toxicological effects**

**Acute toxicity**

**Skin corrosion/irritation**

Skin - rabbit - Extremely corrosive and destructive to tissue. - Draize Test

**Serious eye damage/eye irritation**

no data available

**Respiratory or skin sensitization**

no data available

**Germ cell mutagenicity**

no data available

**Carcinogenicity**

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**Reproductive toxicity**

Reproductive toxicity - rat - Oral

Effects on Newborn: Biochemical and metabolic.

Developmental Toxicity - rat - Oral

Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

**Specific target organ toxicity - single exposure**

no data available

**Specific target organ toxicity - repeated exposure**

no data available

**Aspiration hazard**

no data available

**Potential health effects**

**Inhalation**

May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

<b>Ingestion</b>	May be harmful if swallowed. Causes burns.
<b>Skin</b>	May be harmful if absorbed through skin. Causes skin burns.
<b>Eyes</b>	Causes eye burns.

### Signs and Symptoms of Exposure

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., Inhalation may provoke the following symptoms:, spasm, inflammation and edema of the bronchi, spasm, inflammation and edema of the larynx, pneumonitis, Symptoms and signs of poisoning are:, burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, Vomiting, Pulmonary edema. Effects may be delayed., Large doses may cause: conversion of hemoglobin to methemoglobin, producing cyanosis; marked fall in blood pressure, leading to collapse, coma, and possibly death.

### Additional Information

RTECS: Not available

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## 12. ECOLOGICAL INFORMATION

### 12.1 Toxicity

Toxicity to fish LC50 - Asterias rubens - 100 - 330 mg/l - 48 h

### 12.2 Persistence and degradability

no data available

### 12.3 Bioaccumulative potential

no data available

### 12.4 Mobility in soil

no data available

### 12.5 Results of PBT and vPvB assessment

no data available

### 12.6 Other adverse effects

May be harmful to aquatic organisms due to the shift of the pH.

---

## 13. DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

#### Product

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company.

#### Contaminated packaging

Dispose of as unused product.

---

## 14. TRANSPORT INFORMATION

### 14.1 UN number

ADR/RID: 2031

IMDG: 2031

IATA: 2031

### 14.2 UN proper shipping name

ADR/RID: NITRIC ACID

IMDG: NITRIC ACID

IATA: Nitric acid

Passenger Aircraft: Not permitted for transport

### 14.3 Transport hazard class(es)

ADR/RID: 8 (5.1)

IMDG: 8 (5.1)

IATA: 8 (5.1)

### 14.4 Packaging group

ADR/RID: I

IMDG: I

IATA: I

### 14.5 Environmental hazards

ADR/RID: no

IMDG Marine pollutant: no

IATA: no

**14.6 Special precautions for user**

no data available

---

**15. REGULATORY INFORMATION**

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

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

no data available

**15.2 Chemical Safety Assessment**

no data available

---

**16. OTHER INFORMATION****Text of H-code(s) and R-phrases mentioned in Section 3**

H272	May intensify fire; oxidiser.
H314	Causes severe skin burns and eye damage.
Ox. Liq.	Oxidizing liquids
Skin Corr.	Skin corrosion
C	Corrosive
O	Oxidising
R 8	Contact with combustible material may cause fire.
R35	Causes severe burns.

**Further information**

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# 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

<b>Inhalation</b>	: Move exposed person to fresh air. Inhalation of vapours and/or mists might irritate respiratory tract. Get medical attention if symptoms occur.
<b>Ingestion</b>	: Wash out mouth with water. Do not induce vomiting. Get medical attention if symptoms occur.
<b>Skin contact</b>	: Remove contaminated clothing and shoes. Wash contaminated skin with soap and water. Get medical attention if symptoms occur.
<b>Eye contact</b>	: 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

<b>Suitable</b>	: Use dry chemical, CO <sub>2</sub> , water spray (fog) or foam.
<b>Not suitable</b>	: Do not use water jet.
<b>Special protective equipment for fire-fighters</b>	: 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

<b>Personal precautions</b>	No action shall be taken involving any personal risk or without suitable training. Put on appropriate personal protective equipment (see section 8).
<b>Environmental precautions</b>	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).
<b>Small spill</b>	Smaller spillage can be wiped up with paper cloths.
<b>Large spill</b>	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

<b>Handling</b>	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.
<b>Storage</b>	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.
<b>Packaging materials</b>	
<b>Recommended</b>	: Use original container.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Exposure limit values

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

<b>Recommended monitoring procedures</b>	: 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.
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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

<b>Occupational exposure controls</b>	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.
<b>Hygiene measures</b>	Handle in accordance with good industrial hygiene and safety practices.
<b>Respiratory protection</b>	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.
<b>Hand protection</b>	Wear oil-resistant protective gloves (e.g. nitril rubber). neoprene PVC
<b>Eye protection</b>	If potential exists for splashing, use goggles.
<b>Skin protection</b>	Wear protective clothing if there is a risk of skin contact. Wash contaminated clothing before reuse.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### General information

#### Appearance

<b>Physical state</b>	: Liquid.
<b>Colour</b>	: Light yellow
<b>Odour</b>	: Odourless/Light petroleum.

#### Important health, safety and environmental information

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

## 10. STABILITY AND REACTIVITY

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

## 11. TOXICOLOGICAL INFORMATION

### Potential acute health effects

<b>Acute toxicity</b>	: Low acute toxicity.
<b>Ingestion</b>	: Ingestion may cause nausea and eventually vomitting and diarrhoea.
<b>Inhalation</b>	: Inhalation of oil mist or vapours at elevated temperatures may cause respiratory irritation.
<b>Skin</b>	: Repeated exposure may cause skin dryness or cracking.
<b>Eyes</b>	: 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.



## SAFETY DATA SHEET

ODORANT NB

Page 1

Issued: 24/11/2005

Revision No: 5

### 1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY / UNDERTAKING

**Product name:** ODORANT NB

**Product code:** 16410

**Use / description of product:** Odorant for gas.

**Company name:** Robinson Brothers

Phoenix Street

West Bromwich

West Midlands

B70 0AH

United Kingdom

Tel: +44 (0) 121 553 2451

Fax: +44 (0) 121 500 5183

Emergency tel: +44 (0) 121 553 0356

### 2. COMPOSITION / INFORMATION ON INGREDIENTS

**Hazardous ingredients:** TERTIARY BUTYL MERCAPTAN 78-82%

EINECS: 200-890-2 CAS: 75-66-1

[F] R11; [Xi] R36; [Sens.] R43; [Xn] R65

- DIMETHYLSULPHIDE 18-22%

EINECS: 200-846-2 CAS: 75-18-3

[F] R11; [Xn] R22; [Xi] R36; [Xn] R65

### 3. HAZARDS IDENTIFICATION

**Main hazards:** Highly flammable. Irritating to eyes. May cause sensitisation by skin contact. Harmful: may cause lung damage if swallowed.

**Other hazards:** May be irritating to respiratory mucous membranes. In use, may form flammable / explosive vapour-air mixture. Toxic to aquatic organisms.

### 4. FIRST AID MEASURES (SYMPTOMS)

**Skin contact:** There may be irritation and redness at the site of contact. May give delayed skin sensitisation

**Eye contact:** There may be irritation and redness. The eyes may water profusely.

**Ingestion:** Not likely due to odour. There may be soreness and redness of the mouth and throat. Nausea and stomach pain may occur. There may be vomiting.

**Inhalation:** There may be irritation of the throat with a feeling of tightness in the chest. May be irritating to respiratory mucous membranes. Exposure to vapour may cause headache

### 4. FIRST AID MEASURES (ACTION)

**Skin contact:** Remove all contaminated clothes and footwear immediately. Drench the affected skin with running water for 10 minutes or longer if substance is still on skin. A residual odour may cling to skin. Consult a doctor.

[cont...]

**Eye contact:** Bathe the eye with running water for 15 minutes. Consult a doctor.

**Ingestion:** Wash out mouth with water. Do not induce vomiting. If conscious, give half a litre of water to drink immediately. Consult a doctor.

**Inhalation:** Remove casualty from exposure ensuring one's own safety whilst doing so. If conscious, ensure the casualty sits or lies down. If breathing becomes bubbly, have the casualty sit and provide oxygen if available. Consult a doctor.

## 5. FIRE-FIGHTING MEASURES

**Extinguishing media:** Alcohol or polymer foam. Carbon dioxide. Dry chemical powder. Use water spray to cool containers.

**Exposure hazards:** Highly flammable. Vapour may travel considerable distance to source of ignition and flash back. In combustion emits toxic fumes of carbon dioxide / carbon monoxide. / In combustion emits toxic fumes of sulphur oxides.

**Protection of fire-fighters:** Wear self-contained breathing apparatus. Wear protective clothing to prevent contact with skin and eyes.

## 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions:** Refer to section 8 of SDS for personal protection details. Mark out the contaminated area with signs and prevent access to unauthorised personnel. Eliminate all sources of ignition. Turn leaking containers leak-side up to prevent the escape of liquid.

**Environmental precautions:** Contain spillage Do not discharge into drains or rivers. Alert National Rivers Authority or other appropriate regulatory body of spillages or uncontrolled discharges into watercourses.

**Clean-up procedures:** \*\*NOTIFY LOCAL GAS SUPPLY UNDERTAKINGS FOR POSSIBLE FALSE ALARM CALLS\*\*  
Absorb into dry earth or sand. Transfer to a closable, labelled salvage container for disposal by an appropriate method. Do not use equipment in clean-up procedure which may produce sparks. Destroy residual odorant with with sodium hypochlorite (bleach) or hydrogen peroxide. Refer to section 13 of SDS for suitable method of disposal.

## 7. HANDLING AND STORAGE

**Handling requirements:** Ensure there is exhaust ventilation of the area. Do not handle in a confined space. Avoid the formation or spread of mists in the air. Avoid direct contact with the substance. Smoking is forbidden. Use non-sparking tools. Take precautions against static discharges

**Storage conditions:** Store in cool, well ventilated area. Keep container tightly closed. Keep away from sources of ignition. Prevent the build up of electrostatic charge in the immediate area. Ensure lighting and electrical equipment are not a source of ignition.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Hazardous ingredients:** TERTIARY BUTYL MERCAPTAN  
WEL (8 hr exposure limit): 0.5ppm

**Engineering measures:** Ensure there is exhaust ventilation of the area. Ensure lighting and electrical equipment are not a source of ignition.

**Respiratory protection:** Self-contained breathing apparatus must be available in case of emergency.

**Hand protection:** PVC gloves. / Rubber gloves. Glove selection must take into account any solvents and other hazards present.

**Eye protection:** Safety glasses. / Safety goggles. Ensure eye bath is to hand.

**Skin protection:** Protective clothing. Boots.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**State:** Liquid

**Colour:** Pale yellow

**Odour:** Pungent

**Solubility in water:** Insoluble

**Also soluble in:** Most organic solvents.

**Boiling point/range°C:** 55

**Flash point°C:** -30

**Autoflammability°C:** 247

## 10. STABILITY AND REACTIVITY

**Stability:** Stable under normal conditions.

**Conditions to avoid:** Heat. Flames. Sources of ignition.

**Materials to avoid:** Strong oxidising agents. Strong acids.

**Haz. decomp. products:** In combustion emits toxic fumes of carbon dioxide / carbon monoxide. / In combustion emits toxic fumes of sulphur oxides.

## 11. TOXICOLOGICAL INFORMATION

**Hazardous ingredients:** TERTIARY BUTYL MERCAPTAN

IHL RAT LC50 97.5 mg/l

ORL RAT LD50 4 800 mg/kg

SKN RBT LC50 20 800 mg/kg

- DIMETHYLSULPHIDE

IHL RAT LC50 104 mg/l

**Chronic toxicity:** May cause sensitisation by skin contact.

**Routes of exposure:** Refer to section 4 of SDS for routes of exposure and corresponding symptoms.

## 12. ECOLOGICAL INFORMATION

**Hazardous ingredients:** TERTIARY BUTYL MERCAPTAN

ALGAE 72H IC50 13 mg/l

DAPHNIA 48H EC50 6.7 mg/l

FISH RAINBOW TROUT 96H LC50 34 mg/l

- DIMETHYLSULPHIDE

ALGAE 96H LC50 23 mg/l

DAPHNIA 48H EC50 29 mg/l

FISH RAINBOW TROUT 96H LC50 213 mg/l



**Mobility:** Insoluble in water.

**Persistence and degradability:** Biodegradable.

**Bioaccumulative potential:** No bioaccumulation potential.

**Other adverse effects:** Toxic to aquatic organisms. May taint water.

### 13. DISPOSAL CONSIDERATIONS

**Disposal operations:** Can be destroyed by incineration or by reaction with dilute solutions of sodium hypochlorite or hydrogen peroxide.

**NB:** The user's attention is drawn to the possible existence of regional or national regulations regarding disposal.

### 14. TRANSPORT INFORMATION

#### ADR / RID

**UN no:** 3336

**ADR Class:** 3

**Packing group:** II

**Classification code:** F1

**Shipping name:** MERCAPTAN MIXTURE, LIQUID, FLAMMABLE, N.O.S. (TERTIARY BUTYL MERCAPTAN; DIMETHYLSULPHIDE)

**Labelling:** 3

**Hazard ID no:** 33



#### IMDG / IMO

**UN no:** 3336

**Class:** 3

**Packing group:** II

**EmS:** F-E,S-D

**Marine pollutant:** .

**Labelling:** 3

#### IATA / ICAO

**UN no:** 3336

**Class:** 3

**Packing group:** II

**Packing instructions:** 305(P&CA); 307(CAO)

**Labelling:** 3

### 15. REGULATORY INFORMATION

**Hazard symbols:** Highly flammable.  
Harmful.



**Risk phrases:** R11: Highly flammable.  
R36: Irritating to eyes.

R43: May cause sensitisation by skin contact.

R65: Harmful: may cause lung damage if swallowed.

**Safety phrases:** S16: Keep away from sources of ignition - No smoking.

S24: Avoid contact with skin.

S33: Take precautionary measures against static discharges.

S36/37/39: Wear suitable protective clothing, gloves and eye / face protection.

S62: If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

**Note:** The regulatory information given above only indicates the principal regulations specifically applicable to the product described in the safety data sheet. The user's attention is drawn to the possible existence of additional provisions which complete these regulations. Refer to all applicable national, international and local regulations or provisions.

## 16. OTHER INFORMATION

**Other information:** Changes in sections: 2, 3, 4, 5, 6, 7, 8, 10, 12 and 15

**Risk phrases used in s.2:** R11: Highly flammable.

R36: Irritating to eyes.

R43: May cause sensitisation by skin contact.

R65: Harmful: may cause lung damage if swallowed.

R22: Harmful if swallowed.

**Legal disclaimer:** The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. This company shall not be held liable for any damage resulting from handling or from contact with the above product. Users should ensure that the product is of the appropriate quality to meet their requirements. Information is provided without obligation or warranty as to the product's suitability for the intended use. Conforms to 2001/59/EC and 2001/58/EC Directives

## 1 Identification of substance

### - Product details

- Trade name **PENNSTOP® DEHA 85%**

- Article number: 179581

- Application of the substance / the preparation

Polymerization inhibitor

Corrosion inhibitors

Intermediate for organic synthesis

- Manufacturer/Supplier:

IMCD UK Ltd.

