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

1.1 Product identifier

Product name: Gas Oil Class A2, Class D

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

Identified use(s): Fuel.

Uses advised against: Follow supplier's recommendations on correct use of the product. Uses other than those covered by the exposure scenarios included in this safety data sheet are not supported.

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier:
Certas Energy UK Limited
302 Bridgewater Place
Birchwood Park
Warrington
Cheshire
WA3 6XG

Telephone: 0800 685 685

E-mail: hse.admin@certasenergy.co.uk

1.4 Emergency telephone number

In case of emergency, call: 01642 679 461 (24 hours, 7 days)

SECTION 2: Hazard Identification

2.1 Classification of the substance or mixture

2.1.1. Classification according to Regulation (EC) No. 1272/2008 (CLP)

Flam. Liq. 3; H226
Asp Tox 1; H304
Skin Irrit. 2; H315
Acute Tox. 4; H332
Carc. 1B; H350
STOT RE 2; H373 (Thymus, liver, bone marrow)
Aquatic Chronic 2; H411

2.1.2. Classification according to Directive Directive 1999/45/EC (CHIP)

R10
Harmful; Xn; R20
Irritant; Xi; R38
Carc. Cat. 2; R45
Harmful; Xn; R48
Harmful; Xn; R65
Dangerous for the environment; N; R51/53

2.2 Label elements

2.2.1. Label according to Regulation (EC) No. 1272/2008 (CLP)

Hazard pictogram(s):

Signal Word: Danger.

Hazard Statement(s):

H226: Flammable liquid and vapour.
H304: May be fatal if swallowed and enters airways.
H315: Causes skin irritation.
H332: Harmful if inhaled.
H350: May cause cancer.
H373: May cause damage to organs (Thymus, liver, bone marrow) through prolonged or repeated exposure.
H411: Toxic to aquatic life with long lasting effects.

Precautionary Statement(s):

P102: Keep out of reach of children.
P201: Obtain special instructions before use.
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P331: Do NOT induce vomiting.
P405: Store locked up.
P501: Dispose of contents/container to approved disposal facility.

Supplemental Hazard information (EU): None.

2.2.2. Label according to Directive 1999/45/EEC (CHIP)

Hazard pictogram(s):

Indications of danger: Harmful, Dangerous for the environment

Hazard Statement(s):

R10: Flammable.
R20: Harmful by inhalation.
R38: Irritating to skin.
R45: May cause cancer.
R48: Danger of serious damage to health by prolonged exposure.
R65: Harmful: may cause lung damage if swallowed.
R51/53: Toxic to aquatic organisms, may cause long-term

adverse effects in the aquatic environment.

Precautionary Statement(s):

S2: Keep out of the reach of children.
S29: Do not empty into drains.
S36/37: Wear suitable protective clothing and 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 label or container.

2.3 Other hazards

The product does not meet the criteria for PBT or vPvB substances.

SECTION 3: Composition/Information on Ingredients

3.2 Mixtures

Chemical name	% w/w	CAS No.	EC No.	Index No.	Classification (Regulation (EC) No. 1272/2008 (CLP))	Classification (Directive 67/548/EEC)
Fuels, diesel *REACH: 01-2119484664-27-XXXX*	90-100	68334-30-5	269-822-7	649-224-00-6	Flam. Liq. 3; H226 Asp Tox 1; H304 Skin Irrit. 2; H315 Acute Tox. 4 H332 Carc. 2 H351 STOT RE 2; H373 (Thymus, liver, bone marrow) Aquatic Chronic 2; H411	R10 Xn; R20 Xi; R38 Carc. Cat. 3; R40 Xn; R48 Xn; R65 N; R51/53
Fatty acids, vegetable-oil, Me esters	0-10	68990-52-3	273-606-8	-	-	-
Fatty acids, tallow, Me esters	0-10	61788-61-2	262-989-7	-	-	-
Naphthalene	< 1	91-20-3	202-049-5	601-052-00-2	Acute Tox. 4; H322 Carc. 1B; H350 Aquatic Acute 1; H400 Aquatic Chronic 1; H410	Xn; R22 Carc. Cat. 2; R45 N; R50/53

See Section 16 for full description of R phrases and H statements.

Total sulphur: < 0.1%

SECTION 4: First Aid Measures

4.1 Description of first aid measures

INHALATION: Remove person to fresh air and keep comfortable for breathing. Keep warm and at rest. If symptoms persist, obtain medical attention.

SKIN CONTACT: Remove contaminated clothing immediately. Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.

EYE CONTACT: Remove contact lenses if present and easy to do. Wash eyes immediately with plenty of water, making sure to rinse under

eyelids. If symptoms persist, obtain medical attention.

INGESTION: Obtain medical attention immediately. Do not induce vomiting. Do not give anything by mouth because of risk of material entering the lungs and causing lung damage. If person is drowsy or unconscious and vomiting, place on left side with head down. If possible, do not leave unattended and observe closely for adequacy of breathing.

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

Skin contact causes irritation, redness and pain. Repeated exposure may cause skin dryness or cracking. Eye contact may cause slight irritation, watering, redness and pain. Inhalation of high concentrations of vapours may cause drowsiness or dizziness. Ingestion may cause irritation of the mouth and digestive tract. If swallowed, aspiration into lungs may result in chemical pneumonia.

May cause cancer. May cause damage to organs (Thymus, liver, bone marrow) through prolonged or repeated exposure.

4.3 Indication of any immediate medical attention and special treatments needed:

In case of accident or if you feel unwell, seek medical advice immediately. If swallowed, patient should be monitored for signs of breathing difficulty as effects of aspiration may be delayed for up to 48 hours. If breathing is laboured, oxygen should be administered by qualified personnel.

SECTION 5: Fire-fighting Measures

5.1 Extinguishing Media

Suitable extinguishing media: Foam, CO2 or dry powder.

Unsuitable extinguishing media: Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Flammable liquid and vapour: Vapour may form explosive mixture with air. Vapour is heavier than air and may accumulate in confined spaces. Vapours may travel considerable distances to ignition sources where they can ignite, flash back or explode. The product will float on surface water and can reignite. Containers exposed to heat may burst due to increase in pressure.

Combustion may liberate toxic fumes: Carbon monoxide, carbon dioxide, various hydrocarbons, nitrogen oxides, sulphur oxides.

5.3 Advice for fire-fighters

A self-contained breathing apparatus and suitable protective clothing should be worn in fire conditions. Move undamaged containers from fire area if this can be done safely. Keep fire exposed containers cool by spraying with water. Do not allow product or run-off to enter drains, sewers or watercourses.

SECTION 6: Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1 For non-emergency personnel

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharge. Use only non-sparkling tools. Use explosion-proof electrical, ventilating and lighting equipment. Caution – spillage area may be slippery.

Keep upwind. Ensure adequate ventilation. Avoid inhalation of vapours. Avoid contact with skin and eyes. Wear suitable personal protective equipment. Wear appropriate respirator when ventilation is inadequate. (See Section 8).

6.1.2 For emergency responders

Keep unnecessary personnel away. Wear suitable protective clothing (See Section 8). Contaminated clothing should be thoroughly cleaned.

6.2 Environmental precautions

Collect spillage. Do not allow to enter drains, sewers or watercourses. Spillages or uncontrolled discharges into watercourses must be alerted to the Environment Agency or other appropriate regulatory body. If spill occurs on water notify the appropriate authorities and advise shipping of any hazard.

6.3 Methods and materials for containment and clearing up

6.3.1 For containment

Stop the leak if it is safe to do so. Contain the spillage with sand, earth or any suitable adsorbent material.

6.3.2 For cleaning up

Use sand, earth or any suitable non-combustible adsorbent material to adsorb spillages. Using non-sparking tools transfer the contaminated absorbent material into a container for disposal.
For spillages on water, remove use appropriate methods such as skimming, booms or adsorbents. For spillages onto soil, remove contaminated soil for remediation or disposal in accordance with local regulations.

Waste containers used should be plastic-lined sealable drums. Containers should be sealed before being disposed of via an authorised waste disposal contractor.

6.3.3 Other advice

None.

6.4 Reference to other sections

See Section 8 for personal protective equipment. See Section 13 for waste disposal.

SECTION 7: Handling and Storage

7.1 Precautions for safe handling

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Ground/bond container and receiving equipment. Take precautionary measures against static discharge. Use only non-sparkling tools. Use explosion-proof electrical, ventilating and lighting equipment.

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area. Provide adequate ventilation, including local extraction, to ensure occupational exposure limits are not exceeded. Avoid breathing vapours/spray. Avoid contact with skin and eyes. Wear suitable personal protective equipment (See Section 8).

Do not eat, drink or smoke in the vicinity of the product. Wash thoroughly after handling. Take off contaminated clothing and wash it before reuse. Contaminated clothing should be thoroughly cleaned or disposed of as hazardous waste.

Product transfer
Electrostatic charges may be generated during pumping. Ensure electrical continuity by bonding all equipment. Avoid splash filling. 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. Contamination resulting from product transfer may give rise to light hydrocarbon vapour in the headspace of tanks that have previously contained gasoline. This vapour may explode if there is a source of ignition. Partly filled containers present a greater hazard than those that are full, therefore handling, transfer and sampling activities need special care.

Tank cleaning

Cleaning, inspection and maintenance of storage tanks is a specialist operation that requires the implementation of strict procedures and precautions. These include issue of work permits, gas-freeing of tanks, using a manned safety harness, lifelines and wearing air-supplied breathing apparatus. Prior to entry and while cleaning is underway, the atmosphere within the tank must be monitored using an oxygen meter and explosimeter. Additional precautions are required where the tank may have previously contained leaded gasoline.

7.2 Conditions for safe storage, including any incompatibilities

Keep away from heat and sources of ignition. Keep away from direct sunlight. Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool. Empty containers retain product residue and can be hazardous.

Keep away from oxidising agents, reducing agents.

This product must never be stored in buildings occupied by people. Drums and small containers should be stored in well-ventilated areas, flameproof cabinets or stores. Keep in a bunded area with a sealed floor to provide containment against spillage. Stack drums to a height not exceeding three metres without the use of racking. Seek specialist advice for the design, construction and operation of bulk storage facilities.

Recommended Storage Container materials

For containers or container linings use mild steel or stainless steel, 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 specifically tested for compatibility with the product. For container linings, use amine-adduct cured epoxy paint. For seals and gaskets use: graphite, PTFE, Viton A, Viton B.

Unsuitable Storage Container materials

Synthetic materials such as plastics and fiberglass 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.

7.3 Specific end uses(s)

Refer to supplemental exposure scenarios attached or 'fuel for oil-fired heating systems'.

SECTION 8: Exposure Controls/Personal Protection

8.1 Control parameters

Workplace exposure limits

Source: EH40/2005, 2nd Ed., 2011.

None assigned.

Community exposure limits

Sources: ILV: 91/322/EEC; IOELV: 2000/39/EC, 2006/15/EC, 2009/161/EU

Substance	Exposure Limit Type	CAS No.	LTEL (8 hr TWA)		STEL (15 min)		Comments
			ppm	mg/m³	ppm	mg/m³	
Naphthalene	ILV	91-20-3	10	30	-	-	-

IOELV: Indicative Occupational Exposure Limit Value
ILV: Indicative Limit Value
Skin: Can be absorbed through the skin.

Other exposure limits

Source: American Conference of Governmental Industrial Hygienists (ACGIH)

Substance	CAS No.	LTEL (8 hr TWA)		STEL (15 min)		Comments
		ppm	mg/m³	ppm	mg/m³	
Fuels, diesel	68334-30-5	-	100	-	-	Skin
Naphthalene	91-20-3	10	-	15	-	Skin, A3

Skin: Can be absorbed through the skin.
A3: Confirmed animal carcinogen with unknown relevance to humans.

Source: Phillips 66 Guidelines

Substance	CAS No.	LTEL (8 hr TWA)		STEL (15 min)		Comments
		ppm	mg/m³	ppm	mg/m³	
Naphthalene	91-20-3	-	0.2	-	-	As total of 17 PNAs measured by NIOSH method 5506

DNELs (Workers)

Inhalation: 68.3 mg/m^3/day
Dermal: 2.9 mg/kg bw/day

DNELs (Consumers)

Inhalation: 61.2 mg/m^3/day
Dermal: 1.3 mg/kg bw/day

PNECs

None assigned.

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Provide adequate ventilation to ensure that occupational exposure limits are not exceeded. Local extraction may be required. Eye wash and quick-drench shower facilities should be available in the work area. Contaminated clothing and shoes should be thoroughly washed before reuse.

8.2.2 Personal protection

Eye protection: Goggles or safety glasses with side shields giving complete protection to eyes. (EN 166). Depending on conditions of use, close-fitting eye protection and a face shield may be necessary.

Skin protection:

Hand protection: Chemical-resistant gloves. (EN 374). Suitable glove material: nitrile, neoprene or PVC (breakthrough time > 240 minutes). Contact glove supplier to confirm suitable glove material, thickness and breakthrough times.

Other: Long sleeve protective clothing. Plastic apron. Rubber boots.

Respiratory protection: Where airborne levels below the exposure limits cannot be maintained, wear an air-purifying respirator (EN 140) with a Type A/P2 filter or better suitable for organic gases and

vapours with a boiling point above 65°C. (EN 14387).

Thermal hazards: Wear suitable temperature resistant gloves and protective clothing if the product is heated.

8.2.3 Environmental exposure controls

Inform environmental manager of all incidents involving this product.

SECTION 9: Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

Data given below are typical values

Appearance:	Clear, straw-coloured liquid.
Odour:	Diesel.
Odour threshold:	Not available.
pH:	Not applicable.
Melting/freezing point:	Not available.
Initial boiling point and boiling range:	165 – 375°C
Flash point:	> 55°C (closed cup)
Evaporation rate:	Not available.
Flammability (solid; gas):	Not applicable.
Upper/lower flammability or explosive limits:	0.5% – 6.0% (v/v in air)
Vapour pressure:	< 0.3 kPa (20°C)
Vapour density:	> 1 (Air = 1)
Relative density:	0.82 – 0.85 (15°C) (Water = 1)
Solubility(ies):	Negligible in water (20°C) Miscible in aromatic solvents.
Partition coefficient: n-octanol/water:	Log Kow: 3.9-6 (approximate)
Auto-ignition temperature:	250-270°C
Decomposition temperature:	Not available.
Viscosity:	4.8 mm^2/s (20°C) 2-4.5 mm^2/s (40°C)
Explosive properties:	Not explosive. Vapour may form explosive mixture in air.
Oxidising properties:	Not oxidising.

9.2 Other information

Pour point: -24°C

SECTION 10: Stability and Reactivity

10.1	**Reactivity**	Reacts with oxidising agents.
10.2	**Chemical stability**	Stable under normal conditions.
10.3	**Possibility of hazardous reactions**	No hazardous reactions expected during normal use.
10.4	**Conditions to avoid**	Keep away from sources of ignition, hot surfaces, direct sunlight. Prevent accumulation of vapours. Contact with incompatible materials.
10.5	**Incompatible materials**	Oxidising agents e.g. chlorates and ammonium nitrate which

may be used in agriculture. Reducing agents. Reducing agents.

10.6 Hazardous decomposition products

Combustion may liberate toxic fumes: Carbon monoxide, carbon dioxide, various hydrocarbons, nitrogen oxides, sulphur oxides.

SECTION 11: Toxicological Information

11.1 Information on toxicological effects

Acute toxicity

No data available on the mixture. The following data are for the product components:

Fuels, diesel:
LD_{50} (oral/rat): > 5,000 mg/kg
LD_{50} (dermal/rabbit): > 4,300 mg/kg
LC_{50} (inhalation/rat (male and female/mist): > 4.1 mg/L air (analytical), 4 h
LC_{50} (inhalation/rat (male/mist): > 5.4 mg/L air (analytical), 4 h
LC_{50} (inhalation/rat (female/mist): > 3.6 mg/L air (analytical), 4 h
Naphthalene:
LD_{50} (oral/rat): > 2,000 mg/kg
LD_{50} (dermal/rat): > 2,500 mg/kg
LC_{50} (inhalation/rat (male and female/vapour): > 0.4 mg/L air (analytical), 4 h

Skin corrosion/irritation

Causes skin irritation. Repeated exposure may cause skin dryness or cracking.

Serious eye damage/irritation

May cause slight eye irritation.

Skin sensitisation

Not expected to be a skin sensitiser.

Respiratory sensitisation

Not expected to be a respiratory sensitiser.

Germ cell mutagenicity

The product does not contain substances classified as mutagenic above the classification thresholds.

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 cause tumours in the absence of prolonged skin irritation.

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.

Reproductive toxicity

The product does not contain substances classified for reproductive toxicity above the classification thresholds.

Specific Target Organ Toxicity – single exposure	Based on the available data, the classification criteria are not met.
Specific Target Organ Toxicity – repeated exposure	May cause damage to organs (Thymus, liver, bone marrow) through prolonged or repeated exposure.
Aspiration hazard	May be fatal if swallowed and enters airways. Risk of aspiration into lungs resulting in chemical pneumonia.

Information on likely routes of exposure

Inhalation	Inhalation of high concentrations of vapours may cause drowsiness or dizziness.
Skin contact	Causes skin irritation. Repeated exposure may cause skin dryness or cracking.
Eye contact	May cause slight eye irritation.
Ingestion	May be fatal if swallowed and enters airways. Risk of aspiration into lungs resulting in chemical pneumonia. Ingestion may cause irritation of the mouth and digestive tract.

Symptoms related to the physical, chemical and toxicological characteristics

Skin contact causes irritation, redness and pain. Repeated exposure may cause skin dryness or cracking. Eye contact may cause slight irritation, watering, redness and pain. Inhalation of high concentrations of vapours may cause drowsiness or dizziness. Ingestion may cause irritation of the mouth and digestive tract. If swallowed, aspiration into lungs may result in chemical pneumonia.

Mixture versus substance information

No data available.

Other information

None.

SECTION 12: Ecological Information

12.1 Toxicity

Toxic to aquatic life with long lasting effects.

Experimental studies on samples of gas oils show acute aquatic toxicity values typically in the range 2-20 mg/L. These values are consistent with the predicted aquatic toxicity based on their hydrocarbon compositions.

No data available on the mixture. The following data are for the product components:

Fuels, diesel:
LL_{50} (*Oncorhynchus mykiss*): 21 mg/L, 96 h (WAF)
NOEL (*Oncorhynchus mykiss*): 10 mg/L, 96 h (WAF)
NOEL (*Oncorhynchus mykiss*): 0.083 mg/L, 14 days (WAF) (estimated using PETROTOX computer model)
EL_{50} (*Daphnia magna*): 210 mg/L, 48 h (WAF)
NOEL (*Daphnia magna*): 46 mg/L, 48 h (WAF)
NOEL (*Daphnia magna*): 0.2 mg/L, 21 days (WAF) (estimated using PETROTOX computer model)
EL_{50} (*Pseudokirchnerella subcapitata*): 10 mg/L, 72 h (biomass)
NOEL (*Pseudokirchnerella subcapitata*): 1 mg/L, 72 h (biomass)
EL_{50} (*Pseudokirchnerella subcapitata*): 22 mg/L, 72 h (growth

rate)
NOEL (*Pseudokirchnerella subcapitata*): 1 mg/L, 72 h (growth rate)
EL_{50} (*Tetrahymena pyriformis*): > 1,000 mg/L, 40 h (estimated using PETROTOX computer model)
NOEL (*Tetrahymena pyriformis*): 3.217 mg/L, 40 h (estimated using PETROTOX computer model)

Naphthalene:
LC_{50} (*Pimephales promelas*): 6.08 mg/L, 96 h
LC_{50} (*Oncorhynchus mykiss*): 1.6 mg/L, 96 h
LC_{50} (*Oncorhynchus kisutch*): 2.1 mg/L, 96 h
EC_{50} (*Daphnia magna*): 2.16 mg/L, 48 h
NOEC (*Oncorhynchus kisutch*): 0.37 mg/L, 40 days
NOEC (*Daphnia pulex*): 0.59 mg/L, 125 days

12.2 Persistence and degradability

Based on the known or expected properties of individual components, the product is not expected to be readily biodegradable. Some components are expected to be persistent however other components will be easily degraded by microorganisms under aerobic conditions.

12.3 Bioaccumulative potential

The product components have measured or predicted Log Kow values in the range 3.9 – 6 or above and therefore have a high potential to bioaccumulate. In practice, lower molecular weight compounds will be readily metabolised and the actual bioaccumulation potential of higher molecular weight compounds is limited by the low water solubility and large molecular size.

12.4 Mobility in soil

The product components are immiscible in water and will float on the surface of water. Lower molecular weight components will evaporate from the surface, reducing the risk to aquatic organisms. In air the hydrocarbon components undergo photodegradation by hydroxyl radicals with half lives in the range of less than one day.
The majority of components will be adsorbed onto sediment. Adsorption is the predominant process on release to soil. Adsorbed components will slowly degrade in both water and soil.

12.5 Results of PBT and vPvB assessment

The product does not contain substances assessed to be PBT or vPvB.

12.6 Other adverse effects

None known.

SECTION 13: Disposal Considerations

13.1 Waste treatment methods

To be disposed of as hazardous waste. Disposal should be in accordance with local, state or national legislation.

Contaminated adsorbent must be removed in sealed, plastic lined drums and disposed of via an authorised waste disposal contractor. Empty containers retain product residue and can be hazardous. Do not empty into drains; dispose of this material and its container in a safe way.

Suggested EU Waste Code: 13 07 01* (fuel oil and diesel)). Waste codes should be assigned by the user based on the application for which the product was used.

SECTION 14: Transport Information

ADR

14.1	**UN Number**	1202
14.2	**UN Proper shipping name**	GAS OIL
14.3	**Transport hazard class(es)**	3
14.4	**Packing group**	III
14.5	**Environmental hazards**	Yes
14.6	**Special precautions for the user**	Read SDS and supplier instructions on correct use of the product.

ADN

14.1	**UN Number**	1202
14.2	**UN Proper shipping name**	GAS OIL
14.3	**Transport hazard class(es)**	3
14.4	**Packing group**	III
14.5	**Environmental hazards**	Yes
14.6	**Special precautions for the user**	Read SDS and supplier instructions on correct use of the product.

RID

14.1	**UN Number**	1202
14.2	**UN Proper shipping name**	GAS OIL
14.3	**Transport hazard class(es)**	3
14.4	**Packing group**	III
14.5	**Environmental hazards**	Yes
14.6	**Special precautions for the user**	Read SDS and supplier instructions on correct use of the product.

IATA/ICAO

14.1	**UN Number**	1202
14.2	**UN Proper shipping name**	GAS OIL
14.3	**Transport hazard class(es)**	3
14.4	**Packing group**	III
14.5	**Environmental hazards**	Yes
14.6	**Special precautions for the user**	Read SDS and supplier instructions on correct use of the product.

IMDG

14.1	**UN Number**	1202
14.2	**UN Proper shipping name**	GAS OIL
14.3	**Transport hazard class(es)**	3
14.4	**Packing group**	III
14.5	**Environmental hazards**	Marine pollutant.
14.6	**Special precautions for the user**	Read SDS and supplier instructions on correct use of the product.
14.7	**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code**	The product is not intended to be transported in bulk.

SECTION 15: Regulatory Information

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

This Safety Data Sheet was prepared in accordance with EC Regulation (EC) No. 1907/2006 as amended. The product has been classified in accordance with Regulation (EC) No. 1272/2008 (CLP), Directive 67/548/EEC & Directive 1999/45/EC.

15.2 Chemical Safety Assessment

A chemical safety assessment has been carried out.

SECTION 16: Other Information

Full text of relevant R-phrases and/or H-statements:

Hazard Statement(s):	H226: Flammable liquid and vapour. H304: May be fatal if swallowed and enters airways. H315: Causes skin irritation. H332: Harmful if inhaled. H350: May cause cancer. H351: Suspected of causing cancer. H373: May cause damage to organs through prolonged or repeated exposure. 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.
Supplemental Hazard information (EU):	Not applicable.
Risk phrase(s):	R10: Flammable. R20: Harmful by inhalation. R22: Harmful if swallowed. R38: Irritating to skin. R40: Limited evidence of a carcinogenic effect. R45: May cause cancer. R48: Danger of serious damage to health by prolonged exposure. R65: Harmful: may cause lung damage if swallowed. 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.

Abbreviations:

CAS:	Chemical Abstracts Service;
EINECS:	European Inventory of Existing Commercial Chemical Substances
EC_{50}:	Effective Concentration 50%
EL_{50}:	Effective Loading rate 50%
LC_{50}:	Lethal Concentration 50%
LD_{50}:	Lethal Dose 50%
LL_{50}:	Lethal Loading rate 50%
LOEL:	Lowest Observed Effect Level
NOEL:	No Observed Effect Level
PBT:	Persistent, Bioaccumulative and Toxic.
RMM:	Risk Management Measures
UVCB:	Substance of Unknown or Variable composition, Complex reaction products or Biological materials

vPvB: Very Persistent and Very Bioaccumulative
WAF: Water Accommodated Fraction

References:

Supplier's Safety Data Sheets
ECHA disseminated REACH dossiers
ECHA Classification and Labelling Inventory
Approved Classification and Labelling Guide (Sixth edition)
The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009
Regulation (EC) No. 1272/2008 of the European Parliament and of the council.

Disclaimer:

This safety data sheet contains important information to ensure the safe storage, handling and use of this product, it does not however constitute an assessment of workplace risks.

Users are advised to refer to relevant legislation, approved codes of practice and guidance available from the Health & Safety Executive (website: http://www.hse.gov.uk) and to the IP Codes of Practice available from the Energy Institute (website: http://www.energyinst.org.uk)

Further information:
The above information is based on our current knowledge of the product. The purpose of this data sheet is to describe the product in terms of its safety and environmental requirements. It is the user's responsibility to satisfy themselves as to the application of this information and/or recommendations for their own use.

Version history:

Version:	7.0
Issue date:	31/10/2013
Previous Version:	6.0
Issue date of previous version:	24/11/2011
Sections changed from previous version:	1-16

Annex to extended Safety Data Sheet (eSDS)

1. Manufacture of substance – Industrial

Section 1: Exposure scenario **Vacuum of Hydrocracked Gas Oils and Distillate Fuels**	
Title	
Manufacture of substance	
Use Descriptor	
Sector(s) of use:	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites. SU 8: Manufacture of bulk, large scale chemicals (including petroleum products). SU 9: Manufacture of fine chemicals.
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC 8a: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities. PROC 15: Use as laboratory reagent.
Environmental Release Category(ies):	ERC 1: Manufacture of substances. ERC 4: Industrial use of processing aids in processes and products, not becoming part of articles.
Specific Environmental Release Category:	ESVOC SpERC 1.1.v1
Processes, tasks, activities covered	
Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.	
Section 2: Operation conditions and risk management measures	
2.1 Control of worker exposure	
Product Characteristics	
Physical form of product:	Liquid. Vapour pressure: < 0.5 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Frequency and duration of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).
Other operational conditions affecting exposure:	Operation is carried out at elevated temperature (> 20°C above ambient temperature). Assumes a good basic standard of occupational hygiene is implemented.
Contributing Scenarios	
Contributing Scenarios/Product Category	**Specific Risk Management Measures & Operating Conditions**
General measures applicable to all activities:	Control of any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: ensure relevant staff are informed of the nature of the exposure and are aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clean up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination/spills

	immediately. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.
General exposures (closed systems):	Handle within a closed system.
General exposures (open systems):	Wear suitable gloves tested to EN 374.
Process sampling:	No other specific measures identified.
Bulk closed loading and unloading:	Handle within a closed system. Wear suitable gloves tested to EN 374.
Bulk open loading and unloading:	Wear suitable gloves tested to EN 374.
Laboratory activities:	No other specific measures identified.
Equipment cleaning and maintenance:	Drain down system prior to equipment break-in or maintenance. Wear suitable gloves tested to EN 374 in combination with basic employee training.
Bulk product storage:	Store substance within a closed system.

Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit acute inhalation toxicity and are classified as R20 (Harmful by inhalation) / H332 (Harmful if inhaled) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.

Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit irritation to the skin and are classified as R38 (Irritating to skin) / H315 (Causes skin irritation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R65 (Harmful: May cause lung damage if swallowed) / H304 (May be fatal if swallowed and enters airways). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMs necessary to protect from this adverse effect.

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R45 (May cause cancer) / H350 (May cause cancer). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL or DMEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in Section 2 of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect.

2.2 Control of Environmental Exposure

Product Characteristics
Substance is a complex UVCB. Predominantly hydrophobic.

Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	28,000,000
Fraction of regional tonnage used locally:	0.021

Frequency and duration of use
Continuous release.

Emission days (days/year):	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	0.01
Release fraction to wastewater from process (initial release prior to RMM)	0.00003
Release fraction to soil from process (initial release prior to RMM)	0.0001

Technical conditions and measures at process level (source) to prevent release
Common practices vary across sites, thus conservative process release estimated used.

