Safety Data Sheet

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH)

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

1.1. Product identifier

Substance name:	**Fuels, diesel**
Code:	**817652**
Unique Formula Identifier (UFI):	**X4MS-CM5S-AK77-AVAX**
MARPOL Annex I Category:	Fuels, Including Ship's Bunkers
REACH Registration Number:	01-2119484664-27-0221
Issue date:	18-Nov-2020

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

Relevant identified uses:	Fuel
Uses advised against:	Uses other than those covered by the exposure scenarios appended to this Safety Data Sheet are not supported.

1.3. Details of the supplier of the safety data sheet

Manufacturer/Supplier:	Phillips 66 CS Limited 7th Floor 200-202 Aldersgate Street London EC1A 4HD UK
SDS Information:	URL: www.Phillips66.com/SDS Email: ESDS@P66.com

1.4. Emergency telephone number

CHEMTREC Global +1 703 527 3887
CHEMTREC Germany 0800-181-7059
CHEMTREC France +(33)-975181407
CHEMTREC Spain 900-868538
CHEMTREC UK +(44)-870-8200418
CHEMTREC Denmark +(45)-69918573
CHEMTREC Sweden (Stockholm) +(46)-852503403
CHEMTREC Netherlands +(31)-858880596

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

CLP Classification (EC No 1272/2008)
H226 - Flammable liquids -- Category 3
H304 -- Aspiration Hazard -- Category 1
H315 -- Skin corrosion/irritation -- Category 2
H332 -- Acute toxicity, Inhalation -- Category 4
H351 -- Carcinogenicity -- Category 2
H373 -- Specific target organ toxicity (repeated exposure) -- Category 2 (Immune system/Liver/bone)
H411 -- Hazardous to the aquatic environment, chronic toxicity -- Category 2

2.2. Label elements

DANGER

H226 - Flammable liquid and vapour
H304 - May be fatal if swallowed and enters airways
H315 - Causes skin irritation
H332 - Harmful if inhaled
H351 - Suspected of causing cancer
H373 - May cause damage to organs through prolonged or repeated exposure
H411 - Toxic to aquatic life with long lasting effects
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P260 - Do not breathe dust/fume/gas/mist/vapours/spray
P273 - Avoid release to the environment
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
P331 - Do NOT induce vomiting

2.3. Other hazards

Electrostatic charge may be generated during pumping and other operations
Does not meet the criteria for persistent, bioaccumulative and toxic (PBT) or very persistent, very bioaccumulative (vPvB) substances.

SECTION 3: Composition/information on ingredients

3.1. Substances

Chemical Name	CASRN	EINECS	REACH Registration No	Concentration[1]	Classification[2]
Fuels, diesel	68334-30-5	269-822-7	01-2119484664-27	0-100	Flam. Liq. 3, H226 Asp. Tox. 1, H304 Skin Irrit. 2, H315 Acute Tox. 4, H332 Carc. 2, H351 STOT RE 2, H373 Aquatic Chronic 2, H411
Kerosine, petroleum	8008-20-6	232-366-4	01-2119485517-27	0-18	Flam. Liq. 3, H226 Asp. Tox. 1, H304 Skin Irrit. 2, H315 STOT SE 3, H336 Aquatic Chronic 2, H411
Aromatic hydrocarbons, distillation residues, naphthalene-rich	98072-36-7	308-487-4	01-2119480164-41	<10	Acute Tox. 4, H302 Asp. Tox. 1, H304 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Carc. 2, H351 Muta. 1B, H340 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Naphthalene, 1,2,3,4-tetrahydro-	119-64-2	204-340-2	Not applicable	<5	Eye Irrit. 2, H319 Skin Irrit. 2, H315 Aquatic Chronic 2, H411
Naphthalene	91-20-3	202-049-5	-	<2.5	Acute Tox. 4, H302 Carc. 2, H351 Aquatic Acute 1, H400 Aquatic Chronic 1, H410

[1] All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.
[2] Regulation EC 1272/2008.
See Section 11 for more information.

Total Sulphur: < 0.1 wt%

SECTION 4: First aid measures

4.1. Description of first aid measures

Eye Contact: If irritation or redness develops from exposure, flush eyes with clean water. If symptoms persist, seek medical attention.

Skin Contact: Remove contaminated shoes and clothing, and flush affected area(s) with large amounts of water. If skin surface is damaged, apply a clean dressing and seek medical attention. If skin surface is not damaged, cleanse affected area(s) thoroughly by washing with mild soap and water or a waterless hand cleaner. If irritation or redness develops, seek medical attention. Wash contaminated clothing before reuse. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician. (see Note to Physician)

Inhalation: If respiratory symptoms or other symptoms of exposure develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. If symptoms persist, seek immediate medical attention. If victim is not breathing, clear airway and immediately begin artificial respiration. If breathing difficulties develop, oxygen should be administered by qualified personnel. Seek immediate medical attention.

Ingestion: Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. If victim is drowsy or unconscious and vomiting, place on the left side with the head down. If possible, do not leave victim unattended and observe closely for adequacy of breathing. Seek medical attention.

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

While significant vapour concentrations are not likely, high concentrations can cause minor respiratory irritation, headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue. Ingestion can cause irritation of the digestive tract, nausea, diarrhea, and vomiting. Prolonged or repeated contact may dry skin and cause irritation.

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

Notes to Physician: When using high-pressure equipment, injection of product under the skin can occur. In this case, the casualty should be sent immediately to the hospital. Do not wait for symptoms to develop. High-pressure hydrocarbon injection injuries may produce substantial necrosis of underlying tissue despite an innocuous appearing external wound. These injuries often require extensive emergency surgical debridement and all injuries should be evaluated by a specialist in order to assess the extent of injury. Early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Dry chemical, carbon dioxide, or foam is recommended. Water spray is recommended to cool or protect exposed materials or structures. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam. Water may be ineffective for extinguishment, unless used under favorable conditions by experienced fire fighters.

5.2. Special hazards arising from the substance or mixture

Unusual Fire & Explosion Hazards: Flammable. This material can be ignited by heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, mechanical/electrical equipment, and electronic devices such as cell phones, computers, calculators, and pagers which have not been certified as intrinsically safe) Vapours may travel considerable distances to a source of ignition where they can ignite, flash back, or explode. May create vapour/air explosion hazard indoors, in confined spaces, outdoors, or in sewers. This product will float and can be reignited on surface water. Vapours are heavier than air and can accumulate in low areas. If container is not properly cooled, it can rupture in the heat of a fire.

Hazardous Combustion Products: Combustion may yield smoke, carbon monoxide, and other products of incomplete combustion. Oxides of nitrogen and sulphur may also be formed.

5.3. Special protective actions for fire-fighters

For fires beyond the initial stage, emergency responders in the immediate hazard area should wear protective clothing. When

the potential chemical hazard is unknown, in enclosed or confined spaces, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8). Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapours and to protect personnel. Avoid spreading burning liquid with water used for cooling purposes. Cool equipment exposed to fire with water, if it can be done safely.

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

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

6.2. Environmental precautions

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

6.3. Methods and material for containment and cleaning up

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

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

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. Take precautionary measures against static discharge. Use non-sparking tools. Do not breathe vapour or mist. Use only outdoors or in a well-ventilated area. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use good personal hygiene practices and wear appropriate personal protective equipment (see section 8).

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

High pressure injection of hydrocarbon fuels, hydraulic oils or greases under the skin may have serious consequences even though no symptoms or injury may be apparent. This can happen accidentally when using high pressure equipment such as high pressure grease guns, fuel injection apparatus or from pinhole leaks in tubing of high pressure hydraulic oil equipment.

For use as a motor fuel only. Do not use as a solvent due to its flammable and potentially toxic properties. Siphoning by mouth can result in lung aspiration which can be harmful or fatal.
The use of hydrocarbon fuel in an area without adequate ventilation may result in hazardous levels of incomplete combustion products (e.g. carbon monoxide, oxides of sulphur and nitrogen, benzene and other hydrocarbons) and/or dangerously low

oxygen levels.

Diesel engine exhaust contains hazardous combustion products and has been identified as a cancer hazard. Exposure should be minimized to reduce potential risk.

7.2. Conditions for safe storage, including any incompatibilities

Keep container(s) tightly closed and properly labeled. Use and store this material in cool, dry, well-ventilated areas away from heat, direct sunlight, hot metal surfaces, and all sources of ignition. Store only in approved containers. Post area "No Smoking or Open Flame." Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain or have contained this material, refer to appropriate guidance pertaining to cleaning, repairing, welding, or other contemplated operations. Outdoor or detached storage is preferred. Indoor storage should meet Country or Committee standards and appropriate fire codes.