Times House, Throwley Way

Sutton, Surrey SM1 4AF

Tel. +44 (0)20 8770 7090

Fax. +44 (0)20 8770 7295

- Informing department:

HSEQ Department

sds@imcdgroup.com

- Emergency information:

+44 (0)1865 407 333 NCEC (National Chemical Emergency Centre)

(24 hours)

## 2 Hazards identification

- Hazard designation:



Xn Harmful

- Information pertaining to particular dangers for man and environment

R 10 Flammable.

R 21/22 Harmful in contact with skin and if swallowed.

R 36/37/38 Irritating to eyes, respiratory system and skin.

## 3 Composition/information on ingredients



- Chemical characterization

- Description: Aqueous solution of:

- Dangerous components:

CAS: 3710-84-7 N,N-diethylhydroxylamine

EINECS: 223-055-4

 Xn,  Xi; R 10-21/22-36/37/38

85.0%

- Additional information For the wording of the listed risk phrases refer to section 16.

## 4 First aid measures

- General information Instantly remove any clothing soiled by the product.

- After inhalation

In case of unconsciousness bring patient into stable side position for transport.

Supply fresh air or oxygen; call for doctor.

- After skin contact

Instantly wash with water and soap and rinse thoroughly.

Seek medical treatment.

- After eye contact Rinse opened eye for several minutes under running water. Then consult doctor.

- After swallowing Do not induce vomiting; immediately call for medical help.

Trade name **PENNSTOP® DEHA 85%**

(Contd. of page 1)

**5 Fire fighting measures**

- **Suitable extinguishing agents**  
CO<sub>2</sub>, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.
- **For safety reasons unsuitable extinguishing agents** Water with a full water jet.
- **Special hazards caused by the material, its products of combustion or flue gases:**  
Can be released in case of fire:  
Nitrogen oxides (NO<sub>x</sub>)  
Carbon monoxide (CO)
- **Protective equipment:**  
Wear self-contained breathing apparatus.  
Wear full protective suit.
- **Additional information**  
Cool endangered containers with water spray jet.  
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

**6 Accidental release measures**

- **Person-related safety precautions:**  
Wear protective equipment. Keep unprotected persons away.  
Keep ignition sources away - Do not smoke.
- **Measures for environmental protection:** Do not allow to enter drainage system, surface or ground water.
- **Measures for cleaning/collecting:**  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Send for recovery or disposal in suitable containers.  
Neutralize with a sodium bisulphate solution.

**7 Handling and storage**

- **Handling**
  - **Information for safe handling:**  
Keep containers tightly sealed.  
Store in cool, dry place in tightly closed containers.  
Keep away from heat and direct sunlight.  
Ensure good ventilation/exhaustion at the workplace.  
Only handle and refill product in closed systems.
  - **Information about protection against explosions and fires:**  
Keep ignition sources away - Do not smoke.  
Protect against electrostatic charges.
- **Storage**
  - **Requirements to be met by storerooms and containers:**  
Store only in the original container.  
Provide solvent resistant, sealed floor.  
Suitable material for containers and conduit: steel or stainless steel.  
Unsuitable material for container: aluminium.  
Use polyolefine containers.
  - **Information about storage in one common storage facility:**  
Do not store together with oxidizing and acidic materials.  
Store away from foodstuffs.  
Do not store together with alkalis (caustic solutions).
  - **Further information about storage conditions:** Store in nitrogen.
  - **Recommended storage temperature:** < 50°C

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Revision: 22.01.2008

Trade name **PENNSTOP® DEHA 85%**

(Contd. of page 2)

## 8 Exposure controls and personal protection

- **Additional information about design of technical systems:** No further data; see section 7.
- **Components with critical values that require monitoring at the workplace:**  
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- **Additional information:** The lists that were valid during the compilation were used as basis.

### - Personal protective equipment

#### - General protective and hygienic measures

Keep away from foodstuffs, beverages and food.  
Instantly remove any soiled and impregnated garments.  
Wash hands during breaks and at the end of the work.

#### - Breathing equipment:



Use breathing protection in case of insufficient ventilation.

#### - Protection of hands:



Protective gloves.

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

#### - Material of gloves

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

Rubber gloves

#### - Penetration time of glove material

The exact break-through time has to be found out by the manufacturer of the protective gloves and has to be observed.

#### - Eye protection:



Tightly sealed safety glasses.

#### - Body protection:

Protective work clothing.  
Boots

## 9 Physical and chemical properties:

### - General Information

- |                  |            |
|------------------|------------|
| - <b>Form:</b>   | Fluid      |
| - <b>Colour:</b> | Yellowish  |
| - <b>Smell:</b>  | Amine-like |

### - Change in condition

- |                                       |             |
|---------------------------------------|-------------|
| - <b>Melting point/Melting range:</b> | -25°C       |
| - <b>Boiling point/Boiling range:</b> | 125 - 130°C |

- |                       |                   |
|-----------------------|-------------------|
| - <b>Flash point:</b> | 46°C (Closed cup) |
|-----------------------|-------------------|

### - Ignition temperature:

- |                                     |             |
|-------------------------------------|-------------|
| - <b>Decomposition temperature:</b> | 120 - 130°C |
|-------------------------------------|-------------|

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GB

Printing date 17.07.2008

Version: 1

Revision: 22.01.2008

**Trade name PENNSTOP® DEHA 85%**

(Contd. of page 3)

- <b>Self-inflammability:</b>	Product is not selfigniting.
- <b>Danger of explosion:</b>	Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
- <b>Vapour pressure at 25°C:</b>	43 hPa
- <b>Density at 20°C</b>	0.902 g/cm <sup>3</sup>
- <b>Solubility in / Miscibility with</b>	
- <b>Water:</b>	Fully miscible
- <b>Alcohols:</b>	Fully miscible
- <b>pH-value:</b>	Alkaline
- <b>Partition coefficient (n-octanol/water):</b>	-1.5 log POW
- <b>Additional information</b>	Henry's constant: 0.0059 Pa m <sup>3</sup> /mol

## 10 Stability and reactivity

- **Conditions to be avoided:** No decomposition if used according to specifications.
- **Decomposition will begin at:** > 125 °C
- **Materials to be avoided:**
  - Strong oxidizing agents
  - Peroxides
  - Perchlorates
  - Strong acids
  - Nitrates
  - Oxygen
- **Dangerous reactions**
  - Formation of toxic nitrosamines with:
    - Nitrous acid
    - Nitrites
    - Oxygen
- **Dangerous products of decomposition:**
  - Carbon monoxide
  - Toxic gases/vapours
  - Nitrogen oxides (NO<sub>x</sub>)

## 11 Toxicological information

### - Acute toxicity:

#### - LD/LC50 values that are relevant for classification:

#### 3710-84-7 N,N-diethylhydroxylamine

Oral	LD50	2190 mg/kg (rat)
Dermal	LD50	1300 mg/kg (rabbit)
Inhalative	LC50/4h (ppm)	3140 ppm (rat)

- **Primary irritant effect:**
  - **on the skin:** Irritant for skin and mucous membranes.
  - **on the eye:** Irritant effect
- **Sensitization:** Not sensitizing (guinea pig)
- **Additional toxicological information:**
  - Harmful
  - Irritant

(Contd. on page 5)

GB

**Trade name PENNSTOP® DEHA 85%**

(Contd. of page 4)

The product shows the following dangers according to the calculation method of the General EC Classification Guidelines for Preparations as issued in the latest version:

## 12 Ecological information:

### - Information about elimination (persistence and degradability):

- Method OECD guideline 301A

- Degree of elimination: 20 % / 28 d

### - Behaviour in environmental systems:

- Mobility and bioaccumulation potential: Not potentially bioaccumulable

### - Ecotoxicological effects:

- Aquatic toxicity:

### - Type of test Effective concentration Method Assessment

#### 3710-84-7 N,N-diethylhydroxylamine

EC50/16h 43.5 mg/l (Pseudomonas putida)

EC50/48h 130.1 mg/l (Daphnia magna)

LC50/96h 150 mg/l (Lebistes reticulatus)

### - General notes:

Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system.

## 13 Disposal considerations

### - Product:

- Recommendation Must be specially treated under adherence to official regulations.

### - Uncleaned packagings:

#### - Recommendation:

Disposal must be made according to official regulations.

Packagings that cannot be cleaned are to be disposed of in the same manner as the product.

- Recommended cleaning agent: Water, if necessary with cleaning agent.

## 14 Transport information

### - Land transport ADR/RID and GGVS/GGVE (cross-border/domestic)



- ADR/RID-GGVS/E Class: 3 (F1) Flammable liquids.

- Kemler Number: 30

- UN-Number: 1993

- Packaging group: III

- Label: 3

- Designation of goods: 1993 FLAMMABLE LIQUID, N.O.S. (N,N-diethylhydroxylamine), (not viscous)

### - Maritime transport IMDG/GGVSea:



- IMDG/GGVSea Class: 3

- UN Number: 1993

- Label: 3

- Packaging group: III

(Contd. on page 6)

Trade name **PENNSTOP® DEHA 85%**

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- **EMS Number:** F-E,S-E
- **Marine pollutant:** No
- **Correct technical name:** FLAMMABLE LIQUID, N.O.S. (N,N-diethylhydroxylamine)

- **Air transport ICAO-TI and IATA-DGR:**

- **ICAO/IATA Class:** 3
- **UN/ID Number:** 1993
- **Label:** 3
- **Packaging group:** III
- **Correct technical name:** FLAMMABLE LIQUID, N.O.S. (N,N-diethylhydroxylamine)

- **Transport/Additional information:** UK EAC: 3Y

## 15 Regulatory information

- **Designation according to EC guidelines:**

The product has been classified and labelled in accordance with EC Directives / Ordinance on Hazardous Materials (GefStoffV)

- **Code letter and hazard designation of product:**

Xn Harmful

- **Hazard-determining components of labelling:**

N,N-diethylhydroxylamine

- **Risk phrases:**

- 10 Flammable.
- 21/22 Harmful in contact with skin and if swallowed.
- 36/37/38 Irritating to eyes, respiratory system and skin.

- **Safety phrases:**

- 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

## 16 Other information:

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **National inventories**

Listed in the following country inventories:

IECSC - China  
EINECS - Europe  
PICCS  
ECL - Korea  
DSL - Canada  
TSCA - USA  
AICS - Australia

- **Relevant R-phrases**

- 10 Flammable.
- 21/22 Harmful in contact with skin and if swallowed.
- 36/37/38 Irritating to eyes, respiratory system and skin.

- **Department issuing data specification sheet:** HSEQ Department

(Contd. on page 7)



**Trade name PENNSTOP® DEHA 85%****- Contact:**

Dr. Anthony Lyons  
HSEQ Manager, IMCD UK Ltd.  
Tel. +44 (0)20 8770 3421

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## Safety Data Sheet

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

#### 1.1 Product Identifier

**Material Name** : **Propane**

#### 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 U.K. Exploration and Production**  
1 Altens Farm Road  
Nigg  
Aberdeen, AB12 3FY  
United Kingdom

**Telephone** : +44 (0)1224 882000  
**Fax** : +44 (0)1224 881617  
**Email Contact for MSDS** : epeREACH@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).

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### 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

## Safety Data Sheet

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

### 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.

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EC Classification : Extremely flammable.  
EC Risk Phrases : R12 Extremely flammable.  
EC Safety Phrases : S2 Keep out of the reach of children.  
S9 Keep container in a well-ventilated place.  
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 It may also contain one or more of the following additives: odourants (usually ethyl mercaptan), anti-icing agents. 1,3-butadiene, classified as a Category 1 carcinogen and Category 2 mutagen, may be present at concentrations of less than 0.1%(m/m).

### Hazardous Components

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

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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-phrase(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.

## 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** : 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

## Safety Data Sheet

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.
- 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.

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**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.

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### 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 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),

## Safety Data Sheet

- Unsuitable Materials** : GRVE (vinyl ester), Viton (FKM), type F and GB, Neoprene (CR).  
: 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
	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.



## Safety Data Sheet

### 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 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

## Safety Data Sheet

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.

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## 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 -40 °C / -40 °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 1.7 - 10.9 %(V)
Auto-ignition temperature	: Typical 450 °C / 842 °F
Vapour pressure	: ca. 980 kPa at 20 °C / 68 °F
Density	: Typical 500 - 510 kg/m <sup>3</sup> at 15 °C / 59 °F
Water solubility	: Negligible.
Solubility in other solvents	: Data not available
n-octanol/water partition coefficient (log Pow)	: ca. 2.3
Dynamic viscosity	: Not applicable.
Kinematic viscosity	: Not applicable.
Vapour density (air=1)	: ca. 1.5 at 15 °C / 59 °F
Evaporation rate (nBuAc=1)	: Data not available
Flammability	: Extremely flammable.

### 9.2 Other Information

Other Information : Not applicable.

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### 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** : No evidence of mutagenic activity.
- 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 exposure** : Low systemic toxicity on repeated exposure.

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**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.

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### 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.

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### 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

## Safety Data Sheet

- 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 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.

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### 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

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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 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.

### **Sea transport (IMDG Code):**

14.1 UN No. : UN 1965

14.2 UN Proper Shipping Name : HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S.

Technical name : (Propane)

14.3 Transport Hazard Class : 2.1

14.5 Marine pollutant : 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.

### **Air transport (IATA):**

14.1 UN No. : 1965

14.2 UN Proper Shipping Name : Hydrocarbon gas mixture, liquefied, n.o.s.

Technical name : (Propane )

14.3 Transport Hazard Class : 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.

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

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

**Additional Information** : Local regulations: UN1978 classification is used for commercial propane.  
Hazchem code: 2YE  
IATA - Forbidden for transport on passenger aircraft.

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### 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

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.

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### 16. OTHER INFORMATION

**R-phrases(s)**

## Safety Data Sheet

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**                    : 1.0

**MSDS Effective Date**                    : 16.05.2011

**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

TRETOLITE\* DMO80046

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

### 1.1 Product identifier

**Product name** : TRETOLITE\* DMO80046  
**Product code** : DMO80046  
**Product description** : Demulsifier  
**Product type** : Liquid.  
**Other means of identification** : Not available.

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

Not available.

### 1.3 Details of the supplier of the safety data sheet

Baker Hughes  
Kirkby Bank Road,  
Knowsley Industrial Park,  
Liverpool,  
L33 7SY, UK

Tel: +44 (0)151 545 3899  
Fax: +44 (0)151 547 3590

**e-mail address of person responsible for this SDS** : paul.chapman2@bakerhughes.com

### 1.4 Emergency telephone number

#### Supplier

**Telephone number** : CHEMTREC Emergency Telephone within UK: 0203 318 0470  
CHEMTREC Emergency Telephone outside UK: +44 203 318 0470

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

**Product definition** : Mixture

#### Classification according to Directive 1999/45/EC [DPD]

The product is classified as dangerous according to Directive 1999/45/EC and its amendments.