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Risk from environmental exposure is driven by freshwater sediment. Prevent discharge of undissolved substance to or recover from onsite wastewater.

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

Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency (%):	≥ 90.3
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0
Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%):	94.1
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	97.1
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (Kg/d):	3,300,000
Assumed domestic sewage treatment plant flow (m^3/d):	10,000
Conditions and measures related to external treatment of waste for disposal	
During manufacturing no waste of the substance is generated.	
Conditions and measures related to external recovery of waste	
During manufacturing no waste of the substance is generated.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DNEL or DMEL when Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for dermal irritant health effects. Available hazard data do not support the need for a DNEL to be established for other irritant health effects. Risk Management Measures are based on qualitative risk characterisation.	
4.2 Environment	
Guidance is based on assumed operating conditions which may or may not be applicable to all sites; thus scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Envirnonmental-Release-Classes.pdf). Scaled local assessments for EU refineries have been performed using site-specific data and are attached in the PETRORISK file 'Site Specific Production' Worksheet.	

2. Use of substance as an intermediate – Industrial

Section 1: Exposure scenario **Vacuum of Hydrocracked Gas Oils and Distillate Fuels**	
Title	
Use as an intermediate	
Use Descriptor	
Sector(s) of use:	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites. SU 8: Manufacture of bulk, large scale chemicals (including petroleum products). SU 9: Manufacture of fine chemicals.
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC 8a: Transfer of substance or preparation (charging/ discharging) from/to

	vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities. PROC 15: Use as laboratory reagent.
Environmental Release Category(ies):	ERC 6a: Industrial use resulting in manufacture of another substance (use of intermediates)
Specific Environmental Release Category:	ESVOC SpERC 6.1a.v1
Processes, tasks, activities covered	
Use of the substance as an intermediate (not related to Strictly Controlled Conditions). Includes recycling/recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.	
Section 2: Operation conditions and risk management measures	
2.1 Control of worker exposure	
Product Characteristics	
Physical form of product:	Liquid. Vapour pressure: < 0.5 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Frequency and duration of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).
Other operational conditions affecting exposure:	Operation is carried out at elevated temperature (> 20°C above ambient temperature). Assumes a good basic standard of occupational hygiene is implemented.
Contributing Scenarios	
Contributing Scenarios/Product Category	**Specific Risk Management Measures & Operating Conditions**
General measures applicable to all activities:	Control of any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: ensure relevant staff are informed of the nature of the exposure and are aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clean up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination immediately. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.
General exposures (closed systems):	Handle within a closed system.
General exposures (open systems):	Wear suitable gloves tested to EN 374.
Process sampling:	No other specific measures identified.
Bulk closed loading and unloading:	Handle within a closed system. Wear suitable gloves tested to EN 374.
Bulk closed loading and unloading:	Wear suitable gloves tested to EN 374.
Laboratory activities:	No other specific measures identified.
Equipment cleaning and maintenance:	No other specific measures identified.
Bulk product storage:	Store substance within a closed system.
Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit acute inhalation toxicity and are classified as R20 (Harmful by inhalation) / H332 (Harmful if inhaled) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs. Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit irritation to the skin and are classified as R38 (Irritating	

to skin) / H315 (Causes skin irritation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R65 (Harmful: May cause lung damage if swallowed) / H304 (May be fatal if swallowed and enters airways). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMs necessary to protect from this adverse effect.

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R45 (May cause cancer) / H350 (May cause cancer). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL or DMEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in Section 2 of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect.

2.2 Control of Environmental Exposure

Product Characteristics
Substance is a complex UVCB. Predominantly hydrophobic.

Amounts Used

Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	350,000
Fraction of regional tonnage used locally:	0.043

Frequency and duration of use
Continuous release.

Emission days (days/year):	300

Environmental factors not influenced by risk management

Local freshwater dilution factor:	10
Local marine water dilution factor:	100

Other given operational conditions affecting environmental exposure

Release fraction to air from process (initial release prior to RMM)	0.001
Release fraction to wastewater from process (initial release prior to RMM)	0.00003
Release fraction to soil from process (initial release prior to RMM)	0.001

Technical conditions and measures at process level (source) to prevent release
Common practices vary across sites, thus conservative process release estimated used.

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Risk from environmental exposure is driven by freshwater sediment. Prevent discharge of undissolved substance to or recover from onsite wastewater.

Treat air emission to provide a typical removal efficiency of (%):	80
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency (%):	≥ 51.7
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0

Organisation measures to prevent/limit release from site
Prevent discharge of undissolved substance to or recover from onsite wastewater.
Do not apply industrial sludge to natural soils.
Sludge should be incinerated, contained or reclaimed.

Estimated substance removal from wastewater via domestic sewage treatment (%):	94.1
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94.1
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (Kg/d):	410,000
Assumed domestic sewage treatment plant flow (m^3/d):	2,000

Conditions and measures related to external treatment of waste for disposal

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

Conditions and measures related to external recovery of waste

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

Section 3: Exposure Estimation
3.1 Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.
3.2 Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.
Section 4: Guidance to check the compliance with the exposure scenario
4.1 Health
Predicted exposures are not expected to exceed the DNEL or DMEL when Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for dermal irritant health effects. Available hazard data do not support the need for a DNEL to be established for other irritant health effects. Risk Management Measures are based on qualitative risk characterisation.
4.2 Environment
Guidance is based on assumed operating conditions which may or may not be applicable to all sites; thus scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Envirnonmental-Release-Classes.pdf).

3. Distribution of substance – Industrial

Section 1: Exposure scenario **Vacuum of Hydrocracked Gas Oils and Distillate Fuels**	
Title	
Distribution of the substance	
Use Descriptor	
Sector(s) of use:	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites.
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC 8a: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities. PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC 15: Use as laboratory reagent.
Environmental Release Category(ies):	ERC 1: Manufacture of substances. ERC 2: Formulation of preparations. ERC 3: Formulation in materials. ERC 4: Industrial use of processing aids in processes and products, not becoming part of articles. ERC 5: Industrial use resulting in inclusion into or onto a matrix. ERC 6a: Industrial use resulting in manufacture of another substance (use of intermediates). ERC 6b: Industrial use of reactive processing aids. ERC 6c: Industrial use of monomers for manufacture of thermoplastics. ERC 6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers. ERC 7: Industrial use of substances in closed systems.
Specific Environmental Release Category:	ESVOC SpERC 1.1b.v1
Processes, tasks, activities covered	
Loading (including marine vessel/barge, road/rail car and IBC loading), and repacking (including drums and small packs) of substance, including its sampling, storage, unloading distribution and associated laboratory activities.	

Section 2: Operation conditions and risk management measures	
2.1 Control of worker exposure	
Product Characteristics	
Physical form of product:	Liquid. Vapour pressure: < 0.5 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Frequency of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).
Other operational conditions affecting exposure:	Assumes use at not more than 20°C above ambient temperature (unless stated otherwise). Assumes a good basic standard of occupational hygiene is implemented.
Contributing Scenarios	
Contributing Scenarios/Product Category	**Specific Risk Management Measures & Operating Conditions**
General measures applicable to all activities:	Control of any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: ensure relevant staff are informed of the nature of the exposure and are aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clean up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination immediately. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.
General exposures (closed systems):	Handle substance within a closed system.
General exposures (open systems):	Wear suitable gloves tested to EN 374.
Process sampling:	No other specific measures identified.
Laboratory activities:	No other specific measures identified.
Bulk closed loading and unloading:	Handle substance within a closed system. Wear suitable gloves tested to EN 374.
Bulk open loading and unloading:	Wear suitable gloves tested to EN 374.
Drum and small package filling:	Wear suitable gloves tested to EN 374.
Equipment cleaning and maintenance:	Wear chemically resistant gloves (tested to EN 374) in combination with ‘basic’ employee training.
Storage:	Store substance within a closed system.

Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit acute inhalation toxicity and are classified as R20 (Harmful by inhalation) / H332 (Harmful if inhaled) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.

Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit irritation to the skin and are classified as R38 (Irritating to skin) / H315 (Causes skin irritation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R65 (Harmful: May cause lung damage if swallowed) / H304 (May be fatal if swallowed and enters airways). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMs necessary to protect from this adverse effect.

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R45 (May cause cancer) / H350 (May cause

cancer). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL or DMEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in Section 2 of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect.	
2.2 Control of Environmental Exposure	
Product Characteristics Substance is a complex UVCB. Predominantly hydrophobic.	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	28,000,000
Fraction of regional tonnage used locally:	0.002
Frequency and duration of use Continuous release.	
Emission days (days/year):	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	0.001
Release fraction to wastewater from process (initial release prior to RMM)	0.000001
Release fraction to soil from process (initial release prior to RMM)	0.00001
Technical conditions and measures at process level (source) to prevent release Common practices vary across sites, thus conservative process release estimated used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Risk from environmental exposure is driven by freshwater sediment. Prevent discharge of undissolved substance to or recover from onsite wastewater.	
Treat air emission to provide a typical removal efficiency of (%):	90
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency (%):	≥ 9.6
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0
Organisation measures to prevent/limit release from site Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Estimated substance removal from wastewater via domestic sewage treatment (%):	94.1
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94.1
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (Kg/d):	410,000
Assumed domestic sewage treatment plant flow (m^3/d):	2,000
Conditions and measures related to external treatment of waste for disposal	
The substance is consumed during use and no waste of the substance is generated.	
Conditions and measures related to external recovery of waste	
The substance is consumed during use and no waste of the substance is generated.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DNEL or DMEL when Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels. Available hazard data do not	

support the need for a DNEL to be established for dermal irritant health effects. Available hazard data do not support the need for a DNEL to be established for other irritant health effects. Risk Management Measures are based on qualitative risk characterisation.
4.2 Environment
Guidance is based on assumed operating conditions which may or may not be applicable to all sites; thus scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Envirnonmental-Release-Classes.pdf).

4. Formulation and (Re)packing of substance – Industrial

Section 1: Exposure scenario **Vacuum of Hydrocracked Gas Oils and Distillate Fuels**	
Title	
Formulation and (Re)packing of substances and mixtures	
Use Descriptor	
Sector(s) of use:	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites. SU 10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys).
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC 8a: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities. PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC 14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation. PROC 15: Use as laboratory reagent.
Environmental Release Category(ies):	ERC 2: Formulation of preparations.
Specific Environmental Release Category:	ESVOC SpERC 2.2.v1
Processes, tasks, activities covered	
Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, material transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.	
Section 2: Operation conditions and risk management measures	
2.1 Control of worker exposure	
Product Characteristics	
Physical form of product:	Liquid. Vapour pressure: < 0.5 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Frequency and duration of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).
Other operational conditions affecting exposure:	Assumes use at not more than 20°C above ambient temperature (unless stated otherwise). Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios	
Contributing Scenarios/Product Category	**Specific Risk Management Measures & Operating Conditions**
General measures applicable to all activities:	Control of any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: ensure relevant staff are informed of the nature of the exposure and are aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clean up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination immediately. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.
General exposures (closed systems):	Handle substance within a closed system.
General exposures (open systems):	Wear suitable gloves tested to EN 374.
Process sampling:	No other specific measures identified.
Drum/batch transfers:	Use drum pumps or carefully pour from container. Wear chemical-resistant gloves (tested to EN 374) in combination with 'basic' employee training.
Bulk transfers:	Handle substance within a closed system. Wear suitable gloves tested to EN 374.
Mixing operations (open systems):	Provide extract ventilation to points where emissions occur. Wear chemical-resistant gloves (tested to EN 374) in combination with 'basic' employee training.
Production or preparation or articles by tableting, compression, extrusion or pelletisation:	Wear suitable gloves tested to EN 374.
Laboratory activities:	No other specific measures identified.
Equipment cleaning and maintenance:	Drain down system prior to equipment break-in or maintenance. Wear suitable gloves tested to EN 374.
Storage:	Store substance within a closed system.

Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit acute inhalation toxicity and are classified as R20 (Harmful by inhalation) / H332 (Harmful if inhaled) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.

Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit irritation to the skin and are classified as R38 (Irritating to skin) / H315 (Causes skin irritation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R65 (Harmful: May cause lung damage if swallowed) / H304 (May be fatal if swallowed and enters airways). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMs necessary to protect from this adverse effect.

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R45 (May cause cancer) / H350 (May cause cancer). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL or DMEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in Section 2 of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect.

2.2 Control of Environmental Exposure	
Product Characteristics Substance is a complex UVCB. Predominantly hydrophobic.	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	28,000,000
Fraction of regional tonnage used locally:	0.0011
Frequency and duration of use Continuous release.	
Emission days (days/year):	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	0.01
Release fraction to wastewater from process (initial release prior to RMM)	0.00002
Release fraction to soil from process (initial release prior to RMM)	0.0001
Technical conditions and measures at process level (source) to prevent release Common practices vary across sites, thus conservative process release estimated used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Risk from environmental exposure is driven by freshwater sediment. Prevent discharge of undissolved substance to or recover from onsite wastewater.	
Treat air emission to provide a typical removal efficiency of (%):	0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency (%):	≥ 60.0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0
Organisation measures to prevent/limit release from site Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Estimated substance removal from wastewater via domestic sewage treatment (%):	91.1
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	91.1
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (Kg/d):	680,000
Assumed domestic sewage treatment plant flow (m^3/d):	2,000
Conditions and measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DNEL or DMEL when Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for dermal irritant health effects. Available hazard data do not support the need for a DNEL to be established for other irritant health effects. Risk Management Measures are based on qualitative risk characterisation.	

4.2 Environment
Guidance is based on assumed operating conditions which may or may not be applicable to all sites; thus scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Envirnonmental-Release-Classes.pdf).

5. Use of substance in metal working fluids/rolling oils – Industrial

Section 1: Exposure scenario **Vacuum of Hydrocracked Gas Oils and Distillate Fuels**	
Title	
Use in metal working fluids/rolling oils	
Use Descriptor	
Sector(s) of use:	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites.
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC 7: Industrial spraying. PROC 8a: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities. PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC 10: Roller application or brushing. PROC 13: Treatment of articles by dipping and pouring. PROC 17: Lubrication at high energy conditions and in partly open process.
Environmental Release Category(ies):	ERC 4: Industrial use of processing aids in processes and products, not becoming part of articles.
Specific Environmental Release Category:	ESVOC SpERC 4.7a.v1
Processes, tasks, activities covered	
Covers the use in formulated metal working fluids (MWFs)/rolling oils including transfer operations, rolling and annealing activities, cutting/machining activities, automated and manual application of corrosion protections (including brushing, dipping and spraying), equipment maintenance, draining and disposal of waste oils.	
Section 2: Operation conditions and risk management measures	
2.1 Control of worker exposure	
Product Characteristics	
Physical form of product:	Liquid. Vapour pressure: < 0.5 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Frequency and duration of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).
Other operational conditions affecting exposure:	Assumes use at not more than 20°C above ambient temperature (unless stated otherwise). Assumes a good basic standard of occupational hygiene is implemented.
Contributing Scenarios	
Contributing Scenarios/Product Category	**Specific Risk Management Measures & Operating Conditions**
General measures applicable to all activities:	Control of any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush

	equipment where possible prior to maintenance. Where there is potential for exposure: ensure relevant staff are informed of the nature of the exposure and are aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clean up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination immediately. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.
General exposures (closed systems):	Handle substance within a closed system.
General exposures (open systems):	Provide extract ventilation to points where emissions occur.
Bulk transfers:	Handle substance within a closed system. Wear suitable gloves tested to EN 374.
Filling/preparation of equipment from drums or containers:	Wear suitable gloves tested to EN 374.
Process sampling:	No other specific measures identified.
Metal machining operations:	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Provide a good standard of general ventilation (not less that 3 to 5 air changes per hour). Wear suitable gloves (tested to EN 374), coveralls and eye protection.
Treatment by dipping and pouring:	Wear suitable gloves tested to EN 374.
Spraying:	Wear chemical-resistant gloves (tested to EN 374) in combination with ‘basic’ employee training.
Manual roller, spreader, flow application:	Wear chemical-resistant gloves (tested to EN 374) in combination with ‘basic’ employee training.
Automated metal rolling/forming:	Handle substance within in a predominantly closed system provided with extract ventilation.
Semi-automated metal rolling/forming:	Provide extract ventilation to points where emissions occur.
Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance. Wear chemical-resistant gloves (tested to EN 374) in combination with ‘basic’ employee training.
Storage:	Store substance in a closed system.

Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit acute inhalation toxicity and are classified as R20 (Harmful by inhalation) / H332 (Harmful if inhaled) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.

Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit irritation to the skin and are classified as R38 (Irritating to skin) / H315 (Causes skin irritation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R65 (Harmful: May cause lung damage if swallowed) / H304 (May be fatal if swallowed and enters airways). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMs necessary to protect from this adverse effect.

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R45 (May cause cancer) / H350 (May cause cancer). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL or DMEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in Section 2 of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect.

2.2 Control of Environmental Exposure

Product Characteristics
Substance is a complex UVCB. Predominantly hydrophobic.

Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	10,000
Fraction of regional tonnage used locally:	0.01
Frequency and duration of use Continuous release.	
Emission days (days/year):	20
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	0.02
Release fraction to wastewater from process (initial release prior to RMM)	0.000003
Release fraction to soil from process (initial release prior to RMM)	0
Technical conditions and measures at process level (source) to prevent release Common practices vary across sites, thus conservative process release estimated used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Risk from environmental exposure is driven by freshwater. Prevent discharge of undissolved substance to or recover from onsite wastewater. No wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%):	70
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency (%):	≥ 8.3
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0
Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Estimated substance removal from wastewater via domestic sewage treatment (%):	94.1
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94.1
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (Kg/d):	78,000
Assumed domestic sewage treatment plant flow (m^3/d):	2,000
Conditions and measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DNEL or DMEL when Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for dermal irritant health effects. Available hazard data do not support the need for a DNEL to be established for other irritant health effects. Risk Management Measures are based on qualitative risk characterisation.	
4.2 Environment	
Guidance is based on assumed operating conditions which may or may not be applicable to all sites; thus scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal	

efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Envirnonmental-Release-Classes.pdf).

6. Use of substance as release agents or binders – Industrial

Section 1: Exposure scenario **Vacuum of Hydrocracked Gas Oils and Distillate Fuels**	
Title	
Use as release agents or binders	
Use Descriptor	
Sector(s) of use:	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites.
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC 6: Calendering operations. PROC 7: Industrial spraying. PROC 8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities. PROC 10: Roller application or brushing. PROC 13: Treatment of articles by dipping and pouring. PROC 14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation.
Environmental Release Category(ies):	ERC 4: Industrial use of processing aids in processes and products, not becoming part of articles.
Specific Environmental Release Category:	ESVOC SpERC 4.10a.v1
Processes, tasks, activities covered	
Covers the use as binders and release agents including material transfers, mixing, application (including spraying and brushing), mould forming and casting and handling of waste.	
Section 2: Operation conditions and risk management measures	
2.1 Control of worker exposure	
Product Characteristics	
Physical form of product:	Liquid. Vapour pressure: < 0.5 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Frequency and duration of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).
Other operational conditions affecting exposure:	Assumes use at not more than 20°C above ambient temperature (unless stated otherwise). Assumes a good basic standard of occupational hygiene is implemented.
Contributing Scenarios	
Contributing Scenarios/Product Category	**Specific Risk Management Measures & Operating Conditions**
General measures applicable to all activities:	Control of any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: ensure relevant staff are informed of the nature of the exposure and are aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clean up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for

	indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination/spills immediately. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.
Bulk transfers:	Handle substance within a closed system.
Drum/batch transfers:	Wear chemical-resistant gloves (tested to EN 374) in combination with 'basic' employee training.
Mixing operations (closed systems):	No other specific measures identified.
Mixing operations (open systems):	Wear chemical-resistant gloves (tested to EN 374) in combination with 'basic' employee training.
Mould forming:	Wear chemical-resistant gloves (tested to EN 374) in combination with 'basic' employee training.
Casting operations (open systems):	Minimise exposure by partial enclosure for the operation or equipment and provide extract ventilation at openings. Wear suitable gloves tested to EN 374.
Machine spraying:	Minimise exposure by extracted full enclosure for the operation or equipment. Wear suitable gloves tested to EN 374.
Manual spraying:	Wear a full face respirator conforming to EN 140 with Type A/P2 filter or better. Wear suitable gloves (tested to EN 374), coveralls and eye protection. Ensure operatives are trained to minimise exposures.
Manual roller, spreader, flow application:	Wear chemical-resistant gloves (tested to EN 374) in combination with specific activity training.
Equipment cleaning and maintenance:	Drain down system prior to equipment break-in or maintenance. Wear chemical-resistant gloves (tested to EN 374) in combination with 'basic' employee training.
Storage:	Store substance within a closed system.

Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit acute inhalation toxicity and are classified as R20 (Harmful by inhalation) / H332 (Harmful if inhaled) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.

Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit irritation to the skin and are classified as R38 (Irritating to skin) / H315 (Causes skin irritation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R65 (Harmful: May cause lung damage if swallowed) / H304 (May be fatal if swallowed and enters airways). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMs necessary to protect from this adverse effect.

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R45 (May cause cancer) / H350 (May cause cancer). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL or DMEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in Section 2 of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect.

2.2 Control of Environmental Exposure

Product Characteristics
Substance is a complex UVCB. Predominantly hydrophobic.

Amounts Used

Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	14,000
Fraction of regional tonnage used locally:	0.18

Frequency and duration of use
Continuous release.

Emission days (days/year):	100
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	1.0
Release fraction to wastewater from process (initial release prior to RMM)	0.0000003
Release fraction to soil from process (initial release prior to RMM)	0
Technical conditions and measures at process level (source) to prevent release Common practices vary across sites, thus conservative process release estimated used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Risk from environmental exposure is driven by freshwater sediment. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%):	80
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency (%):	≥ 59.2
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0
Organisation measures to prevent/limit release from site Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Estimated substance removal from wastewater via domestic sewage treatment (%):	94.1
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94.1
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (Kg/d):	170,000
Assumed domestic sewage treatment plant flow (m^3/d):	2,000
Conditions and measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DNEL or DMEL when Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for dermal irritant health effects. Available hazard data do not support the need for a DNEL to be established for other irritant health effects. Risk Management Measures are based on qualitative risk characterisation.	
4.2 Environment	
Guidance is based on assumed operating conditions which may or may not be applicable to all sites; thus scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Envirnonmental-Release-Classes.pdf).	

7. Use of substance as release agents or binders – Professional

Section 1: Exposure scenario **Vacuum of Hydrocracked Gas Oils and Distillate Fuels**	
Title	
Use as release agents or binders	
Use Descriptor	
Sector(s) of use:	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen).
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC 6: Calendering operations. PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC 10: Roller application or brushing. PROC 11: Non-industrial spraying. PROC 14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation.
Environmental Release Category(ies):	ERC 8a: Wide dispersive indoor use of processing aids in open systems. ERC 8d: Wide dispersive outdoor use of processing aids in open systems.
Specific Environmental Release Category:	ESVOC SpERC 8.10b.v1
Processes, tasks, activities covered	
Covers the use as binders and release agents including material transfers, mixing, application by spraying and brushing and handling of waste.	
Section 2: Operation conditions and risk management measures	
2.1 Control of worker exposure	
Product Characteristics	
Physical form of product:	Liquid. Vapour pressure: < 0.5 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Frequency and duration of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).
Other operational conditions affecting exposure:	Assumes use at not more than 20°C above ambient temperature (unless stated otherwise). Assumes a good basic standard of occupational hygiene is implemented.
Contributing Scenarios	
Contributing Scenarios/Product Category	**Specific Risk Management Measures & Operating Conditions**
General measures applicable to all activities:	Control of any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: ensure relevant staff are informed of the nature of the exposure and are aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clean up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination/spills immediately. Wash off any skin contamination immediately. Provide

	basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying.
Material transfers (closed systems):	No other specific measures identified.
Drum/batch transfers:	Wear suitable gloves tested to EN 374.
Mixing operations (closed systems):	No other specific measures identified.
Mixing operations (open systems):	Wear suitable gloves tested to EN 374.
Mould forming:	Provide extract ventilation to points where emissions occur. Wear suitable gloves tested to EN 374.
Casting operations with local exhaust ventilation:	Provide extract ventilation to points where emissions occur. Wear suitable gloves tested to EN 374.
Casting operations without local exhaust ventilation:	Wear a respirator conforming to EN 140 with Type A/P2 filter or better. Wear suitable gloves (tested to EN 374), coveralls and eye protection.
Manual spraying with local exhaust ventilation:	Carry out in a vented booth or extracted enclosure. Wear suitable gloves (tested to EN 374), coveralls and eye protection. Ensure operatives are trained to minimise exposures.
Manual spraying without local exhaust ventilation:	Wear a respirator conforming to EN 140 with Type A/P2 filter or better. Wear suitable gloves (tested to EN 374), coveralls and eye protection. Ensure operatives are trained to minimise exposures.
Manual roller, spreader, flow application:	Wear chemical-resistant gloves (tested to EN 374) in combination with specific activity employee training.
Equipment cleaning and maintenance:	Drain down system prior to equipment break-in or maintenance. Wear chemical-resistant gloves (tested to EN 374) in combination with 'basic' employee training.
Storage:	Store substance in a closed system.

Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit acute inhalation toxicity and are classified as R20 (Harmful by inhalation) / H332 (Harmful if inhaled) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.

Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit irritation to the skin and are classified as R38 (Irritating to skin) / H315 (Causes skin irritation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R65 (Harmful: May cause lung damage if swallowed) / H304 (May be fatal if swallowed and enters airways). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMs necessary to protect from this adverse effect.

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R45 (May cause cancer) / H350 (May cause cancer). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL or DMEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in Section 2 of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect.

2.2 Control of Environmental Exposure

Product Characteristics
Substance is a complex UVCB. Predominantly hydrophobic.

Amounts Used

Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	2,900
Fraction of regional tonnage used locally:	0.0005

Frequency and duration of use
Continuous release.

Emission days (days/year):	365

Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	0.95
Release fraction to wastewater from process (initial release prior to RMM)	0.025
Release fraction to soil from process (initial release prior to RMM)	0.025
Technical conditions and measures at process level (source) to prevent release Common practices vary across sites, thus conservative process release estimated used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Risk from environmental exposure is driven by freshwater sediment. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%):	Not applicable.
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency (%):	≥ 8.3
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0
Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Estimated substance removal from wastewater via domestic sewage treatment (%):	94.1
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94.1
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (Kg/d):	62
Assumed domestic sewage treatment plant flow (m^3/d):	2,000
Conditions and measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DNEL or DMEL when Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for dermal irritant health effects. Available hazard data do not support the need for a DNEL to be established for other irritant health effects. Risk Management Measures are based on qualitative risk characterisation.	
4.2 Environment	
Guidance is based on assumed operating conditions which may or may not be applicable to all sites; thus scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Envirnonmental-Release-Classes.pdf).	

8. Use of substance as a fuel – Industrial

Section 1: Exposure scenario **Vacuum of Hydrocracked Gas Oils and Distillate Fuels**	
Title	
Use as a fuel	
Use Descriptor	
Sector(s) of use:	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites.
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC 16: Using material as fuel sources, limited exposure to unburned product to be expected.
Environmental Release Category(ies):	ERC 7: Industrial use of substances in closed systems.
Specific Environmental Release Category:	ESVOC SpERC 7.12a.v1
Processes, tasks, activities covered	
Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.	
Section 2: Operation conditions and risk management measures	
2.1 Control of worker exposure	
Product Characteristics	
Physical form of product:	Liquid. Vapour pressure: < 0.5 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Frequency and duration of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).
Other operational conditions affecting exposure:	Assumes use at not more than 20°C above ambient temperature (unless stated otherwise). Assumes a good basic standard of occupational hygiene is implemented.
Contributing Scenarios	
Contributing Scenarios/Product Category	**Specific Risk Management Measures & Operating Conditions**
General measures applicable to all activities:	Control of any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: ensure relevant staff are informed of the nature of the exposure and are aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clean up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination/spills immediately. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.
Bulk transfers:	Wear suitable gloves tested to EN 374.
Drum/batch transfers:	Wear suitable gloves tested to EN 374.
Use as a fuel (closed systems):	No other specific measures identified.

Equipment cleaning and maintenance:	Drain down system prior to equipment break-in or maintenance. Wear chemical-resistant gloves (tested to EN 374) in combination with 'basic' employee training.
Storage:	Store substance within a closed system.

Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit acute inhalation toxicity and are classified as R20 (Harmful by inhalation) / H332 (Harmful if inhaled) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.

Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit irritation to the skin and are classified as R38 (Irritating to skin) / H315 (Causes skin irritation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R65 (Harmful: May cause lung damage if swallowed) / H304 (May be fatal if swallowed and enters airways). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMs necessary to protect from this adverse effect.

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R45 (May cause cancer) / H350 (May cause cancer). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL or DMEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in Section 2 of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect.