7.3. Specific end use(s)

Refer to supplemental exposure scenarios if attached.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational Exposure Limits:

Chemical Name	ACGIH	Ireland	United Kingdom	Phillips 66
Fuels, diesel	TWA-8hr: 100 mg/m³ inhalable fraction and vapor Skin	TWA-8hr: 100 mg/m³ STEL: 300 mg/m³	---	TWA-8hr: 100 mg/m³ Skin
Kerosine, petroleum	TWA-8hr: 200 mg/m³ total hydrocarbon vapor Kerosene/Jet fuels Skin	Skin	---	TWA-8hr: 200 mg/m³ TWA-8hr: 28 ppm Skin
Naphthalene	TWA-8hr: 10 ppm Skin	TWA-8hr: 10 ppm TWA-8hr: 50 mg/m³ STEL: 30 ppm STEL: 150 mg/m³	---	TWA-8hr: 10 ppm Skin

STEL = Short Term Exposure Limit (15 minutes); TWA = Time Weighted Average (8 hours); --- = No Occupational Exposure Limit. Local regulations may be more stringent than regional or national requirements.

Biological Limit Values:

Chemical Name	ACGIH	European Union	United Kingdom
Naphthalene	1-Naphthol with hydrolysis plus 2-Naphthol with hydrolysis in : , end of shift (nonquantitative, nonspecific)	---	---

--- = No Biological Limit Value. Local regulations may be more stringent than regional or national requirements

Relevant DNEL and PNEC:

Worker Derived No-Effect Level (DNEL)
Inhalation: 68.3 mg/m³
Dermal: 2.9 mg/kgbw/day

Consumer Derived No-Effect Level (DNEL)
Inhalation: 20 mg/m³
Dermal: 1.3 mg/kgbw/day
Ingestion: Not applicable

Environmental Predicted No-Effect Concentration (PNEC): No information available

8.2. Exposure controls

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

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

Skin/Hand Protection: The use of gloves impervious to the specific material handled that comply with EN 374 is advised to prevent skin contact. Users should check with manufacturers to confirm the breakthrough performance of their products. Depending on exposure and use conditions, additional protection may be necessary to prevent skin contact including use of items such as chemical resistant boots, aprons, arm covers, hoods, coveralls, or encapsulated suits. Suggested protective materials: Nitrile rubber

Respiratory Protection: Where there is potential for airborne exposure above the exposure limit an approved air purifying respirator equipped with Type A, organic gases and vapour filters (as specified by the manufacturer) may be used.

A respiratory protection programme that follows recommendations for the selection, use, care and maintenance of respiratory protective devices in EN 529:2005 should be followed whenever workplace conditions warrant a respirator's use. Air purifying respirators provide limited protection and cannot be used in atmospheres that exceed the maximum use concentration (as directed by regulation or the manufacturer's instructions), in oxygen deficient (less than 19.5 percent oxygen) situations, or under conditions that are immediately dangerous to life and health.

Other Protective Equipment: Eye wash and quick-drench shower facilities should be available in the work area. Thoroughly clean shoes and wash contaminated clothing before reuse.

Environmental Exposure Controls: Refer to Sections 6, 7, 12 and 13.

Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Data represent typical values and are not intended to be specifications. N/A = Not Applicable; N/D = Not Determined

Appearance:	Clear to amber
Physical form of product:	Liquid
Odour:	Diesel fuel
Odour threshold:	N/D
pH:	N/A
Melting / freezing point:	N/D
Initial boiling point and boiling range:	356 - 734 °F / 180 - 390 °C
Flash point:	> 131 °F / > 55 °C
Method:	CC (closed cup)
Evaporation Rate (nBuAc=1):	N/D
Flammability (solid, gas):	N/A
Upper Explosive Limits (vol % in air):	5.0
Lower Explosive Limits (vol % in air):	0.5
Vapour pressure:	<0.3 kPa @20°C
Vapour density:	>1 (air = 1)
Relative density:	0.85 @ 60ºF (15.6ºC) (water = 1)
Solubility(ies):	Negligible
Partition coefficient n-octanol /water (log KOW):	N/D
Autoignition temperature:	250 °C
Decomposition temperature:	N/D
Viscosity:	4.8 mm²/s @ 20°C; 1.5-5.5 mm²/s @ 40°C
Explosive properties:	N/D
Oxidising properties:	N/D

9.2. Other information

Other information

Pour point:	-11.2 °F / -24 °C
Bulk Density::	N/D

SECTION 10: Stability and reactivity

10.1. Reactivity Not chemically reactive.

10.2. Chemical stability Stable under normal ambient and anticipated conditions of use.

10.3. Possibility of hazardous reactions Hazardous reactions not anticipated.

10.4. Conditions to avoid Avoid high temperatures and all sources of ignition. Prevent vapour accumulation.

10.5. Incompatible materials Avoid contact with strong oxidizing agents and strong reducing agents.

10.6. Hazardous decomposition products Not anticipated under normal conditions of use.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Substance / Mixture

Acute Toxicity	Hazard	Additional Information	LC50/LD50 Data
Inhalation	Harmful if inhaled		> 4.1 mg/L (mist, estimated) (rat)
Dermal	Unlikely to be harmful		>2 g/kg (Estimated) (rabbit)
Oral	Unlikely to be harmful		>5 g/kg (Estimated) (rat)

Likely Routes of Exposure: Inhalation, eye contact, skin contact

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

Skin Corrosion/Irritation: Causes skin irritation. Repeated exposure may cause skin dryness or cracking.

Serious Eye Damage/Irritation: Causes mild eye irritation.

Skin Sensitisation: Not expected to be a skin sensitizer.

Respiratory Sensitisation: No information available on the mixture, however none of the components have been classified for respiratory sensitisation (or are below the concentration threshold for classification).

Specific Target Organ Toxicity (Single Exposure): No information available on the mixture, however none of the components have been classified for target organ toxicity (or are below the concentration threshold for classification).

Specific Target Organ Toxicity (Repeated Exposure): May cause damage to organs through prolonged or repeated exposure.
Carcinogenicity: Suspected of causing cancer. Based on component information.

Germ Cell Mutagenicity: No information available on the mixture, however none of the components have been classified for germ cell mutagenicity (or are below the concentration threshold for classification). Based on component information.

Reproductive Toxicity: Not expected to cause reproductive toxicity.
Other Comments: Diesel engine exhaust has been classified by the International Agency for Research on Cancer (IARC) and National Toxicology Programme (NTP) as a carcinogen.

11.2 Information on Hazardous Components

Fuels, diesel

Carcinogenicity: Repeated application of residual aromatic extracts to mouse skin resulted in an increased incidence of skin tumours. They have been identified as a carcinogen by IARC.
Target Organ(s): Repeated dermal application of petroleum gas oils for 90 days resulted in decreased liver, thymus, and spleen weights, and altered bone marrow function. Microscopic alterations included liver hypertrophy and necrosis, decreased hematopoesis and lymphocyte depletion.
Target organs, tissues and biological systems: Immune system, Liver, bone

Kerosine, petroleum

Target organs, tissues and biological systems: Central Nervous System (CNS)
Reproductive Toxicity: Hydrodesulphurized kerosene applied to the skin of female rats at 494, 330, or 165 mg/kg daily for 7 consecutive weeks (premating, mating, and gestation), or for 8 consecutive weeks in males did not result in systemic, reproductive, or developmental toxicity.

Naphthalene

Carcinogenicity: Naphthalene has been evaluated in two year inhalation studies in both rats and mice. The US National Toxicology Programme (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.

SECTION 12: Ecological information

12.1. Toxicity

Experimental studies of gas oils show that acute aquatic toxicity values are typically in the range 2-20 mg/L. These values are consistent with the predicted aquatic toxicity of these substances based on their hydrocarbon compositions. They should be regarded as toxic to aquatic organisms, with the potential to cause long term adverse effects in the aquatic environment.

12.2. Persistence and degradability

Gas oils are complex combinations of individual hydrocarbon species. Based on the known or expected properties of individual constituents, category members are not predicted to be readily biodegradable. Some hydrocarbon constituents of gas oils are predicted to meet the criteria for persistence; on the other hand, some components can be easily degraded by microorganisms under aerobic conditions.

Persistence per IOPC Fund definition: Non-Persistent

12.3. Bioaccumulative potential

Gas oil components have measured or calculated Log Kow values in the range of 3.9 to 6 which indicates a high potential to bioaccumulate. Lower molecular weight compounds are readily metabolized and the actual bioaccumulation potential of higher molecular weight compounds is limited by the low water solubility and large molecular size.

12.4. Mobility in soil

Releases to water will result in a hydrocarbon film floating and spreading on the surface. For the lighter components, volatilisation is an important loss process and reduces the hazard to aquatic organisms. In air, the hydrocarbon vapours react readily with hydroxyl radicals with half-lives of less than one day. Photoxidation on the water surface is also a significant loss process particularly for polycyclic aromatic compounds. In water, the majority of components will be adsorbed on sediment. Adsorption is the most predominant physical process on release to soil. Adsorbed hydrocarbons will slowly degrade in both water and soil.