**Classification** : R10  
Xi; R36/37/38  
N; R51/53

**Physical/chemical hazards** : Flammable.

**Human health hazards** : Irritating to eyes, respiratory system and skin.

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

See Section 16 for the full text of the R phrases or H statements declared above.

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

#### Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

**Signal word** : Danger

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## SECTION 2: Hazards identification

<b>Hazard statements</b>	: Flammable liquid and vapour. Causes skin irritation. Causes serious eye damage. May be fatal if swallowed and enters airways. Harmful to aquatic life with long lasting effects.
<b>Precautionary statements</b>	
<b>Prevention</b>	: Wear protective gloves: >8 hours (breakthrough time): polyvinyl alcohol (PVA) Nitrile gloves.. Wear eye or face protection. Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Avoid release to the environment. Wash hands thoroughly after handling.
<b>Response</b>	: Not applicable.
<b>Storage</b>	: Store locked up. Store in a well-ventilated place. Keep cool.
<b>Disposal</b>	: Dispose of contents and container in accordance with all local, regional, national and international regulations.

### 2.2 Label elements

[Regulation \(EC\) No. 1272/2008 \[CLP\]](#)

<b>Hazard symbol or symbols</b>	: 
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<b>Indication of danger</b>	: Irritant, Dangerous for the environment
<b>Risk phrases</b>	: R10- Flammable. R36/37/38- Irritating to eyes, respiratory system and skin. R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
<b>Safety phrases</b>	: S61- Avoid release to the environment. Refer to special instructions/safety data sheet.
<b>Hazardous ingredients</b>	:
<b>Supplemental label elements</b>	: Not applicable.

### 2.3 Other hazards

<b>Substance meets the criteria for PBT according to Regulation (EC) No. 1207/2006, Annex XIII</b>	Not applicable. P: Not available. B: Not available. T: Not available.
<b>Substance meets the criteria for vPvB according to Regulation (EC) No. 1207/2006, Annex XIII</b>	Not applicable. vP: Not available. vB: Not available.
<b>Other hazards which do not result in classification</b>	: Not available.

## SECTION 3: Composition/information on ingredients

<b>Substance/mixture</b>	: Mixture
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### SECTION 3: Composition/information on ingredients

Product/ingredient name	Identifiers	%	Classification		Type
			67/548/EEC	Regulation (EC) No. 1272/2008 [CLP]	
Solvent naphtha (petroleum), heavy arom.	EC: 265-198-5 CAS: 64742-94-5 Index: 649-424-00-3	10 - 30	Xn; R65 N; R51/53	Asp. Tox. 1, H304 Aquatic Chronic 2, H411	[1]
Solvent naphtha (petroleum), light arom.	EC: 265-199-0 CAS: 64742-95-6 Index: 649-356-00-4	10 - 30	Xn; R65 N; R51/53	Asp. Tox. 1, H304	[1]
ammonium diisopropyl naphthalenesulphonate	EC: 270-360-3 CAS: 68425-60-5	10 - 30	Xi; R36/38	Skin Irrit. 2, H315 Eye Irrit. 2, H319	[1]
1,2,4-trimethylbenzene	EC: 202-436-9 CAS: 95-63-6 Index: 601-043-00-3	10 - 30	R10 Xn; R20 Xi; R36/37/38 N; R51/53	Flam. Liq. 3, H226 Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335 Aquatic Chronic 2, H411	[1] [2]
diisopropyl naphthalenesulphonic acid, compound with cyclohexylamine (1:1)	EC: 270-361-9 CAS: 68425-61-6	10 - 30	Xi; R36/37/38	Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335i	[1]
2-methylpropan-1-ol	EC: 201-148-0 CAS: 78-83-1 Index: 603-108-00-1	5 - 10	R10 Xi; R41, R37/38 R67	Flam. Liq. 3, H226 Skin Irrit. 2, H315 Eye Dam. 1, H318 STOT SE 3, H335 and H336	[1] [2]
mesitylene	EC: 203-604-4 CAS: 108-67-8 Index: 601-025-00-5	1 - 5	R10 Xi; R37 N; R51/53	Flam. Liq. 3, H226 STOT SE 3, H335 Aquatic Chronic 2, H411	[1] [2]
1,2,3-trimethylbenzene	EC: 208-394-8 CAS: 526-73-8	1 - 5	R10 Xi; R36/37/38	Flam. Liq. 3, H226 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 2, H371i	[1] [2]
cumene	EC: 202-704-5 CAS: 98-82-8 Index: 601-024-00-X	0.1 - 1	R10 Xn; R65 Xi; R37 N; R51/53	Flam. Liq. 3, H226 STOT SE 3, H335 Asp. Tox. 1, H304 Aquatic Chronic 2, H411	[1] [2]
naphthalene	EC: 202-049-5 CAS: 91-20-3 Index: 601-052-00-2	0.1 - 1	Carc. Cat. 3; R40 Xn; R22 N; R50/53	Acute Tox. 4, H302 Carc. 2, H351 Aquatic Acute 1, H400 Aquatic Chronic 1, H410	[1] [2]
			See section 16 for the full text of the R-phrases declared above	See Section 16 for the full text of the H statements declared above.	

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

#### Type

[1] Substance classified with a health or environmental hazard

[2] Substance with a workplace exposure limit

[3] Substance meets the criteria for PBT according to Regulation (EC) No. 1207/2006, Annex XIII

[4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1207/2006, Annex XIII

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

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 15 minutes. Get medical attention.
- Inhalation** : Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 15 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

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

#### Potential acute health effects

- Eye contact** : Irritating to eyes.
- Inhalation** : Irritating to respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact** : Irritating to skin.
- Ingestion** : Irritating to mouth, throat and stomach.

#### Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:  
irritation  
watering  
redness
- Inhalation** : Adverse symptoms may include the following:  
respiratory tract irritation  
coughing
- Skin contact** : Adverse symptoms may include the following:  
irritation  
redness
- Ingestion** : No specific data.

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

- Notes to medical doctor** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : Not available.

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

- Suitable** : Use dry chemical, CO<sub>2</sub>, water spray (fog) or foam.
- Not suitable** : Do not use water jet.

### 5.2 Special hazards arising from the substance or mixture

- Special exposure hazards** : Flammable liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard.

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## SECTION 5: Firefighting measures

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. This material is toxic to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

### Hazardous thermal decomposition products

- : Decomposition products may include the following materials:  
carbon dioxide  
carbon monoxide  
nitrogen oxides  
sulfur oxides

### 5.3 Advice for fire-fighters

#### 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.

#### Additional information

- : Not available.

## SECTION 6: Accidental release measures

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

- : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).

### 6.2 Environmental precautions

- : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also Section 8 for additional information on hygiene measures.

### 6.3 Methods and materials for containment and cleaning up

#### Small spill

- : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

#### Large spill

- : Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. 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. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product.

### 6.4 Reference to other sections

- : Note: see section 8 for personal protective equipment and section 13 for waste disposal.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

- : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Avoid release to the environment. Refer to special instructions/safety data sheet. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

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## SECTION 7: Handling and storage

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

**Storage** : Store in accordance with local regulations. Store in a segregated and approved area. 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. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

**Recommended Packaging materials** : Use original container.

**7.3 Specific end use(s)** : Demulsifier  
Not available.

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational exposure limits

Product/ingredient name	Exposure limit values
1,2,4-trimethylbenzene	<b>EH40/2005 WELs (United Kingdom (UK), 8/2007).</b> TWA: 25 ppm, 0 times per shift, 8 hour(s). TWA: 125 mg/m <sup>3</sup> , 0 times per shift, 8 hour(s).
2-methylpropan-1-ol	<b>EH40/2005 WELs (United Kingdom (UK), 8/2007).</b> STEL: 231 mg/m <sup>3</sup> 15 minute(s). STEL: 75 ppm 15 minute(s). TWA: 154 mg/m <sup>3</sup> 8 hour(s). TWA: 50 ppm 8 hour(s).
mesitylene	<b>EH40/2005 WELs (United Kingdom (UK), 8/2007).</b> TWA: 25 ppm, 0 times per shift, 8 hour(s). TWA: 125 mg/m <sup>3</sup> , 0 times per shift, 8 hour(s).
1,2,3-trimethylbenzene	<b>EH40/2005 WELs (United Kingdom (UK), 8/2007).</b> TWA: 25 ppm 8 hour(s). TWA: 125 mg/m <sup>3</sup> 8 hour(s).
cumene	<b>EH40/2005 WELs (United Kingdom (UK), 8/2007). Absorbed through skin.</b> STEL: 250 mg/m <sup>3</sup> , 0 times per shift, 15 minute(s). STEL: 50 ppm, 0 times per shift, 15 minute(s). TWA: 25 ppm, 0 times per shift, 8 hour(s). TWA: 125 mg/m <sup>3</sup> , 0 times per shift, 8 hour(s).
naphthalene	<b>EU OEL (Europe, 12/2009). Notes: list of indicative occupational exposure limit values</b> TWA: 10 ppm, 0 times per shift, 8 hour(s). TWA: 50 mg/m <sup>3</sup> , 0 times per shift, 8 hour(s).

**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.

### 8.2 Exposure controls

**Occupational exposure controls** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.



## SECTION 8: Exposure controls/personal protection

<b>Hygiene measures</b>	: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
<b>Respiratory protection</b>	: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Recommended: organic vapour filter (Type A)
<b>Hand protection</b>	: Chemical-resistant gloves: polyvinyl alcohol (PVA) Nitrile gloves.
<b>Eye protection</b>	: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.
<b>Skin protection</b>	: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.
<b>Environmental exposure controls</b>	: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

<b>Physical state</b>	: Liquid.
<b>Colour</b>	: Brown. [Dark]
<b>Odour</b>	: Aromatic.
<b>Odour threshold</b>	: Not available.
<b>pH</b>	: Not available.
<b>Boiling point</b>	: Not available.
<b>Melting point/freezing point</b>	: <-35°C (<-31°F)
<b>Flammability (solid, gas)</b>	: May be combustible at high temperature.
<b>Flash point</b>	: Closed cup: >24°C (>75.2°F)
<b>Explosive properties</b>	: Not available.
<b>Explosion limits</b>	: Not available.
<b>Oxidising properties</b>	: Not available.
<b>Vapour pressure</b>	: Not available.
<b>Density</b>	: Not available.
<b>Relative density</b>	: 0.925 to 0.995 (16°C)
<b>Solubility</b>	: Not available. Immiscible with water, Soluble in, Aromatic solvents
<b>Partition coefficient: n-octanol/water</b>	: Not available.
<b>Viscosity</b>	: Kinematic (40°C): 5 to 35 cSt
<b>Vapour density</b>	: Not available.
<b>Evaporation rate (butyl acetate = 1)</b>	: Not available.
<b>Decomposition temperature</b>	: Not available.
<b>Auto-ignition temperature</b>	: Not available.

### 9.2 Other information

<b>Pour point</b>	: Not available.
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**SECTION 10: Stability and reactivity**

- 10.1 Reactivity** : No specific test data related to reactivity available for this product or its ingredients.
- 10.2 Chemical stability** : The product is stable.
- 10.3 Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- 10.4 Conditions to avoid** : Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
- 10.5 Incompatible materials** : Reactive or incompatible with the following materials:  
oxidizing materials
- 10.6 Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

**SECTION 11: Toxicological information****Potential acute health effects**

- Inhalation** : Irritating to respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Ingestion** : Irritating to mouth, throat and stomach.
- Skin contact** : Irritating to skin.
- Eye contact** : Irritating to eyes.

**Acute toxicity**

Product/ingredient name	Result	Species	Dose	Exposure
Solvent naphtha (petroleum), heavy arom.	LD50 Oral	Rat	>2000 mg/kg	-
Solvent naphtha (petroleum), light arom. 1,2,4-trimethylbenzene 2-methylpropan-1-ol	LD50 Oral	Rat	3200 mg/kg	-
	LD50 Oral	Rat	2900 mg/kg	-
	LC50 Inhalation Vapour	Rat	18000 mg/m <sup>3</sup>	4 hours
	LC50 Inhalation Vapour	Rat	19200 mg/m <sup>3</sup>	4 hours
mesitylene cumene	LD50 Dermal	Rabbit	3400 mg/kg	-
	LD50 Oral	Rat	2460 mg/kg	-
	LD50 Oral	Rat	5000 mg/kg	-
	LC50 Inhalation Vapour	Mouse	10000 mg/m <sup>3</sup>	7 hours
	LC50 Inhalation Vapour	Rat	39000 mg/m <sup>3</sup>	4 hours
	LD50 Dermal	Rabbit	10600 mg/kg	-
	LD50 Oral	Rat	1400 mg/kg	-

Product name	Carcinogenic effects	Mutagenic effects	Developmental effects	Fertility effects
naphthalene	Carc. Cat. 3; R40			

- General** : No known significant effects or critical hazards.
- Carcinogenicity** : No known significant effects or critical hazards.
- Mutagenicity** : No known significant effects or critical hazards.
- Teratogenicity** : No known significant effects or critical hazards.
- Developmental effects** : No known significant effects or critical hazards.
- Fertility effects** : No known significant effects or critical hazards.
- Inhalation** : Adverse symptoms may include the following:  
respiratory tract irritation  
coughing
- Ingestion** : No specific data.
- Skin contact** : Adverse symptoms may include the following:  
irritation  
redness
- Eye contact** : Adverse symptoms may include the following:  
irritation  
watering  
redness



**SECTION 12: Ecological information**

**12.1 Toxicity** : Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Water polluting material. May be harmful to the environment if released in large quantities.