2.2 Control of Environmental Exposure

Product Characteristics
Substance is a complex UVCB. Predominantly hydrophobic.

Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	4,500,000
Fraction of regional tonnage used locally:	0.34

Frequency and duration of use
Continuous release.

Emission days (days/year):	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	0.005
Release fraction to wastewater from process (initial release prior to RMM)	0.00001
Release fraction to soil from process (initial release prior to RMM)	0

Technical conditions and measures at process level (source) to prevent release
Common practices vary across sites, thus conservative process release estimated used.

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Risk from environmental exposure is driven by freshwater sediment. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.

Treat air emission to provide a typical removal efficiency of (%):	95
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency (%):	≥ 97.7
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 60.4

Organisation measures to prevent/limit release from site
Prevent discharge of undissolved substance to or recover from onsite wastewater.
Do not apply industrial sludge to natural soils.
Sludge should be incinerated, contained or reclaimed.

Estimated substance removal from wastewater via domestic sewage treatment (%):	94.1

Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94.1
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (Kg/d):	5,500,000
Assumed domestic sewage treatment plant flow (m^3/d):	2,000
Conditions and measures related to external treatment of waste for disposal	
Combustion emissions considered in regional exposure assessment.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DNEL or DMEL when Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for dermal irritant health effects. Available hazard data do not support the need for a DNEL to be established for other irritant health effects. Risk Management Measures are based on qualitative risk characterisation.	
4.2 Environment	
Guidance is based on assumed operating conditions which may or may not be applicable to all sites; thus scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Envirnonmental-Release-Classes.pdf).	

9. Use of substance as a fuel – Professional

Section 1: Exposure scenario **Vacuum of Hydrocracked Gas Oils and Distillate Fuels**	
Title	
Use as a fuel	
Use Descriptor	
Sector(s) of use:	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen).
Process Category(ies):	PROC 1: Use in closed process, no likelihood of exposure. PROC 2: Use in closed, continuous process with occasional controlled exposure. PROC 3: Use in closed batch process (synthesis or formulation). PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC 16: Using material as fuel sources, limited exposure to unburned product to be expected.
Environmental Release Category(ies):	ERC 9a: Wide dispersive indoor use of substances in closed systems. ERC 9b: Wide dispersive outdoor use of substances in closed systems.
Specific Environmental Release Category:	ESVOC SpERC 9.12b.v1
Processes, tasks, activities covered	
Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.	

Section 2: Operation conditions and risk management measures	
2.1 Control of worker exposure	
Product Characteristics	
Physical form of product:	Liquid. Vapour pressure: < 0.5 kPa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Frequency and duration of use:	Covers daily exposures of up to 8 hours (unless stated otherwise).
Other operational conditions affecting exposure:	Assumes use at not more than 20°C above ambient temperature (unless stated otherwise). Assumes a good basic standard of occupational hygiene is implemented.
Contributing Scenarios	
Contributing Scenarios/Product Category	**Specific Risk Management Measures & Operating Conditions**
General measures applicable to all activities:	Control of any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: ensure relevant staff are informed of the nature of the exposure and are aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clean up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants):	Avoid direct skin contact with the product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with the substance is likely. Clean up contamination/spills immediately. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.
Bulk transfers:	Wear suitable gloves tested to EN 374.
Drum/batch transfers:	Use drum pumps or carefully pour from container. Wear suitable gloves tested to EN 374.
Refuelling:	Wear suitable gloves tested to EN 374.
Use as a fuel (closed systems):	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) or ensure operation is undertaken outdoors.
Equipment cleaning and maintenance:	Drain down system prior to equipment break-in or maintenance. Wear chemical-resistant gloves (tested to EN 374) in combination with 'basic' employee training.
Storage:	Store substance within a closed system.

Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit acute inhalation toxicity and are classified as R20 (Harmful by inhalation) / H332 (Harmful if inhaled) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.

Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit irritation to the skin and are classified as R38 (Irritating to skin) / H315 (Causes skin irritation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R65 (Harmful: May cause lung damage if swallowed) / H304 (May be fatal if swallowed and enters airways). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMs necessary to protect from this adverse effect.

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R45 (May cause cancer) / H350 (May cause cancer). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL or DMEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in Section 2

of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect.	
2.2 Control of Environmental Exposure	
Product Characteristics Substance is a complex UVCB. Predominantly hydrophobic.	
Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	6,700,000
Fraction of regional tonnage used locally:	0.0005
Frequency and duration of use Continuous release.	
Emission days (days/year):	365
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other given operational conditions affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	0.0001
Release fraction to wastewater from process (initial release prior to RMM)	0.00001
Release fraction to soil from process (initial release prior to RMM)	0.00001
Technical conditions and measures at process level (source) to prevent release Common practices vary across sites, thus conservative process release estimated used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Risk from environmental exposure is driven by freshwater sediment. If discharging to domestic sewage plant, no onsite wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%):	Not applicable.
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency (%):	≥ 8.3
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%):	≥ 0
Organisation measures to prevent/limit release from site Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to municipal sewage treatment plant	
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94.1
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (Kg/d):	140,000
Assumed domestic sewage treatment plant flow (m^3/d):	2,000
Conditions and measures related to external treatment of waste for disposal	
Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Section 3: Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise stated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.	
Section 4: Guidance to check the compliance with the exposure scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DNEL or DMEL when Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels. Available hazard data do not support the need for a DNEL to be established for dermal irritant health effects. Available hazard data do not support	

the need for a DNEL to be established for other irritant health effects. Risk Management Measures are based on qualitative risk characterisation.
4.2 Environment
Guidance is based on assumed operating conditions which may or may not be applicable to all sites; thus scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Envirnonmental-Release-Classes.pdf).

10. Use of substance as a fuel – Consumer

Section 1: Exposure scenario **Vacuum of Hydrocracked Gas Oils and Distillate Fuels**	
Title	
Use as a fuel	
Use Descriptor	
Sector(s) of use:	SU 21: Consumer uses: Private households (= general public = consumers).
Product Category(ies):	PC 13: Fuels.
Environmental Release Category(ies):	ERC 9a: Wide dispersive indoor use of substances in closed systems. ERC 9b: Wide dispersive outdoor use of substances in closed systems.
Specific Environmental Release Category:	ESVOC SpERC 9.12c.v1
Processes, tasks, activities covered	
Covers consumer uses of liquid fuels.	
Section 2: Operation conditions and risk management measures	
2.1 Control of worker exposure	
Product Characteristics	
Physical form of product:	Liquid. Vapour pressure: > 10 Pa at standard temperature and pressure.
Concentration of substance in product:	Covers percentages of substance in product up to 100% (unless stated otherwise).
Amounts used:	For each use event, covers use amounts of up to 37,500 g. Covers skin contact area of up to 420 cm^2.
Frequency and duration of use:	Covers use up to 0.143 times per day (i.e. one use every 7 days). Covers exposure of up to 2 hours per use event.
Contributing Scenarios	
Contributing Scenarios/Product Category	**Specific Risk Management Measures & Operating Conditions**
Liquid: Automotive refuelling	Covers concentrations of up to 100%. Covers use up to 52 days/year. Covers use up to 1 time per day. Covers skin contact area up to 210 cm^2. For each use event, covers use amounts up to 37,500 g. Covers outdoor use. Covers use in room size of 100 m^3. Covers exposure of up to 0.05 hours (3 min) per use event. No specific risk management measures identified beyond those operational conditions stated.
Liquid: Garden equipment - Use	Covers concentrations of up to 100%. Covers use up to 26 days/year. Covers use up to 1 time a day. For each use event, covers use amounts up to 750 g. Covers outdoor use. Covers use in room size of 100 m^3. Covers exposure of up to 2 hours per use event. No specific risk management measures identified beyond those operational conditions stated.
Liquid: Garden equipment - refuelling	Covers concentrations of up to 100%.

	Covers use up to 26 days/year. Covers use up to 1 time a day. Covers skin contact area up to 420 cm^2. For each use event, covers use amounts up to 750 g. Covers use in a one car garage (34 m^3) under typical ventilation. Covers use in room size of 34 m^3. Covers exposure of up to 0.03 hours (1.8 min). No specific risk management measures identified beyond those operational conditions stated.

Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit acute inhalation toxicity and are classified as R20 (Harmful by inhalation) / H332 (Harmful if inhaled) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.

Vacuum or hydrocracked Gas Oils and Distillate Fuels exhibit irritation to the skin and are classified as R38 (Irritating to skin) / H315 (Causes skin irritation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but appropriate toxicity data exists to allow a qualitative characterisation. Please see Section 2 of the SDS for the necessary RMMs.

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R65 (Harmful: May cause lung damage if swallowed) / H304 (May be fatal if swallowed and enters airways). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMS in Section 2 of the SDS aim to define the appropriate RMMs necessary to protect from this adverse effect.

Vacuum or hydrocracked Gas Oils and Distillate Fuels are classified as R45 (May cause cancer) / H350 (May cause cancer). The available data for this adverse effect do not provide quantitative dose-response information for a DNEL or DMEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in Section 2 of the SDS aim to define the appropriate RMMS necessary to protect from this adverse effect.

2.2 Control of Environmental Exposure

Product Characteristics
Substance is a complex UVCB. Predominantly hydrophobic.

Amounts Used	
Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	16,000,000
Fraction of regional tonnage used locally:	0.0005
Frequency and duration of use Continuous release.	
Emission days (days/year):	365
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%):	94.1
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (Kg/d):	350,000
Assumed domestic sewage treatment plant flow (m^3/d):	2,000

Conditions and measures related to external treatment of waste for disposal

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

Conditions and measures related to external recovery of waste

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

Section 3: Exposure Estimation

3.1 Health

The ECETOC TRA tool has been used to estimate consumer exposures consistent with the contact of ECETOC report #107 and Chapter R15 of the IR & CSA TGD. Where exposure determinants differ to these sources they are indicated.

3.2 Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk Model.
Section 4: Guidance to check the compliance with the exposure scenario
4.1 Health
Users are advised to consider national Occupational Exposure Limits (OELs) or other equivalent values. Predicted exposures are not expected to exceed the DNEL or DMEL when Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, users should ensure that risks are managed to at least equivalent levels.
4.2 Environment
Guidance is based on assumed operating conditions which may or may not be applicable to all sites; thus scaling may be necessary to define appropriate site-specific risk management measures. Further details on scaling and control technologies are provided in SpERC factsheet (http://www.cefic.org/Documents/IndustrySupport/REACH-Implementation/Guidance-and-Tools/SPERCs-Specific-Envirnonmental-Release-Classes.pdf).

Revision Date 11/08/2014
Revision 9
Supersedes date 20/08/2013

SAFETY DATA SHEET
Ferric chloride solution

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product name	Ferric chloride solution
Synonyms, Trade Names	Iron (III) chloride solution
REACH Registration number	01-2119497998-05
CAS-No.	7705-08-0
EC No.	231-729-4

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

Identified uses	Agrochemical uses Treatment of waste water. Intermediate Treatment of drinking water, has received approval by the European Committee for Standardisation. Use of iron salts in biogas production Use in adhesives and sealants Use of selected iron salts in land remediation applications Laboratory agent
Uses advised against	No specific uses advised against are identified.

1.3. Details of the supplier of the safety data sheet

Supplier

Industrial Chemicals Limited
Hogg Lane
Grays
Essex
RM17 5DU
United Kingdom
T:+44 (0)1375 389000
F:+44 (0)1375 389110
sds@icgl.co.uk

1.4. Emergency telephone number

+44 (0)1865 407333 (24-hour)

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical and Chemical Hazards	Met. Corr. 1 - H290
Human health	Acute Tox. 4 - H302;Skin Irrit. 2 - H315;Eye Dam. 1 - H318
Environment	Not classified.

Classification (1999/45/EEC) Xn;R22. Xi;R38, R41.

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

2.2. Label elements

EC No. 231-729-4

Contains Iron (III) chloride

Label In Accordance With (EC) No. 1272/2008

Ferric chloride solution

Signal Word	Danger	
Hazard Statements		
	H290	May be corrosive to metals.
	H302	Harmful if swallowed.
	H315	Causes skin irritation.
	H318	Causes serious eye damage.
Precautionary Statements		
	P280	Wear protective gloves/protective clothing/eye protection/face protection.
	P302+352	IF ON SKIN: Wash with plenty of soap and water.
	P305+351+338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
	P362	Take off contaminated clothing and wash before reuse.
Supplementary Precautionary Statements		
	P301+312	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
	P332+313	If skin irritation occurs: Get medical advice/attention.
	P390	Absorb spillage to prevent material damage.
	P406	Store in corrosive resistant/… container with a resistant inner liner.

2.3. Other hazards

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixtures

HYDROCHLORIC ACID ...% **1-5%**

CAS-No.: 7647-01-0 **EC No.: 231-595-7**

Classification (EC 1272/2008)	Classification (67/548/EEC)
Skin Corr. 1B - H314	C;R34
STOT SE 3 - H335	Xi;R37

Iron (II) chloride **0.1 - 1.0%**

CAS-No.: **EC No.:**

Classification (EC 1272/2008)	Classification (67/548/EEC)
Acute Tox. 4 - H302	Xn;R22.
Eye Dam. 1 - H318	Xi;R41.

Iron (III) chloride **40-60%**

CAS-No.: 7705-08-0 **EC No.:**

Classification (EC 1272/2008)	Classification (67/548/EEC)
Acute Tox. 4 - H302	Xn;R22.
Skin Irrit. 2 - H315	Xi;R38,R41.
Eye Dam. 1 - H318	

NICKEL DICHLORIDE **< 100 ppm**

CAS-No.: 7718-54-9 **EC No.: 231-743-0**

Ferric chloride solution

Classification (EC 1272/2008)	Classification (67/548/EEC)
Acute Tox. 3 - H301	Carc. Cat. 1;R49
Acute Tox. 3 - H331	Muta. Cat. 3;R68
Skin Irrit. 2 - H315	Repr. Cat. 2;R61
Resp. Sens. 1 - H334	T;R23/25,R48/23
Skin Sens. 1 - H317	Xi;R38
Muta. 2 - H341	R42/43
Carc. 1A - H350i	N;R50/53
Repr. 1B - H360D	
STOT RE 1 - H372	
Aquatic Acute 1 - H400	
Aquatic Chronic 1 - H410	

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

REACH Registration number 01-2119497998-05
CAS-No. 7705-08-0
EC No. 231-729-4

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Inhalation

Remove victim immediately from source of exposure.

Ingestion

Rinse mouth thoroughly. Get medical attention. Show this safety data sheet

Skin contact

Remove contaminated clothing immediately and wash skin with soap and water.

Eye contact

Rinse with water. Contact physician if discomfort continues.

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

General information

Symptoms of over exposure may include nausea, abdominal pain and dizziness. No long term effects from over exposure.

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

In case of ingestion, induced vomiting is not considered necessary.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Extinguishing media

Use fire-extinguishing media appropriate for surrounding materials. Carbon dioxide or dry powder. Water spray. Larger fires: Alcohol resistant foam. Do not use water jet as an extinguisher, as this will spread the fire.

Unsuitable extinguishing media

Water jet.

5.2. Special hazards arising from the substance or mixture

Hazardous combustion products

May give off toxic fumes in a fire.

5.3. Advice for firefighters

Protective equipment for fire-fighters

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

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Avoid inhalation of spray mist and contact with skin and eyes. Provide adequate ventilation.

6.2. Environmental precautions

Ferric chloride solution

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.

6.3. Methods and material for containment and cleaning up

Collect in containers and seal securely. Avoid generation and spreading of dust. Dampen spillage with water. Containers with collected spillage must be properly labelled with correct contents and hazard symbol. Dispose of via a licensed hazardous waste contractor. Wash contaminated area with water.

6.4. Reference to other sections

For personal protection, see section 8. For waste disposal, see section 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Avoid forming spray/aerosol mists. Provide good ventilation.

7.2. Conditions for safe storage, including any incompatibilities

Store in vessels suitable for substances of low pH (plastic vessels, or rubber-lined tanks). Store away from: Alkalis.

Storage Class

Corrosive storage.

7.3. Specific end use(s)

Specific Exposure Scenarios (not including those listed in section 1) should be discussed with the manufacturer

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Name	STD	TWA - 8 Hrs		STEL - 15 Min		Notes
HYDROCHLORIC ACID ...%	WEL	1 ppm	2 mg/m3	5 ppm	8 mg/m3	
Iron (II) chloride	WEL		1 mg/m3		2 mg/m3	
Iron (III) chloride	WEL	0.15 ppm	1 mg/m3	0.3 ppm	2 mg/m3	
NICKEL DICHLORIDE	WEL		0.1 mg/m3			

WEL = Workplace Exposure Limit.

DNEL

Dermal	Short Term	Systemic Effects	40	mg/kg/day
Inhalation.	Short Term	Systemic Effects	104	mg/m3
Dermal	Short Term	Local Effects	1 mg/cm2	
Inhalation.	Short Term	Local Effects	104	mg/m3
Dermal	Long Term	Systemic Effects	1.67	mg/kg/day
Inhalation.	Long Term	Systemic Effects	4.3	mg/m3
Dermal	Long Term	Local Effects	1 mg/cm2	
Inhalation.	Long Term	Local Effects	26	mg/m3

PNEC

Freshwater	0.001	mg/l
STP	1	mg/l

Iron (III) chloride (CAS: 7705-08-0)

Ingredient Comments

WEL = Workplace Exposure Limits

8.2. Exposure controls

Respiratory equipment

If mists are formed, a respirator must be worn. In case of inadequate ventilation or risk of inhalation of dust, use suitable respiratory equipment with particle filter (type P2).

Hand protection

Use protective gloves. Use protective gloves made of: Neoprene. Glove maufacturers' specifications should always be checked first.

Eye protection

Wear approved safety goggles.

Ferric chloride solution

Other Protection

Wear protective work clothing.

Hygiene measures

When using do not eat, drink or smoke. Promptly remove any clothing that becomes contaminated. Wash hands at the end of each work shift and before eating, smoking and using the toilet. Keep away from foodstuffs, beverages and feed.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance	Liquid
Colour	Yellow.
Odour	Slight odour. Ester.
Solubility	Soluble in water.
Initial boiling point and boiling range (°C)	>150'C
Melting point (°C)	-12'C
Bulk Density	1.43 kg/m3
Vapour pressure	8 Pa 25'C
Evaporation rate	Lower than water
pH-Value, Conc. Solution	~ 1.0
Viscosity	About 10 mPas 20
Solubility Value (G/100G H2O@20°C)	158 @ 20'C
Decomposition temperature (°C)	>240'C

Odour Threshold, Lower

Not known.

Odour Threshold, Upper

Not known.

Auto Ignition Temperature (°C)	>240'C
Partition Coefficient (N-Octanol/Water)	log Kow 1.9

Explosive under influence of flame.

Not considered to be explosive.

Will not support combustion

Not considered to be oxidising

9.2. Other information

Mol. Weight	162.21

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

No specific reactivity hazards associated with this product.

10.2. Chemical stability

Stable under normal temperature conditions and recommended use. If diluted to <~1% in water, ferric hydroxide is formed and flocculates out. In the event of release to the aquatic environment, this process counteracts the potential hazards of the substance, and does not add significantly to the ubiquitous iron in the environment.

10.3. Possibility of hazardous reactions

There are no hazardous reactions if handled and stored according to prescribed conditions.

Hazardous Polymerisation

Will not polymerise.

10.4. Conditions to avoid

Avoid excessive heat for prolonged periods of time.

10.5. Incompatible materials

Materials To Avoid

Strong oxidising substances.

Ferric chloride solution

10.6. Hazardous decomposition products

None under normal conditions.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Acute toxicity:

Acute Toxicity (Oral LD50)

300 mg/kg Rat

ATE (Dermal)

2000 mg/kg

Skin Corrosion/Irritation:

Irritating.

Serious eye damage/irritation:

Moderately Irritating.

Respiratory or skin sensitisation:

Not sensitising to skin

Germ cell mutagenicity:

Negative.

Carcinogenicity:

This substance has no evidence of carcinogenic properties.

Reproductive Toxicity:

Does not contain any substances known to be toxic to reproduction.

Specific target organ toxicity - single exposure:

Not classified as a specific target organ toxicant after a single exposure.

Specific target organ toxicity - repeated exposure:

STOT - Repeated exposure

Dose Level: 500 mg/kg Oral Rat

Target Organs

Liver

Reversible transient effects

Aspiration hazard:

No risk of aspiration

Toxicokinetics

Slowly absorbed by ingestion. Poorly absorbed through the skin. Will not accumilate in the body. Metabolism is expected with no known hadardous metabolites.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Acute Toxicity - Fish

LC50 6.8 mg/l Onchorhynchus mykiss (Rainbow trout)

Acute Toxicity - Aquatic Invertebrates

EC50 0.98 mg/l Daphnia magna

Acute Toxicity - Aquatic Plants

IC50 2.8 mg/l Freshwater algae

Ferric chloride solution

Acute Toxicity - Microorganisms

NOEC >1000 mg/l

12.2. Persistence and degradability

Degradability

The product is biodegradable. 55% over 28 days, with no plateaux reached

12.3. Bioaccumulative potential

Bioaccumulative potential

Will not bio-accumulate.

Partition coefficient

log Kow 1.9

12.4. Mobility in soil

Mobility:

The product has poor water-solubility. Mobility is expected to be low.

12.5. Results of PBT and vPvB assessment

The PBT and vPvB criteria in Annex XIII of the REACH Regulation do not apply.

12.6. Other adverse effects

Not available.

SECTION 13: DISPOSAL CONSIDERATIONS

General information

Must be disposed of as hazarous chemical waste. Do not allow product to reach the sewage system.

13.1. Waste treatment methods

SECTION 14: TRANSPORT INFORMATION

14.1. UN number

UN No. (ADR/RID/ADN)	2582
UN No. (IMDG)	2582
UN No. (ICAO)	2582

14.2. UN proper shipping name

Proper Shipping Name	FERRIC CHLORIDE SOLUTION
Proper Shipping Name	FERRIC CHLORIDE, SOLUTION

14.3. Transport hazard class(es)

ADR/RID/ADN Class	8
ADR/RID/ADN Class	Class 8: Corrosive substances.
ADR Label No.	8
IMDG Class	8
ICAO Class/Division	8

Transport Labels

14.4. Packing group

Ferric chloride solution

ADR/RID/ADN Packing group	III
IMDG Packing group	III
ICAO Packing group	III

14.5. Environmental hazards

14.6. Special precautions for user

EMS	F-A, S-B
Emergency Action Code	2X
Hazard No. (ADR)	80
Tunnel Restriction Code	(E)

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

SECTION 15: REGULATORY INFORMATION

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

EU Legislation

This product has been approved as a chemical used for the treatment of drinking water, under the appropriate BS EN Standard (see Sales Specification), and so it is also approved by the British Drinking Water Inspectorate.

15.2. Chemical Safety Assessment

A chemical safety assessment has been carried out.

SECTION 16: OTHER INFORMATION

General information

Some sedimentation can occur in this product. Even after filtering, slow sedimentation will occur. To avoid problems caused by this sedimentation, storage tanks should be cleaned every 1 to 2 years.

Revision Comments

Updated Section(s) 9, 16,

Issued By	Chief Chemist
Revision Date	11/08/2014
Revision	9
Supersedes date	20/08/2013

Risk Phrases In Full

R34	Causes burns.
R22	Harmful if swallowed.
R37	Irritating to respiratory system.
R38	Irritating to skin.
R49	May cause cancer by inhalation.
R61	May cause harm to the unborn child.
R42/43	May cause sensitisation by inhalation and skin contact.
R68	Possible risk of irreversible effects.
R41	Risk of serious damage to eyes.
R23/25	Toxic by inhalation and if swallowed.
R48/23	Toxic: danger of serious damage to health by prolonged exposure through inhalation.
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Ferric chloride solution

Hazard Statements In Full

H372	Causes damage to organs <<Organs>> through prolonged or repeated exposure.
H318	Causes serious eye damage.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H302	Harmful if swallowed.
H290	May be corrosive to metals.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317	May cause an allergic skin reaction.
H350i	May cause cancer by inhalation.
H335	May cause respiratory irritation.
H360D	May damage the unborn child.
H341	Suspected of causing genetic defects.
H331	Toxic if inhaled.
H301	Toxic if swallowed.
H410	Very toxic to aquatic life with long lasting effects.
H400	Very toxic to aquatic life.

SAFETY DATA SHEET

According to Regulation (EC) No 1907/2006 and its amendments

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

1.1. Product identifier

Product name:	**FLOPAM™ FO 4490 SSH**
Type of product:	Mixture.

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

Identified uses:	Processing aid for industrial applications.
Uses advised against:	None.

1.3. Details of the supplier of the safety data sheet

Company:	SNF (UK) Limited 1 Red Hall Crescent, Paragon Business Village Wakefield WF1 2DF United Kingdom
Telephone:	01924-311000
Telefax:	01924-311099
E-mail address:	regs@snf.com

1.4. Emergency telephone number

24-hour emergency number:	+33 477 36 87 25
National Poisons Information Centre:	01 8092566 or 01 8379964 (24/24, 7/7)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No.1272/2008:

Not classified.

2.2. Label elements

Labelling according to Regulation (EC) 1272/2008:

Hazard pictogram(s):	None.
Signal word:	None.

Hazard statement(s):	None.
Precautionary statement(s):	None.
Additional elements:	EUH210 - Safety data sheet available on request

2.3. Other hazards

Aqueous solutions or powders that become wet render surfaces extremely slippery.

PBT and vPvB assessment:
Not PBT or vPvB according to the criteria of Annex XIII of REACH.

For explanation of abbreviations see Section 16.

SECTION 3: Composition/information on ingredients

3.1. Substances
Not applicable, this product is a mixture.

3.2. Mixtures

Hazardous components

Adipic acid

Concentration/ -range:	<= 2.5%
EC-No.:	204-673-3
REACH Registration Number:	01-2119457561-38-XXXX
Classification according to Regulation (EC) No.1272/2008:	Eye Irrit. 2;H319

Sulphamidic acid

Concentration/ -range:	<= 2.5%
EC-No.:	226-218-8
REACH Registration Number:	01-2119982121-44-XXXX / 01-2119488633-28-XXXX
Classification according to Regulation (EC) No.1272/2008:	Skin Irrit. 2;H315, Eye Irrit. 2;H319, Aquatic Chronic 3;H412

For explanation of abbreviations see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:
Move to fresh air. Get medical attention if symptoms occur.

Skin contact:
Wash off with soap and plenty of water. Get medical attention if irritation develops and persists.

Eye contact:
Rinse immediately with plenty of water, also under the eyelids. Get medical attention.

Ingestion:
Rinse mouth. If conscious, give the victim plenty of water to drink. Induce vomiting, but only if victim is fully conscious.

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

Powder can cause localised skin irritation in folds of the skin or under tight clothing. Contact with dust can cause mechanical irritation or drying of the skin.

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

None.

Other information:
No information available.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:
Water. Water spray. Foam. Carbon dioxide (CO2). Dry powder.
Warning! Aqueous solutions or powders that become wet render surfaces extremely slippery.

Unsuitable extinguishing media:
None known.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products:
Thermal decomposition may produce: hydrogen chloride gas, nitrogen oxides (NOx), carbon oxides (COx). Ammonia (NH3). Hydrogen cyanide (hydrocyanic acid) may be produced in the event of combustion in an oxygen deficient atmosphere.

5.3. Advice for firefighters

Protective measures:
Wear self contained breathing apparatus for fire fighting if necessary.

Other information:
Aqueous solutions or powders that become wet render surfaces extremely slippery.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions:
Avoid contact with skin and eyes. Avoid dust formation. Avoid breathing dust. Aqueous solutions or powders that become wet render surfaces extremely slippery.

Protective equipment:
Wear adequate personal protective equipment (see Section 8 Exposure Controls/Personal Protection).

Emergency procedures:
Keep people away from spill/leak. Prevent further leakage or spillage if safe to do so.

6.2. Environmental precautions

As with all chemical products, do not flush into surface water.

6.3. Methods and material for containment and cleaning up

Small spills:
Do not flush with water. Clean up promptly by sweeping or vacuum.

Large spills:
Do not flush with water. Prevent unauthorized access. Sweep up and shovel into suitable containers for disposal.

Residues:
Sweep up to prevent slip hazard. After cleaning, flush away traces with water.

6.4. Reference to other sections

SECTION 7: Handling and storage; SECTION 8: Exposure controls/personal protection; SECTION 13: Disposal considerations;

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid contact with skin and eyes. Avoid dust formation. Avoid breathing dust. Wash hands before breaks and at the end of workday.

7.2. Conditions for safe storage, including any incompatibilities

Keep in a dry place.
Incompatible with oxidizing agents.