12.5. Results of PBT and vPvB assessment

Not a PBT or vPvB substance.

12.6. Other adverse effects

None anticipated.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

European Waste Code: 13 07 01* fuel oil and diesel

This material, if discarded as produced, would be considered as hazardous waste pursuant to Directive 2008/98/EC on

hazardous waste, and subject to the provisions of that Directive unless Article 1(5) of that Directive applies.
This code has been assigned based upon the most common uses for this material and may not reflect contaminants resulting from actual use. Waste generators/producers are responsible for assessing the actual process used when generating the waste and it's contaminants in order to assign the proper waste disposal code.

Disposal must be in accordance with Directive 2008/98/EC and other applicable national or regional provisions, and based upon material characteristics at time of disposal. For incineration of waste, follow Directive 2000/76/EC. For landfill of waste, follow Directive 1999/31/EC. Product is suitable for burning in an enclosed controlled burner for fuel value if >5000 BTU, or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products. Follow Directive 2000/76/EC.

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

SECTION 14: Transport information

14.1. UN number
UN1202

14.2. UN proper shipping name
Diesel fuel

14.3. Transport hazard class(es)
3; (N2, F)

14.4. Packing group
III

14.5. Environmental hazards
Marine pollutant - Environmentally Hazardous

14.6. Special precautions for user
If transported in bulk by marine vessel in international waters, product is being carried under the scope of MARPOL Annex I.

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

SECTION 15: Regulatory information

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

EC 1272/2008 - Classification, labelling and packaging of substances and mixtures
EN166:2002 Eye Protection
EN 529:2005 Respiratory Protective devices
BS EN 374-1:2003 Protective gloves against chemicals and micro-organisms
Occupational Exposure Limits, Technical Rules for Dangerous Substances
Occupational Exposure Limits, Health and Safety Authority
Workplace Exposure Limits, EH40/2005, Control of Substances Hazardous to Health
Federal Water Act on the Classification of Substances Hazardous to Waters
Directive 2008/98/EC (Waste Framework Directive)
Directive 2000/76/EC on incineration of waste
Directive 1999/31/EC on landfill of waste

Export Rating: NLR (No Licence Required)

15.2. Chemical safety assessment

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

SECTION 16: Other information

Issue date	18-Nov-2020
Status:	FINAL
Previous Issue Date:	19-Aug-2020
Revised Sections or Basis for Revision:	Unique Formula Identifier (UFI) Toxicological (Section 11) Format change
Safety Data Sheet Number:	**817652**
Language:	BE

List of Relevant Hazard Statements:
H226 - Flammable liquid and vapour
H302 - Harmful if swallowed
H304 - May be fatal if swallowed and enters airways
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H332 - Harmful if inhaled
H336 - May cause drowsiness or dizziness
H340 - May cause genetic defects
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

Regulatory Basis of Classification

CLP Classification (EC No 1272/2008)	Regulatory Basis
H226 - Flammable liquids -- Category 3	Based on component information.
H304 -- Aspiration Hazard -- Category 1	Based on component information.
H315 -- Skin corrosion/irritation -- Category 2	Based on component information.
H332 -- Acute toxicity, Inhalation -- Category 4	Based on component information.
H351 -- Carcinogenicity -- Category 2	Based on component information.
H373 -- Specific target organ toxicity (repeated exposure) -- Category 2 (Immune system/Liver/bone)	Based on component information.
H411 -- Hazardous to the aquatic environment, chronic toxicity -- Category 2	Based on component information.

Guide to Abbreviations:
ACGIH = American Conference of Governmental Industrial Hygienists; ADR = Agreement on Dangerous Goods by Road; BMGV = Biological Monitoring Guidance Value; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA = [US] Environmental Protection Agency; Germany-TRGS = Technical Rules for Dangerous Substances; IARC = International Agency for Research on Cancer; ICAO/IATA = International Civil Aviation Organisation / International Air Transport Association; INSHT = National Institute for Health and Safety at Work; IMDG = International Maritime Dangerous Goods; Irland-HSA = Ireland's National Health and Safety Authority; LEL = Lower Explosive Limit; MARPOL = Marine Pollution; N/A = Not Applicable; N/D = Not Determined; NTP = [US] National Toxicology Programme; PBT = Persistent, Bioaccumulative and Toxic; RID = Regulations Concerning the International Transport of Dangerous Goods by Rail; STEL = Short Term Exposure Limit; TLV = Threshold Limit Value; TRGS 903 = Technical rules for hazardous substances; TWA = Time Weighted Average; UEL = Upper Explosive Limit; UK-EH40 = United Kingdom EH40/2005 OEL; vPvB = very Persistent, very Bioaccumulative

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

1. Manufacture of substance - Industrial

Section 1 Exposure Scenario Vacuum or Hydrocracked Gas Oils and Distillate Fuels	
Title	Manufacture of substance
Use Descriptor	
Sector(s) of use	3, 8, 9
Process category(ies)	1, 2, 3, 4, 8a, 8b, 15
Environmental release category(ies)	1, 4
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 Operational conditions and risk management measures	
2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other operational conditions affecting exposure	Operation is carried out at elevated temperature (>20°C above ambient temperature). Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios / Product Category	**Specific Risk Management Measures & Operating Conditions**
General measures applicable to all activities	Control 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 exposure and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
General exposures (closed systems)	Handle substance within a closed system
General exposures (open systems)	Wear suitable gloves tested to EN374.
Process sampling	No other specific measures identified
bulk closed loading and unloading	Handle substance within a closed system Wear suitable gloves tested to EN374.
bulk open loading and unloading	Wear suitable gloves tested to EN374.
Equipment cleaning and maintenance	Drain down system prior to equipment break-in or

	maintenance Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Laboratory activities	No other specific measures identified
Bulk product storage	Store substance within a closed system

Vacuum or Hydrocracked Gas Oils and Distillate Fuels exhibits acute inhalation toxicity and is classified R20 (Harmful by inhalation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary / additional RMMs. Vacuum or Hydrocracked Gas Oils and Distillate Fuels exhibits irritation to the skin and is classified R38 (Irritating to skin) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary RMMs. Vacuum or Hydrocracked Gas Oils and Distillate Fuels is classified R65 (Harmful: may cause lung damage if swallowed). The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from this adverse effect. There is limited evidence of carcinogenic effects in Vacuum or Hydrocracked Gas Oils and Distillate Fuels and it is classified R40 (May cause cancer) accordingly. The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL 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 these adverse effects.

2.2 Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	2.8e7
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 operational conditions of use affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	1.0e-2
Release fraction to wastewater from process (initial release prior to RMM)	3.0e-5
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 estimates used.

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

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
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

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):	3.3e6
Assumed domestic sewage treatment plant flow (m^3/d):	10000

Conditions and measures related to external treatment of waste for disposal
During manufacturing no waste of the substance is generated.

Conditions and measures related to external recovery of waste
During manufacturing no waste of the substance is generated.

Section 3 Exposure Estimation

3.1 Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.
3.2 Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.
Section 4 Guidance to check compliance with the Exposure Scenario
4.1 Health
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Available hazard data does not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterization.
4.2 Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (https://cefic.org/app/uploads/2019/01/SPERCs-Specific-Envirnonmental-Release-Classes-REACHImpl-ES-CSA-CSR.pdf). Scaled local assessments for EU refineries have been performed using site-specific data and are attached in PETRORISK file – “Site-Specific Production” worksheet.

2. Use of substance as an intermediate - Industrial

Section 1 Exposure Scenario Vacuum or Hydrocracked Gas Oils and Distillate Fuels	
Title	Use as an intermediate
Use Descriptor	
Sector(s) of use	3, 8, 9
Process category(ies)	1, 2, 3, 4, 8a, 8b, 15
Environmental release category(ies)	6a
Specific Environmental Release Category	ESVOC SpERC 6.1a.v1
Processes, tasks, activities covered	
Use of substance as an intermediate (not related to Strictly Controlled Conditions). Includes recycling/recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).	
Section 2 Operational conditions and risk management measures	
2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other operational conditions affecting exposure	Operation is carried out at elevated temperature (>20°C above ambient temperature). Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios / Product Category	**Specific Risk Management Measures & Operating Conditions**
General measures applicable to all activities	Control 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 exposure and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to

	EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
General exposures (closed systems)	Handle substance within a closed system
General exposures (open systems)	Wear suitable gloves tested to EN374.
Process sampling	No other specific measures identified
bulk closed loading and unloading	Handle substance within a closed system Wear suitable gloves tested to EN374.
bulk open loading and unloading	Wear suitable gloves tested to EN374.
Equipment cleaning and maintenance	No other specific measures identified
Laboratory activities	No other specific measures identified
Bulk product storage	Store substance within a closed system

Vacuum or Hydrocracked Gas Oils and Distillate Fuels exhibits acute inhalation toxicity and is classified R20 (Harmful by inhalation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary / additional RMMs. Vacuum or Hydrocracked Gas Oils and Distillate Fuels exhibits irritation to the skin and is classified R38 (Irritating to skin) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary RMMs. Vacuum or Hydrocracked Gas Oils and Distillate Fuels is classified R65 (Harmful: may cause lung damage if swallowed). The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from this adverse effect. There is limited evidence of carcinogenic effects in Vacuum or Hydrocracked Gas Oils and Distillate Fuels and it is classified R40 (May cause cancer) accordingly. The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL 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 these adverse effects.