**Aquatic ecotoxicity**

<b>Product/ingredient name</b>	<b>Result</b>	<b>Species</b>	<b>Exposure</b>
Solvent naphtha (petroleum), heavy arom.	Acute LC50 1 to 10 mg/l	Fish	96 hours
Solvent naphtha (petroleum), light arom.	Acute LC50 1 to 10 mg/l	Fish	96 hours
2-methylpropan-1-ol	Acute LC50 600000 ug/L Marine water	Crustaceans - Artemia salina - Nauplii	48 hours
	Acute LC50 1030000 to 1200000 ug/L Fresh water	Daphnia - Daphnia magna - Neonate - 0 to 24 hours	48 hours
	Acute LC50 1330000 to 1520000 ug/L Fresh water	Fish - Oncorhynchus mykiss - 1.67 g	96 hours
mesitylene	Acute LC50 12520 to 15050 ug/L Fresh water	Fish - Carassius auratus - 1 to 1.5 years - 13 to 20 cm - 20 to 80 g	96 hours
cumene	Acute EC50 7400 to 11290 ug/L Fresh water	Crustaceans - Artemia sp. - Nauplii	48 hours
	Acute EC50 10600 to 14100 ug/L Fresh water	Daphnia - Daphnia magna - Neonate - <=24 hours	48 hours
naphthalene	Acute LC50 2700 ug/L Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Acute EC50 1.96 mg/L Fresh water	Daphnia - Daphnia magna - <24 hours	48 hours
	Acute LC50 315 ug/L Fresh water	Fish - Melanotaenia fluviatilis - LARVAE - 1 days	96 hours
	Chronic NOEC 600 ug/L Fresh water	Daphnia - Daphnia magna - <=24 hours	48 hours

**Conclusion/Summary** : Not available.

**12.2 Persistence and degradability**

**Conclusion/Summary** : Not available.

<b>Product/ingredient name</b>	<b>Aquatic half-life</b>	<b>Photolysis</b>	<b>Biodegradability</b>
Solvent naphtha (petroleum), heavy arom.	-	-	Not readily
Solvent naphtha (petroleum), light arom.	-	-	Not readily
1,2,4-trimethylbenzene	-	-	Not readily
mesitylene	-	-	Not readily
cumene	-	-	Not readily
naphthalene	-	-	Not readily

**12.3 Bioaccumulative potential**

<b>Product/ingredient name</b>	<b>LogP<sub>ow</sub></b>	<b>BCF</b>	<b>Potential</b>
cumene	3.66	-	high
naphthalene	3.01	-	high

**12.4 Mobility in soil** : Not available.

**12.5 Results of PBT and vPvB assessment**

**PBT** : Not applicable.  
P: Not available. B: Not available. T: Not available.

**vPvB** : Not applicable.  
vP: Not available. vB: Not available.

**12.6 Other adverse effects** : No known significant effects or critical hazards.

## SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

### 13.1 Waste treatment methods

#### Product

**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. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. 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. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

**Hazardous waste** : The classification of the product may meet the criteria for a hazardous waste.

#### Packaging







**Methods of disposal** : The generation of waste should be avoided or minimised wherever possible. Empty containers or liners may retain some product residues. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

### 13.2 Additional information

**Special precautions** : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.



## SECTION 14: Transport information

### International transport regulations

Regulatory information	14.1 UN number	14.2 Proper shipping name	14.3 Transport hazard class(es)	14.4 PG*	Label
<b>ADR/RID Class</b>	UN1993	Flammable liquid, n.o.s. (aromatic naptha)	3	III	 
<b>ADN/ADNR Class</b>	UN1993	Flammable liquid, n.o.s. (aromatic naptha)	3	III	 
<b>IMDG Class</b>	UN1993	Flammable liquid, n.o.s. (aromatic naptha)	3	III	 

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<b>IATA Class</b>	UN1993	Flammable liquid, n.o.s. (aromatic naptha)	3	III	 
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PG\* : Packing group

<b>Regulatory information</b>	<b>14.5 Environmental hazards</b>	<b>14.6 Special precautions for user</b>	<b>Additional information</b>
<b>ADR/RID Class</b>	Yes.	<b>Special provisions</b> 640 (E)  <b>Tunnel code</b> (D/E)	<b>UK Hazchem:</b> 3YE
<b>ADN/ADNR Class</b>	Yes.	-	-
<b>IMDG Class</b>	Yes.	Marine pollutant	Marine pollutant
<b>IATA Class</b>	Yes.	-	-

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

Proper shipping name : Not available.

Ship type : Not available.

Pollution category : Not available.

**SECTION 15: Regulatory information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**EU Regulation (EC) No. 1907/2006 (REACH)Annex XIV - List of substances subject to authorisationSubstances of very high concern

None of the components are listed.

**Annex XVII - Restrictions** : Not applicable.on the manufacture,  
placing on the market and  
use of certain dangerous  
substances, mixtures and  
articlesOther EU regulations

Europe inventory : Not determined.

Black List Chemicals : Not listed

Priority List Chemicals : Not listed

**15.2 Chemical Safety Assessment** : This product contains substances for which Chemical Safety Assessments are still required.

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**SECTION 16: Other information****16.1 Revision comments** : Not available.
 Indicates information that has changed from previously issued version.

**16.2 Abbreviations and acronyms** : ATE = Acute Toxicity Estimate  
 CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]  
 DNEL = Derived No Effect Level  
 EUH statement = CLP-specific Hazard statement  
 PNEC = Predicted No Effect Concentration  
 RRN = REACH Registration Number

**16.3 Key literature references and sources for data** : Not available.**16.4 Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]**

Flam. Liq. 3, H226  
 Skin Irrit. 2, H315  
 Eye Dam. 1, H318  
 Asp. Tox. 1, H304  
 Aquatic Chronic 3, H412

**Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]**

Classification	Justification
Flam. Liq. 3, H226 Skin Irrit. 2, H315 Eye Dam. 1, H318 Asp. Tox. 1, H304 Aquatic Chronic 3, H412	On basis of test data Calculation method Calculation method Calculation method Calculation method

**16.5 Full text of abbreviated H statements** : H226 Flammable liquid and vapour.  
 H302 Harmful if swallowed.  
 H304 May be fatal if swallowed and enters airways.  
 H315 Causes skin irritation.  
 H318 Causes serious eye damage.  
 H319 Causes serious eye irritation.  
 H332 Harmful if inhaled.  
 H335 May cause respiratory irritation.  
 H335 May cause respiratory irritation. May cause drowsiness or dizziness.  
 and  
 H336  
 H335i May cause respiratory irritation.  
 H351 Suspected of causing cancer.  
 H371i May cause damage to organs if inhaled.  
 H400 Very toxic to aquatic life.  
 H410 Very toxic to aquatic life with long lasting effects.  
 H411 Toxic to aquatic life with long lasting effects.  
 H412 Harmful to aquatic life with long lasting effects.

**Full text of classifications [CLP/GHS]** : Acute Tox. 4, H302 ACUTE TOXICITY: ORAL - Category 4  
 Acute Tox. 4, H332 ACUTE TOXICITY: INHALATION - Category 4  
 Aquatic Acute 1, H400 AQUATIC TOXICITY (ACUTE) - Category 1  
 Aquatic Chronic 1, H410 AQUATIC TOXICITY (CHRONIC) - Category 1  
 Aquatic Chronic 2, H411 AQUATIC TOXICITY (CHRONIC) - Category 2  
 Aquatic Chronic 3, H412 AQUATIC TOXICITY (CHRONIC) - Category 3  
 Asp. Tox. 1, H304 ASPIRATION HAZARD - Category 1  
 Carc. 2, H351 CARCINOGENICITY - Category 2  
 Eye Dam. 1, H318 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1  
 Eye Irrit. 2, H319 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2  
 Flam. Liq. 3, H226 FLAMMABLE LIQUIDS - Category 3  
 Skin Irrit. 2, H315 SKIN CORROSION/IRRITATION - Category 2  
 STOT SE 2, H371i SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE): INHALATION - Category 2  
 STOT SE 3, H335 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Respiratory tract irritation] - Category 3  
 STOT SE 3, H335 and SPECIFIC TARGET ORGAN TOXICITY (SINGLE

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## SECTION 16: Other information

H336	EXPOSURE) [Respiratory tract irritation and Narcotic effects] - Category 3
STOT SE 3, H335i	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE): INHALATION [Respiratory tract irritation] - Category 3

**16.5 Full text of abbreviated R phrases** :

- R10- Flammable.
- R40- Limited evidence of a carcinogenic effect.
- R20- Harmful by inhalation.
- R22- Harmful if swallowed.
- R65- Harmful: may cause lung damage if swallowed.
- R41- Risk of serious damage to eyes.
- R37- Irritating to respiratory system.
- R36/38- Irritating to eyes and skin.
- R37/38- Irritating to respiratory system and skin.
- R36/37/38- Irritating to eyes, respiratory system and skin.
- R67- Vapours may cause drowsiness and dizziness.
- R50/53- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
- R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**Full text of classifications [DSD/DPD]** :

- Carc. Cat. 3 - Carcinogen category 3
- Xn - Harmful
- Xi - Irritant
- N - Dangerous for the environment

**16.6 Training advice** : Not available.

### 16.7 Further information

**Date of issue/ Date of revision** : 8 March 2011

**Version** : 1

#### Notice to reader

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.

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**1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING**

<b>Material Name</b>	: <b>Shell Omala S2 G 100</b>
<b>Uses</b>	: Gear lubricant.
<b>Product Code</b>	: 001D7835
<b>Manufacturer/Supplier</b>	: <b>Shell UK Oil Products Limited</b> Shell Centre London SE1 7NA United Kingdom
<b>Telephone</b>	: (+44) 08708500939
<b>Email Contact for MSDS</b>	: If you have any enquiries about the content of this MSDS please email lubricantSDS@shell.com
<b>Emergency Telephone Number</b>	: +44-(0) 151-350-4595

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**2. HAZARDS IDENTIFICATION**

<b>EC Classification</b>	: Not classified as dangerous under EC criteria.
<b>Health Hazards</b>	: Not expected to be a health hazard when used under normal conditions. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis. Used oil may contain harmful impurities.
<b>Signs and Symptoms</b>	: Oil acne/folliculitis signs and symptoms may include formation of black pustules and spots on the skin of exposed areas. Ingestion may result in nausea, vomiting and/or diarrhoea.
<b>Safety Hazards</b>	: Not classified as flammable but will burn.
<b>Environmental Hazards</b>	: Not classified as dangerous for the environment.

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**3. COMPOSITION/INFORMATION ON INGREDIENTS**

<b>Preparation Description</b>	: Highly refined mineral oils and additives.
<b>Hazardous Components</b>	

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Chemical Name	CAS No.	EINECS	REACH Registration No.	Symbol(s)	R-phrase(s)	Conc.
Amine phosphate	91745-46-9	294-716-2		Xi, N	R43; R51/53	0.10 - 0.50%

**Additional Information** : The highly refined mineral oil contains <3% (w/w) DMSO-extract, according to IP346. Refer to chapter 16 for full text of EC R-phrases.

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**4. FIRST AID MEASURES**

**General Information** : Not expected to be a health hazard when used under normal conditions.

**Inhalation** : No treatment necessary under normal conditions of use. If symptoms persist, obtain medical advice.

**Skin Contact** : Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available. If persistent irritation occurs, obtain medical attention.

**Eye Contact** : Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.

**Ingestion** : In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.

**Advice to Physician** : Treat symptomatically.

---

**5. FIRE FIGHTING MEASURES**

Clear fire area of all non-emergency personnel.

**Specific Hazards** : Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds.

**Suitable Extinguishing Media** : Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

**Unsuitable Extinguishing Media** : Do not use water in a jet.

**Protective Equipment for Firefighters** : Proper protective equipment including breathing apparatus must be worn when approaching a fire in a confined space.

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**6. ACCIDENTAL RELEASE MEASURES**

Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. See Chapter 13 for information on

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disposal. Observe the relevant local and international regulations.

- Protective measures** : Avoid contact with skin and eyes. Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers.
- Clean Up Methods** : Slippery when spilt. Avoid accidents, clean up immediately. Prevent from spreading by making a barrier with sand, earth or other containment material. Reclaim liquid directly or in an absorbent. Soak up residue with an absorbent such as clay, sand or other suitable material and dispose of properly.
- Additional Advice** : Local authorities should be advised if significant spillages cannot be contained.

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## 7. HANDLING AND STORAGE

- General Precautions** : Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires. 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.
- Handling** : Avoid prolonged or repeated contact with skin. Avoid inhaling vapour and/or mists. When handling product in drums, safety footwear should be worn and proper handling equipment should be used.
- Storage** : Keep container tightly closed and in a cool, well-ventilated place. Use properly labelled and closeable containers. Storage Temperature: 0 - 50°C / 32 - 122°F  
The storage of this product may be subject to the Control of Pollution (Oil Storage) (England) Regulations. Further guidance may be obtained from the local environmental agency office.
- Recommended Materials** : For containers or container linings, use mild steel or high density polyethylene.
- Unsuitable Materials** : PVC.
- Additional Information** : Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion. 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".



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## 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.

## Occupational Exposure Limits

Material	Source	Type	ppm	mg/m3	Notation
Oil mist, mineral	ACGIH	TWA [Inhalable fraction.]		5 mg/m3	

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

Appropriate measures include: Adequate ventilation to control airborne concentrations. Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

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

**Respiratory Protection** : No respiratory protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material. 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 suitable, select an appropriate combination of mask and filter. Select a filter suitable for combined particulate/organic gases and vapours [boiling point >65 °C (149 °F)] meeting EN14387.

**Hand Protection** : 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: PVC, neoprene or nitrile rubber gloves. 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. Personal hygiene is a key element of effective

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<b>Eye Protection</b>	: 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.
<b>Protective Clothing</b>	: Wear safety glasses or full face shield if splashes are likely to occur. Approved to EU Standard EN166.
<b>Monitoring Methods</b>	: Skin protection not ordinarily required beyond standard issue work clothes.
<b>Environmental Exposure Controls</b>	: 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.
	: Minimise release to the environment. An environmental assessment must be made to ensure compliance with local environmental legislation.

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**9. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance	: Brown. Liquid at room temperature.
Odour	: Slight hydrocarbon.
pH	: Not applicable.
Initial Boiling Point and Boiling Range	: > 280 °C / 536 °F estimated value(s)
Pour point	: Typical -24 °C / -11 °F
Flash point	: Typical 240 °C / 464 °F (COC)
Upper / lower Flammability or Explosion limits	: Typical 1 - 10 %(V) (based on mineral oil)
Auto-ignition temperature	: > 320 °C / 608 °F
Vapour pressure	: < 0.5 Pa at 20 °C / 68 °F (estimated value(s))
Density	: Typical 891 kg/m <sup>3</sup> at 15 °C / 59 °F
Water solubility	: Negligible.
n-octanol/water partition coefficient (log Pow)	: > 6 (based on information on similar products)
Kinematic viscosity	: Typical 100 mm <sup>2</sup> /s at 40 °C / 104 °F
Vapour density (air=1)	: > 1 (estimated value(s))
Evaporation rate (nBuAc=1)	: Data not available

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**10. STABILITY AND REACTIVITY**

<b>Stability</b>	: Stable.
<b>Conditions to Avoid</b>	: Extremes of temperature and direct sunlight.
<b>Materials to Avoid</b>	: Strong oxidising agents.
<b>Hazardous Decomposition Products</b>	: Hazardous decomposition products are not expected to form during normal storage.

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11. TOXICOLOGICAL INFORMATION

<b>Basis for Assessment</b>	:	Information given is based on data on the components and the toxicology of similar products.
<b>Acute Oral Toxicity</b>	:	Expected to be of low toxicity: LD50 > 5000 mg/kg , Rat
<b>Acute Dermal Toxicity</b>	:	Expected to be of low toxicity: LD50 > 5000 mg/kg , Rabbit
<b>Acute Inhalation Toxicity</b>	:	Not considered to be an inhalation hazard under normal conditions of use.
<b>Skin Irritation</b>	:	Expected to be slightly irritating.
<b>Eye Irritation</b>	:	Expected to be slightly irritating.
<b>Respiratory Irritation</b>	:	Inhalation of vapours or mists may cause irritation.
<b>Sensitisation</b>	:	Not expected to be a skin sensitiser.
<b>Repeated Dose Toxicity</b>	:	Not expected to be a hazard.
<b>Mutagenicity</b>	:	Not considered a mutagenic hazard.
<b>Carcinogenicity</b>	:	Product contains mineral oils of types shown to be non-carcinogenic in animal skin-painting studies. Highly refined mineral oils are not classified as carcinogenic by the International Agency for Research on Cancer (IARC). Other components are not known to be associated with carcinogenic effects.
<b>Reproductive and Developmental Toxicity</b>	:	Not expected to be a hazard.
<b>Additional Information</b>	:	Used oils may contain harmful impurities that have accumulated during use. The concentration of such impurities will depend on use and they may present risks to health and the environment on disposal. ALL used oil should be handled with caution and skin contact avoided as far as possible.