7.3. Specific end use(s)

This information is not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

National occupational exposure limits:

Adipic acid
5 mg/m³ (8 hours)

Derived No and Minimum Effect Levels (DNELs/DMELs)

Adipic acid

Workers:

Long-term systemic effects:

Inhalation	264 mg/m³
Skin contact	38 mg/kg/day

Acute systemic effects:

Inhalation	264 mg/m³
Skin contact	38 mg/kg/day

Long-term local effects:

Inhalation	5 mg/m³

Acute local effects:

Inhalation	5 mg/m³

Long-term systemic effects:

Inhalation	65 mg/m³
Skin contact	19 mg/kg/day
Ingestion	19 mg/kg/day

Acute systemic effects:

Inhalation	65 mg/m³
Skin contact	19 mg/kg/day
Ingestion	19 mg/kg/day

Sulphamidic acid

Workers:

Long-term systemic effects:

Inhalation	70.5 mg/m³
Skin contact	10 mg/kg/day

Long-term systemic effects:

Inhalation	17.4 mg/m³
Skin contact	5 mg/kg/day
Ingestion	5 mg/kg/day

Predicted no-effect concentrations (PNEC)

Adipic acid

Freshwater:	0.126 mg/L
Intermittent release:	0.46 mg/L
Marine water:	0.0126 mg/L
Sewage treatment plant:	59.1 mg/L
Sediment (freshwater):	0.484 mg/kg
Sediment (marine water):	0.0484 mg/kg
Soil:	0.0228 mg/kg

Sulphamidic acid

Freshwater:	1.8 mg/L
Intermittent release:	0.48 mg/L
Marine water:	0.18 mg/L
Sewage treatment plant:	20 mg/L
Sediment (freshwater):	8.36 mg/kg

Sediment (marine water):	0.84 mg/kg
Soil:	5 mg/kg
Oral (secondary poisoning):	The product is not expected to bioaccumulate.

8.2. Exposure controls

Appropriate engineering controls:

Use local exhaust if dusting occurs. Natural ventilation is adequate in absence of dusts.

Individual protection measures, such as personal protective equipment:

a) Eye/face protection:
Safety glasses with side-shields. Do not wear contact lenses where this product is used. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

b) Skin protection:
i) Hand protection: PVC or other plastic material gloves. The selected protective gloves have to satisfy the specifications of EU Directive 89/689/EEC and the standard EN 374 derived from it.
ii) Other: Chemical resistant apron or protective suit if splashing or repeated contact with solution is likely. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

c) Respiratory protection:
Dust safety masks recommended where working powder concentration is more than 10 mg/m³. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

d) Additional advice:
Wash hands before breaks and at the end of workday. Wash hands before breaks and immediately after handling the product. Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls:

Do not allow uncontrolled discharge of product into the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

a) Appearance:	Granular solid, white.
b) Odour:	None.
c) Odour Threshold:	Not applicable.
d) pH:	2.5 - 4.5 @ 5 g/L (See Technical Bulletin or Product Specifications for a more precise value, if available)
e) Melting point/freezing point:	> 100°C
f) Initial boiling point and boiling range:	Not applicable.

g) Flash point:	Not applicable.
h) Evaporation rate:	Not applicable.
i) Flammability (solid, gas):	Not combustible.
j) Upper/lower flammability or explosive limits:	Not expected to create explosive atmospheres.
k) Vapour pressure:	Not applicable.
l) Vapour density:	Not applicable.
m) Relative density:	0.6 - 0.9 (See Technical Bulletin or Product Specifications for a more precise value, if available)
n) Solubility(ies):	Soluble in water.
o) Partition coefficient:	< 0
p) Autoignition temperature:	Not applicable.
q) Decomposition temperature:	> 200°C
r) Viscosity:	See Technical Bulletin.
s) Explosive properties:	Not expected to be explosive based on the chemical structure.
t) Oxidizing properties:	Not expected to be oxidising based on the chemical structure.

9.2. Other information

None.

SECTION 10: Stability and reactivity

10.1. Reactivity

Hazardous polymerisation does not occur.

10.2. Chemical stability

Stable.

10.3. Possibility of hazardous reactions

Oxidizing agents may cause exothermic reactions.

10.4. Conditions to avoid

None known.

10.5. Incompatible materials

Oxidizing agents.

10.6. Hazardous decomposition products

Thermal decomposition may produce: hydrogen chloride gas, nitrogen oxides (NOx), carbon oxides (COx). Ammonia (NH3). Hydrogen cyanide (hydrocyanic acid) may be produced in the event of combustion in an oxygen deficient atmosphere.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Information on the product as supplied:

Acute oral toxicity:	LD50/oral/rat > 5000 mg/kg
Acute dermal toxicity:	LD50/dermal/rat > 5000 mg/kg.
Acute inhalation toxicity:	The product is not expected to be toxic by inhalation.
Skin corrosion/irritation:	Not irritating.
Serious eye damage/eye irritation:	Testing conducted according to the Draize technique showed the material produces no corneal or iridial effects and only slight transitory conjuctival effects similar to those which all granular materials have on conjuctivae.
Respiratory/skin sensitisation:	The results of testing on guinea pigs showed this material to be non-sensitizing.
Mutagenicity:	Not mutagenic.
Carcinogenicity:	Not carcinogenic.
Reproductive toxicity:	Not toxic for reproduction.
STOT - Single exposure:	No known effects.
STOT - Repeated exposure:	No known effect.
Aspiration hazard:	No hazards resulting from the material as supplied.

Relevant information on the hazardous components:

Adipic acid

Acute oral toxicity:	LD50/oral/rat = 5560 mg/kg (OECD 401)
Acute dermal toxicity:	LD0/dermal/rabbit >= 3176 mg/kg
Acute inhalation toxicity:	LC0/inhalation/4 hours/rat > 7.7 mg/L (OECD 403)
Skin corrosion/irritation:	Slightly irritating.
Serious eye damage/eye irritation:	Not irritating. (OECD 405) (SNF)
Respiratory/skin sensitisation:	Not sensitizing.
Mutagenicity:	Negative in the Ames Test (OECD 471). Negative in the In vitro Mammalian Cell Gene Mutation Test (OECD 476).

Carcinogenicity:	Based on available data, product is not expected to be carcinogenic. Carcinogenicity study in rat: NOAEL > 750 mg/kg/day
Reproductive toxicity:	Based on available data, product is not expected to be toxic for reproduction. NOAEL/Maternal toxicity/rat >= 288 mg/kg/day NOAEL/Developmental toxicity/rat >= 288 mg/kg/day
STOT - Single exposure:	No known effects.
STOT - Repeated exposure:	No known effect.
Aspiration hazard:	No known effects.

Sulphamidic acid

Acute oral toxicity:	LD50/oral/rat = 2065 - 2140 mg/kg
Acute dermal toxicity:	NOAEL/dermal/rat = 2000 mg/kg (OECD 402)
Acute inhalation toxicity:	The product is not expected to be toxic by inhalation.
Skin corrosion/irritation:	Not irritating. (OECD 404) (SNF)
Serious eye damage/eye irritation:	Moderately irritating to the eyes. (EPA OPPTS 870.2400)
Respiratory/skin sensitisation:	The product is not expected to be sensitizing.
Mutagenicity:	Negative in the Ames Test (OECD 471). Negative in the In vitro Mammalian Cell Gene Mutation Test (OECD 476). Not mutagenic. (OECD 472, 487)
Carcinogenicity:	Based on the absence of mutagenicity, it is unlikely that the substance is carcinogenic.
Reproductive toxicity:	Based on available data, product is not expected to be toxic for reproduction. Prenatal Development Toxicity Study (OECD 414) - NOAEL/Maternal toxicity/rat = 200 mg/kg/day - NOAEL/Developmental toxicity/rat = 200 mg/kg/day
STOT - Single exposure:	No known effects.
STOT - Repeated exposure:	No known effect.
Aspiration hazard:	No known effects.

SECTION 12: Ecological information

SECTION 12: Ecological information

12.1. Toxicity

Information on the product as supplied:

Acute toxicity to fish:	LC50/Danio rerio/96 hours = 5 - 10 mg/L (OECD 203)
Acute toxicity to invertebrates:	EC50/Daphnia magna/48 hours = 20 - 50 mg/L (OECD 202)
Acute toxicity to algae:	Algal inhibition tests are not appropriate. The flocculation characteristics of the product interfere directly in the test medium preventing homogenous distribution which invalidates the test.
Chronic toxicity to fish:	No data available.
Chronic toxicity to invertebrates:	No data available.
Toxicity to microorganisms:	No data available.
Effects on terrestrial organisms:	No data available. Readily biodegradable, exposure to soil is unlikely.
Sediment toxicity:	No data available. Readily biodegradable, exposure to sediment is unlikely.

Relevant information on the hazardous components:

Adipic acid

Acute toxicity to fish:	LC0/Danio rerio/96 hours >= 1000 mg/L
Acute toxicity to invertebrates:	EC50/Daphnia magna/48 hours = 46 mg/L (OECD 202)
Acute toxicity to algae:	IC50/Selenastrum capricornutum/72 hours = 59 mg/L (OECD 201)
Chronic toxicity to fish:	No data available.
Chronic toxicity to invertebrates:	NOEC/Daphnia magna/21 days = 6.3 mg/L (OECD 211)
Toxicity to microorganisms:	EC50/activated sludge/3 hours = 4747 mg/L (OECD 209)
Effects on terrestrial organisms:	no data available.
Sediment toxicity:	No data available.

Sulphamidic acid

Acute toxicity to fish:	LC50/Pimephales promelas/96 hours = 70.3 mg/L (OECD 203)
Acute toxicity to invertebrates:	EC50/Daphnia magna/48 hours = 71.6 mg/L (OECD 202)
Acute toxicity to algae:	IC50/Scenedesmus subspicatus/72 hours = 48 mg/L (OECD 201)

Chronic toxicity to fish:	NOEC/Danio rerio/34 days >= 60 mg/L (OECD 210)
Chronic toxicity to invertebrates:	NOEC/Daphnia magna/21 days = 19 mg/L (OECD 211)
Toxicity to microorganisms:	EC50/activated sludge/3 hours > 200 mg/L (OECD 209)
Effects on terrestrial organisms:	no data available.
Sediment toxicity:	No data available.

12.2. Persistence and degradability

Information on the product as supplied:

Degradation:	Based on degradation data of components, this product is expected to be readily (bio)degradable.
Hydrolysis:	At natural pHs (>6) the polymer degrades due to hydrolysis to more than 70% in 28 days. The hydrolysis products are not harmful to aquatic organisms.
Photolysis:	No data available.

Relevant information on the hazardous components:

Adipic acid

Degradation:	Readily biodegradable. > 70% / 28 days (OECD 301 D)
Hydrolysis:	Does not hydrolyse.
Photolysis:	Half-life (indirect photolysis): = 2.9 days

Sulphamidic acid

Degradation:	Not relevant (inorganic).
Hydrolysis:	Does not hydrolyse.
Photolysis:	No data available.

12.3. Bioaccumulative potential

Information on the product as supplied:

The product is not expected to bioaccumulate.

Partition co-efficient (Log Pow):	< 0
Bioconcentration factor (BCF):	No data available.

Relevant information on the hazardous components:

Adipic acid

Partition co-efficient (Log Pow): 0.093 @ 25°C, pH 3.3

Bioconcentration factor (BCF): No data available.

Sulphamidic acid

Partition co-efficient (Log Pow): -4.34 @ 20°C

Bioconcentration factor (BCF): No data available.

12.4. Mobility in soil

Information on the product as supplied:

No data available.

Relevant information on the hazardous components:

Adipic acid

Koc: No data available.

Sulphamidic acid

Koc: No data available.

12.5. Results of PBT and vPvB assessment

PBT assessment:
Not PBT according to the criteria of Annex XIII of REACH.

vPvB assessment:
Not vPvB according to the criteria of Annex XIII of REACH.

12.6. Other adverse effects

None known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste from residues/unused products:

Dispose in accordance with local and national regulations. Can be landfilled or incinerated, when in compliance with local regulations.

Contaminated packaging:

Rinse empty containers with water and use the rinse-water to prepare the working solution. If recycling is not practicable, dispose of in compliance with local regulations. Can be landfilled or incinerated, when in compliance with local regulations.

Recycling:

In accordance with local and national regulations.

SECTION 14: Transport information

Land transport (ADR/RID)

Not classified.

Sea transport (IMDG)

Not classified.

Air transport (IATA)

Not classified.

SECTION 15: Regulatory information

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

All components of this product have been registered or pre-registered with the European Chemicals Agency or are exempt from registration.

15.2. Chemical safety assessment

A Chemical Safety Assessment for this product has been carried out by the person responsible for producing this Safety Data Sheet. All relevant information used to conduct this assessment are included in this Safety Data Sheet as well any as any resulting Risk Reduction Measures.

SECTION 16: Other information

This data sheet contains changes from the previous version in section(s):

SECTION 3. Composition/information on ingredients, SECTION 5. Fire-fighting measures, SECTION 8. Exposure controls/personal protection, SECTION 16. Other Information.

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

Acronyms
PBT = persistent, bioaccumulative and toxic
STOT = Specific target organ toxicity
vPvB = very persistent and very bioaccumulative

Abbreviations
Aquatic Chronic 3 = Hazardous to the aquatic environment — Chronic Hazard, Category 3
Eye Irrit. 2 = Serious eye damage/eye irritation, Hazard Category 2
Skin Irrit. 2 = Skin corrosion/irritation, Hazard Category 2

Hazard statements
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H412 - Harmful to aquatic life with long lasting effects

Training advice:

Do not handle until all safety precautions have been read and understood.

This SDS was prepared in accordance with the following:

Regulation (EC) N°1907/2006, as amended
Regulation (EC) N°1272/2008, as amended

Version: 20.01.a

PRCC003

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.

ANNEX(ES)

This product is not hazardous as supplied and/or does not contain hazardous components:

- which require REACH registration; or,
- which demonstrate relevant effects which would require a chemical safety assessment; or,
- which are present at concentrations above their cut-off value.

Therefore, according to Regulation (EC) No 1907/2006, Article 31, paragraph 7, an Exposure Scenario is not required as an annex to the Safety Data Sheet.

SAFETY DATA SHEET

According to Regulation (EC) No 1907/2006 and its amendments

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

1.1. Product identifier

Product name:	**FLOPAM™ FO 4698 SSH**
Type of product:	Mixture.

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

Identified uses:	Processing aid for industrial applications.
Uses advised against:	None.

1.3. Details of the supplier of the safety data sheet

Company:	SNF (UK) Limited 1 Red Hall Crescent, Paragon Business Village Wakefield WF1 2DF United Kingdom
Telephone:	01924-311000
Telefax:	01924-311099
E-mail address:	regs@snf.com

1.4. Emergency telephone number

24-hour emergency number:	+33 477 36 87 25
National Poisons Information Centre:	01 8092566 or 01 8379964 (24/24, 7/7)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No.1272/2008:

Not classified.

2.2. Label elements

Labelling according to Regulation (EC) 1272/2008:

Hazard pictogram(s):	None.
Signal word:	None.

Hazard statement(s):	None.
Precautionary statement(s):	None.
Additional elements:	EUH210 - Safety data sheet available on request

2.3. Other hazards

Aqueous solutions or powders that become wet render surfaces extremely slippery.

PBT and vPvB assessment:
Not PBT or vPvB according to the criteria of Annex XIII of REACH.

For explanation of abbreviations see Section 16.

SECTION 3: Composition/information on ingredients

3.1. Substances
Not applicable, this product is a mixture.

3.2. Mixtures
This product is a mixture.

Hazardous components

Sulphamidic acid

Concentration/ -range:	2.5 - 10%
EC-No.:	226-218-8
REACH Registration Number:	01-2119982121-44-XXXX / 01-2119488633-28-XXXX
Classification according to Regulation (EC) No.1272/2008:	Skin Irrit. 2;H315, Eye Irrit. 2;H319, Aquatic Chronic 3;H412

For explanation of abbreviations see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:
Move to fresh air. Get medical attention if symptoms occur.

Skin contact:
Wash off with soap and plenty of water. Get medical attention if irritation develops and persists.

Eye contact:
Rinse immediately with plenty of water, also under the eyelids. Get medical attention.

Ingestion:
Rinse mouth. If conscious, give the victim plenty of water to drink. Induce vomiting, but only if victim is fully conscious.

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

Powder can cause localised skin irritation in folds of the skin or under tight clothing. Contact with dust can cause mechanical irritation or drying of the skin.

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

None reasonably foreseeable.

Other information:
None.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:
Water. Water spray. Foam. Carbon dioxide (CO_2). Dry powder.
Warning! Aqueous solutions or powders that become wet render surfaces extremely slippery.

Unsuitable extinguishing media:
None known.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products:
Thermal decomposition may produce: hydrogen chloride gas, nitrogen oxides (NOx), carbon oxides (COx). Hydrogen cyanide (hydrocyanic acid) may be produced in the event of combustion in an oxygen deficient atmosphere.

5.3. Advice for firefighters

Protective measures:
No special protective equipment required. Wear self contained breathing apparatus for fire fighting if necessary.

Other information:
Aqueous solutions or powders that become wet render surfaces extremely slippery.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions:
Aqueous solutions or powders that become wet render surfaces extremely slippery.

Protective equipment:
Wear adequate personal protective equipment (see Section 8 Exposure Controls/Personal Protection).

Emergency procedures:
Keep people away from spill/leak. Prevent further leakage or spillage if safe to do so.

6.2. Environmental precautions

As with all chemical products, do not flush into surface water.

6.3. Methods and material for containment and cleaning up

Small spills:
Do not flush with water.Clean up promptly by sweeping or vacuum.

Large spills:
Do not flush with water. Prevent unauthorized access. Sweep up and shovel into suitable containers for disposal.

Residues:
After cleaning, flush away traces with water.

6.4. Reference to other sections

SECTION 7: Handling and storage; SECTION 8: Exposure controls/personal protection; SECTION 13: Disposal considerations;

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid contact with skin and eyes. Avoid dust formation. Avoid breathing dust. Wash hands before breaks and at the end of workday.

7.2. Conditions for safe storage, including any incompatibilities

Keep in a dry place.
Incompatible with oxidizing agents.

7.3. Specific end use(s)

This information is not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

National occupational exposure limits:
None known.

Derived No and Minimum Effect Levels (DNELs/DMELs)

Sulphamidic acid

Workers:

Long-term systemic effects:

Inhalation	70.5 mg/m³
Skin contact	10 mg/kg/day

Consumer:

Long-term systemic effects:

Inhalation	17.4 mg/m³
Skin contact	5 mg/kg/day
Ingestion	5 mg/kg/day

Predicted no-effect concentrations (PNEC)

Sulphamidic acid

Freshwater:	1.8 mg/L
Intermittent release:	0.48 mg/L
Marine water:	0.18 mg/L
Sewage treatment plant:	20 mg/L
Sediment (freshwater):	8.36 mg/kg
Sediment (marine water):	0.84 mg/kg
Soil:	5 mg/kg
Oral (secondary poisoning):	The product is not expected to bioaccumulate.

8.2. Exposure controls

Appropriate engineering controls:

Use local exhaust if dusting occurs. Natural ventilation is adequate in absence of dusts.

Individual protection measures, such as personal protective equipment:

a) Eye/face protection:
Safety glasses with side-shields.

b) Skin protection:
i) Hand protection: PVC or other plastic material gloves.
ii) Other: Workclothes protecting arms, legs and body.

c) Respiratory protection:
No personal respiratory protective equipment normally required. Dust safety masks recommended where working powder concentration is more than 10 mg/m³.

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

Environmental exposure controls:

Do not allow uncontrolled discharge of product into the environment. Do not flush into surface water.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

a) Appearance:	Granular solid, White.
b) Odour:	None.
c) Odour Threshold:	Not applicable.
d) pH:	2.5 - 4.5 @ 5g/L (See Technical Bulletin or Product Specifications for precise value)
e) Melting point/freezing point:	> 100°C
f) Initial boiling point and boiling range:	Not applicable.
g) Flash point:	Not applicable.
h) Evaporation rate:	Not applicable.
i) Flammability (solid, gas):	Not combustible.
j) Upper/lower flammability or explosive limits:	Not expected to create explosive atmospheres.
k) Vapour pressure:	Not applicable.
l) Vapour density:	Not applicable.
m) Relative density:	0.6 - 0.9
n) Solubility(ies):	Soluble in water.
o) Partition coefficient:	< 0
p) Autoignition temperature:	Not applicable.
q) Decomposition temperature:	> 200°C
r) Viscosity:	See Technical Bulletin.
s) Explosive properties:	Not expected to be explosive based on the chemical structure.
t) Oxidizing properties:	Not expected to be oxidising based on the chemical structure.

9.2. Other information

None.

SECTION 10: Stability and reactivity

10.1. Reactivity

Hazardous polymerisation does not occur.

10.2. Chemical stability

Stable.

10.3. Possibility of hazardous reactions

Oxidizing agents may cause exothermic reactions.

10.4. Conditions to avoid

None known.

10.5. Incompatible materials

Oxidizing agents.

10.6. Hazardous decomposition products

Thermal decomposition may produce: hydrogen chloride gas, nitrogen oxides (NOx), carbon oxides (COx). Hydrogen cyanide (hydrocyanic acid) may be produced in the event of combustion in an oxygen deficient atmosphere.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Information on the product as supplied:

Acute oral toxicity:	LD50/oral/rat > 5000 mg/kg
Acute dermal toxicity:	LD50/dermal/rat > 5000 mg/kg.
Acute inhalation toxicity:	The product is not expected to be toxic by inhalation.
Skin corrosion/irritation:	Not irritating.
Serious eye damage/eye irritation:	Testing conducted according to the Draize technique showed the material produces no corneal or iridial effects and only slight transitory conjuctival effects similar to those which all granular materials have on conjuctivae.
Respiratory/skin sensitisation:	The results of testing on guinea pigs showed this material to be non-sensitizing.
Mutagenicity:	Not mutagenic.
Carcinogenicity:	Not carcinogenic.
Reproductive toxicity:	Not toxic for reproduction.
STOT - Single exposure:	No known effects.
STOT - Repeated exposure:	No known effect.
Aspiration hazard:	No hazards resulting from the material as supplied.

Relevant information on the hazardous components:

Sulphamidic acid

Acute oral toxicity:	LD50/oral/rat = 2065 - 2140 mg/kg
Acute dermal toxicity:	NOAEL/dermal/rat = 2000 mg/kg (OECD 402)
Acute inhalation toxicity:	The product is not expected to be toxic by inhalation.
Skin corrosion/irritation:	Not irritating. (OECD 404) (SNF)
Serious eye damage/eye irritation:	Moderately irritating to the eyes. (EPA OPPTS 870.2400)
Respiratory/skin sensitisation:	The product is not expected to be sensitizing.
Mutagenicity:	Negative in the Ames Test (OECD 471). Negative in the In vitro Mammalian Cell Gene Mutation Test (OECD 476). Not mutagenic. (OECD 472, 487)
Carcinogenicity:	Based on the absence of mutagenicity, it is unlikely that the substance is carcinogenic.
Reproductive toxicity:	Prenatal Development Toxicity Study (OECD 414) - NOAEL/Maternal toxicity/rat = 200 mg/kg/day - NOAEL/Developmental toxicity/rat = 200 mg/kg/day
STOT - Single exposure:	No known effects.
STOT - Repeated exposure:	No known effect.
Aspiration hazard:	No known effects.

SECTION 12: Ecological information

12.1. Toxicity

Information on the product as supplied:

Acute toxicity to fish:	LC50/Danio rerio/96 hours = 5 - 10 mg/L (OECD 203)
Acute toxicity to invertebrates:	EC50/Daphnia magna/48 hours = 20 - 50 mg/L (OECD 202)
Acute toxicity to algae:	Algal inhibition tests are not appropriate. The flocculation characteristics of the product interfere directly in the test medium preventing homogenous distribution which invalidates the test.
Chronic toxicity to fish:	No data available.
Chronic toxicity to invertebrates:	No data available.

Toxicity to microorganisms:	No data available.
Effects on terrestrial organisms:	No data available.
Sediment toxicity:	No data available.

Relevant information on the hazardous components:

Sulphamidic acid

Acute toxicity to fish:	LC50/Pimephales promelas/96 hours = 70.3 mg/L (OECD 203)
Acute toxicity to invertebrates:	EC50/Daphnia magna/48 hours = 71.6 mg/L (OECD 202)
Acute toxicity to algae:	IC50/Scenedesmus subspicatus/72 hours = 48 mg/L (OECD 201)
Chronic toxicity to fish:	NOEC/Danio rerio/34 days >= 60 mg/L (OECD 210)
Chronic toxicity to invertebrates:	NOEC/Daphnia magna/21 days = 19 mg/L (OECD 211)
Toxicity to microorganisms:	EC50/activated sludge/3 hours > 200 mg/L (OECD 209)
Effects on terrestrial organisms:	No data available.
Sediment toxicity:	No data available.

12.2. Persistence and degradability

Information on the product as supplied:

Degradation:	Based on degradation data of components, this product is expected to be readily (bio)degradable.
Hydrolysis:	At natural pHs (>6) the polymer degrades due to hydrolysis to more than 70% in 28 days. The hydrolysis products are not harmful to aquatic organisms.
Photolysis:	No data available.

Relevant information on the hazardous components:

Sulphamidic acid

Degradation:	Not relevant (inorganic).
Hydrolysis:	Does not hydrolyse.
Photolysis:	No data available.

12.3. Bioaccumulative potential

Information on the product as supplied:

The product is not expected to bioaccumulate.

Partition co-efficient (Log Pow): < 0

Bioconcentration factor (BCF): No data available.

Relevant information on the hazardous components:

Sulphamidic acid

Partition co-efficient (Log Pow): -4.34 @ 20°C

Bioconcentration factor (BCF): No data available.

12.4. Mobility in soil

Information on the product as supplied:

No data available.

Relevant information on the hazardous components:

Sulphamidic acid

Koc: No data available.

12.5. Results of PBT and vPvB assessment

PBT assessment:
Not PBT according to the criteria of Annex XIII of REACH.

vPvB assessment:
Not vPvB according to the criteria of Annex XIII of REACH.

12.6. Other adverse effects

None known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste from residues/unused products:

Dispose in accordance with local and national regulations. Can be landfilled or incinerated, when in compliance with local regulations.

Contaminated packaging:

Rinse empty containers with water and use the rinse-water to prepare the working solution. If recycling is not practicable, dispose of in compliance with local regulations. Can be landfilled or incinerated, when in compliance with local regulations.

Recycling:

In accordance with local and national regulations.

SECTION 14: Transport information

Land transport (ADR/RID)

Not classified.

Sea transport (IMDG)

Not classified.

Air transport (IATA)

Not classified.

SECTION 15: Regulatory information

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

All components of this product have been registered or pre-registered with the European Chemicals Agency or are exempt from registration.

15.2. Chemical safety assessment

A Chemical Safety Assessment for this product has been carried out by the person responsible for producing this Safety Data Sheet. All relevant information used to conduct this assessment are included in this Safety Data Sheet as well any as any resulting Risk Reduction Measures.

SECTION 16: Other information

This data sheet contains changes from the previous version in section(s):

SECTION 15. Regulatory information, SECTION 16. Other Information.

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

Acronyms
PBT = persistent, bioaccumulative and toxic
STOT = Specific target organ toxicity
vPvB = very persistent and very bioaccumulative

Abbreviations
Eye Irrit. 2 = Serious eye damage/eye irritation, Hazard Category 2
Skin Irrit. 2 = Skin corrosion/irritation, Hazard Category 2
Aquatic Chronic 3 = Hazardous to the aquatic environment — Chronic Hazard, Category 3

Hazard statements
H319 - Causes serious eye irritation
H315 - Causes skin irritation
H412 - Harmful to aquatic life with long lasting effects

This SDS was prepared in accordance with the following:

Regulation (EC) N°1907/2006, as amended
Regulation (EC) N°1272/2008, as amended

Version: 19.01.a

PRCC009

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.

ANNEX(ES)

This product is not hazardous as supplied and/or does not contain hazardous components:

- which require REACH registration; or,
- which demonstrate relevant effects which would require a chemical safety assessment; or,
- which are present at concentrations above their cut-off value.

Therefore, according to Regulation (EC) No 1907/2006, Article 31, paragraph 7, an Exposure Scenario is not required as an annex to the Safety Data Sheet.

SAFETY DATA SHEET

According to Regulation (EC) No 1907/2006 and its amendments

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

1.1. Product identifier

Product name:	**FLOPAM™ AN 926 VHM AB 20**
Type of product:	Mixture.

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

Identified uses:	Processing aid for industrial applications.
Uses advised against:	None.

1.3. Details of the supplier of the safety data sheet

Company:	SNF (UK) Limited 1 Red Hall Crescent, Paragon Business Village Wakefield WF1 2DF United Kingdom
Telephone:	01924-311000
Telefax:	01924-311099
E-mail address:	regs@snf.com

1.4. Emergency telephone number

24-hour emergency number:	+33 477 36 87 25
National Poisons Information Centre:	01 8092566 or 01 8379964 (24/24, 7/7)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No.1272/2008:

Not classified.