2.2 Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	3.5e5
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 operational conditions of use affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	1.0e-3
Release fraction to wastewater from process (initial release prior to RMM)	3.0e-5
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 estimates used.

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

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.

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	94.1

plant) RMMs (%):	
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (kg/d):	4.1e5
Assumed domestic sewage treatment plant flow (m³/d):	2000
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 indicated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Available hazard data does not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterization.	
4.2 Environment	
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (https://cefic.org/app/uploads/2019/01/SPERCs-Specific-Envirnonmental-Release-Classes-REACHImpl-ES-CSA-CSR.pdf).	

3. Distribution of substance - Industrial

Section 1 Exposure Scenario Vacuum or Hydrocracked Gas Oils and Distillate Fuels	
Title	Distribution of substance
Use Descriptor	
Sector(s) of use	3
Process category(ies)	1, 2, 3, 4, 8a, 8b, 9, 15
Environmental release category(ies)	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7
Specific Environmental Release Category	ESVOC SpERC 1.1b.v1
Processes, tasks, activities covered	
Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading distribution and associated laboratory activities.	
Section 2 Operational conditions and risk management measures	
2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other operational conditions affecting exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios / Product Category	**Specific Risk Management Measures & Operating Conditions**
General measures applicable to all activities	Control 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 exposure and aware of basic actions to

	minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
General exposures (closed systems)	Handle substance within a closed system
General exposures (open systems)	Wear suitable gloves tested to EN374.
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 EN374.
bulk open loading and unloading	Wear suitable gloves tested to EN374.
Drum and small package filling	Wear suitable gloves tested to EN374.
Equipment cleaning and maintenance	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Storage	Store substance within a closed system

Vacuum or Hydrocracked Gas Oils and Distillate Fuels exhibits acute inhalation toxicity and is classified R20 (Harmful by inhalation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary / additional RMMs. Vacuum or Hydrocracked Gas Oils and Distillate Fuels exhibits irritation to the skin and is classified R38 (Irritating to skin) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary RMMs. Vacuum or Hydrocracked Gas Oils and Distillate Fuels is classified R65 (Harmful: may cause lung damage if swallowed). The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from this adverse effect. There is limited evidence of carcinogenic effects in Vacuum or Hydrocracked Gas Oils and Distillate Fuels and it is classified R40 (May cause cancer) accordingly. The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL 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 these adverse effects.

2.2 Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	2.8e7
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 operational conditions of use affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	1.0e-3
Release fraction to wastewater from process (initial release prior to RMM)	1.0e-6
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 estimates used.

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

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.	
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 (%):	94.1
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (kg/d):	4.1e5
Assumed domestic sewage treatment plant flow (m^3/d):	2000
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 indicated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Available hazard data does not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterization.	
4.2 Environment	
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (https://cefic.org/app/uploads/2019/01/SPERCs-Specific-Envirnonmental-Release-Classes-REACHImpl-ES-CSA-CSR.pdf).	

4. Formulation & (Re)packing of substance - Industrial

Section 1 Exposure Scenario Vacuum or Hydrocracked Gas Oils and Distillate Fuels	
Title	Formulation & (re)packing of substances and mixtures
Use Descriptor	
Sector(s) of use	3, 10
Process category(ies)	1, 2, 3, 4, 5, 8a, 8b, 9, 14, 15
Environmental release category(ies)	2
Specific Environmental Release Category	ESVOC SpERC 2.2.v1
Processes, tasks, activities covered	
Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.	
Section 2 Operational conditions and risk management measures	
2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other operational conditions affecting exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios / Product Category	Specific Risk Management Measures & Operating Conditions
General measures applicable to all activities	Control 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 exposure and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
General exposures (closed systems)	Handle substance within a closed system
General exposures (open systems)	Wear suitable gloves tested to EN374.
Process sampling	No other specific measures identified
Drum/batch transfers	Use drum pumps or carefully pour from container Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Bulk transfers	Handle substance within a closed system Wear suitable gloves tested to EN374.
Mixing operations (open systems)	Provide extract ventilation to points where emissions occur Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Production or preparation or articles by tabletting, compression, extrusion or pelletisation	Wear suitable gloves tested to EN374.
Drum/batch transfers	Wear suitable gloves tested to EN374.
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 EN374.
Storage	Store substance within a closed system

Vacuum or Hydrocracked Gas Oils and Distillate Fuels exhibits acute inhalation toxicity and is classified R20 (Harmful by inhalation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary / additional RMMs. Vacuum or Hydrocracked Gas Oils and Distillate Fuels exhibits irritation to the skin and is classified R38 (Irritating to skin) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary RMMs. Vacuum or Hydrocracked Gas Oils and Distillate Fuels is classified R65 (Harmful: may cause lung damage if swallowed). The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from this adverse effect. There is limited evidence of carcinogenic effects in Vacuum or Hydrocracked Gas Oils and Distillate Fuels and it is classified R40 (May cause cancer) accordingly. The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL 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 these adverse effects.

2.2 Control of environmental exposure

Product characteristics

Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	2.8e7
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 operational conditions of use affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	1.0e-2
Release fraction to wastewater from process (initial release prior to RMM)	2.0e-5
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 estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Risk from environmental exposure is driven by freshwater sediment. Prevent discharge of undissolved substance to or recover from onsite wastewater.	
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.	
Conditions and measures related to municipal sewage treatment plant	
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 (%):	94.1
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (kg/d):	6.8e5
Assumed domestic sewage treatment plant flow (m^3/d):	2000
Conditions and measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	
External 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 indicated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Available hazard data does not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterization.	
4.2 Environment	
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (https://cefic.org/app/uploads/2019/01/SPERCs-Specific-Envirnonmental-Release-Classes-REACHImpl-ES-CSA-CSR.pdf).	

5. Use of substance in Metal working fluids / rolling oils - Industrial

Section 1 Exposure Scenario Vacuum or Hydrocracked Gas Oils and Distillate Fuels	
Title	Metal working fluids / rolling oils
Use Descriptor	
Sector(s) of use	3
Process category(ies)	1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 13, 17

Environmental release category(ies)	4
Specific Environmental Release Category	ESVOC SpERC 4.7a.v1
Processes, tasks, activities covered	
Covers the use in formulated 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 Operational conditions and risk management measures	
2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other operational conditions affecting exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios / Product Category	**Specific Risk Management Measures & Operating Conditions**
General measures applicable to all activities	Control 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 exposure and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
General exposures (closed systems)	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 EN374.
Filling / preparation of equipment from drums or containers	Wear suitable gloves tested to EN374.
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.
Treatment by dipping and pouring	Wear suitable gloves tested to EN374.
Spraying	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 than 3 to 5 air changes per hour) Wear suitable gloves (tested to EN374), coverall and eye protection.
Manual Roller, spreader, flow application	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Automated metal rolling/forming	Handle substance within 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 chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.
Storage	Store substance within a closed system

Vacuum or Hydrocracked Gas Oils and Distillate Fuels exhibits acute inhalation toxicity and is classified R20 (Harmful by inhalation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary / additional RMMs. Vacuum or Hydrocracked Gas Oils and Distillate Fuels exhibits irritation to the skin and is classified R38 (Irritating to skin) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary RMMs. Vacuum or Hydrocracked Gas Oils and Distillate Fuels is classified R65 (Harmful: may cause lung damage if swallowed). The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from this adverse effect. There is limited evidence of carcinogenic effects in Vacuum or Hydrocracked Gas Oils and Distillate Fuels and it is classified R40 (May cause cancer) accordingly. The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL 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 these adverse effects.

2.2 Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	1.0e4
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 operational conditions of use 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)	3.0e-6
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 estimates used.

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

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

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):	7.8e4
Assumed domestic sewage treatment plant flow (m^3/d):	2000

Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste
External 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 indicated.

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

Section 4 Guidance to check compliance with the Exposure Scenario

4.1 Health
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Available hazard data does not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterization.
4.2 Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (https://cefic.org/app/uploads/2019/01/SPERCs-Specific-Envirnonmental-Release-Classes-REACHImpl-ES-CSA-CSR.pdf).