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12. ECOLOGICAL INFORMATION

Ecotoxicological data have not been determined specifically for this product. Information given is based on a knowledge of the components and the ecotoxicology of similar products.

<b>Acute Toxicity</b>	:	Poorly soluble mixture. May cause physical fouling of aquatic organisms. Expected to be practically non toxic: LL/EL/IL50 > 100 mg/l (to aquatic organisms) (LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract). Mineral oil is not expected to cause any chronic effects to aquatic organisms at concentrations less than 1 mg/l.
<b>Mobility</b>	:	Liquid under most environmental conditions. Floats on water. If it enters soil, it will adsorb to soil particles and will not be mobile.
<b>Persistence/degradability</b>	:	Expected to be not readily biodegradable. Major constituents

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<b>Bioaccumulation</b>	: are expected to be inherently biodegradable, but the product contains components that may persist in the environment.
<b>Other Adverse Effects</b>	: Contains components with the potential to bioaccumulate.
	: Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities. Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential.

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### 13. DISPOSAL CONSIDERATIONS

<b>Material Disposal</b>	: Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses.
<b>Container Disposal</b>	: Dispose in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.
<b>Local Legislation</b>	: Disposal should be in accordance with applicable regional, national, and local laws and regulations. EU Waste Disposal Code (EWC): 13 02 05 mineral-based non-chlorinated engine, gear and lubricating oils. Classification of waste is always the responsibility of the end user.

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### 14. TRANSPORT INFORMATION

**ADR**

This material is not classified as dangerous under ADR regulations.

**RID**

This material is not classified as dangerous under RID regulations.

**ADN**

This material is not classified as dangerous under ADN regulations.

**IMDG**

This material is not classified as dangerous under IMDG regulations.

**IATA (Country variations may apply)**

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This material is either not classified as dangerous under IATA regulations or needs to follow country specific requirements.

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### 15. REGULATORY INFORMATION

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

EC Classification	:	Not classified as dangerous under EC criteria.
EC Symbols	:	No Hazard Symbol required
EC Risk Phrases	:	Not classified.
EC Safety Phrases	:	Not classified.
<b>Chemical Inventory Status</b>		
EINECS	:	All components listed or polymer exempt.
TSCA	:	All components listed.
Sensitiser not sufficient to classify	:	Contains amine phosphate. May produce an allergic reaction.
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.

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**16. OTHER INFORMATION**

R-phrases)

	Not classified.
R43	May cause sensitisation by skin contact.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**MSDS Version Number** : 2.0**MSDS Effective Date** : 28.10.2011**MSDS Revisions** : A vertical bar (|) in the left margin indicates an amendment from the previous version.**MSDS Regulation** : Regulation 1907/2006/EC**MSDS Distribution** : The information in this document should be made available to all who may handle the product.**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**

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**1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING**

<b>Material Name</b>	: <b>Shell Omala S2 G 150</b>
<b>Uses</b>	: Gear lubricant.
<b>Product Code</b>	: 001D7836
<b>Manufacturer/Supplier</b>	: <b>Shell UK Oil Products Limited</b> Shell Centre London SE1 7NA United Kingdom
<b>Telephone</b>	: (+44) 08708500939
<b>Email Contact for MSDS</b>	: If you have any enquiries about the content of this MSDS please email lubricantSDS@shell.com
<b>Emergency Telephone Number</b>	: +44-(0) 151-350-4595

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**2. HAZARDS IDENTIFICATION**

<b>EC Classification</b>	: Not classified as dangerous under EC criteria.
<b>Health Hazards</b>	: Not expected to be a health hazard when used under normal conditions. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis. Used oil may contain harmful impurities.
<b>Signs and Symptoms</b>	: Oil acne/folliculitis signs and symptoms may include formation of black pustules and spots on the skin of exposed areas. Ingestion may result in nausea, vomiting and/or diarrhoea.
<b>Safety Hazards</b>	: Not classified as flammable but will burn.
<b>Environmental Hazards</b>	: Not classified as dangerous for the environment.

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**3. COMPOSITION/INFORMATION ON INGREDIENTS**

<b>Preparation Description</b>	: Highly refined mineral oils and additives.
<b>Hazardous Components</b>	

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Chemical Name	CAS No.	EINECS	REACH Registration No.	Symbol(s)	R-phrase(s)	Conc.
Amine phosphate	91745-46-9	294-716-2		Xi, N	R43; R51/53	0.10 - 0.50%

**Additional Information** : The highly refined mineral oil contains <3% (w/w) DMSO-extract, according to IP346. Refer to chapter 16 for full text of EC R-phrases.

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**4. FIRST AID MEASURES**

**General Information** : Not expected to be a health hazard when used under normal conditions.

**Inhalation** : No treatment necessary under normal conditions of use. If symptoms persist, obtain medical advice.

**Skin Contact** : Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available. If persistent irritation occurs, obtain medical attention.

**Eye Contact** : Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.

**Ingestion** : In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.

**Advice to Physician** : Treat symptomatically.

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**5. FIRE FIGHTING MEASURES**

Clear fire area of all non-emergency personnel.

**Specific Hazards** : Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds.

**Suitable Extinguishing Media** : Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

**Unsuitable Extinguishing Media** : Do not use water in a jet.

**Protective Equipment for Firefighters** : Proper protective equipment including breathing apparatus must be worn when approaching a fire in a confined space.

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**6. ACCIDENTAL RELEASE MEASURES**

Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. See Chapter 13 for information on



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disposal. Observe the relevant local and international regulations.

- Protective measures** : Avoid contact with skin and eyes. Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers.
- Clean Up Methods** : Slippery when spilt. Avoid accidents, clean up immediately. Prevent from spreading by making a barrier with sand, earth or other containment material. Reclaim liquid directly or in an absorbent. Soak up residue with an absorbent such as clay, sand or other suitable material and dispose of properly.
- Additional Advice** : Local authorities should be advised if significant spillages cannot be contained.

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## 7. HANDLING AND STORAGE

- General Precautions** : Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires. 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.
- Handling** : Avoid prolonged or repeated contact with skin. Avoid inhaling vapour and/or mists. When handling product in drums, safety footwear should be worn and proper handling equipment should be used.
- Storage** : Keep container tightly closed and in a cool, well-ventilated place. Use properly labelled and closeable containers. Storage Temperature: 0 - 50°C / 32 - 122°F  
The storage of this product may be subject to the Control of Pollution (Oil Storage) (England) Regulations. Further guidance may be obtained from the local environmental agency office.
- Recommended Materials** : For containers or container linings, use mild steel or high density polyethylene.
- Unsuitable Materials** : PVC.
- Additional Information** : Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion. 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".

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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

**Occupational Exposure Limits**

Material	Source	Type	ppm	mg/m3	Notation
Oil mist, mineral	ACGIH	TWA [Inhalable fraction.]		5 mg/m3	

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

Appropriate measures include: Adequate ventilation to control airborne concentrations. Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

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

**Respiratory Protection** : No respiratory protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material. 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 suitable, select an appropriate combination of mask and filter. Select a filter suitable for combined particulate/organic gases and vapours [boiling point >65 °C (149 °F)] meeting EN14387.

**Hand Protection** : 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: PVC, neoprene or nitrile rubber gloves. 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. Personal hygiene is a key element of effective

## Safety Data Sheet

<b>Eye Protection</b>	: 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.
<b>Protective Clothing</b>	: Wear safety glasses or full face shield if splashes are likely to occur. Approved to EU Standard EN166.
<b>Monitoring Methods</b>	: Skin protection not ordinarily required beyond standard issue work clothes.
<b>Environmental Exposure Controls</b>	: 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.
	: Minimise release to the environment. An environmental assessment must be made to ensure compliance with local environmental legislation.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Brown. Liquid at room temperature.
Odour	: Slight hydrocarbon.
pH	: Not applicable.
Initial Boiling Point and Boiling Range	: > 280 °C / 536 °F estimated value(s)
Pour point	: Typical -24 °C / -11 °F
Flash point	: Typical 240 °C / 464 °F (COC)
Upper / lower Flammability or Explosion limits	: Typical 1 - 10 %(V) (based on mineral oil)
Auto-ignition temperature	: > 320 °C / 608 °F
Vapour pressure	: < 0.5 Pa at 20 °C / 68 °F (estimated value(s))
Density	: Typical 897 kg/m <sup>3</sup> at 15 °C / 59 °F
Water solubility	: Negligible.
n-octanol/water partition coefficient (log Pow)	: > 6 (based on information on similar products)
Kinematic viscosity	: Typical 150 mm <sup>2</sup> /s at 40 °C / 104 °F
Vapour density (air=1)	: > 1 (estimated value(s))
Evaporation rate (nBuAc=1)	: Data not available

## 10. STABILITY AND REACTIVITY

<b>Stability</b>	: Stable.
<b>Conditions to Avoid</b>	: Extremes of temperature and direct sunlight.
<b>Materials to Avoid</b>	: Strong oxidising agents.
<b>Hazardous Decomposition Products</b>	: Hazardous decomposition products are not expected to form during normal storage.

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11. TOXICOLOGICAL INFORMATION

<b>Basis for Assessment</b>	:	Information given is based on data on the components and the toxicology of similar products.
<b>Acute Oral Toxicity</b>	:	Expected to be of low toxicity: LD50 > 5000 mg/kg , Rat
<b>Acute Dermal Toxicity</b>	:	Expected to be of low toxicity: LD50 > 5000 mg/kg , Rabbit
<b>Acute Inhalation Toxicity</b>	:	Not considered to be an inhalation hazard under normal conditions of use.
<b>Skin Irritation</b>	:	Expected to be slightly irritating.
<b>Eye Irritation</b>	:	Expected to be slightly irritating.
<b>Respiratory Irritation</b>	:	Inhalation of vapours or mists may cause irritation.
<b>Sensitisation</b>	:	Not expected to be a skin sensitiser.
<b>Repeated Dose Toxicity</b>	:	Not expected to be a hazard.
<b>Mutagenicity</b>	:	Not considered a mutagenic hazard.
<b>Carcinogenicity</b>	:	Product contains mineral oils of types shown to be non-carcinogenic in animal skin-painting studies. Highly refined mineral oils are not classified as carcinogenic by the International Agency for Research on Cancer (IARC). Other components are not known to be associated with carcinogenic effects.
<b>Reproductive and Developmental Toxicity</b>	:	Not expected to be a hazard.
<b>Additional Information</b>	:	Used oils may contain harmful impurities that have accumulated during use. The concentration of such impurities will depend on use and they may present risks to health and the environment on disposal. ALL used oil should be handled with caution and skin contact avoided as far as possible.

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12. ECOLOGICAL INFORMATION

Ecotoxicological data have not been determined specifically for this product. Information given is based on a knowledge of the components and the ecotoxicology of similar products.

<b>Acute Toxicity</b>	:	Poorly soluble mixture. May cause physical fouling of aquatic organisms. Expected to be practically non toxic: LL/EL/IL50 > 100 mg/l (to aquatic organisms) (LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract). Mineral oil is not expected to cause any chronic effects to aquatic organisms at concentrations less than 1 mg/l.
<b>Mobility</b>	:	Liquid under most environmental conditions. Floats on water. If it enters soil, it will adsorb to soil particles and will not be mobile.
<b>Persistence/degradability</b>	:	Expected to be not readily biodegradable. Major constituents

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- are expected to be inherently biodegradable, but the product contains components that may persist in the environment.
- Bioaccumulation** : Contains components with the potential to bioaccumulate.
- Other Adverse Effects** : Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities. Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential.

### 13. DISPOSAL CONSIDERATIONS

- Material Disposal** : Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses.
- Container Disposal** : 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.  
EU Waste Disposal Code (EWC): 13 02 05 mineral-based non-chlorinated engine, gear and lubricating oils. Classification of waste is always the responsibility of the end user.

### 14. TRANSPORT INFORMATION

**ADR**

This material is not classified as dangerous under ADR regulations.

**RID**

This material is not classified as dangerous under RID regulations.

**ADN**

This material is not classified as dangerous under ADN regulations.

**IMDG**

This material is not classified as dangerous under IMDG regulations.

**IATA (Country variations may apply)**

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This material is either not classified as dangerous under IATA regulations or needs to follow country specific requirements.

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### 15. REGULATORY INFORMATION

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

EC Classification	:	Not classified as dangerous under EC criteria.
EC Symbols	:	No Hazard Symbol required
EC Risk Phrases	:	Not classified.
EC Safety Phrases	:	Not classified.
<b>Chemical Inventory Status</b>		
EINECS	:	All components listed or polymer exempt.
TSCA	:	All components listed.
Sensitiser not sufficient to classify	:	Contains amine phosphate. May produce an allergic reaction.
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.

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**16. OTHER INFORMATION**

R-phrases)

	Not classified.
R43	May cause sensitisation by skin contact.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**MSDS Version Number** : 2.0**MSDS Effective Date** : 28.10.2011**MSDS Revisions** : A vertical bar (|) in the left margin indicates an amendment from the previous version.**MSDS Regulation** : Regulation 1907/2006/EC**MSDS Distribution** : The information in this document should be made available to all who may handle the product.**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

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

#### 1.1 Product Identifier

**Material Name** : Shell Omala S2 G 220

**Product Code** : 001D7837

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

**Product Use** : Gear lubricant.

**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** : Shell UK Oil Products Limited

Shell Centre  
London  
SE1 7NA  
United Kingdom

**Telephone** : (+44) 08708500939

**Email Contact for  
Safety Data Sheet** : If you have any enquiries about the content of this SDS please  
email lubricantSDS@shell.com

#### 1.4 Emergency Telephone Number

: +44-(0) 151-350-4595

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### SECTION 2. HAZARDS IDENTIFICATION

#### 2.1 Classification of the substance or mixture

1999/45/EC	
Hazard Characteristics	R-phrases(s)
Not classified as dangerous under EC criteria.;	

**Sensitiser not sufficient to  
classify** : Contains amine phosphate. May produce an allergic reaction.



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### 2.2 Label Elements

#### Labeling according to Directive 1999/45/EC

EC Symbols : No Hazard Symbol required

EC Classification : Not classified as dangerous under EC criteria.

EC Risk Phrases : Not classified.

EC Safety Phrases : Not classified.

### 2.3 Other Hazards

**Health Hazards** : Not expected to be a health hazard when used under normal conditions. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis. Used oil may contain harmful impurities.