2.2. Label elements

Labelling according to Regulation (EC) 1272/2008:

Hazard pictogram(s):	None.
Signal word:	None.

Hazard statement(s): None.

Precautionary statement(s): None.

Additional elements: None.

2.3. Other hazards

Aqueous solutions or powders that become wet render surfaces extremely slippery.

PBT and vPvB assessment:
Not PBT or vPvB according to the criteria of Annex XIII of REACH.

SECTION 3: Composition/information on ingredients

3.1. Substances
Not applicable, this product is a mixture.

3.2. Mixtures

Hazardous components
Contains no reportable hazardous substances.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:
Move to fresh air. No hazards which require special first aid measures.

Skin contact:
Wash off with soap and plenty of water. Get medical attention if irritation develops and persists.

Eye contact:
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In case of persistent eye irritation, consult a physician.

Ingestion:
Rinse mouth with water. Do NOT induce vomiting. Get medical attention if symptoms occur.

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

Powder can cause localised skin irritation in folds of the skin or under tight clothing. Moderate eye irritation due to effects all powders have on conjunctivae.

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

None reasonably foreseeable.

Other information:
Aqueous solutions or powders that become wet render surfaces extremely slippery.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:
Water. Water spray. Foam. Carbon dioxide (CO_2). Dry powder.
Warning! Aqueous solutions or powders that become wet render surfaces extremely slippery.

Unsuitable extinguishing media:
None known.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products:
Thermal decomposition may produce: nitrogen oxides (NOx), carbon oxides (COx). Ammonia (NH_3). Hydrogen cyanide (hydrocyanic acid) may be produced in the event of combustion in an oxygen deficient atmosphere.

5.3. Advice for firefighters

Protective measures:
In the event of fire, wear self-contained breathing apparatus.

Other information:
Aqueous solutions or powders that become wet render surfaces extremely slippery.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions:
Aqueous solutions or powders that become wet render surfaces extremely slippery.

Protective equipment:
Wear adequate personal protective equipment (see Section 8 Exposure Controls/Personal Protection).

Emergency procedures:
Keep people away from spill/leak. Prevent further leakage or spillage if safe to do so.

6.2. Environmental precautions

As with all chemical products, do not flush into surface water.

6.3. Methods and material for containment and cleaning up

Small spills:
Do not flush with water. Clean up promptly by sweeping or vacuum. Keep in suitable, closed containers for disposal.

Large spills:
Do not flush with water. Clean up promptly by sweeping or vacuum. Keep in suitable, closed containers for disposal.

Residues:
After cleaning, flush away traces with water.

6.4. Reference to other sections

SECTION 7: Handling and storage; SECTION 8: Exposure controls/personal protection; SECTION 13: Disposal considerations;

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Aqueous solutions or powders that become wet render surfaces extremely slippery. Use personal protective equipment.

7.2. Conditions for safe storage, including any incompatibilities

Keep in a dry place. Keep container closed when not in use.
Incompatible with strong bases and oxidizing agents.

7.3. Specific end use(s)

This information is not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

National occupational exposure limits:
None known.

Derived No and Minimum Effect Levels (DNELs/DMELs)
None known.

Predicted no-effect concentrations (PNEC)
None known.

8.2. Exposure controls

Appropriate engineering controls:

Use local exhaust if dusting occurs. Natural ventilation is adequate in absence of dusts.

Individual protection measures, such as personal protective equipment:

a) Eye/face protection:
Safety glasses with side-shields. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

b) Skin protection:
i) Hand protection: PVC or other plastic material gloves. The selected protective gloves have to satisfy the specifications of EU Directive 89/689/EEC and the standard EN 374 derived from it.
ii) Other: Workclothes protecting arms, legs and body. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

c) Respiratory protection:
No personal respiratory protective equipment normally required. Dust safety masks recommended where working powder concentration is more than 10 mg/m³. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

d) Additional advice:
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and immediately after handling the product. Wash hands before breaks and at the end of workday.

Environmental exposure controls:

Do not allow uncontrolled discharge of product into the environment.

SECTION 9: Physical and chemical properties

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

a) Appearance:	Granular solid, white.
b) Odour:	None.
c) Odour Threshold:	Not applicable.
d) pH:	5 - 9 @ 5 g/L (See Technical Bulletin or Product Specifications for a more precise value, if available)
e) Melting point/freezing point:	> 150°C
f) Initial boiling point and boiling range:	Not applicable.
g) Flash point:	Not applicable.
h) Evaporation rate:	Not applicable.
i) Flammability (solid, gas):	No data available.
j) Upper/lower flammability or explosive limits:	Not expected to create explosive atmospheres.
k) Vapour pressure:	Not applicable.
l) Vapour density:	Not applicable.
m) Relative density:	0.6 - 0.9 (See Technical Bulletin or Product Specifications for a more precise value, if available)
n) Solubility(ies):	Soluble in water.
o) Partition coefficient:	-2
p) Autoignition temperature:	Does not self-ignite (based on the chemical structure).
q) Decomposition temperature:	> 150°C
r) Viscosity:	See Technical Bulletin.
s) Explosive properties:	Kst = 0 Non-flammable to ignition sources of less than 2.5 kJ.
t) Oxidizing properties:	Not expected to be oxidising based on the chemical structure.

9.2. Other information

None.

SECTION 10: Stability and reactivity

10.1. Reactivity

None known.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Oxidizing agents may cause exothermic reactions. Contact with strong bases liberates ammonia.

10.4. Conditions to avoid

None known.

10.5. Incompatible materials

Incompatible with strong bases and oxidizing agents.

10.6. Hazardous decomposition products

Thermal decomposition may produce: nitrogen oxides (NOx), carbon oxides (COx). Ammonia (NH3). Hydrogen cyanide (hydrocyanic acid) may be produced in the event of combustion in an oxygen deficient atmosphere.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Information on the product as supplied:

Acute oral toxicity:	LD50/oral/rat > 5000 mg/kg
Acute dermal toxicity:	LD50/dermal/rat > 5000 mg/kg.
Acute inhalation toxicity:	The product is not expected to be toxic by inhalation.
Skin corrosion/irritation:	Not irritating.
Serious eye damage/eye irritation:	Not irritating.
Respiratory/skin sensitisation:	Not sensitizing.
Mutagenicity:	Not mutagenic.
Carcinogenicity:	Not carcinogenic.
Reproductive toxicity:	Not toxic for reproduction.
STOT - Single exposure:	No known effects.
STOT - Repeated exposure:	No known effect.
Aspiration hazard:	No hazards resulting from the material as supplied.

SECTION 12: Ecological information

12.1. Toxicity

Information on the product as supplied:

Acute toxicity to fish:	LC50/Danio rerio/96 hours > 100 mg/L (OECD 203) LC50/Fathead minnow/96 hours > 100 mg/L (OECD 203)

Acute toxicity to invertebrates:	EC50/Daphnia magna/48 hours > 100 mg/L (OECD 202)
Acute toxicity to algae:	IC50/Scenedesmus subspicatus/72 hours > 100 mg/L (OECD 201)
Chronic toxicity to fish:	No data available.
Chronic toxicity to invertebrates:	No data available.
Toxicity to microorganisms:	No data available.
Effects on terrestrial organisms:	No known effects.
Sediment toxicity:	No data available.

12.2. Persistence and degradability

Information on the product as supplied:

Degradation:	Not readily biodegradable.
Hydrolysis:	Does not hydrolyse.
Photolysis:	No data available.

12.3. Bioaccumulative potential

Information on the product as supplied:

Not bioaccumulating.

Partition co-efficient (Log Pow):	-2
Bioconcentration factor (BCF):	~0

12.4. Mobility in soil

Information on the product as supplied:

None.

12.5. Results of PBT and vPvB assessment

PBT assessment:
Not PBT according to the criteria of Annex XIII of REACH.

vPvB assessment:
Not vPvB according to the criteria of Annex XIII of REACH.

12.6. Other adverse effects

None known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste from residues/unused products:

Dispose in accordance with local and national regulations. Can be landfilled or incinerated, when in compliance with local regulations.

Contaminated packaging:

Rinse empty containers with water and use the rinse-water to prepare the working solution. If recycling is not practicable, dispose of in compliance with local regulations. Can be landfilled or incinerated, when in compliance with local regulations.

Recycling:

In accordance with local and national regulations.

SECTION 14: Transport information

Land transport (ADR/RID)

Not classified.

Sea transport (IMDG)

Not classified.

Air transport (IATA)

Not classified.

SECTION 15: Regulatory information

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

All components of this product have been registered or pre-registered with the European Chemicals Agency or are exempt from registration.

15.2. Chemical safety assessment

A Chemical Safety Assessment for this product has been carried out by the person responsible for producing this Safety Data Sheet. All relevant information used to conduct this assessment are included in this Safety Data Sheet as well any as any resulting Risk Reduction Measures.

SECTION 16: Other information

This data sheet contains changes from the previous version in section(s):

SECTION 8. Exposure controls/personal protection, SECTION 16. Other Information.

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

Acronyms
PBT = persistent, bioaccumulative and toxic
STOT = Specific target organ toxicity
vPvB = very persistent and very bioaccumulative

Training advice:

Do not handle until all safety precautions have been read and understood.

This SDS was prepared in accordance with the following:

Regulation (EC) N°1907/2006, as amended
Regulation (EC) N°1272/2008, as amended

Version: 20.01.b

PRAC001

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.

ANNEX(ES)

This product is not hazardous as supplied and/or does not contain hazardous components:

- which require REACH registration; or,
- which demonstrate relevant effects which would require a chemical safety assessment; or,
- which are present at concentrations above their cut-off value.

Therefore, according to Regulation (EC) No 1907/2006, Article 31, paragraph 7, an Exposure Scenario is not required as an annex to the Safety Data Sheet.

Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 26.03.2020 *Version number 1* *Revision: 21.03.2018*

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

· **1.1 Product identifier**

· **Trade name: AGITAN® DF 681F**

· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
No further relevant information available.
· **Application of the substance / the mixture** Defoamers, Anti-foaming agent

· **1.3 Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
MÜNZING CHEMIE GmbH
Münzingstrasse 2
74232 Abstatt, Germany
E-Mail: info@munzing.com
Tel.: +49 7131 987-100

· **Further information obtainable from:**
Product Safety Department
E-mail (MSDS): msds@munzing.com
· **1.4 Emergency telephone number:** For Chemical Emergencies: CHEMTREC: +1 703 741 5970

SECTION 2: Hazards identification

· **2.1 Classification of the substance or mixture**
· **Classification according to Regulation (EC) No 1272/2008**
The product is not classified as hazardous, according to the CLP regulation.

· **2.2 Label elements**
· **Labelling according to Regulation (EC) No 1272/2008** Void
· **Hazard pictograms** Void
· **Signal word** Void
· **Hazard statements** Void
· **Additional information:**
Contains Reaction mass of: 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H-isothiazol-3-one [EC no. 220-239-6] (3:1). May produce an allergic reaction.
Safety data sheet available on request.
· **2.3 Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** None.
· **vPvB:** None.

*
SECTION 3: Composition/information on ingredients

· **3.2 Chemical characterisation: Mixtures**
· **Description:**
hydrocarbons
non-ionic emulsifiers

· **Dangerous components:**

CAS: 64742-56-9 EINECS: 265-159-2 Reg.nr.: 01-2119480132-48	Distillates (petroleum), solvent-dewaxed light paraffinic Asp. Tox. 1, H304	75-100%

· **Additional information:** For the wording of the listed hazard phrases refer to section 16.

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SECTION 4: First aid measures

· ***4.1 Description of first aid measures***
· ***General information:*** *Immediately remove any clothing soiled by the product.*
· ***After inhalation:*** *Supply fresh air; consult doctor in case of complaints.*
· ***After skin contact:*** *Immediately wash with water and soap and rinse thoroughly.*
· ***After eye contact:***
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
· ***After swallowing:*** *If symptoms persist consult doctor.*
· ***4.2 Most important symptoms and effects, both acute and delayed*** *No further relevant information available.*
· ***4.3 Indication of any immediate medical attention and special treatment needed***
No further relevant information available.

SECTION 5: Firefighting measures

· ***5.1 Extinguishing media***
· ***Suitable extinguishing agents:***
CO2, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
· ***For safety reasons unsuitable extinguishing agents:*** *Water with full jet*
· ***5.2 Special hazards arising from the substance or mixture*** *No further relevant information available.*
· ***5.3 Advice for firefighters***
· ***Protective equipment:*** *Do not inhale explosion gases or combustion gases.*
· ***Additional information***
Cool endangered receptacles with water spray.
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

SECTION 6: Accidental release measures

· ***6.1 Personal precautions, protective equipment and emergency procedures***
Wear protective clothing.
Particular danger of slipping on leaked/spilled product.
· ***6.2 Environmental precautions:***
Dilute with plenty of water.
Do not allow to enter sewers/ surface or ground water.
· ***6.3 Methods and material for containment and cleaning up:***
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
· ***6.4 Reference to other sections***
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7: Handling and storage

· ***7.1 Precautions for safe handling***
Keep away from heat and direct sunlight.
Prevent formation of aerosols.
· ***Information about fire - and explosion protection:***
Protect from heat.
Keep ignition sources away - Do not smoke.

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· **7.2 Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:** Store in a cool location.
· **Information about storage in one common storage facility:** Store away from oxidising agents.
· **Further information about storage conditions:** Store in cool, dry conditions in well sealed receptacles.
· **7.3 Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

· **Additional information about design of technical facilities:** No further data; see item 7.

· **8.1 Control parameters**

· **Ingredients with limit values that require monitoring at the workplace:**	
CAS: 64742-56-9 Distillates (petroleum), solvent-dewaxed light paraffinic	
ACGIH-TWA	Long-term value: 5 mg/m³ mineral oil mist

· **Additional information:** The lists valid during the making were used as basis.

· **8.2 Exposure controls**
· **Personal protective equipment:**
· **General protective and hygienic measures:**
The usual precautionary measures are to be adhered to when handling chemicals.
Avoid contact with the eyes and skin.
· **Respiratory protection:** Use suitable respiratory protective device only when aerosol or mist is formed.
· **Protection of hands:**
Only use chemical-protective gloves with CE-labelling of category III.
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
· **Material of gloves**
Nitrile rubber, NBR
Recommended thickness of the material: ≥ 0.4 mm
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.
· **Penetration time of glove material**
For the mixture of chemicals mentioned below the penetration time has to be at least 480 minutes (Permeation according to EN 16523-1:2015: Level 6).
The determined penetration times according to EN 16523-1:2015 are not performed under practical conditions. Therefore a maximum wearing time, which corresponds to 50% of the penetration time, is recommended.
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
· **Eye protection:** Safety glasses
· **Body protection:** Protective work clothing

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SECTION 9: Physical and chemical properties

· **9.1 Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
Form:	Fluid
Colour:	Yellowish
· **Odour:**	Slight
· **Odour threshold:**	Not determined.
· **pH-value (20 g/l) at 20 °C:**	≈ 7 (DIN ISO 976)
· **Change in condition**	
Melting point/freezing point:	Undetermined.
Initial boiling point and boiling range:	Undetermined.
· **Flash point:**	> 100 °C (DIN EN ISO 2719)
· **Flammability (solid, gas):**	Not applicable.
· **Decomposition temperature:**	Not determined.
· **Auto-ignition temperature:**	Product is not selfigniting.
· **Explosive properties:**	Product is not explosive. However, formation of explosive air/vapour mixtures are possible.
· **Explosion limits:**	
Lower:	Not determined.
Upper:	Not determined.
· **Oxidising properties**	None.
· **Vapour pressure:**	Not determined.
· **Density at 20 °C:**	≈ 0.88 g/cm³ (DIN EN ISO 2811-1)
· **Relative density**	Not determined.
· **Vapour density**	Not determined.
· **Evaporation rate**	Not determined.
· **Solubility in / Miscibility with water:**	Insoluble.
· **Partition coefficient: n-octanol/water:**	Not determined.
· **Viscosity:**	
Dynamic at 20 °C:	≈ 600 mPas (DIN EN ISO 3219)
Kinematic at 40 °C:	>20.5 mm²/s (DIN EN ISO 51562)
· **9.2 Other information**	No further relevant information available.

SECTION 10: Stability and reactivity

· **10.1 Reactivity** No further relevant information available.
· **10.2 Chemical stability**
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **10.3 Possibility of hazardous reactions**
Flammable vapour-air mixtures may develop if stored in large receptacles and above room temperature.
Can react violently with oxygen rich (oxidising) material. Danger of Explosion.
· **10.4 Conditions to avoid** No further relevant information available.
· **10.5 Incompatible materials:** No further relevant information available.

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· **10.6 Hazardous decomposition products:** No dangerous decomposition products known.

SECTION 11: Toxicological information

· **11.1 Information on toxicological effects**
· **Acute toxicity** Based on available data, the classification criteria are not met.

· **LD/LC50 values relevant for classification:**		
CAS: 64742-56-9 Distillates (petroleum), solvent-dewaxed light paraffinic		
Oral	LD50	>5,000 mg/kg (rat)
Dermal	LD50	>5,000 mg/kg (rabbit)

· **Primary irritant effect:**
· **Skin corrosion/irritation** Based on available data, the classification criteria are not met.
· **Serious eye damage/irritation** Based on available data, the classification criteria are not met.
· **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.
· **CMR effects (carcinogenity, mutagenicity and toxicity for reproduction)**
· **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
· **Carcinogenicity** Based on available data, the classification criteria are not met.
· **Reproductive toxicity** Based on available data, the classification criteria are not met.
· **STOT-single exposure** Based on available data, the classification criteria are not met.
· **STOT-repeated exposure** Based on available data, the classification criteria are not met.
· **Aspiration hazard** Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

· **12.1 Toxicity**

· **Aquatic toxicity:**	
CAS: 64742-56-9 Distillates (petroleum), solvent-dewaxed light paraffinic	
LL50	>100 mg/l (daphnia)
EL50	>100 mg/l (alga)
	>100 mg/l (fish)

· **12.2 Persistence and degradability**
A part of the components is heavily biodegradable.
A part of the single components easily eliminable from water.
· **12.3 Bioaccumulative potential** No further relevant information available.
· **12.4 Mobility in soil** No further relevant information available.
· **Ecotoxical effects:**
· **Behaviour in sewage processing plants:**
Inhibition of degradation activity in activated sludge is not to be anticipated during correct introduction of low concentrations. Do not release untreated into natural waters.
· **Additional ecological information:**
· **General notes:**
Due to available data on eliminability/decomposition and bioaccumulation potential a prolonged damage of the environment is unlikely.
According to the criteria of the EU-classification and labelling "dangerous for environment"(93/21/EWG) the substance/ the product has to be classified as non-hazardous for the environment.
Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
· **12.5 Results of PBT and vPvB assessment**
According to Annex XIV of Regulation (EC) No.1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): The product does not contain a substance fullfilling the

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PBT (persistent/bioaccumulative/toxic) criteria or the vPvB (very persistent/very bioaccumulative) criteria.
Self classification.
· **12.6 Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

· **13.1 Waste treatment methods**
· **Recommendation**
Must not be disposed together with household garbage. Do not allow product to reach sewage system.

· **European waste catalogue**	
16 03 06	organic wastes other than those mentioned in 16 03 05

· **Uncleaned packaging:**
· **Recommendation:** Disposal must be made according to official regulations.
· **Recommended cleansing agents:** Water, if necessary together with cleansing agents.

SECTION 14: Transport information

· **14.1 UN-Number** · **ADR/RID/ADN, ADN, IMDG, IATA**	Void
· **14.2 UN proper shipping name** · **ADR/RID/ADN, ADN, IMDG, IATA**	Void
· **14.3 Transport hazard class(es)** · **ADR/RID/ADN, ADN, IMDG, IATA** · **Class**	Void
· **14.4 Packing group** · **ADR/RID/ADN, IMDG, IATA**	Void
· **14.5 Environmental hazards:** · **Marine pollutant:**	No
· **14.6 Special precautions for user**	Not applicable.
· **14.7 Transport in bulk according to Annex II of Marpol and the IBC Code**	Not applicable.
· **Transport/Additional information:**	Not a dangerous good to the above specifications.
· **UN "Model Regulation":**	Void

SECTION 15: Regulatory information

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

· **Directive 2012/18/EU**
· **Named dangerous substances - ANNEX I** None of the ingredients is listed.
· **National regulations:**

· **Waterhazard class:** Water hazard class 1 (German AwSV, Self-assessment): slightly hazardous for water.
· **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

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Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 26.03.2020 *Version number 1* *Revision: 21.03.2018*

Trade name: AGITAN® DF 681F

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SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· ***Relevant phrases***
H304 May be fatal if swallowed and enters airways.

· ***Department issuing SDS:***
Product Safety Department
E-Mail: msds@munzing.com

· ***Abbreviations and acronyms:***
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
Asp. Tox. 1: Aspiration hazard – Category 1

· **** Data compared to the previous version altered.***

MATERIAL SAFETY DATA SHEET

1. IDENTIFICATION OF THE PRODUCT AND THE COMPANY

Product Name: **FLOFOAM 139F**

Supplier: **SNF (UK) LIMITED**
Solutions House, Ripley Close,
Normanton Industrial Estate
Normanton, WF6 1TB.

Telephone Number: +44 (0) 1924 311000 **Fax:** +44 (0) 1924 311099

Product Use: Process aid for industrial applications.

2. HAZARDS IDENTIFICATION

This product is not hazardous to health according to EC criteria.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components presenting hazards : Blend of hydrocarbons, fatty acid esters and surfactants.

Hazardous	CAS No	Concentration	R Phrase	Classification
Component				
Kerosene	064742-81-0	<55%	R65	Xn

4. FIRST AID MEASURES

Product in eyes : Wash thoroughly with water. If irritation persists, seek medical advice.

Product on skin : Remove all contaminated clothing and footwear. Wash with soap and water. In case of persistent skin irritation, consult a physician.

Product inhaled : No hazard anticipated.

Product ingested : Do not induce vomiting. Give milk to drink. Seek medical advice.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : WATER SPRAY, FOAM, CARBON DIOXIDE (CO2), POWDERS, AQUEOUS FILM FORMING FOAM (AFFF).

Unsuitable extinguishing media : Strong water jet.

Specific hazards : NOT classified as flammable according to EC criteria, but may present a risk in the event of a fire.
Combustible liquid. However, it does not catch fire easily.

6. ACCIDENTAL RELEASE MEASURES

Wash small spillages away with cold water. Absorb large spillages with sand or earth.
Dispose in accordance with national and local regulations.

7. HANDLING AND STORAGE

Store between 5^{o}C and 30^{o}C. Extremes of temperature may adversely affect viscosity and stability.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering measures : No specific measures are required provided the product is handled in accordance with the general rules of occupational hygiene and safety.

Personal protective equipment :
Hand protection : Protective gloves.

Eye Protection : Goggles or visor.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Clear amber liquid.
S.G.: Approx 0.88.

10. STABILITY AND REACTIVITY

No known hazardous reactions.

11. TOXICOLOGICAL INFORMATION

Product in eyes : This product is mildly irritating to the eyes.

Product on skin : Moderately irritant to the skin, prolonged contact may cause dermatitis.

Product inhaled : No hazard anticipated.

Product ingested : This product has low systemic toxicity. If aspiration occurs (e.g. during vomiting) this can lead to intense irritation of the lung tissue, and chemically induced pneumonia.

12. ECOLOGICAL INFORMATION

OECD 301D Biodegradability test. 14 days >80% Biodegradation.

13. DISPOSAL CONSIDERATIONS

Incineration under approved conditions.

14. TRANSPORT INFORMATION

This product is not classified as dangerous.

15. REGULATORY INFORMATION

EC Labelling

- Symbol (s)	None.
- R Phrase (s)	None.
- S Phrase (s)	None.

16. OTHER INFORMATION

Further information:

This MSDS was prepared in accordance with the following:

Council Directive 92/32/EEC of 30 April 1992 amending for the seventh time Directive 67/548/EEC on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances and all subsequent adaptations to technical progress.

Directive 1999/45/EC of the European Parliament and of the Council of 31 May 1999 concerning the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labelling of dangerous preparations.

Commission Directive 2001/58/EC of 27 July 2001 amending for the second time Directive 91/155/EEC defining and laying down the detailed arrangements for the system of specific information relating to dangerous preparations in implementation of Article 14 of European Parliament and Council Directive 1999/45/EC and relating to dangerous substances in implementation of Article 27 of Council Directive 67/548/EEC (safety data sheets).

ISO 110140-1 : Material Safety Data Sheet for Chemical Product.

Contact: SNF (UK) Ltd.
Tele: 01924 311000

Revision Date: 23/10/18

SAFETY DATA SHEET

According to 1907/2006/EC, Article 31

Sodium Chloride - Rock Salt

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

1.1 Product Identifier	
Product Name	Sodium Chloride - Rock Salt
Other Names	Sodium Chloride Technical
CAS No.	7647-17-5
Index No.	Not listed
EC No.	231-598-3
Product Code	S0001296

1.2 Relevant identified uses of the substances or mixture and uses advised against	
Product Use	Laboratory chemicals, manufacture of substances, Scientific R&D

1.3 Details of the supplier of the safety data sheet	
Company	Breckland Scientific Supplies Ltd
Address	Antom Court, Tollgate Drive, Stafford, ST16 3AF
Web	www.brecklandscientific.co.uk
Telephone	01785 227 227
Fax	01785 227 444
Email	msds@brecklandscientific.co.uk
Emergency Telephone	08:30-17:00: 01785 227227 24hrs: 112

Section 2: Hazard Identification

2.1 Classification of the substance mixture	
Classification - (EC) No 1272/2008	Not considered hazardous

2.2 Label Elements	
Hazard Pictograms	
Signal Word	N/A
Hazard Statement	Not considered hazardous
Precautionary Statement	No additional precautions required No additional precautions required

Section 3: Composition/information on ingredients

3.1 Substances - 67/548/EEC/1999/45/EC

Chemical Name & Code	CAS No.	Classification	Concentration

All percentages are by weight.

If above table is empty - no components need to be disclosed according to the applicable regulations

Section 4: First Aid Measures

4.1 Description of first aid measures	
Inhalation	Move the exposed person to fresh air. If breathing stops, provide artificial respiration.
Eye Contact	Rinse immediately with plenty of water for 15 minutes holding the eyelids open. Seek medical attention.
Skin Contact	Remove all contaminated clothes and footwear immediately unless stuck to skin. Wash off immediately with plenty of soap and water. Seek medical attention if irritation or symptoms persist.
Ingestion	DO NOT INDUCE VOMITING. Never give anything by mouth to an unconscious person. Rinse mouth thoroughly. Seek medical attention.
General Information	If you feel unwell, seek medical advice (show the label where possible).

Section 5: Firefighting Measures

5.1 Extinguishing media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment
5.2 Special hazards arising from substances or mixture	No data available
5.3 Advice for firefighters	Wear suitable respiratory equipment when necessary

Section 6: Accidental Release Measures

6.1 Personal precaution, protective equipment and emergency procedures	Wear suitable protective clothing. Avoid breathing vapours, mist or gas. Avoid formation of dust. Ensure adequate ventilation of the working area. Evacuate personnel to a safe area.
6.2 Environmental precautions	If safe to do so, prevent further leakage or spillage. Do not let product enter drains.
6.3 Methods and materials for containments and cleaning up	Avoid raising dust. Sweep up. Transfer to suitable, labelled containers for disposal.

Section 7: Handling and Storage

7.1 Precautions for safe handling	Handle in accordance with good industrial hygiene and safety practice. Never carry a bottle by its top. Avoid formation of dust. Ensure adequate ventilation of the working area.

7.2 Conditions for safe storage including any incompatibilities.	Keep container tightly closed in a cool, dry and well-ventilated area. Keep in properly labeled containers. General principles of chemical storage: Store the minimum stock levels of hazardous chemicals, always disposing of chemicals that are no longer required. Store large breakable containers, particularly of liquids, below shoulder height. Ensure containers and bottle tops are sealed properly to avoid unnecessary leakage of vapours. Ensure hazard labels are clear and never store in direct sunlight.

Section 8: Exposure controls/ personal protection

8.1 Control parameters **8.1.1 Exposure limit values**		
Sodium Chloride - Rock Salt CAS No: 7647-17-5	Long Term (8hr TWA)	Short Term (15 min period STEL)
ppm	N/A	N/A
mg/m^3	N/A	N/A

Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used.