6. Use of substance as Release agents or binders - Industrial

Section 1 Exposure Scenario Vacuum or Hydrocracked Gas Oils and Distillate Fuels	
Title	Use as binders and release agents
Use Descriptor	
Sector(s) of use	3
Process category(ies)	1, 2, 3, 4, 6, 7, 8b, 10, 13, 14
Environmental release category(ies)	4
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), mold forming and casting, and handling of waste.	
Section 2 Operational conditions and risk management measures	
2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other operational conditions affecting exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios / Product Category	**Specific Risk Management Measures & Operating Conditions**
General measures applicable to all activities	Control 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 exposure and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. 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 chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Mixing operations (closed systems)	No other specific measures identified
Mixing operations (open systems)	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Mould forming	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Casting operations (open systems)	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Wear suitable gloves tested to EN374.
Machine Spraying	Minimise exposure by extracted full enclosure for the operation or equipment. Wear suitable gloves tested to EN374.
Manual Spraying	Wear a full face respirator conforming to EN140 with Type A/P2 filter or better. Wear suitable gloves (tested to EN374), coverall and eye protection. Ensure operatives are trained to minimise exposures.
Manual Roller, spreader, flow application	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Equipment cleaning and maintenance	Drain down system prior to equipment break-in or maintenance Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Storage	Store substance within a closed system

Vacuum or Hydrocracked Gas Oils and Distillate Fuels exhibits acute inhalation toxicity and is classified R20 (Harmful by inhalation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary / additional RMMs. Vacuum or Hydrocracked Gas Oils and Distillate Fuels exhibits irritation to the skin and is classified R38 (Irritating to skin) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary RMMs. Vacuum or Hydrocracked Gas Oils and Distillate Fuels is classified R65 (Harmful: may cause lung damage if swallowed). The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from this adverse effect. There is limited evidence of carcinogenic effects in Vacuum or Hydrocracked Gas Oils and Distillate Fuels and it is classified R40 (May cause cancer) accordingly. The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL 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 these adverse effects.

2.2 Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	1.4e4
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 operational conditions of use 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)	3.0e-7
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 estimates used.

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

Treat air emission to provide a typical removal efficiency of (%):	80
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal	59.2

efficiency >= (%):	
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	
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):	1.7e5
Assumed domestic sewage treatment plant flow (m³/d):	2000
Conditions and measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	
External 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 indicated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Available hazard data does not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterization.	
4.2 Environment	
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (https://cefic.org/app/uploads/2019/01/SPERCs-Specific-Envirnonmental-Release-Classes-REACHImpl-ES-CSA-CSR.pdf).	

7. Use of substance as Release agents or binders - Professional

Section 1 Exposure Scenario Vacuum or Hydrocracked Gas Oils and Distillate Fuels	
Title	Use as binders and release agents
Use Descriptor	
Sector(s) of use	22
Process category(ies)	1, 2, 3, 4, 6, 8a, 8b, 10, 11, 14
Environmental release category(ies)	8a, 8d
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, brushing, and handling of waste.	
Section 2 Operational conditions and risk management measures	
2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other operational conditions affecting exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios / Product Category	Specific Risk Management Measures & Operating Conditions
General measures applicable to all activities	Control 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 exposure and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. 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 EN374.
Mixing operations (closed systems)	No other specific measures identified
Mixing operations (open systems)	Wear suitable gloves tested to EN374.
Mould forming	Provide extract ventilation to points where emissions occur Wear suitable gloves tested to EN374.
Casting operations with local exhaust ventilation	Provide extract ventilation to points where emissions occur Wear suitable gloves tested to EN374.
Casting operations without local exhaust ventilation	Wear a respirator conforming to EN140 with Type A/P2 filter or better. Wear suitable gloves (tested to EN374), coverall and eye protection.
Spraying Manual without local exhaust ventilation	Carry out in a vented booth or extracted enclosure Wear suitable gloves (tested to EN374), coverall and eye protection. Ensure operatives are trained to minimise exposures.
Spraying Manual without local exhaust ventilation	Wear a full face respirator conforming to EN140 with Type A/P2 filter or better. Wear suitable gloves (tested to EN374), coverall and eye protection. Ensure operatives are trained to minimise exposures.
Manual Roller, spreader, flow application	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Equipment cleaning and maintenance	Drain down system prior to equipment break-in or maintenance Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.
Storage	Store substance within a closed system
Vacuum or Hydrocracked Gas Oils and Distillate Fuels exhibits acute inhalation toxicity and is classified R20 (Harmful by inhalation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary / additional RMMs. Vacuum or Hydrocracked Gas Oils and Distillate Fuels exhibits irritation to the skin and is classified R38 (Irritating to skin) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary RMMs. Vacuum or Hydrocracked Gas Oils and Distillate Fuels is classified R65 (Harmful: may cause lung damage if swallowed). The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from this adverse effect. There is limited evidence of carcinogenic effects in Vacuum or Hydrocracked Gas Oils and Distillate Fuels and it is classified R40 (May cause cancer) accordingly. The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL 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 these adverse effects.	
2.2 Control of environmental exposure	
Product characteristics Substance is complex UVCB. Predominantly hydrophobic.	
Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	2.9e3
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 operational conditions of use 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 estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Risk from environmental exposure is driven by freshwater sediment. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%):	N/A
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.	
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 (%):	94.1
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (kg/d):	6.2e1
Assumed domestic sewage treatment plant flow (m^3/d):	2000
Conditions and measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	
External 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 indicated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Available hazard data does not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterization.	
4.2 Environment	
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (https://cefic.org/app/uploads/2019/01/SPERCs-Specific-Envirnonmental-Release-Classes-REACHImpl-ES-CSA-CSR.pdf).	

8. Use of substance as a Fuel - Industrial

Section 1 Exposure Scenario Vacuum or Hydrocracked Gas Oils and Distillate Fuels	
Title	Use as a fuel
Use Descriptor	
Sector(s) of use	3
Process category(ies)	1, 2, 3, 8a, 8b, 16
Environmental release category(ies)	7
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 Operational conditions and risk management measures	
2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other operational conditions affecting exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios / Product Category	**Specific Risk Management Measures & Operating Conditions**
General measures applicable to all activities	Control 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 exposure and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
Bulk transfers	Wear suitable gloves tested to EN374.
Drum/batch transfers	Wear suitable gloves tested to EN374.
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 chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.
Storage	Store substance within a closed system

Vacuum or Hydrocracked Gas Oils and Distillate Fuels exhibits acute inhalation toxicity and is classified R20 (Harmful by inhalation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary / additional RMMs. Vacuum or Hydrocracked Gas Oils and Distillate Fuels exhibits irritation to the skin and is classified R38 (Irritating to skin) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary RMMs. Vacuum or Hydrocracked Gas Oils and Distillate Fuels is classified R65 (Harmful: may cause lung damage if swallowed). The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived.

Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from this adverse effect. There is limited evidence of carcinogenic effects in Vacuum or Hydrocracked Gas Oils and Distillate Fuels and it is classified R40 (May cause cancer) accordingly. The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL 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 these adverse effects.	
2.2 Control of environmental exposure	
Product characteristics Substance is complex UVCB. Predominantly hydrophobic.	
Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	4.5e6
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 operational conditions of use affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	5.0e-3
Release fraction to wastewater from process (initial release prior to RMM)	0.00001
Release fraction to soil from process (initial release prior to RMM)	0
Technical conditions and measures at process level (source) to prevent release Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Risk from environmental exposure is driven by freshwater sediment. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%):	95
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency >= (%):	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.	
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 (%):	97.7
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (kg/d):	5.5e6
Assumed domestic sewage treatment plant flow (m^3/d):	2000
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 indicated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Available hazard data does not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterization.	
4.2 Environment	
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to	

define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (https://cefic.org/app/uploads/2019/01/SPERCs-Specific-Envirnonmental-Release-Classes-REACHImpl-ES-CSA-CSR.pdf).

9. Use of substance as a Fuel - Professional

Section 1 Exposure Scenario Vacuum or Hydrocracked Gas Oils and Distillate Fuels	
Title	Use as a fuel
Use Descriptor	
Sector(s) of use	22
Process category(ies)	1, 2, 3, 8a, 8b, 16
Environmental release category(ies)	9a, 9b
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 Operational conditions and risk management measures	
2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other operational conditions affecting exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios / Product Category	**Specific Risk Management Measures & Operating Conditions**
General measures applicable to all activities	Control 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 exposure and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
Bulk transfers	Wear suitable gloves tested to EN374.
Drum/batch transfers	Use drum pumps or carefully pour from container Wear suitable gloves tested to EN374.
Refuelling	Wear suitable gloves tested to EN374.
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 chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.