**Safety Hazards** : Not classified as flammable but will burn.

**Environmental Hazards** : Not classified as dangerous for the environment.

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## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1 Substance

**Material Name** : Not applicable.

### 3.2 Mixtures

**Mixture Description** : Highly refined mineral oils and additives.

#### Hazardous Components

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

Chemical Name	CAS No.	EC Number	REACH Registration No.	Conc.
Amine phosphate	91745-46-9	294-716-2	01-2119493620-38	0.10 - 0.50%

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Chemical Name	Hazard Class & Category	Hazard Statement
Amine phosphate	Flam. Liq., 3; Acute Tox., 4; Eye Dam., 1; Skin Sens., 1; Aquatic Chronic, 2;	H226; H302; H318; H317; H411;

## Classification of components according to 67/548/EEC

Chemical Name	CAS No.	EC Number	REACH Registration No.	Symbol(s)	R-phrases	Conc.
Amine phosphate	91745-46-9	294-716-2	01-2119493620-38	Xn, Xi, N	R22; R41; R43; R51/53	0.10 - 0.50%

**Additional Information** : The highly refined mineral oil contains <3% (w/w) DMSO-extract, according to IP346.

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.

## SECTION 4. FIRST AID MEASURES

## 4.1 Description of First Aid Measures

- General Information** : Not expected to be a health hazard when used under normal conditions.
- Inhalation** : No treatment necessary under normal conditions of use. If symptoms persist, obtain medical advice.
- Skin Contact** : Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available. If persistent irritation occurs, obtain medical attention.
- Eye Contact** : Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.
- Ingestion** : In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.
- 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** : Oil acne/folliculitis signs and symptoms may include formation of black pustules and spots on the skin of exposed areas. Ingestion may result in nausea, vomiting and/or diarrhoea.
- 4.3 Indication of any immediate medical** : Notes to doctor/physician:  
Treat symptomatically.

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attention and special  
treatment needed

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### SECTION 5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

- 5.1 Extinguishing Media** : Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
- Unsuitable Extinguishing Media** : Do not use water in a jet.
- 5.2 Special hazards arising from the substance or mixture** : Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds.
- 5.3 Advice for firefighters** : Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to relevant Standards (e.g. Europe: EN469).

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### SECTION 6. ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. Observe the relevant local and international regulations.

- 6.1 Personal Precautions, Protective Equipment and Emergency Procedures** : 6.1.1 For non emergency personnel: Avoid contact with skin and eyes.  
6.1.2 For emergency responders: Avoid contact with skin and eyes.
- 6.2 Environmental Precautions** : Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers.
- 6.3 Methods and Material for Containment and Cleaning Up** : Slippery when spilt. Avoid accidents, clean up immediately. Prevent from spreading by making a barrier with sand, earth or other containment material. Reclaim liquid directly or in an absorbent. Soak up residue with an absorbent such as clay, sand or other suitable material and dispose of properly.
- Additional Advice** : Local authorities should be advised if significant spillages cannot be contained.

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- 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.

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### SECTION 7. HANDLING AND STORAGE

- General Precautions** : Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. 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.
- 7.1 Precautions for Safe Handling** : Avoid prolonged or repeated contact with skin. Avoid inhaling vapour and/or mists. When handling product in drums, safety footwear should be worn and proper handling equipment should be used. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires. Keep container tightly closed and in a cool, well-ventilated place. Use properly labelled and closeable containers.
- Product Transfer** : This material has the potential to be a static accumulator. Proper grounding and bonding procedures should be used during all bulk transfer operations.
- 7.2 Conditions for safe storage, including any incompatibilities** : Store at ambient temperature.
- Refer to section 15 for any additional specific legislation covering the packaging and storage of this product. The storage of this product may be subject to the Control of Pollution (Oil Storage) (England) Regulations. Further guidance may be obtained from the local environmental agency office.
- Recommended Materials** : For containers or container linings, use mild steel or high density polyethylene.
- Unsuitable Materials** : PVC.
- 7.3 Specific end use(s)** : Not applicable
- Additional Information** : Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion. 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".

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### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

If the American Conference of Governmental Industrial Hygienists (ACGIH) value is provided on this

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document, it is provided for information only.

### 8.1 Control Parameters

#### Occupational Exposure Limits

Material	Source	Type	ppm	mg/m3	Notation
Oil mist, mineral	ACGIH	TWA(Inhalable fraction.)		5 mg/m3	

#### Biological Exposure Index (BEI)

No biological limit allocated.

**PNEC related information** : Data not available

**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/>

Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substances  
<http://www.hse.gov.uk/>

Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA), Germany.  
<http://www.dguv.de/inhalt/index.jsp>

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L'Institut National de Recherche et de Sécurité, (INRS), France  
<http://www.inrs.fr/accueil>

### 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: Adequate ventilation to control airborne concentrations. Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

Define procedures for safe handling and maintenance of controls. Educate and train workers in the hazards and control measures relevant to normal activities associated with this product. Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation. Drain down system prior to equipment break-in or maintenance. Retain drain downs in sealed storage pending disposal or for subsequent recycle. 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.

### Occupational Exposure Controls

#### Personal Protective Equipment

: The provided information is made in consideration of the PPE directive (Council Directive 89/686/EEC) and the CEN European Committee for Standardisation (CEN) standards. Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

#### Eye Protection

: Wear safety glasses or full face shield if splashes are likely to occur. Approved to EU Standard EN166.

#### Hand Protection

: 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: PVC, neoprene or nitrile rubber gloves. 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

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from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.

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.

**Body protection** : Skin protection not ordinarily required beyond standard issue work clothes.

**Respiratory Protection** : No respiratory protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material. 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 suitable, select an appropriate combination of mask and filter. Select a filter suitable for combined particulate/organic gases and vapours [boiling point >65 °C (149 °F)] meeting EN14387.

**Thermal Hazards** : Not applicable.

**Environmental Exposure Controls**

**Environmental exposure control measures** : Minimise release to the environment. An environmental assessment must be made to ensure compliance with local environmental legislation. Information on accidental release measures are to be found in section 6.

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

Appearance : Brown. Liquid at room temperature.  
Odour : Slight hydrocarbon.  
Odour threshold : Data not available

**Safety Data Sheet**

pH	: Not applicable.
Initial Boiling Point and Boiling Range	: > 280 °C / 536 °F estimated value(s)
Pour point	: Typical -18 °C / 0 °F
Flash point	: Typical 240 °C / 464 °F (COC)
Upper / lower Flammability or Explosion limits	: Typical 1 - 10 %(V) (based on mineral oil)
Auto-ignition temperature	: > 320 °C / 608 °F
Vapour pressure	: < 0.5 Pa at 20 °C / 68 °F (estimated value(s))
Relative Density	: Typical 0.899 at 15 °C / 59 °F
Density	: Typical 899 kg/m3 at 15 °C / 59 °F
Water solubility	: Negligible.
Solubility in other solvents	: Data not available
n-octanol/water partition coefficient (log Pow)	: > 6 (based on information on similar products)
Dynamic viscosity	: Data not available
Kinematic viscosity	: Typical 220 mm2/s at 40 °C / 104 °F
Vapour density (air=1)	: > 1 (estimated value(s))
Evaporation rate (nBuAc=1)	: Data not available
Decomposition Temperature	: Data not available
Flammability	: Data not available
Oxidizing Properties	: Data not available
Explosive Properties	: Not classified

**9.2 Other Information**

Electrical conductivity	: This material is not expected to be a static accumulator.
Other Information	: not a VOC
Volatile organic compound	: 0 %

---

**SECTION 10. STABILITY AND REACTIVITY**

<b>10.1 Reactivity</b>	: The product does not pose any further reactivity hazards in addition to those listed in the following sub-paragraph.
<b>10.2 Chemical stability</b>	: No hazardous reaction is expected when handled and stored according to provisions.
<b>10.3 Possibility of Hazardous Reactions</b>	: Reacts with strong oxidising agents.
<b>10.4 Conditions to Avoid</b>	: Extremes of temperature and direct sunlight.
<b>10.5 Incompatible</b>	: Strong oxidising agents.



**Safety Data Sheet****Materials**

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

---

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

**Basis for Assessment** : Information given is based on data on the components and the toxicology of similar products.  
Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

**Likely Routes of Exposure** : Skin and eye contact are the primary routes of exposure although exposure may occur following accidental ingestion.

**Acute Oral Toxicity** : Expected to be of low toxicity: LD50 > 5000 mg/kg , Rat

**Acute Dermal Toxicity** : Expected to be of low toxicity: LD50 > 5000 mg/kg , Rabbit

**Acute Inhalation Toxicity** : Not considered to be an inhalation hazard under normal conditions of use.

**Skin corrosion/irritation** : Expected to be slightly irritating.

**Serious eye damage/irritation** : Expected to be slightly irritating.

**Respiratory Irritation** : Inhalation of vapours or mists may cause irritation.

**Respiratory or skin sensitisation** : For respiratory and 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. Product contains mineral oils of types shown to be non-carcinogenic in animal skin-painting studies. Highly refined mineral oils are not classified as carcinogenic by the International Agency for Research on Cancer (IARC).

<b>Material</b>	<b>Carcinogenicity Classification</b>
Highly refined mineral oil (IP346 <3%)	ACGIH Group A4: Not classifiable as a human carcinogen.
Highly refined mineral oil (IP346 <3%)	IARC 3: Not classifiable as to carcinogenicity to humans.
Highly refined mineral oil (IP346 <3%)	GHS / CLP: No carcinogenicity classification

**Reproductive and** : Not expected to be a hazard.

## Safety Data Sheet

### Developmental Toxicity

#### Summary on evaluation of the CMR properties

<b>Carcinogenicity</b>	: This product does not meet the criteria for classification in categories 1A/1B.,
<b>Mutagenicity</b>	: This product does not meet the criteria for classification in categories 1A/1B.
<b>Reproductive Toxicity (fertility)</b>	: This product does not meet the criteria for classification in categories 1A/1B.
<b>Specific target organ toxicity - single exposure</b>	: Not expected to be a hazard.
<b>Specific target organ toxicity - repeated exposure</b>	: Not expected to be a hazard.
<b>Additional Information</b>	: Used oils may contain harmful impurities that have accumulated during use. The concentration of such impurities will depend on use and they may present risks to health and the environment on disposal. ALL used oil should be handled with caution and skin contact avoided as far as possible. Classifications by other authorities under varying regulatory frameworks may exist.

---

## SECTION 12. ECOLOGICAL INFORMATION

<b>Basis for Assessment</b>	: Ecotoxicological data have not been determined specifically for this product. Information given is based 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).
<b>12.1 Toxicity</b>	
<b>Acute Toxicity</b>	: Poorly soluble mixture. May cause physical fouling of aquatic organisms. Expected to be practically non toxic: LL/EL/IL50 > 100 mg/l (to aquatic organisms) LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract. Mineral oil is not expected to cause any chronic effects to aquatic organisms at concentrations less than 1 mg/l.
<b>12.2 Persistence and degradability</b>	: Expected to be not readily biodegradable. Major constituents are expected to be inherently biodegradable, but the product contains components that may persist in the environment.
<b>12.3 Bioaccumulative Potential</b>	: Contains components with the potential to bioaccumulate.

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- 12.4 Mobility in Soil** : Liquid under most environmental conditions. If it enters soil, it will adsorb to soil particles and will not be mobile. Floats on water.
- 12.5 Result of PBT and vPvB assesment** : This mixture does not contain any REACH registered substances that are assessed to be a PBT or a vPvB.
- 12.6 Other Adverse Effects** : Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities. Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential.

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### SECTION 13. DISPOSAL CONSIDERATIONS

#### 13.1 Waste Treatment Methods

- Material Disposal** : Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses.
- Container Disposal** : 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.  
EU Waste Disposal Code (EWC): 13 02 05 mineral-based non-chlorinated engine, gear and lubricating oils. Classification of waste is always the responsibility of the end user.

---

### SECTION 14. TRANSPORT INFORMATION

#### Land transport (ADR/RID):

##### ADR

This product is not classified as dangerous for this mode of transport. Therefore 14.1 UN Number, 14.2 UN Proper Shipping name, 14.3 Transport hazard class(es), 14.4 Packing group, 14.5 Environmental hazards, 14.6 Special precautions for user do not apply.

##### RID

This product is not classified as dangerous for this mode of transport. Therefore 14.1 UN

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Number, 14.2 UN Proper Shipping name, 14.3 Transport hazard class(es), 14.4 Packing group, 14.5 Environmental hazards, 14.6 Special precautions for user do not apply.

### Inland waterways transport (ADN):

This product is not classified as dangerous for this mode of transport. Therefore 14.1 UN Number, 14.2 UN Proper Shipping name, 14.3 Transport hazard class(es), 14.4 Packing group, 14.5 Environmental hazards, 14.6 Special precautions for user do not apply.

### Sea transport (IMDG Code):

This product is not classified as dangerous for this mode of transport. Therefore 14.1 UN Number, 14.2 UN Proper Shipping name, 14.3 Transport hazard class(es), 14.4 Packing group, 14.5 Environmental hazards, 14.6 Special precautions for user do not apply.

### Air transport (IATA):

This product is not classified as dangerous for this mode of transport. Therefore 14.1 UN Number, 14.2 UN Proper Shipping name, 14.3 Transport hazard class(es), 14.4 Packing group, 14.5 Environmental hazards, 14.6 Special precautions for user do not apply.

### 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** : MARPOL Annex 1 rules apply for bulk shipments by sea.

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## 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

**Authorisations and/or restrictions on use** : Product is not subject to Authorisation under REACh.

**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

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TSCA	<p>listed or polymer exempt.</p> <p>: All components listed.</p>
Other Information	<p>: Environmental Protection Act 1990 (as amended). Health and Safety at Work etc. Act 1974. Consumers Protection Act 1987. Pollution Prevention and Control Act 1999. Environment Act 1995. Factories Act 1961. The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment (Amendment) Regulations 2011. Chemicals (Hazard Information and Packaging for Supply) Regulations 2009. Control of Substances Hazardous to Health Regulations 2002 (as amended). Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations 1997. Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (as amended). Personal Protective Equipment Regulations 2002. Personal Protective Equipment at Work Regulations 1992. Hazardous Waste (England and Wales) Regulations 2005(as amended). Control of Major Accident Hazards Regulations 1999 (as amended). Renewable Transport Fuel Obligations Order 2007 (as amended). Energy Act 2011. Environmental Permitting (England and Wales) Regulations 2010 (as amended). Waste (England and Wales) Regulations 2011 (as amended). Planning (Hazardous Substances) Act 1990 and associated regulations. The Environmental Protection (Controls on Ozone-Depleting Substances) Regulations 2011.</p>
<b>15.2 Chemical Safety Assessment</b>	<p>: No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.</p>

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

	Not classified.
R22	Harmful if swallowed.
R41	Risk of serious damage to eyes.
R43	May cause sensitisation by skin contact.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**CLP Hazard Statements**

H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H411	Toxic to aquatic life with long lasting effects.

**Additional Information** : No Exposure Scenario annex is attached to this safety data sheet. It is a non-classified mixture containing hazardous substances as detailed in Section 3; relevant information from Exposure Scenarios for the hazardous substances contained have been integrated into the core sections 1-16 of this SDS.