Figures are based upon UK EH40 WEL (Workplace Exposure Limits)

8.2 Exposure Controls	
Engineering Measures	Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of the working day. Ensure adequate ventilation of the working area. Ensure quickly accessible eye-wash stations are available.
Eye / face protection	Wear appropriate well-fitting protective eyeglasses or chemical safety goggles as described by EN166 (EU Standard)
Skin / hand protection	Wear appropriate protective gloves and clothing to prevent skin exposure.Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact.
Respiratory protection	Use a EN149 (EU Standard) approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9: Physical and chemical properties

State:	Solid
Colour:	Colourless
Melting point:	801
Boiling point:	1413
Relative density: (g/cm^3)	2.1650
Chemical formula:	N/A
Molecular weight: (g/mol)	

Section 10: Stability & Reactivity

10.1 Reactivity	No data available
10.2 Chemical stability	Stable under normal conditions
10.3 Possibility of hazardous reactions	No data available
10.4 Conditions to avoid	No data available
10.5 Incompatible materials	No data available

10.6 Hazardous decomposition products	No data available

Section 11: Toxicological information

11.1 Information on toxicological effects:	
Acute toxicity	No data available
Germ cell mutagenicity	No data available
Carcinogenicity	No data available
Reproductive toxicity	No data available

11.4 Toxicological information	
Sodium Chloride - Rock Salt	Oral Rat LD50 (mg/kg): 3550

Section 12: Ecological information

12.1 **Toxicity:** Toxicity to daphnia and other aquatic vertebrates	
Sodium Chloride - Rock Salt	EC50 Daphnia magna (Water flea) (mg/l - 48hr): 1661

Section 13: Disposal considerations

General information	Dispose of in compliance with all local and national regulations.
Disposal methods	Contact a licensed waste disposal company. Dispose of this material and its container to hazardous or special waste collection point

Section 14: Transport information

14.1 UN Number		
ADR/RID: N/A	IMDG: N/A	IATA: N/A

14.2 UN Proper shipping name:	Sodium Chloride - Rock Salt
14.3 Transport hazard class(es):	N/A
14.4 Packing group:	N/A

14.5 Environmental Hazards		
ADR/RID: No	IMDG Marine Pollutant: No	IATA: No

Section 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture	
Regulations	Labelling according to Regulation (EC) No 1272/2008.

Section 16: Other information

16.1 Other information: Text of hazard statements in Section 3	

If above table is empty - no components need to be disclosed according to the applicable regulations

16.2 Further information	
Further information	The information supplied in this Safety Data Sheet is designed only as guidance for the safe use, storage and handling of the product. This information is correct to the best of our knowledge and belief at the date of publication however no guarantee is made to its accuracy. This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials. Breckland Scientific Supplies Limited will not be held liable for any damage or injury caused by this product and does not obviate the requirement for end users to carry out their own workplace and specific use risk assessment.

SAFETY DATA SHEET
Sulfuric Acid 15-50%

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

1.1. Product identifier

Product name Sulfuric Acid 15-50%

Synonyms; trade names Concentrated sulfuric adic, Oil of vitriol, Sulphuric acid, Battery acid

REACH registration number 01-2119458838-20

CAS number 7664-93-9

EC number 231-639-5

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

Identified uses Treatment of drinking water, has received approval by the European Committee for Standardisation. Manufacture of substances. Intermediate Processing aid pH regulating agent Battery electrolyte Pharmaceutical substance Plating and metal surface treatment agents Flue gas scrubber Laboratory agent

1.3. Details of the supplier of the safety data sheet

Supplier

Industrial Chemicals Limited
Hogg Lane
Grays
Essex
RM17 5DU
United Kingdom
T:+44 (0)1375 389000
F:+44 (0)1375 389110
sds@icgl.co.uk

1.4. Emergency telephone number

Emergency telephone +44 (0)1865 407333 (24-hour)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical hazards Not Classified

Health hazards Skin Corr. 1A - H314

Environmental hazards Not Classified

Classification (67/548/EEC or 1999/45/EC) C;R35.

Human health The IARC has issued the following statement (Monograph 100F): "There is sufficient evidence in humans for the carcinogenicity of mists from strong inorganic acids. Mists from strong inorganic acids cause cancer of the larynx. There is limited evidence for a causal association of mists from strong inorganic acids with cancer of the lung. Mists from strong inorganic acids are carcinogenic to humans (Group 1).

Sulfuric Acid 15-50%

2.2. Label elements

EC number 231-639-5

Pictogram

Signal word Danger

Hazard statements H314 Causes severe skin burns and eye damage.

Precautionary statements
P260 Do not breathe vapour/ spray.
P264 Wash contaminated skin thoroughly after handling.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
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/ doctor.
P321 Specific treatment (see medical advice on this label).
P363 Wash contaminated clothing before reuse.
P405 Store locked up.
P501 Dispose of contents/ container in accordance with national regulations.

Contains Sulfuric acid

Supplementary precautionary statements
P260 Do not breathe vapour/ spray.
P264 Wash contaminated skin thoroughly after handling.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P310 Immediately call a POISON CENTER/ doctor.
P363 Wash contaminated clothing before reuse.

2.3. Other hazards

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Sulfuric acid **30-60%**

CAS number: —

Classification	Classification (67/548/EEC or 1999/45/EC)
Skin Corr. 1A - H314	C;R35.

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

General information Speed is essential! Get medical attention immediately.

Inhalation Remove affected person from source of contamination. Give oxygen if necessary. Apply artificial respiration if breathing has ceased or is failing. Do not use mouth-to-mouth resucitation if victim ingested or inhaled the substance.

Sulfuric Acid 15-50%

Ingestion If confined to the mouth, rinse mouth thoroughly and ensure water is not swallowed. If swallowed, drink plenty of water. If substance has been swallowed, give water to drink immediately Do not induce vomiting.

Skin contact Remove contaminated clothing and rinse skin thoroughly with water.

Eye contact Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 15 minutes.

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

Inhalation Mist/droplets are irritating to the respiratory tract, and will cause a burning sensation in the throat, coughing, and breathing difficulties. Pulmonary oedema (excessive liquid in the lungs) can occur after inhalation of higher amounts. Long-term exposure may cause cancer of the larynx. Long-term, low-level exposure may cause erosion and discolouration of teeth.

Skin contact Causes severe burns; may lead to permanent scarring.

Eye contact Risk of severe damage to eyes. Burns can occur. May cause long-term damage and even loss of sight.

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

Notes for the doctor After treatment keep patient under observation for 48 hours, as delayed pulmonary oedema may develop.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media Use fire-extinguishing media suitable for the surrounding fire. Use water to cool containers.

5.2. Special hazards arising from the substance or mixture

Specific hazards Oxidising agent. Thermal decomposition or combustion products may include the following substances: Toxic gases or vapours.

5.3. Advice for firefighters

Special protective equipment for firefighters Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

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

6.2. Environmental precautions

Environmental precautions Do not discharge into drains or watercourses or onto the ground. Avoid discharge into drains. Spillages or uncontrolled discharges into watercourses must be reported immediately to the Environmental Agency or other appropriate regulatory body.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up Small Spillages: Absorb spillage with non-combustible, absorbent material. Do not use sawdust or other combustible material. Flush contaminated area with plenty of water. Large Spillages: Neutralise spilled material with crushed limestone, slaked lime (calcium hydroxide), soda ash (sodium carbonate) or sodium bicarbonate. Flush contaminated area with plenty of water. Collect and place in suitable waste disposal containers and seal securely. Extensive fumes may be released.

6.4. Reference to other sections

SECTION 7: Handling and storage

Sulfuric Acid 15-50%

7.1. Precautions for safe handling

Usage precautions Wear appropriate protective clothing. Provide adequate ventilation. Avoid inhalation of vapours. Use approved respirator if air contamination is above an acceptable level. Avoid contact with skin and eyes. Never add water to sulfuric acid. Dilute by slowly adding acid to water, with stirring. Keep away from metals, organics, nitrates, chlorates, carbides and hot surfaces, as corrosive and toxic decomposition products can be formed.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions Store in a cool and well-ventilated place. Store in vessels of mild steel. Note that dilution below 70% will allow sulfuric acid to attack steel. Suitable containers: Plastic. Stainless steel. Store away from the following materials: Alkalis. Caustic products. Strong oxidising agents.

7.3. Specific end use(s)

SECTION 8: Exposure Controls/personal protection

8.1. Control parameters

Occupational exposure limits

Sulfuric acid

Long-term exposure limit (8-hour TWA): 0.05 mg/m³

8.2. Exposure controls

Protective equipment

Appropriate engineering controls Provide adequate general and local exhaust ventilation. Observe any occupational exposure limits for the product or ingredients.

Eye/face protection The following protection should be worn: Chemical splash goggles or face shield.

Hand protection Use protective gloves. Rubber or plastic.

Other skin and body protection Chemical suit and boots if handling large quantities.

Respiratory protection If ventilation is inadequate, suitable respiratory protection must be worn.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Appearance Clear liquid.

Colour Colourless.

Odour Odourless.

pH pH (concentrated solution): <0.1

Melting point -1°C For 96% concentration.

Initial boiling point and range 323°C @ For 96% concentration.

Relative density 1840 @ 20°C For 96% concentration.

Solubility(ies) Soluble in water.

9.2. Other information

SECTION 10: Stability and reactivity

Sulfuric Acid 15-50%

10.1. Reactivity

10.2. Chemical stability

Stability Stable at normal ambient temperatures and when used as recommended.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions Not relevant.

10.4. Conditions to avoid

Conditions to avoid Avoid exposure to high temperatures or direct sunlight. Store in a well-ventilated area. Store in vessels suitable for substances of low pH. Avoid contact with the following materials: Strong alkalis. Strong oxidising agents.

10.5. Incompatible materials

Materials to avoid Strong alkalis. Metals. Organics. Reacts violently with water; ensure acid is always added to water, never the reverse. Avoid contact with sulphides, selenides or arsenic compoinds to prevent formation of the toxic gases hydrogen sulfide, hydrogen selenide, or arsenous hydride.

10.6. Hazardous decomposition products

Hazardous decomposition products Heating may generate the following products: Sulphurous gases (SOx).

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity - oral

Acute toxicity oral (LD_{50} mg/kg) 2,140.0

Species Rat

Acute toxicity - inhalation

Species Rat

Inhalation Pulmonary oedema (excessive liquid in lungs) can occur after inhalation of higher amounts. Mist/droplets are corrosive to the respiratory tract, and will cause a burning sensation in the throat, coughing and breathing difficulties. Long-term exposure may cause cancer of the larynx.

Skin contact Causes severe burns. May lead to permanent scarring.

Eye contact Risk of serious damage to eyes. Causes burns. Contact with concentrated chemical may very rapidly cause severe eye damage, possibly loss of sight.

SECTION 12: Ecological Information

12.1. Toxicity

Acute toxicity - fish , 48 hours: 49 mg/l, Lepomis macrochirus (Bluegill)

12.2. Persistence and degradability

Persistence and degradability Remains indefinitely in environment as sulfate.

12.3. Bioaccumulative potential

12.4. Mobility in soil

Sulfuric Acid 15-50%

12.5. Results of PBT and vPvB assessment

12.6. Other adverse effects

Other adverse effects Release into drains will contribute to the acidification of effluent treatment systems, and injure sewage treatment organisms.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal methods Neutralise waste with alkaline material, such as crushed limestone, slaked lime (calcium hydroxide), soda ash (sodium carbonate) or sodium bicarbonate. Place waste in labelled, sealed containers. Dispose of waste via a licensed waste disposal contractor. Do not dispose directly into rivers or drains

SECTION 14: Transport information

14.1. UN number

UN No. (ADR/RID) 2796

UN No. (IMDG) 2796

UN No. (ICAO) 2796

14.2. UN proper shipping name

Proper shipping name (ADR/RID) SULPHURIC ACID

14.3. Transport hazard class(es)

Transport labels

14.4. Packing group

ADR/RID packing group II

IMDG packing group II

ICAO packing group II

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant
No.

14.6. Special precautions for user

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

SECTION 15: Regulatory information

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

National regulations EH40/2005 Workplace exposure limits.

15.2. Chemical safety assessment

A chemical safety assessment has been carried out.

SECTION 16: Other information

Sulfuric Acid 15-50%

Revision comments	This is the first issue using the GHS Pro software package.
Issued by	D.Kelly
Revision date	22/09/2016
Revision	11
Supersedes date	11/06/2015
Risk phrases in full	R35 Causes severe burns.
Hazard statements in full	H314 Causes severe skin burns and eye damage.

Revision Date 24/05/13

Revision 9

Supersedes date March 2011

SAFETY DATA SHEET
Sodium hydroxide solution, 5 - 51%

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product name Sodium hydroxide solution, 5 - 51%

REACH Registration number 01-2119457892-27

CAS-No. 1310-73-2

EC No. 215-185-5

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

Identified uses Treatment of drinking water, has received approval by the European Committee for Standardisation. Treatment of waste water. Raw material. Neutralising agent. pH regulating agent Manufacture of substances. Absorbant for gases and liquids Manufacturing soaps Washing and cleaning products

1.3. Details of the supplier of the safety data sheet

Supplier

Industrial Chemicals Limited
Hogg Lane
Grays
Essex
RM17 5DU
United Kingdom
T:+44 (0)1375 389000
F:+44 (0)1375 389110
sds@icgl.co.uk

1.4. Emergency telephone number

+44 (0)1865 407333 (24-hour)

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical and Chemical Hazards	Met. Corr. 1 - H290
Human health	Skin Corr. 1A - H314;Eye Dam. 1 - H318
Environment	Not classified.

Classification (1999/45/EEC) C;R35.

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

Human health

Corrosive. Prolonged contact causes serious eye and tissue damage.

Environment

Substantial amounts of the product may lead to a local change in acidity in small water systems which may have adverse effects on aquatic organisms.

2.2. Label elements

EC No. 215-185-5

Contains SODIUM HYDROXIDE

Label In Accordance With (EC) No. 1272/2008

Sodium hydroxide solution, 5 - 51%

Signal Word	Danger	
Hazard Statements		
	H290	May be corrosive to metals.
	H314	Causes severe skin burns and eye damage.
	H318	Causes serious eye damage.
Supplementary Precautionary Statements		
	P234	Keep only in original container.
	P280	Wear protective gloves/protective clothing/eye protection/face protection.
	P260	Do not breathe vapour/spray.
	P264	Wash contaminated skin thoroughly after handling.
	P321	Specific treatment (see medical advice on this label).
	P301+330+331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
	P303+361+353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
	P304+340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
	P305+351+338	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.
	P363	Wash contaminated clothing before reuse.
	P390	Absorb spillage to prevent material damage.
	P405	Store locked up.
	P406	Store in corrosive resistant/… container with a resistant inner liner.
	P501	Dispose of contents/container to …

2.3. Other hazards

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixtures

SODIUM HYDROXIDE	**40-60%**
CAS-No.: 1310-73-2 **EC No.: 215-185-5**	
Classification (EC 1272/2008) Met. Corr. 1 - H290 Skin Corr. 1A - H314 Eye Dam. 1 - H318	Classification (67/548/EEC) C;R35

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

REACH Registration number 01-2119457892-27

CAS-No. 1310-73-2

EC No. 215-185-5

Composition Comments

Mercury (Rayon) grade contains a low level of mercury, typically less than 0.1 ppm. Diaphragm grade contains up to 1.3% sodium chloride, which increases the density of the solution.

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

General information

Get medical attention immediately! CAUTION! First aid personnel must be aware of own risk during rescue!

Inhalation

Rinse nose, mouth, and throat with running water.

Ingestion

Do not induce vomiting. If confined to the mouth, rinse mouth thoroughly and ensure water is not swallowed. If swallowed, drink plenty of water. If substance has been swallowed, give water or milk to drink immediately. Get medical attention immediately!

Skin contact

Remove contaminated clothes and rinse skin thoroughly with water. Get medical attention immediately!

Eye contact

Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes.

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

General information

Strong corrosive action on all body tissue, causing burns and frequently deep ulceration, and ultimately scarring.

Inhalation

Mist/droplets are irritating to the respiratory tract, and will cause a burning sensation in the throat, coughing, and breathing difficulties. Pulmonary oedema (excessive liquid in the lungs) can occur after inhalation of higher amounts.

Ingestion

Causes severe damage to gastrointestinal tract. Can cause perforation and scarring.

Skin contact

Burning pain and severe corrosive skin damage. Causes burns, deep ulceration, and scarring. Frequent contact with lower concentrations may cause eczema.

Eye contact

Corrosive to eyes. May cause severe corneal damage, reduced vision, or even blindness.

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

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Extinguishing media

The product is non-combustible. Use fire-extinguishing media appropriate for surrounding materials.

5.2. Special hazards arising from the substance or mixture

Hazardous combustion products

Contact with some metals can liberate flammable hydrogen gas.

5.3. Advice for firefighters

Protective equipment for fire-fighters

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

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Wear protective clothing as described in Section 8 of this safety data sheet. In case of spills, beware of slippery floors and surfaces.

6.2. Environmental precautions

Do not discharge into drains, water courses or onto the ground. Contain spillages with sand, earth or any suitable adsorbent material. Release to rivers will cause a strong increase in pH, resulting in death to aquatic organisms. Spillages or uncontrolled discharges into watercourses must be IMMEDIATELY alerted to the Environmental Agency or other appropriate regulatory body.

6.3. Methods and material for containment and cleaning up

Small Spillages: Neutralise with weak acid and wash away with water. Alternately, drench spill with water and wash away. Large Spillages: Isolate and pump into a tank. Dispose of via a licensed hazardous waste contractor. Keep people and animals away from contaminated areas.

6.4. Reference to other sections

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Following prolonged storage in metal tanks, a black sludge will collect at the bottom of the tank. This will contain iron, sodium carbonate, and when Mercury (Rayon) grade is stored, mercury. Test the atmosphere in the tank for oxygen and mercury vapour before entering. Appropriate care must be taken when removing and handling this sludge, including control of atmospheric levels. Handle with care as an alkaline material. Take care when diluting with water (heat generation). Avoid contact with skin and eyes. Avoid generation of sprays or mists.

7.2. Conditions for safe storage, including any incompatibilities

Store in vessels of mild steel. Keep away from acids and other chemicals that react with this product. Build-up of white metal carbonate crystals may occur if tank is open to air.

7.3. Specific end use(s)

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Name	STD	TWA - 8 Hrs		STEL - 15 Min		Notes
SODIUM HYDROXIDE	WEL				2 mg/m3	

WEL = Workplace Exposure Limit.

8.2. Exposure controls

Protective equipment

Engineering measures

Provide adequate ventilation, including appropriate local extraction, to ensure that the defined occupational exposure limit is not exceeded.

Respiratory equipment

If ventilation is insufficient, suitable respiratory protection must be provided.

Hand protection

Wear protective gloves. Rubber or plastic.

Eye protection

Goggles/face shield are recommended.

Other Protection

Chemical suit and boots if handling large quantities.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance	Colourless liquid.
Odour	Odourless.
Solubility	Miscible with water
Initial boiling point and boiling range (°C)	142
	For 50% Membrane grade
Melting point (°C)	12
	For 50% Membrane grade
Relative density	1525 20
	For 50% Membrane grade
Viscosity	78 cP 20
	For 50% Membrane grade

9.2. Other information

Sodium hydroxide solution, 5 - 51%

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

10.2. Chemical stability

10.3. Possibility of hazardous reactions

10.4. Conditions to avoid

Vessels should not be open to air; substance absorbs water and carbon dioxide. In extreme cases, the carbonate can form white floating crystals. Do not store adjacent to incompatible materials, such as acids and amphoteric metals eg aluminium, magnesium, zinc, tin and bronze - may release hydrogen gas.

10.5. Incompatible materials

Materials To Avoid

Reaction with ammonium compounds releases ammonia. May react violently with acrolein, acrylnitrice, and allyl alcohol. Heating with trichloroethylene will form explosive mixtures of dichloroacetylene. Some plastics, leather and textiles are destroyed on contact. Mixture with water or acids will release large quantities of heat.

10.6. Hazardous decomposition products

Thermally stable to boiling point; does not decompose. Precipitation of metal hydroxide crystals can occur below 12C.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

General information

Strong corrosive action on all body tissue, causing burns and frequently deep ulceration, with ultimate scarring.

Inhalation

Mist/droplets are corrosive to the respiratory tract, and will cause a burning sensation in the throat, coughing and breathing difficulties. Pulmonary oedema (excessive liquid in lungs) can occur after inhalation of higher amounts.

Ingestion

If ingested will cause severe damage to gastrointestinal tract. Can cause perforation and scarring.

Skin contact

Corrosive to body tissue, causing burns, deep ulceration, and scarring. Frequent contact with lower concentrations may cause eczema.

Eye contact

Vapour or spray may cause eye damage, impaired sight or blindness.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity

Spillage will cause localised damage to animals and plants on the ground. Do not allow release into controlled waters; resulting high pH will affect aquatic life forms. If allowed to enter drains will damage effluent treatment organisms. Neutralisation and dilution will greatly reduce these effects. Product is chemically degradable into sodium carbonate.

12.1. Toxicity

LC 50, 96 Hrs, Fish mg/l	45.4

12.2. Persistence and degradability

12.3. Bioaccumulative potential

12.4. Mobility in soil

12.5. Results of PBT and vPvB assessment

12.6. Other adverse effects

Sodium hydroxide solution, 5 - 51%

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Neutralise with dilute acid and wash away with large amounts of water. Confirm disposal procedures with environmental engineer and local regulations.

SECTION 14: TRANSPORT INFORMATION

14.1. UN number

UN No. (ADR/RID/ADN) 1824

14.2. UN proper shipping name

Proper Shipping Name SODIUM HYDROXIDE SOLUTION

14.3. Transport hazard class(es)

ADR/RID/ADN Class Class 8: Corrosive substances.

Transport Labels

14.4. Packing group

ADR/RID/ADN Packing group II

IMDG Packing group II

ICAO Packing group II

14.5. Environmental hazards

14.6. Special precautions for user

Hazard No. (ADR) 80

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

SECTION 15: REGULATORY INFORMATION

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

15.2. Chemical Safety Assessment

No chemical safety assessment has been carried out.

SECTION 16: OTHER INFORMATION

General information

The material must only be loaded and unloaded from tankers by trained personnel, such as those with a Hazchem certificate.

Sodium hydroxide solution is used as a chemical for the treatment of drinking water, as approved by the European Committee for Standardisation under EN 896:2005.

This data sheet was prepared in accordance with EC 1907/2006 concerning REACH.

Issued By D.Kelly

Revision Date 24/05/13

Revision 9

Sodium hydroxide solution, 5 - 51%

Supersedes date	March 2011

Risk Phrases In Full

R35	Causes severe burns.

Hazard Statements In Full

H318	Causes serious eye damage.
H314	Causes severe skin burns and eye damage.
H290	May be corrosive to metals.

Revision Date 23/04/2015

Revision 6

Supersedes date 29/10/2012

SAFETY DATA SHEET
Sodium hypochlorite solution, 5-20%

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product name	Sodium hypochlorite solution, 5-20%
Synonyms, Trade Names	Commonly called bleach solution
REACH Registration number	01-2119488154-34
CAS-No.	7681-52-9
EC No.	231-668-3

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

Identified uses	Treatment of drinking water, has received approval by the European Committee for Standardisation. Washing and cleaning products Pulp and paper manufacturing Cleaning agent. Treatment of waste water. Finishing agent (textiles) Manufacture of substances. Disinfectant.

1.3. Details of the supplier of the safety data sheet

Supplier	Industrial Chemicals Limited Hogg Lane Grays Essex RM17 5DU United Kingdom T:+44 (0)1375 389000 F:+44 (0)1375 389110 sds@icgl.co.uk

1.4. Emergency telephone number

+44 (0)1865 407333 (24-hour)

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

	Physical and Chemical Hazards	Met. Corr. 1 - H290
	Human health	EUH031;Skin Corr. 1B - H314
	Environment	Aquatic Acute 1 - H400;Aquatic Chronic 2 - H411
Classification (1999/45/EEC)	C;R34. N;R50. R31.	

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

Human health

Vapours may irritate the respiratory system and cause coughing, asthmatic breathing and breathlessness. Corrosive to skin and eyes.

Environment

The product contains a substance which is very toxic to aquatic organisms.

Physical and Chemical Hazards

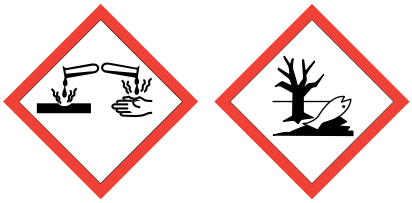
Contact with acids liberates toxic chlorine gas Product may be corrosive to some metals

2.2. Label elements

EC No.	231-668-3
Contains	SODIUM HYDROXIDE Sodium hypochlorite

Label In Accordance With (EC) No. 1272/2008

Sodium hypochlorite solution, 5-20%



Signal Word	Danger	
Hazard Statements		
	H290	May be corrosive to metals.
	H314	Causes severe skin burns and eye damage.
	H400	Very toxic to aquatic life.
	H411	Toxic to aquatic life with long lasting effects.
Precautionary Statements		
	P273	Avoid release to the environment.
	P280	Wear protective gloves/protective clothing/eye protection/face protection.
	P303+361+353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
	P304+340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
	P305+351+338	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.
	P403+235	Store in a well-ventilated place. Keep cool.
Supplementary Precautionary Statements		
	P260	Do not breathe vapour/spray.
	P264	Wash contaminated skin thoroughly after handling.
	P301+330+331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
	P363	Wash contaminated clothing before reuse.
	P390	Absorb spillage to prevent material damage.
	P391	Collect spillage.
	P405	Store locked up.
	P406	Store in corrosive resistant/… container with a resistant inner liner.
	P501	Dispose of contents/container in accordance with national regulations.
Supplemental label information		
	EUH031	Contact with acids liberates toxic gas.

2.3. Other hazards

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixtures

SODIUM HYDROXIDE		**0.1 - 1.0%**
CAS-No.: 1310-73-2	**EC No.: 215-185-5**	
Classification (EC 1272/2008) Met. Corr. 1 - H290 Skin Corr. 1A - H314 Eye Dam. 1 - H318	Classification (67/548/EEC) C;R35	

Sodium hypochlorite		**5-20%**
CAS-No.: 7681-52-9	**EC No.: 231-668-3**	

Sodium hypochlorite solution, 5-20%

Classification (EC 1272/2008)	Classification (67/548/EEC)
Met. Corr. 1 - H290	C;R34.
EUH031	N;R50.
Skin Corr. 1B - H314	R31.
Aquatic Acute 1 - H400	
Aquatic Chronic 2 - H411	

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

REACH Registration number	01-2119488154-34
CAS-No.	7681-52-9
EC No.	231-668-3
Gross Formula	NaOCl + NaCl

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

General information

Get medical attention immediately!

Inhalation

Move the exposed person to fresh air at once. For breathing difficulties oxygen may be necessary.

Ingestion

Do not induce vomiting. If confined to the mouth, rinse mouth thoroughly and ensure water is not swallowed. If swallowed, drink plenty of water. If substance has been swallowed, give water to drink immediately

Skin contact

Remove contaminated clothes and rinse skin thoroughly with water.

Eye contact

Immediately flush with plenty of water for up to 15 minutes. Remove any contact lenses and open eyes wide apart.

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

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

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Extinguishing media

Use fire-extinguishing media appropriate for surrounding materials.

5.2. Special hazards arising from the substance or mixture

Hazardous combustion products

Thermal decomposition will evolve Chlorine. Contact with heavy metals, their compounds and alloys the product decomposes with evolution of oxygen.

5.3. Advice for firefighters

Protective equipment for fire-fighters

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

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

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

6.2. Environmental precautions

Do not discharge into drains, water courses or onto the ground.

6.3. Methods and material for containment and cleaning up

Flush away small spillages with plenty of water. Large Spillages: Absorb with sand or other inert absorbent. Pick up with vacuum or absorbent solid, store in closed container for disposal.

6.4. Reference to other sections

Sodium hypochlorite solution, 5-20%

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Avoid contact with eyes. Handle with care as an alkaline material. Wear appropriate protective clothing. Avoid inhalation of vapours and spray mists. Do not mix with acids, or other cleaning fluids (especially ammonia). Do not mix with sodium bisulfite

7.2. Conditions for safe storage, including any incompatibilities

Unsuitable containers: metals. Store in vented vessels of rubber lined mild steel or HDPE. Uncontolled pressure build up may occur in closed systems (vessels, pipes etc.) so all containers must have a venting device. Sludge may build up in tanks over time, due to salt deposition. Keep away from acids, ammonia solutions, amines and methanol. Keep away from from heat and direct sunlight.

7.3. Specific end use(s)

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Name	STD	TWA - 8 Hrs		STEL - 15 Min		Notes
SODIUM HYDROXIDE	WEL				2 mg/m3	

WEL = Workplace Exposure Limit.

Ingredient Comments

Chlorine vapour STEL 15min 0.5 ppm, 1.5 mg/m3

DNEL

Industry	Inhalation.	Long Term	1.55	mg/m3
Industry	Inhalation.	Short Term	3.1	mg/m3
Consumer	Inhalation.	Long Term	1.55	mg/m3
Consumer	Inhalation.	Short Term	3.1	mg/m3
Consumer	Oral	Long Term	Systemic Effects	0.26 mg/kg/day

8.2. Exposure controls

Protective equipment

Process conditions

Provide eyewash station.

Engineering measures

Provide adequate general and local exhaust ventilation.