Storage	Store substance within a closed system

Vacuum or Hydrocracked Gas Oils and Distillate Fuels exhibits acute inhalation toxicity and is classified R20 (Harmful by inhalation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary / additional RMMs. Vacuum or Hydrocracked Gas Oils and Distillate Fuels exhibits irritation to the skin and is classified R38 (Irritating to skin) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary RMMs. Vacuum or Hydrocracked Gas Oils and Distillate Fuels is classified R65 (Harmful: may cause lung damage if swallowed). The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from this adverse effect. There is limited evidence of carcinogenic effects in Vacuum or Hydrocracked Gas Oils and Distillate Fuels and it is classified R40 (May cause cancer) accordingly. The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL 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 these adverse effects.

2.2 Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	6.7e6
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 operational conditions of use affecting environmental exposure

Release fraction to air from process (initial release prior to RMM)	1.0e-4
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 estimates used.

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

Treat air emission to provide a typical removal efficiency of (%):	N/A
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):	1.4e5
Assumed domestic sewage treatment plant flow (m^3/d):	2000

Conditions and measures related to external treatment of waste for disposal
Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment.

Conditions and measures related to external recovery of waste
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 indicated.

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

Section 4 Guidance to check compliance with the Exposure Scenario
4.1 Health
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Available hazard data does not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterization.
4.2 Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (https://cefic.org/app/uploads/2019/01/SPERCs-Specific-Envirnonmental-Release-Classes-REACHImpl-ES-CSA-CSR.pdf).

10. Use of substance as a Fuel - Consumer

Section 1 Exposure Scenario Vacuum or Hydrocracked Gas Oils and Distillate Fuels	
Title	Use as a fuel
Use Descriptor	
Sector(s) of use	21
Product category(ies)	13
Environmental release category(ies)	9a, 9b
Specific Environmental Release Category	ESVOC SpERC 9.12c.v1
Processes, tasks, activities covered	
Covers consumer uses in liquid fuels.	
Section 2 Operational conditions and risk management measures	
2.1 Control of consumer exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure > 10 Pa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Frequency and duration of use	For each use event, covers use amounts up to (g): 37500 Covers skin contact area up to (cm2): 420
Other operational conditions affecting exposure	Covers use up to (times/day of use): 0.143. Covers exposure up to (hours/event): 2 hours per event.

Contributing Scenarios / Product Category	**Specific Risk Management Measures & Operating Conditions**
Liquid: Automotive Refuelling	Covers concentrations up to (%): 100%. Covers use up to (days/year): 52. Covers use up to (times/day of use): 1. Covers skin contact area up to (cm2): 210.00. For each use event, covers use amounts up to (g): 37500. Covers use in room size of (m^3): 100. Covers exposure up to (hours/event): 0.05. Covers outdoor use No specific risk management measure identified beyond those operational conditions stated
Liquid Garden Equipment - Use	Covers concentrations up to (%): 100%. Covers use up to (days/year): 26. Covers use up to (times/day of use): 1. For each use event, covers use amounts up to (g): 750. Covers outdoor use Covers use in room size of (m^3): 100. Covers exposure up to (hours/event): 2.00. No specific risk management measure identified beyond those operational conditions stated
Liquid: garden equipment - refuelling	Covers concentrations up to (%): 100%. Covers use up to (days/year): 26. Covers use up to (times/day of use): 1. Covers skin contact area up to (cm2): 420.00. For each use event, covers use amounts up to (g): 750. Covers use in a one car garage (34 m^3) under typical ventilation. Covers use in room size of (m^3): 34. Covers exposure up to (hours/event): 0.03. No specific risk management measure identified beyond those operational conditions

	stated
Vacuum or Hydrocracked Gas Oils and Distillate Fuels exhibits acute inhalation toxicity and is classified R20 (Harmful by inhalation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary / additional RMMs. Vacuum or Hydrocracked Gas Oils and Distillate Fuels exhibits irritation to the skin and is classified R38 (Irritating to skin) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary RMMs. Vacuum or Hydrocracked Gas Oils and Distillate Fuels is classified R65 (Harmful: may cause lung damage if swallowed). The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from this adverse effect. There is limited evidence of carcinogenic effects in Vacuum or Hydrocracked Gas Oils and Distillate Fuels and it is classified R40 (May cause cancer) accordingly. The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL 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 these adverse effects.	
2.2 Control of environmental exposure	
Product characteristics Substance is complex UVCB. Predominantly hydrophobic.	
Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	1.6e7
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 operational conditions of use affecting environmental exposure	
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):	3.5e5
Assumed domestic sewage treatment plant flow (m^3/d):	2000
Conditions and measures related to external treatment of waste for disposal	
Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment.	
Conditions and measures related to external recovery of waste	
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 content of ECETOC report #107 and the Chapter R15 of the IR&CSA TGD. Where exposure determinants differ to these sources, then 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 compliance with the Exposure Scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.	
4.2 Environment	
Further details on scaling and control technologies are provided in SpERC factsheet (https://cefic.org/app/uploads/2019/01/SPERCs-Specific-Envirnonmental-Release-Classes-REACHImpl-ES-CSA-CSR.pdf).	

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

1.1 Product identifier

Commercial Product Name
SUPERFLOC C-496HMW

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

Use of the Substance/Mixture

Water treatment chemical

Recommended restrictions on use

-

1.3 Details of the supplier of the safety data sheet

Kemira Oyj
P.O. Box 33000101 HELSINKI FINLAND
Telephone+358108611, Telefax. +358108621124
ProductSafety.FI.Helsinki@kemira.com

1.4 Emergency telephone number

Carechem 24 International (Europe): +44 (0) 1235 239 670
Carechem 24 International: +82 (0)234 798 401

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EU) 1272/2008(CLP)
Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.;

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard statements	:	Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
	EUH210	Safety data sheet available on request.

2.3 Other hazards

Advice; Forms slippery/greasy layers with water.
Potential environmental effects; This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

Chemical nature of the mixture: Cationic polyacrylamide.

CAS/EU number/REACH Registration Number	Chemical name of the substance	Concentration	Classification according to Regulation (EU) 1272/2008(CLP)
124-04-9 204-673-3 01-2119457561-38	Adipic acid	0 - 5 %	Eye Irrit. Category 2,H319
77-92-9 201-069-1 01-2119457026-42	Citric acid	0 - 9.9 %	Eye Irrit. Category 2,H319

The total combined concentration of Adipic acid and Citric acid does not exceed 9.9%.

Further information

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

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General advice

Show this safety data sheet to the doctor in attendance.

Inhalation

Remove to fresh air. If there is difficulty in breathing, medical advice is required. If breathing is irregular or stopped, administer artificial respiration.

Skin contact

Wash off immediately with soap and plenty of water.

Eye contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Ingestion

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

4.2 Most important symptoms and effects, both acute and delayed

Symptoms	:	No information available.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment	:	Symptomatic treatment.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Extinguishing media	:	Water spray Dry chemical Carbon dioxide (CO2)
Unsuitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.2 Special hazards arising from the substance or mixture

Dust can form an explosive mixture in air.

5.3 Advice for firefighters

Wear self-contained breathing apparatus and protective suit.

5.4 Specific methods

Avoid dust accumulation. Forms slippery/greasy layers with water.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

For personal protection see SDS section 8.

6.2 Environmental precautions

Try to prevent the material from entering drains or water courses.

6.3 Methods and materials for containment and cleaning up

Product becomes slippery when it is wet. Take up mechanically and collect into suitable containers for disposal. Flush away traces with water. Prevent product from entering drains. Dispose of in compliance with local and national regulations.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

For personal protection see SDS section 8. The product is hygroscopic. Protect from moisture.

7.2 Conditions for safe storage, including any incompatibilities

Store in original container.
Keep tightly closed in a dry and cool place.

Materials for packaging

Unsuitable material: To avoid product degradation and equipment corrosion, do not use iron, copper or aluminium containers or equipment.

Materials to avoid:

Strong oxidizing agents

Storage stability:

Storage temperature	4 - 32 °C
Other data	Stable under recommended storage conditions.

7.3 Specific end use(s)

Not listed

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Contains no substances with occupational exposure limit values.

PNEC : No data available

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Ensure that eyewash stations and safety showers are close to the workstation location. Avoid dust formation. Ensure adequate ventilation.

Ensure adequate ventilation.

8.2.2 Individual protection measures, such as personal protective equipment
Hand protection

Glove material: Nitrile rubber, Permeability tests are not available for this product.Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

Eye protection

Safety goggles

Skin and body protection

Protective clothing.