**Other Information****Abbreviations and Acronyms**

: Acute Tox. = Acute toxicity  
Asp. Tox. = Aspiration hazard  
Aquatic Acute = Acute hazards to the aquatic environment  
Aquatic Chronic = Hazardous to the aquatic environment - Long-term Hazard  
Eye Dam. = Serious eye damage/eye irritation  
Flam. Liq. = Flammable liquids  
Skin Corr. = Skin corrosion/irritation  
Skin Sens. = Skin sensitizer  
STOT SE = Specific target organ toxicity - single exposure  
STOT RE = Specific target organ toxicity - repeated exposure

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

ACGIH = American Conference of Governmental Industrial Hygienists

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ADR = European Agreement concerning the International  
 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

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OE\_HP V = Occupational Exposure - High Production Volume  
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

<b>SDS Distribution</b>	:	The information in this document should be made available to all who may handle the product.
<b>SDS Version Number</b>	:	3.0
<b>SDS Effective Date</b>	:	03.12.2012
<b>SDS Revisions</b>	:	A vertical bar ( ) in the left margin indicates an amendment from the previous version.
<b>SDS Regulation</b>	:	Regulation 1907/2006/EC as amended by Regulation (EU) 453/2010
<b>Disclaimer</b>	:	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**

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**1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING****1.1 Product Identifier****Material Name** : Sodium Hypochlorite Solution**1.2 Relevant identified uses of the substance or mixture and uses advised against****Product Use** : Sanitizer**Uses Advised Against** : This product must not be used in applications other than the above without first seeking the advice of the supplier.**1.3 Details of the Supplier of the safety data sheet****Manufacturer/Supplier** : **Shell U.K. Exploration and Production**  
1 Altens Farm Road  
Nigg  
Aberdeen, AB12 3FY  
United Kingdom**Telephone** : +44 (0)1224 882000**Fax** : +44 (0)1224 881617**Email Contact for MSDS** : epeREACH@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).

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

Regulation (EC) No 1272/2008 (CLP)	
Hazard classes / Hazard categories	Hazard Statement
Serious eye damage/eye irritation, Category 1	H318

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Skin corrosion/irritation, Category 1A	H314
Corrosive to metals, Category 1	H290

67/548/EEC or 1999/45/EC	
Hazard Characteristics	R-phrases(s)
Corrosive.; Dangerous for the environment.	R34; R41; R50/53

## 2.2 Label Elements

## Labeling according to Regulation (EC) No 1272/2008

Symbol(s)

:



Signal Words

:

Danger

CLP Hazard Statements

:

PHYSICAL HAZARDS:  
H290: May be corrosive to metals.  
HEALTH HAZARDS:  
H314: Causes severe skin burns and eye damage.  
H318: Causes serious eye damage.  
ENVIRONMENTAL HAZARDS:  
H400: Very toxic to aquatic life.

## CLP Precautionary statements

Prevention

:

P260: Do not breathe dust/fume/gas/mist/vapours/spray.  
P264: Wash hands thoroughly after handling.  
P280: Wear protective gloves/protective clothing/eye protection/face protection.

Response

:

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
P303+P361+P353: IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.  
P304+P340: IF INHALED: Remove victim to fresh air and keep

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at rest in a position comfortable for breathing.

**Storage** : P405: Store locked up.

**Disposal** : P501: Dispose of contents and container to appropriate waste site or reclaimer in accordance with local and national regulations.

**Labeling according to Directive 1999/45/EC/67/548/EEC**

EC Symbols : C Corrosive.  
N Dangerous for the environment.



EC Classification : Corrosive. Dangerous for the environment.  
EC Risk Phrases : R34 Causes burns.  
R41 Risk of serious damage to eyes.  
R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.  
EC Safety Phrases : S24/25 Avoid contact with skin and eyes.  
S36/37 Wear suitable protective clothing and gloves.  
S39 Wear eye/face protection.  
S61 Avoid release to the environment. Refer to special instructions/Safety data sheets.

**2.3 Other Hazards**

**Health Hazards** : May be harmful by inhalation.  
Causes severe burns. Causes serious eye irritation. Under normal conditions of use, this is not expected to be a primary route of exposure.

**Environmental Hazards** : Not classified as dangerous for the environment.

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**3. COMPOSITION/INFORMATION ON INGREDIENTS****3.1 Substance**

**Safety Data Sheet****CAS No.** : 7681-52-9**3.2 Mixtures****Mixture Description** : An aqueous solution of sodium hypochlorite.**Hazardous Components****Classification of components according to Regulation (EC) No 1272/2008**

Chemical Name	CAS No.	EINECS	REACH Registration No.	Conc.
Sodium Hypochlorite Solution (<25%)	7681-52-9	231-668-3		100.00%

Chemical Name	Hazard Class & Category	Hazard Statement
Sodium Hypochlorite Solution (<25%)	Met. Corr., 1; Skin Corr., 1B; Eye Dam., 1; Aquatic Acute, 1;	H290; H314; H318; H400;

**Classification of components according to 67/548/EEC**

Chemical Name	CAS No.	EINECS	REACH Registration No.	Symbol(s)	R-phrase(s)	Conc.
Sodium Hypochlorite Solution (<25%)	7681-52-9	231-668-3		C, N	R34; R41; R50/53	100.00%

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

---

**4. FIRST AID MEASURES****4.1 Description of First Aid Measures**

**General Information** : Obtain medical treatment immediately.

**Inhalation** : If inhalation of mists, fumes or vapour causes irritation to the nose or throat, remove to fresh air.

**Skin Contact** : All burns should receive medical attention. Remove contaminated clothing. Immediately flush skin with large amounts of water for at least 15 minutes, and follow by washing with soap and water if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.

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<b>Eye Contact</b>	: Flush eyes with water while holding eyelids open. Rest eyes for 30 minutes. If redness, burning, blurred vision, or swelling persist transport to the nearest medical facility for additional treatment.
<b>Ingestion</b>	: Obtain medical treatment immediately.
<b>4.2 Most important symptoms and effects, both acute and delayed</b>	: Local necrosis is evidenced by delayed onset of pain and tissue damage a few hours following injection.
<b>4.3 Indication of any immediate medical attention and special treatment needed</b>	: Treat symptomatically.

---

### 5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

<b>5.1 Extinguishing Media</b>	: Not applicable.
<b>Unsuitable Extinguishing Media</b>	: Not applicable
<b>5.2 Special hazards arising from the substance or mixture</b>	: Not applicable.
<b>Additional Advice</b>	: Non-flammable liquid.

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### 6. ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. See Chapter 13 for information on disposal. Observe the relevant local and international regulations.

<b>6.1 Personal Precautions, Protective Equipment and Emergency Procedures</b>	: Avoid contact with skin and eyes.
<b>6.2 Environmental Precautions</b>	: Use appropriate containment to avoid environmental contamination.
<b>6.3 Methods and Material for Containment and Cleaning up</b>	: Flush away residues with water.
<b>Additional Advice</b>	: Local authorities should be advised if significant spillages cannot be contained.
<b>6.4 Reference to other sections</b>	: For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. For guidance

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on disposal of spilled material see Chapter 13 of this Material Safety Data Sheet.

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**7. HANDLING AND STORAGE**

- |   |   |  |
|---|---|--|
| <b>General Precautions</b>  | : | Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. 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.   |
| <b>7.1 Precautions for Safe Handling</b>                                | : | Avoid prolonged or repeated contact with skin. Avoid inhaling vapour and/or mists. When handling product in drums, safety footwear should be worn and proper handling equipment should be used.  |
| <b>7.2 Conditions for safe storage, including any incompatibilities</b> | : | Keep container tightly closed and in a cool, well-ventilated place. Use properly labelled and closeable containers. Protect from frost. Storage Temperature: 0 - 50°C / 32 - 122°F<br>The storage of this product may be subject to the Control of Pollution (Oil Storage) (England) Regulations. Further guidance may be obtained from the local environmental agency office. |
| <b>7.3 Specific end use(s)</b>  | : | Not applicable   |
| <b>Additional Information</b>   | : | Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion.<br>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".   |
| <b>Recommended Materials</b>  | : | For containers or container linings use only high density polyethylene.  |
| <b>Unsuitable Materials</b>   | : | Mild steel.  |

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**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**

Contains no components with occupational exposure limit values.

**Safety Data Sheet****Biological Exposure Index (BEI)**

Data not available

**PNEC related information** : Not applicable**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: Adequate ventilation to control airborne concentrations. Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

**Occupational Exposure Controls**

- Personal Protective Equipment** : Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.
- Eye Protection** : Wear safety glasses or full face shield if splashes are likely to occur. Approved to EU Standard EN166.
- Hand Protection** : 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: PVC, neoprene or nitrile rubber gloves. 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. 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.
- Body protection** : Skin protection not ordinarily required beyond standard issue work clothes.
- Respiratory Protection** : No respiratory protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material. If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker

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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 suitable, select an appropriate combination of mask and filter. Select a filter suitable for combined particulate/organic gases and vapours [boiling point >65 °C (149 °F)] meeting EN14387.

**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** : Minimise release to the environment. An environmental assessment must be made to ensure compliance with local environmental legislation.

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

Appearance : Light green. Liquid.  
Odour : Data not available.  
pH : 12 - 13  
Initial Boiling Point and Boiling Range : 102 °C / 216 °F  
Melting / freezing point : -20 °C / -4 °F  
Flash point : Not applicable.  
Upper / lower Flammability or Explosion limits : Not applicable.  
Vapour pressure : 20 hPa at 20 °C / 68 °F  
Specific gravity : Typical 1.23 at 20 °C / 68 °F  
Density : ca. 1.22 - 1.25 kg/m<sup>3</sup> at 20 °C / 68 °F  
Water solubility : Miscible.  
Solubility in other solvents : Data not available

n-octanol/water partition coefficient (log Pow) : < 3 (based on information on similar products)  
Dynamic viscosity : 2.8 mPa.s at 20 °C / 68 °F  
Kinematic viscosity : Data not available  
Vapour density (air=1) : Not applicable.  
Evaporation rate (nBuAc=1) : Data not available  
Flammability : No



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### 9.2 Other Information

Other Information : Data not available

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## 10. STABILITY AND REACTIVITY

- 10.1 Reactivity** : The product does not pose any further reactivity hazards in addition to those listed in the following sub-paragraph.
- 10.2 Chemical stability** : Stable.
- 10.3 Possibility of Hazardous Reactions** : Reacts with strong oxidising agents.
- 10.4 Conditions to Avoid** : Extremes of temperature and direct sunlight.
- 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 testing.
- Likely Routes of Exposure** : Exposure may occur via inhalation, ingestion, skin absorption, skin or eye contact, and accidental ingestion.
- Acute Oral Toxicity** : Low toxicity: LD50 > 5000 mg/kg , Rat
- Acute Dermal Toxicity** : Low toxicity: LD50 > 5000 mg/kg , Rabbit
- Acute Inhalation Toxicity** : May be harmful if inhaled.
- Skin Corrosion/Irritation** : Causes severe burns.
- Serious Eye Damage/Irritation** : Causes serious eye damage.
- Respiratory Irritation** : Inhalation of vapours or mists may cause irritation to the respiratory system.
- Respiratory or Skin Sensitisation** : Not expected to be a skin sensitiser.
- Aspiration Hazard** : Not considered an aspiration hazard.
- Germ Cell Mutagenicity** : In vitro, some test systems suggest that styrene is genotoxic following metabolic activation. Extensive investigation of clastogenic effects in vivo give an overall negative result. The significance of DNA interactions in relation to mutagenicity is unclear.

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<b>Carcinogenicity</b>	: Not carcinogenic in animal studies.
<b>Reproductive and Developmental Toxicity</b>	: Not a developmental toxicant. Does not impair fertility.
<b>Specific target organ toxicity - single exposure</b>	: Not classified.
<b>Specific target organ toxicity - repeated exposure</b>	: Not expected to be a hazard.

---

**12. ECOLOGICAL INFORMATION**

<b>Basis for Assessment</b>	: Information given is based on product testing.
<b>12.1 Toxicity</b>	
<b>Acute Toxicity</b>	: (LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract).
<b>Fish</b>	: Very toxic: LL/EL/IL50 < 1 mg/l
<b>Aquatic Invertebrates</b>	: Very toxic: LL/EL/IL50 < 1 mg/l
<b>Algae</b>	: Very toxic: LL/EL/IL50 < 1 mg/l
<b>Microorganisms</b>	: Data not available
<b>Chronic Toxicity</b>	
<b>Fish</b>	: Data not available
<b>Aquatic Invertebrates</b>	: Data not available
<b>12.2 Persistence and degradability</b>	: Data not available
<b>12.3 Bioaccumulative Potential</b>	: Does not bioaccumulate significantly.
<b>12.4 Mobility</b>	: If product enters soil, one or more constituents will be mobile and may contaminate groundwater.
<b>12.5 Result of PBT and vPvB assesment</b>	: The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not considered to be PBT or vPvB.
<b>12.6 Other Adverse Effects</b>	: Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities. Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential.

**Safety Data Sheet**

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**13. DISPOSAL CONSIDERATIONS****13.1 Waste Treatment Methods**

- Material Disposal** : Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses.
- Container Disposal** : 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. EU Waste Disposal Code (EWC): 16 10 02 aqueous liquid wastes other than those mentioned in 16 10 01.

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

- 14.1 UN No. : 1791
- 14.2 UN Proper Shipping Name : HYPOCHLORITE SOLUTION
- 14.3 Transport Hazard Class : 8
- 14.4 Packing group : II
- Danger label (primary risk) : 8
- 14.5 Environmental Hazard : Environmentally Hazardous

**RID**

- 14.1 UN No. : 1791
- 14.2 UN Proper Shipping Name : HYPOCHLORITE SOLUTION
- 14.3 Transport Hazard Class : 8
- 14.4 Packing group : II
- Danger label (primary risk) : 8
- 14.5 Environmental Hazard : Environmentally Hazardous

**Sea transport (IMDG Code):**

**Safety Data Sheet**

14.1 UN No. : UN 1791  
14.2 UN Proper Shipping Name : HYPOCHLORITE SOLUTION  
14.3 Transport Hazard Class : 8  
14.4 Packing group : II  
14.5 Marine pollutant : Yes

**Air transport (IATA):**

14.1 UN No. : 1791  
14.2 UN Proper Shipping Name : Hypochlorite solution  
14.3 Transport Hazard Class : 8  
14.4 Packing group : II

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**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**

**Authorisations and/or restrictions on use** : Product is not subject to Authorisation under REACH.

**Chemical Inventory Status**

EINECS : All components listed or polymer exempt.  
TSCA : All components listed.

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.

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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.

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

R34 Causes burns.  
R41 Risk of serious damage to eyes.  
R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**CLP Hazard Statements**

H290 May be corrosive to metals.  
H314 Causes severe skin burns and eye damage.  
H318 Causes serious eye damage.  
H400 Very toxic to aquatic life.

**Identified Uses according to the Use Descriptor System**

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

**Other Information**

**MSDS Distribution** : The information in this document should be made available to all who may handle the product.  
**MSDS Version Number** : 1.0  
**MSDS Effective Date** : 22.12.2011

## **Safety Data Sheet**

**MSDS Revisions**

: A vertical bar (|) in the left margin indicates an amendment from the previous version.