Respiratory equipment

For respirator use cartridge type P3 SL

Hand protection

Wear protective gloves. Rubber or plastic.

Eye protection

Goggles/face shield are recommended.

Other Protection

Plastic apron, sleeves, boots - if handling large quantities, full body suit.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance	Liquid
Colour	Green yellow
Odour	Irritating. Chlorine.
Solubility	Completely soluble in water

Initial boiling point and boiling range (°C)	110 Decomposes with heat
Melting point (°C)	-17ºC
Relative density	5%: ~1.10 15%: 1.26 20
pH-Value, Conc. Solution	> 13

9.2. Other information

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

Violent reaction with: Acids. Sodium bisulfite

10.2. Chemical stability

Avoid Contact with acids.

10.3. Possibility of hazardous reactions

Contact with acids liberates toxic chlorine gas. Reacts with amines and ammonia to form explosive compounds, and can react violently with methanol. Reacts strongly with sodium bisulfite

10.4. Conditions to avoid

Store in a cool dry place away from direct sunlight.

10.5. Incompatible materials

Materials To Avoid

Contact with acids liberates toxic chlorine gas. Decomposition with evolution of oxygen is accelerated by heat and light, and also by contact with metals, particularly copper, nickel, iron and monel.

10.6. Hazardous decomposition products

Thermal decomposition will evolve toxic vapours.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Toxic Dose 1 - LD 50

>1200 mg/kg (oral rat)

Acute toxicity:

Acute Toxicity (Dermal LD50)

> 2000 mg/kg Rat

Skin Corrosion/Irritation:

Corrosive

Respiratory or skin sensitisation:

Not Sensitising.

Germ cell mutagenicity:

This substance has no evidence of mutagenic properties.

Carcinogenicity:

This substance has no evidence of carcinogenic properties.

Inhalation

Mist/droplets are corrosive to the respiratory tract, and will cause a burning sensation in the throat, coughing and breathing difficulties.

Sodium hypochlorite solution, 5-20%

Ingestion

If ingested will cause severe damage to gastrointestinal tract.

Skin contact

Causes burns. Prolonged or repeated contact may cause dermatitis

Eye contact

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

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

LC 50, 96 Hrs, Fish mg/l	0.01-0.1
mg/l active chlorine	
EC 50, 48 Hrs, Daphnia, mg/l	0.01-0.1
IC 50, 72 Hrs, Algae, mg/l	Technically unfeasible

Acute Toxicity - Microorganisms

LOEC 0.375 mg/l Activated sludge

12.2. Persistence and degradability

Degradability

The product quickly decomposes in water or soil

12.3. Bioaccumulative potential

Bioaccumulative potential

Will not bio-accumulate.

12.4. Mobility in soil

Mobility:

The product is soluble in water.

12.5. Results of PBT and vPvB assessment

This product does not contain any PBT or vPvB substances.

12.6. Other adverse effects

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Dispose of waste and residues in accordance with local authority requirements. Do not allow runoff to sewer, waterway or ground. Collect in marked containers and deliver to approved depot. Contaminated area should be washed with large amounts of water

SECTION 14: TRANSPORT INFORMATION

14.1. UN number

UN No. (ADR/RID/ADN)	1791
UN No. (IMDG)	1791
UN No. (ICAO)	1791

14.2. UN proper shipping name

Proper Shipping Name	HYPOCHLORITE SOLUTION
Proper Shipping Name	HYPOCHLORITE SOLUTION

14.3. Transport hazard class(es)

ADR/RID/ADN Class	8
ADR/RID/ADN Class	Class 8: Corrosive substances.

Sodium hypochlorite solution, 5-20%

ADR Label No.	8
IMDG Class	8
ICAO Class/Division	8

Transport Labels

14.4. Packing group

ADR/RID/ADN Packing group	II, or III below 10%
IMDG Packing group	II, or III below 10%
ICAO Packing group	II, or III below 10%

14.5. Environmental hazards

Environmentally Hazardous Substance/Marine Pollutant

14.6. Special precautions for user

EMS	F-A, S-B
Emergency Action Code	2X
Hazard No. (ADR)	80
Tunnel Restriction Code	(E)

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

SECTION 15: REGULATORY INFORMATION

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

EU Legislation

This product has been approved as a chemical used for the treatment of drinking water, under the appropriate BS EN Standard (see Sales Specification), and so it is also approved by the British Drinking Water Inspectorate. Regulation (EC) No 1907/2006 of the European Parliament and the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH). 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.

Water hazard classification

WGK 2

15.2. Chemical Safety Assessment

A chemical safety assessment has been carried out.

SECTION 16: OTHER INFORMATION

Revision Comments

Updated Section(s) 14,

Issued By	D.Kelly
Revision Date	23/04/2015
Revision	6

Sodium hypochlorite solution, 5-20%

Supersedes date	29/10/2012

Risk Phrases In Full

R34	Causes burns.
R35	Causes severe burns.
R31	Contact with acids liberates toxic gas.
R50	Very toxic to aquatic organisms.

Hazard Statements In Full

H318	Causes serious eye damage.
H314	Causes severe skin burns and eye damage.
EUH031	Contact with acids liberates toxic gas.
H290	May be corrosive to metals.
H411	Toxic to aquatic life with long lasting effects.
H400	Very toxic to aquatic life.

Limesol/Puresol Calcium Hydroxide Solution
Product Safety Data Sheet

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

1.1 Identification of the substance or preparation

Substance name:	Calcium Hydroxide slurry, Milk of lime (MOL), Hydrated lime solution, calcium dihydoxide
Tradenames:	Limesol, Puresol
Chemical Description:	Calcium hydroxide solution – 40-45% $Ca(OH)_2$
CAS Number	1305-62-0
EINECS Number	215-137-3

1.2 Use of the substance/preparation

Hydrated lime slurries or solutions are typically used in applications such as water treatment, waste water treatment and chemical processes.

1.3 Company identification

Name:	Alkali Solutions Ltd
Address:	Jacobs Well, Suffolk Lane, Abberley, Worcs, WR6 6BE
Telephone:	+44 (0) 1299 896825
E-mail:	info@alkalisolutions.co.uk

1.4 Emergency telephone

Emergency telephone number available during office hours: 01299 896825

Emergency telephone number available outside office hours: No

2. HAZARDS IDENTIFICATION

2.1 Hazard characterization

2.1.1 Classification according to Regulation (EC) 1272/2008

STOT single Exp 3, Route of exposure: Inhalation
Skin Irritation 2
Eye Damage 1

2.1.2 Classification according to Directive 67/548/EEC

Xi – irritant

2.2 Label Elements

2.2.1 Labeling according to Regulations (EC) 1272/2008

Signal word: Danger

Hazard Pictogram:

Hazard Statements:

H315:	Causes skin irritation
H318:	Causes serious eye damage
H335:	May cause respiratory irritation

Precautionary Statements

P102:	Keep out of reach of children
P280:	Wear protective gloves/protective clothing/eye protection/face protection
P305+P351+P310:	IF IN EYES: Rinse cautiously with water for several minutes. Immediately call POISON CENTRE or doctor/physician
P302+P352	IF ON SKIN: Wash with plenty of water
P261:	Avoid breathing dust/spray
P304+P340:	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P501:	Dispose of contents/container in accordance with the local/regional/national/international regulation

2.2.2 Labelling according to Directive 67/548/EEC

Indication of Danger:
Xi Irritant

Risk Phrases:

R37:	Irritating to respiratory system
R38:	Irritating to skin
R41:	Risk of serious damage to eyes

Safety Phrases:

S2	Keep out of reach of children
S25	Avoid contact with eyes
S26	in case of contact with eyes, rinse immediately with plenty of water and seek medical advice
S37	Wear suitable gloves
S39	Wear eye/face protection

2.3 Other Hazards

The substance does not meet the criteria for PBT or vPvB substance.
No other hazards identified.

3. COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Chemical composition

Substance	Calcium Hydroxide solution 45% Ca(OH)2
Trivial Name	Slaked lime, Hydrated lime solution, Milk of Lime, MOL
CAS number	1305-62-0
EINECS Number	215-137-3

No impurities relevant for classification and labeling.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
No known delayed effects. Consult a physician for all exposures except for minor instances
Following skin contact
Wash affected area immediately with plenty of water. Remove contaminated clothing. If necessary seek medical advice.
Following eye contact
Rinse eyes immediately with plenty of water and seek medical advice.
After ingestion
Clean mouth with water and drink afterwards plenty of water. Do NOT induce vomiting. Obtain medical attention.

4.2 Most important symptoms and effects, both acute and delayed

Calcium hydroxide is not acutely toxic via oral, dermal or inhalation route. The substance is classified as irritating to skin and the respiratory tract, and entails a risk of serious damaged to the eye. There is no concern for adverse systemic effects because local effects (pH-effect) are the major health hazard.

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

Follow the advise given in section 4.1

5. FIRE - FIGHTING MEASURES

5.1 Extinguishing media

The product does not burn. All types of extinguishing media are suitable including water, carbon dioxide, dry powder or foam.

5.2 Special Hazards arising from the substance or mixture

None

5.3 Advice for firefighters

Avoid generation of dust. Use breathing apparatus. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1 For non-emergency personnel

Ensure adequate ventilation
Keep dust levels to a minimum
Keep unprotected persons away
Avoid contact with skin, eyes, and clothing – wear suitable protective equipment (see section 8)
Avoid inhalation of dust – ensure that sufficient ventilation or suitable respiratory protective equipment is used, wear suitable protective equipment (see section 8)

6.1.2 For emergency reponders

Ensure adequate ventilation
Keep dust levels to a minimum
Keep unprotected persons away
Avoid contact with skin, eyes, and clothing – wear suitable protective equipment (see section 8)
Avoid inhalation of dust – ensure that sufficient ventilation or suitable respiratory protective equipment is used, wear suitable protective equipment (see section 8)

6.2 Environment precautions

Contain the spillage. Avoid uncontrolled spills to watercourses and drains (pH increase). Any large spillage into watercourses must be reported to the Environment Agency or other regulatory body.

6.3 Methods and material for containment and cleaning up

In all cases avoid dust formation
Use vacuum suction unit, pumps or shovel into bags

6.4 Reference to other sections

For more information on exposure controls/personal protection or disposal considerations, please check section 8 and 13.

7. HANDLING AND STORAGE

7.1 Precautions for Safe Handling

7.1.1 Protective Measures

Avoid contact with skin and eyes. Wear protective equipment (refer to section 8 of this safety data sheet). Do not wear contact lenses when handling this product. It is also advisable to have individual pocket eyewash. Keep dust levels to a minimum. Minimise dust generation. Enclose dust sources, use exhaust ventilation (dust collector at handling points). Handling systems should preferably be enclosed. When handling bags usual precautions should be paid to the risks outlined in the Council Directive 90/269/EEC.

7.1.2: Advice on general occupational hygiene

Avoid inhalation or ingestion and contact with skin and eyes. General occupational hygiene measures are required to ensure safe handling of the substance. These measures involve good personal and housekeeping practices (i.e. regular cleaning with suitable cleaning devices), no drinking, eating and smoking at the workplace. Shower and change clothes at end of work shift. Do not wear contaminated clothing at home.

7.2: Conditions for safe storage, including any incompatibilities

The substance should be stored under dry conditions. Any contact with air and moisture should be avoided. Bulk storage should be in purpose–designed silos. Keep away from acids, significant quantities of paper, straw, and nitro compounds. Keep out of reach of children. Do not use aluminium for transport or storage if there is a risk of contact with water.

7.3: Specific end use(s)

Please check the identified uses in table 1 of the Appendix of this SDS. For more information please see the relevant exposure scenario, available in the Appendix, and check ‘2.1: Control of worker’ in the relevant exposure scenario section in the Appendix.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

SCOEL recommendation (SCOEL/SUM/137 February 2008; see Section 16.6):
Occupational Exposure Limit (OEL), 8 h TWA: 1 mg/m3 respirable dust of calcium hydroxide
Short-term exposure limit (STEL), 15 min: 4 mg/m3 respirable dust of calcium hydroxide
PNEC aqua = 490 µg/l
PNEC soil/groundwater = 1080 mg/l

8.2 Exposure controls

To control potential exposures, generation of dust should be avoided. Further, appropriate protective equipment is recommended. Eye protection equipment (e.g. goggles or visors) must be worn, unless potential contact with the eye can be excluded by the nature and type of application (i.e. closed process). Additionally, face protection, protective clothing and safety shoes are required to be worn as appropriate.

8.2.1: Appropriate engineering controls

If user operations generate dust, use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne dust levels below recommended exposure limits.

8.2.2: Individual protection measures, such as personal protective equipment

8.2.2.1: Eye/face protection	Do not wear contact lenses. For powders, tight fitting goggles with side shields, or wide vision full goggles. It is also advisable to have individual pocket eyewash.
8.2.2.2: Skin protection	Since calcium hydroxide is classified as irritating to skin, dermal exposure has to be minimised as far as technically feasible. The use of protective gloves (nitrile), protective standard working clothes fully covering skin, full length trousers, long sleeved overalls, with close fittings at openings and shoes resistant to caustics and avoiding dust penetration are required to be worn.
8.2.3.3Respiratory protection	Local ventilation to keep levels below established threshold values is recommended. A suitable particle filter mask is recommended, depending on the expected exposure levels - please check the relevant exposure scenario, given in the Appendix/available via your supplier
8.2.2.4: Thermal Hazards	The substance does not represent a thermal hazard, thus special consideration is not required.

8.2.3 Environmental Exposure

All ventilation systems should be filtered before discharge to atmosphere. Avoid releasing to the environment. Contain the spillage. Any large spillage into watercourses must be alerted to the regulatory authority responsible for environmental protection or other regulatory body.
For detailed explanations of the risk management measures that adequately control exposure of the environment to the substance please check the relevant exposure scenario, available via your supplier.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

	Calcium Hydroxide
Description	A milky white suspension of solids in water
Odour	odourless
pH (saturated solution)	12.5 ($Ca(OH)_2$ at 25 ^oC)
Boiling Range/Point	100 ^oC
Melting Point (of $Ca(OH)_2$)	550^oC
Decomposition Temperature	580^oC (CaO and water)
Median particle size	<5 µm
Viscosity	500-100cP
Flash Point (PMCC)	Not applicable, non combustible
Auto-flammability	Not auto-flammable
Flammability	Non-flammable
Explosive Properties	Stable under normal conditions
Vapour Pressure	Negligible vapour pressure at ambient conditions
Relative Density	1.3 g/cm3

10. STABILITY AND REACTIVITY

10.1 Reactivity

In aqueous media $Ca(OH)_2$ dissociates resulting in the formation of calcium cations and hydroxyl anions (when below the limit of water solubility).

10.2 Chemical Stability

Under normal conditions of use and storage, calcium hydroxide is stable

10.3 Possibility of Hazardous reactions

Calcium hydroxide reacts exothermically with acids. When heated above 580 °C, calcium hydroxide decomposes to produce calcium oxide (CaO) and water (H_2O):

$Ca(OH)_2 = CaO + H_2O$.

10.4: Conditions to avoid

Minimise exposure to air and moisture to avoid degradation.

10.5: Incompatible Materials

Calcium hydroxide reacts exothermically with acids to form salts. Calcium hydroxide reacts with aluminium and brass in the presence of moisture leading to the production of hydrogen.

$Ca(OH)_2 + 2Al + 6H_2O = Ca[Al(OH)_4]_2 + 3H_2$

10.6: Hazardous Decomposition Products

None.

Further information: Calcium hydroxide reacts with carbon dioxide to form calcium carbonate, which is a common material in nature.

11. TOXICOLOGICAL INFORMATION

Toxicity endpoints	Outcome of the effects assessment
Acute toxicity	Calcium hydroxide is not acutely toxic. Oral LD50 > 2000 mg/kg bw (OECD 425, rat) Dermal LD50 > 2500 mg/kg bw (OECD 402, rabbit) Inhalation no data available Classification for acute toxicity is not warranted For irritation effects to the respiratory tract see below.
Skin irritation / corrosion	Eye irritation: Calcium hydroxide entails a risk of serious damage to the eye (eye irritation studies (*in vivo*, rabbit). Based on experimental results, calcium hydroxide requires classification as severely irritating to the eye [R41, Risk of serious damage to eye; Eye Damage 1 (H318 - Causes serious eye damage)]. Skin irritation: Calcium hydroxide is irritating to skin (*in vivo*, rabbit). Based on experimental results, calcium hydroxide requires classification as irritating to skin [R38, irritating to skin; Skin Irrit 2 (H315 – Causes skin irritation)].
Respiratory or skin sensitisation	No data available. Calcium hydroxide is considered not to be a skin sensitiser, based on the nature of the effect (pH shift) and the essential requirement of calcium for human nutrition. Classification for sensitisation is not warranted.
Germ cell mutagenicity	Bacterial reverse mutation assay (Ames test, OECD 471): Negative Mammalian chromosome aberration test: Negative In view of the omnipresence and essentiality of Ca and of the physiological non-relevance of any pH shift induced by lime in aqueous media, lime is obviously void of any genotoxic potential including germ cell mutagenicity. Classification for genotoxicity is not warranted.
Carcinogenicity	Calcium (administered as Ca-lactate) is not carcinogenic (experimental result, rat). The pH effect of calcium hydroxide does not give rise to a carcinogenic risk. Human epidemiological data support lack of any carcinogenic potential of calcium hydroxide. Classification for carcinogenicity is not warranted.
Toxicity for reproduction	Calcium (administered as Ca-carbonate) is not toxic to reproduction (experimental result, mouse). The pH effect does not give rise to a reproductive risk. Human epidemiological data support lack of any potential for reproductive toxicity of calcium hydroxide. Both in animal studies and human clinical studies on various calcium salts no reproductive or developmental effects were detected. Also see the Scientific Committee on Food (Section 16.6). Thus, calcium hydroxide is not toxic for reproduction and/or development. Classification for reproductive toxicity according to regulation (EC) 1272/2008 is not required
STOT – single exposure	From human data it is concluded that $Ca(OH)_2$ is irritating to the respiratory tract. As summarised and evaluated in the SCOEL recommendation (Anonymous, 2008), based on human data calcium hydroxide is classified as irritating to the respiratory system [R37, Irritating to respiratory system; STOT SE 3 (H335 – May cause respiratory irritation)].
STOT – repeated	Toxicity of calcium via the oral route is addressed by upper intake levels

exposure	(UL) for adults determined by the Scientific Committee on Food (SCF), being UL = 2500 mg/d, corresponding to 36 mg/kg bw/d (70 kg person) for calcium. Toxicity of $Ca(OH)_2$ via the dermal route is not considered as relevant in view of the anticipated insignificant absorption through skin and due to local irritation as the primary health effect (pH shift). Toxicity of $Ca(OH)_2$ via inhalation (local effect, irritation of mucous membranes) is addressed by an 8-h TWA determined by the Scientific Committee on Occupational Exposure Limits (SCOEL) of 1 mg/m3 respirable dust (see Section 8.1). Therefore, classification of $Ca(OH)_2$ for toxicity upon prolonged exposure is not required.
Aspiration hazard	Calcium hydroxide is not known to present an aspiration hazard.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

12.1.1: Acute/Prolonged toxicity to fish	LC (96h) for freshwater fish: 50.6 mg/l LC_{50} (96h) for marine water fish: 457 mg/l
12.1.2: Acute/Prolonged toxicity to aquatic invertebrates	EC_{50} (48h) for freshwater invertebrates: 49.1 mg/l LC_{50} (96h) for marine water invertebrates: 158
12.1.3: Acute/Prolonged toxicity to aquatic plants	mg/l EC_{50} (72h) for freshwater algae: 184.57 mg/l NOEC (72h) for freshwater algae: 48 mg/l
12.1.4: Toxicity to micro-organisms e.g. bacteria	At high concentration, through the rise of temperature and pH, calcium hydroxide is used for disinfection of sewage sludges.
12.1.5: Chronic toxicity to aquatic organisms	NOEC (14d) for marine water invertebrates: 32 mg/l
12.1.6: Toxicity to soil dwelling organisms	EC $_{10}$/LC_{10} or NOEC for soil macroorganisms: 2000 mg/kg soil dw EC $_{10}$/LC_{10} or NOEC for soil microorganisms: 12000 mg/kg soil dw
12.1.7: Toxicity to terrestrial plants	NOEC (21d) for terrestrial plants: 1080 mg/kg
12.1.8: General effect	Acute pH effect. Although this product is useful to correct water acidity, an excess of more than 1 g/l may be harmful to aquatic life. pH value of > 12 will rapidly decrease as result of dilution and carbonation.

12.2 Persistence and Degradability

Not relevant for inorganic substance

12.3 Bioaccumalative potential

Not relevant as hydrated lime is an inorganic material.

12.4 Mobility in Soils

Calcium hydroxide, which is sparingly soluble, presents a low mobility in most soils

12.5: Results of PBT and vPvB assessment

Not relevant for inorganic substances

12.6: Other adverse effects

No other adverse effects are identified

13. DISPOSAL CONSIDERATIONS

13.1 Waste Treatment

Disposal of calcium hydroxide should be in accordance with local and national legislation. Processing, use or contamination of this product may change the waste management options. Dispose of container and unused contents in accordance with applicable member state and local requirements.
The used packing is only meant for packing this product; it should not be reused for other purposes. After usage, empty the packing completely.

14. TRANSPORT INFORMATION

Calcium hydroxide is not classified as hazardous for transport (ADR (Road), RID (Rail), IMDG / GGVSea (Sea).

14.1: UN Number	Not regulated
14.2: UN Proper Shipping Name	Not regulated
14.3: Transport Hazard classes	Not regulated
14.4: Packing Group	Not regulated
14.5: Environmental hazards	None
14.6: Special precautions for user	None
14.7: Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not regulated

15. REGULATORY INFORMATION

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

Authorisations: Not required
Restrictions on use None

Other EU Regulations	Calcium hydroxide is not a SEVESO substance, not an ozone-depleting substance and not a persistent organic pollutant.
National regulations	None

15.2: Chemical Safety Assessment

A chemical safety assessment has been carried out for this substance.

16. OTHER INFORMATION

Data are based on our latest knowledge but do not constitute a guarantee for any specific product features and do not establish a legally valid contractual relationship.

16.1 Hazard Statements

H315:	Causes skin irritation
H318:	Causes serious eye damage
H335:	May cause respiratory irritation

16.2 Precautionary Statements

P102:	Keep out of reach of children
P280:	Wear protective gloves/protective clothing/eye protection/face protection
P305+P351+P310:	IF IN EYES: Rinse cautiously with water for several minutes. Immediately call POISON CENTRE or doctor/physician
P302+P352	IF ON SKIN: Wash with plenty of water
P261:	Avoid breathing dust/spray
P304+P340:	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P501:	Dispose of contents/container in accordance with the local/regional/national/international regulation

16.3 Risk Phrases

R37:	Irritating to respiratory system
R38:	Irritating to skin
R41:	Risk of serious damage to eyes

16.4 Safety Phrases

S2	Keep out of reach of children
S25	Avoid contact with eyes
S26	in case of contact with eyes, rinse immediately with plenty of water and seek medical advice
S37	Wear suitable gloves
S39	Wear eye/face protection

16.5: Abbreviations

EC_{50}: median effective concentration LC_{50}: median lethal concentration

LD_{50}: median lethal dose

NOEC: no observable effect concentration OEL: occupational exposure limit
PBT: persistent, bioaccumulative, toxic chemical
PNEC: predicted no-effect concentration
SCOEL: Scientific Committee on occupational exposure limits
STEL: short-term exposure limit
TWA: time weighted average
vPvB: very persistent, very bioaccumulative chemical

16.6: Key Literature References

Anonymous, 2006: Tolerable upper intake levels for vitamins and minerals Scientific Committee on Food, European Food Safety Authority, ISBN: 92-9199-014-0 [SCF document]
Anonymous, 2008: Recommendation from the Scientific Committee on Occupational Exposure Limits (SCOEL) for calcium oxide (CaO) and calcium hydroxide ($Ca(OH)_2$), European Commission, DG Employment, Social Affairs and Equal Opportunities, SCOEL/SUM/137 February

16.7 Revision

This version produced in reference to Annex II of the REACH Regulation (EC) 1907/2006

Disclaimer

This safety data sheet (SDS) is based on the legal provisions of the REACH Regulation (EC 1907/2006; article 31 and Annex II), as amended. Its contents are intended as a guide to the appropriate precautionary handling of the material. It is the responsibility of recipients of this SDS to ensure that the information contained therein is properly read and understood by all people who may use, handle, dispose or in any way come in contact with the product. Information and instructions provided in this SDS are based on the current state of scientific and technical knowledge at the date of issue indicated. It should not be construed as any guarantee of technical performance, suitability for particular applications, and does not establish a legally valid contractual relationship. This version of the SDS supersedes all previous versions.

End of the safety data sheet

SAFETY DATA SHEET

KemGuard 5840

Ref. /US/EN

Revision Date: 03/23/2017 Previous date: 06/12/2015 Print Date:12/04/2018

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

Product information

Product name
KemGuard 5840

Recommended use of the chemical and restrictions on use

Use of the Substance/Mixture

Dispersing agent, Scale control
Recommended restrictions on use
For industrial use only.

Supplier's details

Kemira Chemicals, Inc.
1000 Parkwood Circle, Suite 500
30339 Atlanta USA
Telephone+17704361542, Telefax. +17704363432

HEAD OFFICE
Kemira Oyj
P.O. Box 330
00101 HELSINKI
FINLAND
Telephone +358108611 Telefax +358108621124

Emergency telephone number

CHEMTREC: 1-800-424-9300

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

Skin irritation; Category 2; Causes skin irritation.;
Serious eye damage; Category 1; Causes serious eye damage.;

GHS-Labelling

Hazard pictograms :

Signal word : Danger

Hazard statements : **Hazard statements:**

H315	Causes skin irritation.
H318	Causes serious eye damage.

Precautionary statements : **Prevention:**

P264	Wash face, hands and any exposed skin thoroughly after handling.
P280	Wear protective gloves/ eye protection/ face protection.

Response:

P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P321	Specific treatment (see supplemental first aid instructions on this label).
P332 + P313	If skin irritation occurs: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
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.

Hazardous components which must be listed on the label:

- Proprietary acrylic acid copolymer

Other hazards which do not result in classification

Inhalation; The breathing of vapours may cause: Respiratory irritation

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances /Mixtures

Hazardous components

Chemical Name	CAS-No.	Concentration[%]
Proprietary acrylic acid copolymer		30 - 60 %

Further information

Acrylic Copolymer

This material is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

4. FIRST AID MEASURES

Description of first aid measures

Inhalation

This product is not known to cause respiratory problems. If breathing is difficult, remove to fresh air and provide oxygen. If not breathing, give artificial respiration. Seek medical attention if cough or other symptoms develop.

Skin contact

Wash off immediately with soap and plenty of water. Remove contaminated clothing and shoes. Get medical attention if irritation develops and persists.

Eye contact

Flush eyes with water at least 15 minutes. Get medical attention if eye irritation develops or persists.

Ingestion

Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Drink 1 or 2 glasses of water. Consult a physician.

Most important symptoms and effects, both acute and delayed

Symptoms : Causes skin and eye irritation.

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

Treatment : All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to

materials other than this product may have occurred. Treat symptomatically.

5. FIREFIGHTING MEASURES

Suitable extinguishing media

Foam

Dry powder

Water spray

Carbon dioxide (CO2)

Special hazards arising from the substance or mixture

This material will not burn until water has evaporated. Fire or intense heat may cause pressure to build-up in containers/tanks, which may cause a danger of explosion. In case of fire hazardous decomposition products may be produced such as:
Carbon oxides (COx), Sulphur oxides (SOx), Hydrocarbons

Special protective actions for fire-fighters

Wear self-contained breathing apparatus and protective suit. Use NIOSH/MSHA approved respiratory protection.

Further information

Standard procedure for chemical fires. Water in the container will lead to increased pressure and risk of explosion. Cool containers/tanks with water spray. Contaminated fire extinguishing water must be disposed of in accordance with local regulations.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Avoid contact with skin, eyes and clothing. Wear personal protective equipment. Material can create slippery conditions.

Environmental precautions

Avoid runoff into storm sewers and ditches which lead to waterways. Should not be released into the environment. Stop the leakage if possible.

Methods and materials for containment and cleaning up

In case of large spillage, contain by damming up. Collect by pump. Take up mechanically and collect into suitable containers for disposal. Must be disposed of in accordance with local and national regulations. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). After cleaning, flush away traces with water.

7. HANDLING AND STORAGE

Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice. Ensure adequate ventilation.
Wear personal protective equipment. Eye wash bottle with pure water

Conditions for safe storage, including any incompatibilities

Store at room temperature in the original container. Keep tightly closed. Avoid freezing.
Store in a place accessible by authorized persons only. Ensure adequate ventilation.

Materials to avoid:
Strong oxidizing agents

Storage stability:

Other data	Recommended storage temperature
Storage temperature	40 - 100 °F 5 - 38 °C

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value	Form of exposure	Control parameters	Update	Basis

Contains no substances with occupational exposure limit values.