Respiratory protection

In case of inadequate ventilation wear respiratory protection. (filter ABEK-P2)

8.2.3 Environmental exposure controls

Local authorities should be advised if significant spillages cannot be contained.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

General Information (appearance, odour)

Physical state	solid, crystalline, powder
Colour	off-white
Odour	odourless

Important health safety and environmental information

pH	3 - 5 (0.5 %) (as aqueous solution)
Melting point/range	No data available
Boiling point/boiling range	Not applicable
Flash point	Not applicable
Evaporation rate	Not applicable
Explosive properties:	

Lower explosion limit	No data available
Upper explosion limit	No data available
Vapour pressure	Not applicable
Relative vapour density	Not applicable
Bulk density	650 - 850 kg/m³
Solubility(ies):	
Water solubility	Limited by viscosity.
Partition coefficient: n-octanol/water	Not applicable
Auto-ignition temperature	200 °C
Thermal decomposition	> 200 °C
Oxidizing	The substance or mixture is not classified as oxidizing.
Saturation in air (% vol.)	Not applicable
Volatile organic content (VOC)	Not applicable

9.2 Other data

Surface tension	Not applicable

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

No data available

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions : Hazardous polymerisation does not occur.

10.4 Conditions to avoid

Conditions to avoid : Avoid contact with alkaline materials which will degrade the polymer.
Protect from moisture.

10.5 Incompatible materials

Materials to avoid : Strong oxidizing agents

10.6 Hazardous decomposition products

Hazardous decomposition products	:	Ammonia Carbon oxides Nitrogen oxides (NOx) hydrogen chloride (HCl)
Thermal decomposition	:	>200 °C

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

The toxicological data has been taken from products of similar composition.
LD50/Oral/Rat: > 5,000 mg/kg
Remarks:estimated
LC50/Inhalation/4 h/Rat: > 20 mg/l
Remarks: estimated

LD50/Dermal/Rabbit: > 2,000 mg/kg
Remarks: estimated

Irritation and corrosion

Skin:
No skin irritation

Eyes:
No eye irritation

Sensitisation

Not sensitizing.

Long term toxicity

Repeated dose toxicity

Remarks: No data available

Carcinogenicity

Based on available data, the classification criteria are not met.

Mutagenicity

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

The substance or mixture is not classified as specific target organ toxicant, single exposure.

STOT - repeated exposure

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration toxicity No aspiration toxicity classification

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity

–

Remarks: This material is not classified as dangerous for the environment., Ecotoxicological information provided is based on a structurally or compositionally similar product., The effects on aquatic organisms are due to an external (non-systemic) mode of action and are significantly reduced (by a factor of 7-20) within 30 minutes due to the binding of the product to dissolved organic carbon and inorganic sorbents such as clays and silts.

LC50/96 h/Branchydanio rerio (zebra fish)/Acute toxicity/OECD Test Guideline 203: > 1 - 10 mg/l
EC50/48 h/Daphnia magna (Water flea)/Immobilization/OECD Test Guideline 202: > 10 - 100 mg/l
/algae/Growth inhibition/OECD Test Guideline 201:
Remarks: Due to the cationicity of the polymer, test is not appropriate.

Toxicity to other organisms

No data available

12.2 Persistence and degradability

Biological degradability:
CO2 Evolution Test/OECD Test Guideline 301B/28 d: < 70 %

The polymeric ingredient is not readily biodegradable, but degradable by hydrolysis.

12.3 Bioaccumulative potential

Bioaccumulation is unlikely. Because of the high molecular weight of the polymer diffusion through biological membranes is very small.
Partition coefficient: n-octanol/water: Not applicable

12.4.Mobility in soil

Mobility

Water solubility: Limited by viscosity.
Surface tension: Not applicable

12.5. Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects

No information available.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product	Recycling, recovery and reuse of materials is recommended if permitted by regulations.Incineration is recommended. Where possible recycling is preferred to disposal or incineration.
Contaminated packaging	Where possible recycling is preferred to disposal or incineration. Must be disposed of in accordance with local and national regulations.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number

Land transport

Not classified as dangerous in the meaning of transport regulations.

Sea transport

Not classified as dangerous in the meaning of transport regulations.

Air transport

Not classified as dangerous in the meaning of transport regulations.

14.8 Special precautions for user

None known.

SECTION 15: REGULATORY INFORMATION

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

Other regulations : None.

Notification status

:
: 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.
: 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 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 in the Australian Inventory of Chemical Substances (AICS) or are not required to be listed on the Australian Inventory of Chemical Substances (AICS).
: 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 on the Japanese (ENCS) inventory or are not required to be listed on the Japanese (ENCS) inventory.
: All components of this product are included in the Korean

(ECL) inventory or are not required to be listed on the Korean (ECL) inventory.

: All components of this product are included on the Philippine (PICCS) inventory or are not required to be listed on the Philippine (PICCS) inventory.

: All components of this product are included in the New Zealand inventory (NZIoC) or are not required to be listed on the New Zealand inventory(NZIoC).

: All components of this product are included on the Taiwan Toxic Chemical Substances Control Act Inventory.

15.2 Chemical Safety Assessment

A Chemical Safety Assessment is not required for this mixture.

SECTION 16: OTHER INFORMATION

Full text of H-Statements referred to under section 3.

H319 Causes serious eye irritation.

H319 Causes serious eye irritation.

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.

Sources of key data used to compile the Safety Data Sheet

Regulations, databases, literature, own tests.

Additions, Deletions, Revisions

Relevant changes have been marked with vertical lines.

Safety data sheet

according to Regulation (EC) No. 1907/2006 (REACH), amended by 2015/830/EU

Iron(III) chloride solution 40 %

article number: **7750**
Version: **2.0 en**
Replaces version of: 2016-12-01
Version: (1)

date of compilation: 2016-12-01
Revision: 2020-10-06

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

1.1 Product identifier

Identification of the substance	**Iron(III) chloride solution** 40 %
Article number	7750
Registration number (REACH)	not relevant (mixture)

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

Identified uses: laboratory chemical
laboratory and analytical use

1.3 Details of the supplier of the safety data sheet

Carl Roth GmbH + Co KG
Schoemperlenstr. 3-5
D-76185 Karlsruhe
Germany

Telephone: +49 (0) 721 - 56 06 0
Telefax: +49 (0) 721 - 56 06 149
e-mail: sicherheit@carlroth.de
Website: www.carlroth.de

Competent person responsible for the safety data sheet: : Department Health, Safety and Environment

e-mail (competent person): **sicherheit@carlroth.de**

1.4 Emergency telephone number

Name	Street	Postal code/ city	Telephone	Website
National Poisons Information Service City Hospital	Dudley Rd	B187QH Birmingham	844 892 0111	

Emergency information service **+49/(0)89 19240**

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

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

Classification acc. to GHS

Section	Hazard class	Hazard class and category	Hazard statement
2.16	substance or mixture corrosive to metals	(Met. Corr. 1)	H290
3.1O	acute toxicity (oral)	(Acute Tox. 4)	H302
3.2	skin corrosion/irritation	(Skin Irrit. 2)	H315
3.3	serious eye damage/eye irritation	(Eye Dam. 1)	H318

Classification acc. to GHS			
Section	**Hazard class**	**Hazard class and category**	**Hazard statement**
3.4S	skin sensitisation	(Skin Sens. 1)	H317

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 (CLP)

Signal word **Danger**

Pictograms

GHS05, GHS07

Hazard statements

H290	May be corrosive to metals
H302	Harmful if swallowed
H315	Causes skin irritation
H317	May cause an allergic skin reaction
H318	Causes serious eye damage

Precautionary statements

Precautionary statements - prevention

P280	Wear protective gloves/eye protection.

Precautionary statements - response

P302+P352	IF ON SKIN: Wash with plenty of water.
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.

Hazardous ingredients for labelling: Iron(III) chloride, Hydrochloric acid .... %

Labelling of packages where the contents do not exceed 125 ml

Signal word: **Danger**

Symbol(s)

H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
P280	Wear protective gloves/eye protection.
P302+P352	IF ON SKIN: Wash with plenty of water.
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.
contains:	Iron(III) chloride, Hydrochloric acid .... %

2.3 Other hazards

There is no additional information.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Description of the mixture

Composition/information on ingredients.