**MSDS Regulation  
Disclaimer**

: Regulation 1907/2006/EC

: 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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Conforms to EU Regulation 1907/2006/EC as amended. - SDSCLP\_IE

## 1. Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifier

Trade name : Tectyl® 502-C  
PROTECTANT

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

Use of the : Solvent-borne coatings  
Substance/Mixture

### 1.3 Details of the supplier of the safety data sheet

Ashland P.O. Box 8619 NL3009 AP, Rotterdam Netherlands  EUSMT@ashland.com	<b>Emergency telephone number</b> +1-800-274-5263/+1-606-329-5701 , or contact your local emergency telephone number at 112  <b>Product Information</b> +31 10 497 5000 (in the Netherlands), or contact your local CSR contact person
--	---

## 2. Hazards identification

### 2.1 Classification of the substance or mixture


#### Classification (67/548/EEC, 1999/45/EC)

Flammable	R10: Flammable.
	R66: Repeated exposure may cause skin dryness or cracking.
	R67: Vapours may cause drowsiness and dizziness.

### 2.2 Label elements

#### Labelling according to EC Directives(1999/45/EC)

R-phrases(s)	:	R10	Flammable.
		R66	Repeated exposure may cause skin dryness or cracking.
		R67	Vapours may cause drowsiness and dizziness.

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S-phrase(s) : S 9 Keep container in a well-ventilated place.  
S16 Keep away from sources of ignition - No smoking.  
S23 Do not breathe spray.  
S36 Wear suitable protective clothing.  
S51 Use only in well-ventilated areas.  
S60 This material and its container must be disposed of as hazardous waste.

### 2.3 Other hazards

Assessment : PBT substance , vPvB substance - not determined

## 3. Composition/information on ingredients

### 3.2 Mixtures

#### Hazardous components

Chemical Name	CAS-No. EC-No. Registration number	Classification (67/548/EEC)	Classification (REGULATION (EC) No 1272/2008)	Concentration [%]
Hydrocarbons, C9-C11, n-alkanes, iso-alkanes, cyclenes, <2% aromatics	919-857-5 01-2119463258-33-xxxx	R10 Xn; R65 R66-R67	Flam. Liq. 3; H226 STOT SE 3; H336 Asp. Tox. 1; H304	>= 25 - < 40

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

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

## 4. First aid measures

### 4.1 Description of first aid measures

General advice : Consult a physician.  
Show this safety data sheet to the doctor in attendance.

If inhaled : Move to fresh air.  
Call a physician or poison control centre immediately.  
Keep patient warm and at rest.  
If unconscious place in recovery position and seek medical advice.  
Keep respiratory tract clear.  
If breathing is irregular or stopped, administer artificial respiration.  
In case of shortness of breath, give oxygen.



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- : Consult a physician after significant exposure.
- In case of skin contact : Take off contaminated clothing and shoes immediately.  
Wash off immediately with plenty of water.
- In case of eye contact : Flush eyes with water at least 15 minutes. Get medical  
attention if eye irritation develops or persists.  
Remove contact lenses.
- If swallowed : Do not induce vomiting without medical advice.  
Never give anything by mouth to an unconscious person.  
Consult a physician if necessary.

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

- Symptoms : Signs and symptoms of exposure to this material through  
breathing, swallowing, and/or passage of the material through  
the skin may include:  
irritation (nose, throat, airways)  
stomach or intestinal upset (nausea, vomiting, diarrhea)  
central nervous system depression (dizziness, drowsiness,  
weakness, fatigue, nausea, headache, unconsciousness)
- Risks : no data available

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

- Treatment : no data available

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### 5. Firefighting measures

#### 5.1 Extinguishing media

- Suitable extinguishing media : ABC powder  
Carbon dioxide (CO<sub>2</sub>)  
Dry chemical  
Water mist
- Unsuitable extinguishing media : Halons

#### 5.2 Special hazards arising from the substance or mixture

- Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water  
courses.
- Hazardous combustion products : Aldehydes  
carbon dioxide and carbon monoxide  
Hydrocarbons  
Ketones

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sulfur compounds

### 5.3 Advice for firefighters

- Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment.
- Further information : Keep containers and surroundings cool with water spray. Prevent fire extinguishing water from contaminating surface water or the ground water system. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments.

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## 6. Accidental release measures

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

- Personal precautions : Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Pay attention to the spreading of gases especially at ground level (heavier than air) and to the direction of the wind.

### 6.2 Environmental precautions

- Environmental precautions : Prevent further leakage or spillage if safe to do so.

### 6.3 Methods and materials for containment and cleaning up

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

### 6.4 Reference to other sections


no data available

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## 7. Handling and storage

### 7.1 Precautions for safe handling

- Advice on safe handling : Avoid formation of aerosol. Do not breathe vapours or spray mist. For personal protection see section 8. Provide sufficient air exchange and/or exhaust in work rooms. Avoid exceeding of the given occupational exposure limits (see section 8). Smoking, eating and drinking should be prohibited in the

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application area.

Ensure all equipment is electrically grounded and bonded before beginning transfer operations.

Advice on protection against fire and explosion : Take measures to prevent the build up of electrostatic charge. Mixture may charge electrostatically: always use earthing leads when transferring from one container to another. Keep product and empty container away from heat and sources of ignition. No sparking tools should be used. Avoid formation of aerosol.

## 7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Store in original container. Keep containers tightly closed in a dry, cool and well-ventilated place.

Other data : Stable under recommended storage conditions.

## 7.3 Specific end use(s)

# 8. Exposure controls/personal protection

## 8.1 Control parameters

Components	CAS-No.	Value type	Form of Exposure	Control parameters	Update	Basis
Distillates (petroleum), hydrotreated heavy naphthenic	64742-52-5	TWA	Inhalable fraction.	0,2 mg/m3	2010	IR_OEL
Distillates (petroleum), hydrotreated heavy naphthenic	64742-52-5	TWA	Inhalable fraction.	5 mg/m3	2010	IR_OEL
Petrolatum	8009-03-8	TWA	Inhalable fraction.	0,2 mg/m3	2010	IR_OEL
Petrolatum	8009-03-8	TWA	Inhalable fraction.	5 mg/m3	2010	IR_OEL
Distillates (petroleum), hydrotreated light naphthenic	64742-53-6	TWA	Inhalable fraction.	5 mg/m3	2010	IR_OEL
Distillates (petroleum),	64742-53-6	TWA	Inhalable fraction.	0,2 mg/m3	2010	IR_OEL

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hydrotreated light naphthenic						
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## 8.2 Exposure controls

### Engineering measures

Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below level of overexposure (from known, suspected or apparent adverse effects).

### Personal protective equipment

- Respiratory protection : No personal respiratory protective equipment normally required.
- Hand protection : Wear resistant gloves such as:
- : Nitrile rubber
  - : Neoprene gloves
- Eye protection : Safety glasses with side-shields
- Skin and body protection : Wear as appropriate:
- Safety shoes
  - Flame-resistant clothing
- Hygiene measures : Keep away from food, drink and animal feedingstuffs.  
When using do not eat, drink or smoke.  
Ensure that eyewash stations and safety showers are close to the workstation location.


### Environmental exposure controls

- General advice : Prevent further leakage or spillage if safe to do so.

## 9. Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

- Appearance : viscous; liquid
- Colour : amber
- Odour : solvent-like
- Odour Threshold : no data available
- pH : not applicable
- Freezing point / Melting point : < -20 °C
- Boiling point : > 140 °C

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Flash point : 40 °C; Pensky Martens closed cup

Evaporation rate : 0,11

Flammability (solid, gas) : no data available

Burning rate : no data available

Lower explosion limit : no data available

Upper explosion limit : no data available

Vapour pressure : 2,1 hPa; 20 °C

Relative vapor density : > 1

Relative density : 0,88; 20 °C

Density : 0,88 g/cm<sup>3</sup>; 20 °C

Water solubility : partly miscible

Solubility in other solvents : no data available

Partition coefficient: n-octanol/water : no data available

Auto-ignition temperature : > 200 °C

Ignition temperature : no data available

Thermal decomposition : no data available

Viscosity, dynamic : 58 mPa.s; 20 °C


Viscosity, kinematic : 16 mm<sup>2</sup>/s; 40 °C

Explosive properties : no data available

Oxidizing properties : no data available

## 9.2 Other information

Bulk density : no data available

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## 10. Stability and reactivity

### 10.1 Reactivity

Hazardous polymerisation does not occur.

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

Hazardous reactions : Further information: Stable under recommended storage conditions.

: Hazardous polymerisation does not occur.  
Vapours may form explosive mixture with air.

### 10.4 Conditions to avoid

Conditions to avoid : Heat, flames and sparks.

excessive heat

### 10.5 Incompatible materials

Materials to avoid : Oxidizing agents

### 10.6 Hazardous decomposition products

Hazardous decomposition products : carbon dioxide and carbon monoxide  
Hydrocarbons  
sulfur compounds

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## 11. Toxicological information

### 11.1 Information on toxicological effects

#### Product

Acute oral toxicity : no data available

Acute inhalation toxicity : no data available

Acute dermal toxicity : no data available

Acute toxicity (other routes of administration) : no data available

Skin corrosion/irritation : no data available

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Serious eye damage/eye irritation : no data available

Respiratory or skin sensitization : no data available

**Components:**

**Hydrocarbons, C9-C11, n-alkanes, iso-alkanes, cyclenes, <2% aromatics :**

Acute oral toxicity : LD 50: > 5.000 mg/kg, Rat

Acute inhalation toxicity : LC 50: > 5 mg/l, 4 h, Rat, OECD Test Guideline 403

Acute dermal toxicity : LD 50: > 5.000 mg/kg, Rat, OECD Test Guideline 402

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## 12. Ecological information

### 12.1 Toxicity

**Product:**

no data available

**Components:**

**Hydrocarbons, C9-C11, n-alkanes, iso-alkanes, cyclenes, <2% aromatics:**

Toxicity to fish : LC 50: > 1.000 mg/l, 96 h, Oncorhynchus mykiss (rainbow trout), OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC0: 1.000 mg/l, 48 h, Water flea (Daphnia magna), OECD Test Guideline 202

### 12.2 Persistence and degradability

**Product:**

no data available

**Components:**

**Hydrocarbons, C9-C11, n-alkanes, iso-alkanes, cyclenes, <2% aromatics :**

Biodegradability :  
Expected to be biodegradable

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### 12.3 Bioaccumulative potential

**Product:**

Bioaccumulation

: The bioaccumulation potential cannot be determined.

**Components:**

no data available

### 12.4 Mobility in soil

**Product:**

no data available

**Components:**

no data available

### 12.5 Results of PBT and vPvB assessment

**Product:**

no data available

**Components:**

no data available

### 12.6 Other adverse effects

**Product:**

no data available

**Components:**

no data available

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## 13. Disposal considerations

### 13.1 Waste treatment methods

Product

: Dispose of in accordance with the European Directives on waste and hazardous waste.

: Do not contaminate ponds, waterways or ditches with chemical or used container.

Container hazardous when empty.

Dispose of in accordance with local regulations.

Contaminated packaging

: Empty remaining contents.

Dispose of as unused product.

Empty containers should be taken to an approved waste handling site for recycling or disposal.

Do not re-use empty containers.

Do not burn, or use a cutting torch on, the empty drum.



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## 14. Transport information

### REGULATION

ID NUMBER	PROPER SHIPPING NAME	*HAZARD CLASS	SUBSIDIARY HAZARDS	PACKING GROUP	MARINE POLLUTANT / LTD. QTY.
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#### ADR

UN	1139	COATING SOLUTION	3		III
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#### ADNR

UN	1139	COATING SOLUTION	3		III
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#### RID

UN	1139	COATING SOLUTION	3		III
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### INTERNATIONAL MARITIME DANGEROUS GOODS

UN	1139	COATING SOLUTION	3		III
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### INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO

UN	1139	Coating solution	3		III
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### INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER

UN	1139	Coating solution	3		III
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\*ORM = ORM-D, CBL = COMBUSTIBLE LIQUID


Dangerous goods descriptions (if indicated above) may not reflect quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.

## 15. Regulatory information

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

#### Notification status

EU. EINECS	y (positive listing)
US. Toxic Substances Control Act	y (positive listing)
Australia. Industrial Chemical (Notification and Assessment) Act	y (positive listing)

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Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL). (Can. Gaz. Part II, Vol. 133)	y (positive listing)
Japan. Kashin-Hou Law List	n (Negative listing)
Korea. Toxic Chemical Control Law (TCCL) List	y (positive listing)
Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act	y (positive listing)
China. Inventory of Existing Chemical Substances	y (positive listing)

## 15.2 Chemical Safety Assessment

## 16. Other information

### Full text of R-phrases referred to under sections 2 and 3

R10	Flammable.
R65	Harmful: may cause lung damage if swallowed.
R66	Repeated exposure may cause skin dryness or cracking.
R67	Vapours may cause drowsiness and dizziness.

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


H226	Flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H336	May cause drowsiness or dizziness.

### Further information

Other information : The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This SDS has been prepared by Ashland's Environmental Health and Safety Department (+31 10 497 5000).

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

ABM : Water Hazard Class for the Netherlands  
ADR : Agreement concerning the International Carriage of Dangerous Goods by Road.  
CAS : Chemical Abstracts Service (Division of the American Chemical Society).  
CLP : Classification, Labeling, Packaging  
CMR : Carcinogen, Mutagen or Reproductive Toxicant  
CSA : Chemical Safety Assessment  
CSR : Chemical Safety Report  
DNEL : Derived No Effect Level.  
EINECS : European Inventory of Existing Commercial Chemical Substances.  
ELINCS : European List of notified Chemical Substances  
FG : Food grade  
GHS : Globally Harmonized System of Classification and Labeling of Chemicals.  
IATA : International Air Transport Association.  
IATA-DGR : Dangerous Goods Regulation by the "International Air Transport Association" (IATA).  
ICAO : International Civil Aviation Organization  
ICAO-TI

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(ICAO) : Technical Instructions by the "International Civil Aviation Organization"  
 IMDG : International Maritime Code for Dangerous Goods  
 logPow : octanol-water partition coefficient  
 LCxx : Lethal Concentration, for xx percent of test population  
 LDxx : Lethal Dose, for xx percent of test population.  
 ICxx : Inhibitory Concentration for xx of a substance  
 Ecxx : Effective Concentration of xx  
 OECD : Organization for Economic Co-operation and Development  
 OELs : Occupational Exposure Limits  
 PBT : Persistent , Bioaccumulative and Toxic  
 PEC : Predicted Effect Concentration  
 PEL : Permissible Exposure Limits  
 PNEC : Predicted No Effect Concentration  
 PPE : Personal Protection Equipment  
 REACH : Registration, Evaluation, Authorisation and Restriction of Chemical substances  
 RID : Regulation Concerning the International Transport of Dangerous Goods by Rail  
 STEL : Short-term exposure limit  
 STOT : Specific Target Organ Toxicity  
 TLVs : Threshold Limit Values  
 TWA : Time-weighted average  
 vPvB : Very Persistent and Very Bioaccumulative  
 WEL : Workplace Exposure Level  
 WGK : German Water Hazard Class  
 P-Statement : Precautionary Statement  
 R-phrase : Risk phrase  
 H-statement : Hazard Statement