Appropriate engineering controls

Ensure adequate ventilation. Ensure that eyewash stations and safety showers are close to the workstation location.

Individual protection measures, such as personal protective equipment
Respiratory protection

None under normal use.

Hand protection

Glove material: Impervious gloves

Skin and body protection

Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Eye protection

Safety glasses with side-shields.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	liquid,
Colour	Clear colorless to light yellow
Odour	odourless
Odour Threshold	not determined
pH	ca. 3.0 - 3.5
Freezing point :	ca. 32 °F
Initial boiling point and boiling range	Boiling point/boiling range > 100 °C Boiling point/boiling range > 212 °F
Flash point	> 201 °F
Evaporation rate	< 1 (n-butyl acetate = 1)
Explosive properties:	
Lower explosion limit	Not applicable
Upper explosion limit	Not applicable
Vapour pressure	Like water
Relative vapour density	Like water
Density	ca. 1.2 g/cm³ (20 °C) ca. 10 lb/gal (68 °F)
Relative density	ca. 1.2(20 °C,)
Solubility(ies):	
Water solubility	completely soluble
Partition coefficient: n-octanol/water	not determined
Auto-ignition temperature	not auto-flammable
Decomposition temperature	Not applicable, (water evaporates)
Viscosity:	
Viscosity, dynamic	< 600 mPa.s (77 °F) < 600 cP (25 °C)

Surface tension	not determined

10. STABILITY AND REACTIVITY

Reactivity

Bases cause exothermic reactions.

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

Hazardous reactions:	Hazardous polymerisation does not occur.

Conditions to avoid

Conditions to avoid:	Avoid temperatures above 100 °C. Evaporation of water increases the viscosity. Avoid temperatures below 5°C. Handling operations become difficult due to increased viscosity.

Incompatible materials

Materials to avoid:	Strong oxidizing agents

Hazardous decomposition products

Hazardous decomposition products:	In case of fire hazardous decomposition products may be produced such as: Carbon oxides (COx) Sulphur oxides (SOx) Nitrogen oxides (NOx) Hydrocarbons
Thermal decomposition:	Note: Not applicable, (water evaporates)

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute oral toxicity	Conclusion: No data is available on the product itself., Similar product:

/>/Rat/5,000 mg/kg/LD50 Oral

Acute dermal toxicity

Remarks: Similar product:

LD50/Rat
/> 2,000 mg/kg

Skin corrosion/irritation /Causes skin irritation.

Serious eye damage/eye irritation /Causes serious eye damage.

Respiratory or skin sensitisation

Skin sensitisation

Conclusion: No data is available on the product itself.

Germ cell mutagenicity

Genotoxicity in vitro

Remarks: No data available

Conclusion: No known effect.

Carcinogenicity

Carcinogenicity

No evidence of carcinogenic effects by polymer.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Aquatic toxicity

Similar product:
LC50/96 h/Branchydanio rerio (zebra fish): > 100 mg/l

Similar product:
EC50/48 h/Daphnia (water flea): > 100 mg/l

Toxicity to other organisms

There is no data available for this product.

Persistence and degradability

Biological degradability:

Not readily biodegradable.

Bioaccumulative potential

No data is available on the product itself.
Partition coefficient: n-octanol/water: not determined

Mobility in soil

Water solubility: completely soluble
Surface tension: not determined

Other adverse effects

None known.

13. DISPOSAL CONSIDERATIONS

Product	Must be disposed of in accordance with local and national regulations. EPA Hazardous Waste - NO.
Contaminated packaging	Must be disposed of in accordance with local and national regulations.

14. TRANSPORT INFORMATION

Land transport

Not classified as dangerous in the meaning of transport regulations.
HARMFUL - stow away from foodstuffs

Sea transport

Not classified as dangerous in the meaning of transport regulations.
HARMFUL - stow away from foodstuffs

Air transport

Not classified as dangerous in the meaning of transport regulations.
HARMFUL - stow away from foodstuffs

Special precautions for user

None known.

15. REGULATORY INFORMATION

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

SARA Title III Section 311 Categories

Immediate (Acute) Health Effects: Yes;
Delayed (Chronic) Health Effects: No;
Fire Hazard: No;
Sudden Release Of Pressure Hazard: No;
Reactivity Hazard: No;

SARA 302 Extremely Hazardous Substances

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
None Present ()

SARA 313 - Specific Toxic Chemical Listings

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
None Present ()

US. CERCLA - Comprehensive Environmental Response, Compensation and Liability Act List

To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.
None Present ()

California Proposition 65

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.
None Present ()
Remarks: This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

Other regulations : No restrictions identified other than those already covered in

regulations.

Notification status

:
: All components of this product are included in the United States TSCA Chemical Inventory or are not required to be listed on the United States TSCA Chemical Inventory.
: All components of this product are NOT included on the Australian Inventory of Chemical Substances (AICS).
: All components of this product are included in the Canada Domestic Substance List (DSL) or are not required to be listed on the Canada Domestic Substance List (DSL).
: All components of this product are included on the Chinese inventory or are not required to be listed on the Chinese inventory.
: All components of this product are included in the European Inventory of Existing Chemical Substances (EINECS) or are not required to be listed on EINECS.
: This product's Japanese (ENCS) inventory status has NOT been determined.
: All components of this product are NOT included on the Korean (ECL) inventory.
: All components of this product are NOT included on the New Zealand Inventory of Chemical Substances.
: All components of this product are NOT included on the Philippine (PICCS) inventory.
: This product's Taiwan Toxic Chemical Substances Control Act Inventory status has NOT been determined.

16. OTHER INFORMATION

HMIS Rating

Health: 3
Flammability: 1
Reactivity: 0

NFPA Rating

Health: 3
Fire: 1
Reactivity: 0

Training advice

Read the safety data sheet before using the product.

Further information

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.
This SDS is prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI SDS Standard (Z400.1) by Kemira.

Sources of key data used to compile the Safety Data Sheet

Regulations, databases, literature, own tests.

SAFETY DATA SHEET

Automotive Diesel Fuel

Section 1. Identification

GHS product identifier Automotive Diesel Fuel

Other means of identification C10, BP 10 ppm diesel fuel, Ultra Low Sulphur diesel fuel, Automotive Diesel fuel, AD20, AD40, Alpine Diesel and Biodiesel up to B5.

Product code 0000002718

SDS no. 0000002718

Historic SDS no. AD0K1

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

Use of the substance/ mixture Fuel for compression ignition diesel engines.

Manufacturer

Supplier

BP Australia Pty Ltd
Level 17, 717 Bourke Street
Docklands, Victoria 3008
ABN 53 004 085 616

www.bp.com.au

Technical Helpline Number: 1300 139 700

EMERGENCY TELEPHONE NUMBER 1800 638 556

Section 2. Hazard(s) identification

Classification of the substance or mixture

FLAMMABLE LIQUIDS - Category 4
ACUTE TOXICITY (inhalation) - Category 4
SKIN CORROSION/IRRITATION - Category 2
CARCINOGENICITY - Category 2
SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE (bone marrow, liver, thymus) - Category 2
ASPIRATION HAZARD - Category 1

GHS label elements

Hazard pictograms

Signal word DANGER

Hazard statements

H227 - Combustible liquid.
H332 - Harmful if inhaled.
H315 - Causes skin irritation.
H351 - Suspected of causing cancer.
H304 - May be fatal if swallowed and enters airways.
H373 - May cause damage to organs through prolonged or repeated exposure. (bone marrow, liver, thymus)

Precautionary statements

General

P103 - Read label before use.
P102 - Keep out of reach of children.
P101 - If medical advice is needed, have product container or label at hand.

Section 2. Hazard(s) identification

Prevention

P201 - Obtain special instructions before use.
P260 - Do not breathe vapour.
P280 - Wear protective gloves. Wear eye or face protection. Wear protective clothing.
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P240 - Ground/bond container and receiving equipment.
P273 - Avoid release to the environment.

Response

P314 - Get medical attention if you feel unwell.
P308 + P313 - IF exposed or concerned: Get medical attention.
P304 + P340 + P312 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell.
P301 + P310 + P331 - IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting.
P302 + P352 + P362 + P363 - IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. Wash contaminated clothing before reuse.
P332 + P313 - If skin irritation occurs: Get medical attention.

Storage

P405 - Store locked up.
P403 - Store in a well-ventilated place.
P235 - Keep cool.

Disposal

P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements

Not applicable.

Other hazards which do not result in classification

This material may contain significant quantities of polycyclic aromatic hydrocarbons, some of which have been shown by experimental studies to induce skin cancer.
Note: High Pressure Applications
Injections through the skin resulting from contact with the product at high pressure constitute a major medical emergency.
See 'Notes to physician' under First-Aid Measures, Section 4 of this Safety Data Sheet.

Section 3. Composition and ingredient information

Substance/mixture Mixture

May contain Fatty Acid Methyl Esters (FAME). May also contain small quantities of proprietary performance additives. Contains small quantities of polycyclic aromatic hydrocarbons (PAHs).

Ingredient name	% (w/w)	CAS number
Fuels, diesel	> 95	68334-30-5
Alkanes, C10-20-branched and linear	0 - 20	928771-01-1

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.

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

Section 4. First aid measures

Description of necessary first aid measures

Eye contact

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Check for and remove any contact lenses. Get medical attention.

Inhalation

If inhaled, remove to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention.

Section 4. First aid measures

Skin contact

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Drench contaminated clothing with water before removing. This is necessary to avoid the risk of sparks from static electricity that could ignite contaminated clothing. Contaminated clothing is a fire hazard. Contaminated leather, particularly footwear, must be discarded. Clean shoes thoroughly before reuse. Get medical attention.

Ingestion

Do not induce vomiting. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Aspiration hazard if swallowed. Can enter lungs and cause damage. Get medical attention immediately.

Most important symptoms/effects, acute and delayed

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

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

Notes to physician

Treatment should in general be symptomatic and directed to relieving any effects. Product can be aspirated on swallowing or following regurgitation of stomach contents, and can cause severe and potentially fatal chemical pneumonitis, which will require urgent treatment. Because of the risk of aspiration, induction of vomiting and gastric lavage should be avoided. Gastric lavage should be undertaken only after endotracheal intubation. Monitor for cardiac dysrhythmias.

Note: High Pressure Applications
Injections through the skin resulting from contact with the product at high pressure constitute a major medical emergency. Injuries may not appear serious at first but within a few hours tissue becomes swollen, discoloured and extremely painful with extensive subcutaneous necrosis.
Surgical exploration should be undertaken without delay. Thorough and extensive debridement of the wound and underlying tissue is necessary to minimise tissue loss and prevent or limit permanent damage. Note that high pressure may force the product considerable distances along tissue planes.

Specific treatments

No specific treatment.

Protection of first-aiders

No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Section 5. Firefighting measures

Extinguishing media

Suitable extinguishing media

In case of fire, use water fog, foam, dry chemical or carbon dioxide extinguisher or spray.

Unsuitable extinguishing media

Do not use water jet.

Specific hazards arising from the chemical

Combustible liquid. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain. 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.

Hazardous thermal decomposition products

Combustion products may include the following:
carbon oxides (CO, CO_2) (carbon monoxide, carbon dioxide)
other hazardous substances.

Special protective actions for fire-fighters

No action shall be taken involving any personal risk or without suitable training. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Section 5. Firefighting measures

Special protective equipment for fire-fighters Fire-fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.

Hazchem code 3z

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel Immediately contact 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. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Put on appropriate personal protective equipment. Floors may be slippery; use care to avoid falling. Eliminate all ignition sources.

For emergency responders Entry into a confined space or poorly ventilated area contaminated with vapour, mist or fume is extremely hazardous without the correct respiratory protective equipment and a safe system of work. Wear self-contained breathing apparatus. Wear a suitable chemical protective suit. Chemical resistant boots. See also the information in "For non-emergency personnel".

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.

Methods and material for containment and cleaning up

Small spill Eliminate all ignition sources. Stop leak if without risk. Move containers from spill area. Absorb with an inert 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. The method and equipment used must be in conformance with appropriate regulations and industry practice on explosive atmospheres.

Large spill Eliminate all ignition sources. 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. Dike spill area and do not allow product to reach sewage system and surface or ground water. 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. Contaminated absorbent material may pose the same hazard as the spilt product. The method and equipment used must be in conformance with appropriate regulations and industry practice on explosive atmospheres. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

Precautions for safe handling

Protective measures Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not swallow. Aspiration hazard if swallowed. Can enter lungs and cause damage. Never siphon by mouth. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. 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 only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not reuse container. Avoid contact of spilt material and runoff with soil and surface waterways.

Section 7. Handling and storage

Advice on general occupational hygiene

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Wash thoroughly after handling. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

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. Store locked up. Eliminate all ignition sources. Separate from oxidising materials. Keep container tightly closed and sealed until ready for use. Store and use only in equipment/containers designed for use with this product. 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.

Take precautions to avoid static electrical discharge and all ignition sources during filling, ullaging and sampling from storage tanks. Do not enter storage tanks. If entry to vessels is necessary, follow permit to work procedures. When the product is pumped (e.g. during filling, discharge or ullaging) and when sampling, there is a risk of static discharge. Ensure equipment used is properly earthed or bonded to the tank structure. Use of explosion-protected electrical, ventilating, lighting and all material-handling equipment should be considered. Explosive air/vapour mixtures may form at ambient temperatures on contact with hot surfaces. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.

Product contaminated rags, paper or material used to absorb spillages, represent a fire hazard, and should not be allowed to accumulate. Dispose of safely immediately after use. Entry into a confined space or poorly ventilated area contaminated with vapour, mist or fume is extremely hazardous without the correct respiratory protective equipment and a safe system of work.

Classified as a C1 (COMBUSTIBLE LIQUID) for the purpose of storage and handling, in accordance with the requirements of AS 1940. Refer to State Regulations for storage and transport requirements.

Section 8. Exposure controls and personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Fuels, diesel	**ACGIH TLV (United States). Absorbed through skin.** TWA: 100 mg/m³, (measured as total hydrocarbons) 8 hours. Issued/Revised: 1/2007 Form: Inhalable fraction and vapor

Appropriate engineering controls

All activities involving chemicals should be assessed for their risks to health, to ensure exposures are adequately controlled. Personal protective equipment should only be considered after other forms of control measures (e.g. engineering controls) have been suitably evaluated. Personal protective equipment should conform to appropriate standards, be suitable for use, be kept in good condition and properly maintained.
Your supplier of personal protective equipment should be consulted for advice on selection and appropriate standards. For further information contact your national organisation for standards.
Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits.

Section 8. Exposure controls and personal protection

The final choice of protective equipment will depend upon a risk assessment. It is important to ensure that all items of personal protective equipment are compatible.

Environmental exposure controls

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.

Individual protection measures

Hygiene measures

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.

Eye/face protection

Chemical splash goggles.

Skin protection

Hand protection

Wear chemical resistant gloves.

Protective gloves must give suitable protection against mechanical risks (i.e. abrasion, blade cut and puncture). Protective gloves will deteriorate over time due to physical and chemical damage. Inspect and replace gloves on a regular basis. The frequency of replacement will depend upon the circumstances of use.

Recommended: Nitrile gloves.

Skin protection

Recommended: overall
Use of protective clothing is good industrial practice.
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.
Cotton or polyester/cotton overalls will only provide protection against light superficial contamination that will not soak through to the skin. Overalls should be laundered on a regular basis. When the risk of skin exposure is high (e.g. when cleaning up spillages or if there is a risk of splashing) then chemical resistant aprons and/or impervious chemical suits and boots will be required.
Wear suitable protective clothing.
Footwear highly resistant to chemicals.
When there is a risk of ignition wear inherently fire resistant protective clothes and gloves.
When there is a risk of ignition from static electricity, wear anti-static protective clothing. For greatest effectiveness against static electricity, overalls, boots and gloves should all be anti-static.
When the risk of skin exposure is high (from experience this could apply to the following tasks: cleaning work, maintenance and service, filling and transfer, taking samples and cleaning up spillages) then a chemical protective suit and boots will be required.
Work clothing / overalls should be laundered on a regular basis. Laundering of contaminated work clothing should only be done by professional cleaners who have been told about the hazards of the contamination. Always keep contaminated work clothing away from uncontaminated work clothing and uncontaminated personal clothes.

Other skin protection

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.

Respiratory protection

Use with adequate ventilation.
If there is a requirement for the use of a respiratory protective device, but the use of breathing apparatus (independent of ambient atmosphere) is not required, then a suitable filtering device must be worn.
The filter class must be suitable for the maximum contaminant concentration (gas/ vapour/aerosol/particulates) that may arise when handling the product.

Recommended: If ventilation is inadequate, use respirator that will protect against organic vapour and dust/mist.

Section 8. Exposure controls and personal protection

Refer to standards: Respiratory protection:AS/NZS 1715 and AS/NZS 1716
Gloves:AS/NZS 2161.1
Eye protection:AS/NZS 1336 and AS/NZS 1337

Section 9. Physical and chemical properties

Appearance

Physical state Liquid.

Colour Water white to straw including fluorescent green, blue or yellow.

Odour Mild

Odour threshold 0.7 ppm (Based on Fuels, diesel)

pH Not applicable. Based on Solubility in Water (Very slightly soluble in water)

Melting point -29 to -18°C (-20.2 to -0.4°F) (Based on Fuels, diesel)

Boiling point 180 to 380°C (356 to 716°F)

Flash point Closed cup: >61.5°C (>142.7°F) [Pensky-Martens.]

Evaporation rate Not relevant/applicable due to nature of the product. Based on low volatility

Flammability (solid, gas) Not applicable. Based on - Physical state

Lower and upper explosive (flammable) limits Lower: 0.5%
Upper: 7.5%

Vapour pressure 0.1 kPa (0.755 mm Hg) (Based on Concawe Category: Vacuum Gas Oils, Hydrocracked Gas Oils & Distillate Fuels (VHGO))

Vapour density Not available.

Relative density 0.83

Density 820 to 850 kg/m³ (0.82 to 0.85 g/cm³) at 15°C

Solubility Very slightly soluble in water

Partition coefficient: n-octanol/water Not applicable. Based on Fuels, diesel - Substance is a hydrocarbon UVCB. Standard tests for this endpoint are intended for single substances and are not appropriate for this complex substance.

Auto-ignition temperature 240°C (464°F) (Based on Fuels, diesel)

Decomposition temperature Not observed to decompose by final boiling point: 380°C (716°F)

Viscosity Kinematic: 2 to 4.5 mm^2/s (2 to 4.5 cSt) at 40°C

Section 10. Stability and reactivity

Reactivity No specific test data available for this product. Refer to Conditions to avoid and Incompatible materials for additional information.

Chemical stability The product is stable.

Possibility of hazardous reactions Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous polymerisation will not occur.

Conditions to avoid Avoid all possible sources of ignition (spark or flame). Avoid excessive heat.

Incompatible materials Reactive or incompatible with the following materials: oxidising materials.

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

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure

Section 11. Toxicological information

Fuels, diesel	LC50 Inhalation Dusts and mists	Rat	4.1 mg/l	4 hours
	LD50 Dermal	Rabbit	>4300 mg/kg	-
	LD50 Dermal	Rabbit	>4300 mg/kg	-
	LD50 Oral	Rat	17900 mg/kg	-
	LD50 Oral	Rat	7600 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Fuels, diesel	Skin - Irritation	Rabbit	-	-	-
	Skin - Irritation	Rabbit	-	-	-
	Eyes - Non-irritating to the eyes.	Rabbit	-	-	-
	Eyes - Non-irritating to the eyes.	Rabbit	-	-	-

Skin Causes skin irritation.

Sensitisation

Product/ingredient name	Route of exposure	Species	Result
Fuels, diesel	skin	Guinea pig	Not sensitising
	skin	Guinea pig	Not sensitising

Mutagenicity

Product/ingredient name	Test	Experiment	Result
Fuels, diesel	OECD 471	Experiment: In vitro Subject: Non-mammalian species	Positive
	Equivalent to OECD 476	Experiment: In vitro Subject: Mammalian-Animal Cell: Germ	Negative
	not guideline	Experiment: In vivo Subject: Unspecified Cell: Somatic	Negative

Conclusion/Summary Not classified. Based on available data, the classification criteria are not met.

Carcinogenicity

Product/ingredient name	Result	Species	Dose	Exposure
Fuels, diesel	Positive - Dermal - Unspecified	Mouse	-	2 years

Conclusion/Summary Suspected of causing cancer.

Reproductive toxicity

Product/ingredient name	Maternal toxicity	Fertility	Developmental toxin	Species	Dose	Exposure
Fuels, diesel	-	-	Negative	Rat	Dermal	20 days
	-	-	Negative	Rat	Dermal	10 days
	-	-	Negative	Rat	Dermal	10 days

Conclusion/Summary Development: Not classified. Based on available data, the classification criteria are not met.
Fertility: Not classified. Based on available data, the classification criteria are not met.
Effects on or via lactation: Not classified. Based on available data, the classification criteria are not met.

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs

Fuels, diesel	Category 2	Not determined	bone marrow, liver and thymus

Aspiration hazard

Name	Result
Fuels, diesel	ASPIRATION HAZARD - Category 1
Alkanes, C10-20-branched and linear	ASPIRATION HAZARD - Category 1

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

Potential acute health effects

Eye contact No known significant effects or critical hazards.

Inhalation Harmful if inhaled.

Skin contact Causes skin irritation.

Ingestion Irritating to mouth, throat and stomach. Aspiration hazard if swallowed -- harmful or fatal if liquid is aspirated into lungs.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation Adverse symptoms may include the following:
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness

Skin contact Adverse symptoms may include the following:
irritation
redness

Ingestion Adverse symptoms may include the following:
nausea or vomiting

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Eye contact Vapour, mist or fume may cause eye irritation. Exposure to vapour, mist or fume may cause stinging, redness and watering of the eyes.

Inhalation Vapour, mists or fumes may contain polycyclic aromatic hydrocarbons some of which are known to produce skin cancer. Vapour, mists or fumes may contain polycyclic aromatic hydrocarbons some of which are known to produce skin cancer. Vapour, mist or fume may irritate the nose, mouth and respiratory tract.

Skin contact As with all such products containing potentially harmful levels of polycyclic aromatic hydrocarbons, prolonged or repeated skin contact may eventually result in dermatitis or more serious irreversible skin disorders including cancer.

Ingestion If swallowed, may irritate the mouth, throat and digestive system. If swallowed, may cause abdominal pain, stomach cramps, nausea, vomiting, diarrhoea, dizziness and drowsiness.

General May cause damage to organs through prolonged or repeated exposure. Vapour, mists or fumes may contain polycyclic aromatic hydrocarbons some of which are known to produce skin cancer. Vapour, mists or fumes may contain polycyclic aromatic hydrocarbons some of which are known to produce skin cancer.

Carcinogenicity Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity No known significant effects or critical hazards.

Teratogenicity No known significant effects or critical hazards.

Section 11. Toxicological information

Developmental effects No known significant effects or critical hazards.

Fertility effects No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Inhalation (dusts and mists)	1.89 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Fuels, diesel	EL50 >1000 mg/l Nominal Fresh water	Micro-organism	40 hours
	NOELR 3.217 mg/l Nominal Fresh water	Micro-organism	40 hours
	Acute EL50 22 mg/l Nominal Fresh water	Algae	72 hours
	Acute EL50 210 mg/l Nominal Fresh water	Daphnia	48 hours
	Acute EL50 68 mg/l Nominal Fresh water	Daphnia	48 hours
	Acute ErL50 78 mg/l Nominal Fresh water	Algae	72 hours
	Acute LL50 65 mg/l Nominal Fresh water	Fish	96 hours
	Acute LL50 21 mg/l Nominal Fresh water	Fish	96 hours
	Acute NOELR 10 mg/l Nominal Fresh water	Algae	72 hours
	Acute NOELR 1 mg/l Nominal Fresh water	Algae	72 hours
	Acute NOELR 46 mg/l Nominal Fresh water	Daphnia	48 hours
	Chronic NOEL 0.083 mg/l Nominal Fresh water	Fish	14 days
	Chronic NOELR 0.2 mg/l Nominal Fresh water	Daphnia	21 days

Conclusion/Summary Toxic to aquatic life with long lasting effects.

Persistence and degradability

Expected to be biodegradable.

Product/ingredient name	Test	Result	Dose	Inoculum
Fuels, diesel	OECD 301 F	60 % - Readily - 28 days	30 mg/l	-
	OECD 301 F	57.5 % - Not readily - 28 days	25 mg/l	-
	Equivalent to EPA OTS 796.3100	35 % - Not readily - 28 days	5 mg/l	-

Conclusion/Summary Non-persistent per IMO criteria

Bioaccumulative potential

This product is not expected to bioaccumulate through food chains in the environment.

Section 12. Ecological information

Mobility in soil

Soil/water partition coefficient (K_{OC}) Not available.

Mobility Spillages may penetrate the soil causing ground water contamination. This material may accumulate in sediments.

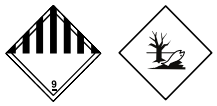
Other ecological information Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

Section 13. Disposal considerations

Disposal methods The generation of waste should be avoided or minimised wherever possible. 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. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. 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. Vapour 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.

Special Precautions for Landfill or Incineration Empty packages may contain some remaining product. Hazard warning labels are a guide to the safe handling of empty packaging and should not be removed.

Section 14. Transport information

	ADG	IMDG	IATA
UN number	Not regulated.	UN3082	UN3082
UN proper shipping name	-	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Fuels, diesel). Marine pollutant	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Fuels, diesel)
Transport hazard class(es)	-	9 	9 
Packing group	-	III	III
Environmental hazards	No.	Yes.	Yes.
Additional information	**Remarks** Combustible liquid Class C1 (AS 1940). **Hazchem code** 3Z **Initial emergency response guide** 47	This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8. **Emergency schedules** F-A, S-F	This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 5.0.2.4.1, 5.0.2.6.1.1 and 5.0.2.8.

Section 14. Transport information

Special precautions for user Not available.

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

Proper shipping name MARPOL Annex 1 rules apply for bulk shipments by sea.
Category: gas oils, including ship's bunkers

Section 15. Regulatory information

Standard Uniform Schedule of Medicine and Poisons

Not scheduled

Consumer products - This product is exempt per Appendix A of the SUSMP.
Industrial Products - Labelling requirements for SUSMP do not apply to a poison that is packed and sold solely for industrial, laboratory or manufacturing use. However, this product is labelled in accordance with NOSHC National Code of Practice for labelling of workplace substances.

Model Work Health and Safety Regulations - Scheduled Substances

No listed substance

Montreal Protocol (Annexes A, B, C, E)

Ingredient name	List name	Status
Not listed.		

Stockholm Convention on Persistent Organic Pollutants

Ingredient name	List name	Status
Not listed.		

Rotterdam Convention on Prior Informed Consent (PIC)

Ingredient name	List name	Status
Not listed.		

International lists

National inventory

REACH Status	For the REACH status of this product please consult your company contact, as identified in Section 1.
Australia inventory (AICS)	All components are listed or exempted.
Canada inventory	All components are listed or exempted.
China inventory (IECSC)	Not determined.
Japan inventory (ENCS)	Not determined.
Korea inventory (KECI)	Not determined.
Philippines inventory (PICCS)	Not determined.
Taiwan Chemical Substances Inventory (TCSI)	All components are listed or exempted.
United States inventory (TSCA 8b)	All components are active or exempted.

Section 16. Any other relevant information

History

Date of printing	8/6/2019
Date of issue/Date of revision	8/6/2019
Date of previous issue	5/25/2016
Version	3
Prepared by	Product Stewardship

Key to abbreviations

ADG = Australian Dangerous Goods
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
NOHSC = National Occupational Health and Safety Commission
REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation [Regulation (EC) No. 1907/2006]
STEL = Short term exposure limit
SUSMP = Standard Uniform Schedule of Medicine and Poisons
UN = United Nations
TWA = Time weighted average
VOC = Volatile Organic Compound
SADT = Self-Accelerating Decomposition Temperature
Varies = may contain one or more of the following 64741-88-4, 64741-89-5, 64741-95-3, 64741-96-4, 64742-01-4, 64742-44-5, 64742-45-6, 64742-52-5, 64742-53-6, 64742-54-7, 64742-55-8, 64742-56-9, 64742-57-0, 64742-58-1, 64742-62-7, 64742-63-8, 64742-65-0, 64742-70-7, 72623-85-9, 72623-86-0, 72623-87-1

Procedure used to derive the classification

Classification	Justification
Flam. Liq. 4, H227	On basis of test data
Acute Tox. 4, H332	Calculation method
Skin Irrit. 2, H315	Calculation method
Carc. 2, H351	Calculation method
STOT RE 2, H373 (bone marrow, liver, thymus)	Calculation method
Asp. Tox. 1, H304	Calculation method

Indicates information that has changed from previously issued version.

Notice to reader

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