Name of substance	Identifier	wt %	Classification acc. to 1272/2008/EC	Pictograms	Notes	Specific Conc. Limits
Iron(III) chloride	CAS No 7705-08-0 EC No 231-729-4 REACH Reg. No 01-2119497998-05-xxxx	39 – 41	Met. Corr. 1 / H290 Acute Tox. 4 / H302 Skin Irrit. 2 / H315 Eye Dam. 1 / H318 Skin Sens. 1 / H317			
Hydrochloric acid .... %	CAS No 7647-01-0 EC No 231-595-7 Index No 017-002-01-X REACH Reg. No 01-2119484862-27-xxxx	≤ 1	Met. Corr. 1 / H290 Skin Corr. 1B / H314 Eye Dam. 1 / H318 STOT SE 3 / H335		B(a) GHS-HC IOELV	Met. Corr. 1; H290: C ≥ 0,1 % Skin Corr. 1B; H314: C ≥ 25 % Skin Irrit. 2; H315: 10 % ≤ C < 25 % Eye Dam. 1; H318: C ≥ 25 % Eye Irrit. 2; H319: 10 % ≤ C < 25 % STOT SE 3; H335: C ≥ 10 %

Notes

B(a): The classification refers to an aqueous solution
GHS-HC: Harmonised classification (the classification of the substance corresponds to the entry in the list according to 1272/2008/EC, Annex VI)
IOELV: Substance with a community indicative occupational exposure limit value

Remarks

For full text of Hazard- and EU Hazard-statements: see SECTION 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General notes

Take off immediately all contaminated clothing.

Following inhalation

Provide fresh air. In all cases of doubt, or when symptoms persist, seek medical advice.

Following skin contact

Rinse skin with water/shower. In case of skin reactions, consult a physician. In case of skin irritation, consult a physician.

Following eye contact

In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist. Protect uninjured eye.

Following ingestion

Rinse mouth immediately and drink plenty of water. Rinse mouth with water (only if the person is conscious). Call a physician immediately.

4.2 Most important symptoms and effects, both acute and delayed

Irritation, Corrosion, Allergic reactions, Nausea, Vomiting, Risk of serious damage to eyes

4.3 Indication of any immediate medical attention and special treatment needed

none

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Co-ordinate fire-fighting measures to the fire surroundings
water spray, foam, dry extinguishing powder, carbon dioxide (CO_2)

Unsuitable extinguishing media

water jet

5.2 Special hazards arising from the substance or mixture

Non-combustible.

Hazardous combustion products

in case of fire and/or explosion do not breathe fumes

5.3 Advice for firefighters

Fight fire with normal precautions from a reasonable distance. Wear self-contained breathing apparatus. Wear full chemical protective clothing.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Do not breathe vapour/spray. Avoid contact with skin and eyes.

6.2 Environmental precautions

Keep away from drains, surface and ground water. The product is an acid. Before discharge into sewage plants the product normally needs to be neutralised.

6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill

Covering of drains.

Advice on how to clean up a spill

Absorb with liquid-binding material (sand, diatomaceous earth, acid- or universal binding agents).

Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Provide adequate ventilation. Avoid exposure. Handle and open container with care.

Advice on general occupational hygiene

Wash hands before breaks and after work. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities

Keep only in the original container. Keep container tightly closed.

Incompatible substances or mixtures

Observe hints for combined storage.

Consideration of other advice

• Ventilation requirements

Use local and general ventilation.

• Specific designs for storage rooms or vessels

Recommended storage temperature: 15 – 25 °C.

7.3 Specific end use(s)

No information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

National limit values

Occupational exposure limit values (Workplace Exposure Limits)

Country	Name of agent	CAS No	Notation	Identifier	TWA [ppm]	TWA [mg/m³]	STEL [ppm]	STEL [mg/m³]	Ceiling-C [ppm]	Ceiling-C [mg/m³]	Source
EU	hydrogen chloride	7647-01-0		IOELV	5	8	10	15			2000/39/EC
GB	hydrogen chloride	7647-01-0	ga	WEL	1	2	5	8			EH40/2005

Notation

Ceiling-C	Ceiling value is a limit value above which exposure should not occur
ga	As gases and aerosols
STEL	Short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified)
TWA	Time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified)

Relevant DNELs/DMELs/PNECs and other threshold levels

• relevant DNELs of components of the mixture

Name of substance	CAS No	End-point	Threshold level	Protection goal, route of exposure	Used in	Exposure time
Iron(III) chloride	7705-08-0	DNEL	2,8 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
Hydrochloric acid .... %	7647-01-0	DNEL	8 mg/m³	human, inhalatory	worker (industry)	chronic - local effects
Hydrochloric acid .... %	7647-01-0	DNEL	15 mg/m³	human, inhalatory	worker (industry)	acute - local effects

8.2 Exposure controls

Individual protection measures (personal protective equipment)

Eye/face protection

Use safety goggle with side protection.

Skin protection

• hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves. The times are approximate values from measurements at 22 ° C and permanent contact. Increased temperatures due to heated substances, body heat etc. and a reduction of the effective layer thickness by stretching can lead to a considerable reduction of the breakthrough time. If in doubt, contact manufacturer. At an approx. 1.5 times larger / smaller layer thickness, the respective breakthrough time is doubled / halved. The data apply only to the pure substance. When transferred to substance mixtures, they may only be considered as a guide.

• type of material

NBR (Nitrile rubber)

• material thickness

≥0,3 mm

• breakthrough times of the glove material

>480 minutes (permeation: level 6)

• other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended.

Respiratory protection

Respiratory protection necessary at: Aerosol or mist formation. Type: B-P2 (combined filters for acidic gases and particles, colour code: Grey/White).

Environmental exposure controls

Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	liquid (fluid)
Colour	dark brown
Odour	stinging
Odour threshold	no data available

Other physical and chemical parameters

pH (value)	<1
Melting point/freezing point	-12 °C
Initial boiling point and boiling range	this information is not available
Flash point	not determined
Evaporation rate	no data available
Flammability (solid, gas)	not relevant (fluid)
Explosive limits	
• lower explosion limit (LEL)	this information is not available
• upper explosion limit (UEL)	this information is not available
Explosion limits of dust clouds	not relevant
Vapour pressure	this information is not available
Density	1,39 – 1,45 $^{g}/_{cm^3}$ at 20 °C
Vapour density	this information is not available
Bulk density	Not applicable
Relative density	this information is not available
Solubility(ies)	
Water solubility	miscible in any proportion
Partition coefficient	
n-octanol/water (log KOW)	this information is not available
Auto-ignition temperature	Information on this property is not available.
Decomposition temperature	no data available
Viscosity	
• kinematic viscosity	6,897 $^{mm^2}/_{s}$ at 20 °C
• dynamic viscosity	10 mPa s at 20 °C

Explosive properties	Shall not be classified as explosive.
Oxidising properties	none

9.2 Other information

There is no additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity

Substance or mixture corrosive to metals.

10.2 Chemical stability

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

10.3 Possibility of hazardous reactions

Violent reaction with: Alkalis, Metals

10.4 Conditions to avoid

Keep away from heat.

10.5 Incompatible materials

different metals

Release of flammable materials with

metals (due to the release of hydrogen in an acid/alkaline medium)

10.6 Hazardous decomposition products

Hazardous combustion products: see section 5.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

• Acute toxicity of components of the mixture

Name of substance	CAS No	Exposure route	ATE
Iron(III) chloride	7705-08-0	oral	500 $^{mg}/_{kg}$

Skin corrosion/irritation

Causes skin irritation.

Serious eye damage/eye irritation

Causes serious eye damage.

Respiratory or skin sensitisation

May cause an allergic skin reaction. May cause sensitization by skin contact.

Summary of evaluation of the CMR properties

Shall not be classified as germ cell mutagenic, carcinogenic nor as a reproductive toxicant

• Specific target organ toxicity - single exposure

Shall not be classified as a specific target organ toxicant (single exposure).

• Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

Symptoms related to the physical, chemical and toxicological characteristics

• If swallowed

nausea, vomiting, Liver and kidney damage

• If in eyes

Causes serious eye damage, risk of blindness

• If inhaled

irritant effects

• If on skin

causes skin irritation, may cause an allergic skin reaction

Other information

None

SECTION 12: Ecological information

12.1 Toxicity

acc. to 1272/2008/EC: Shall not be classified as hazardous to the aquatic environment.

12.2 Process of degradability

The methods for determining the biological degradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

Data are not available.

Bioaccumulative potential of components of the mixture

Name of sub-stance	CAS No	BCF	Log KOW	BOD5/COD
Iron(III) chloride	7705-08-0		-4 (24 °C)	

12.4 Mobility in soil

Data are not available.

12.5 Results of PBT and vPvB assessment

Data are not available.

12.6 Other adverse effects

Data are not available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

This material and its container must be disposed of as hazardous waste. Dispose of contents/container in accordance with local/regional/national/international regulations.

Sewage disposal-relevant information

Do not empty into drains.

Waste treatment of containers/packagings

It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used.

13.2 Relevant provisions relating to waste

The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.

13.3 Remarks

Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities. Please consider the relevant national or regional provisions.

SECTION 14: Transport information

14.1	UN number	**2582**
14.2	UN proper shipping name	**FERRIC CHLORIDE SOLUTION**
	Hazardous ingredients	Iron(III) chloride, Hydrochloric acid .... %
14.3	Transport hazard class(es)	
	Class	8 (corrosive substances)
14.4	Packing group	III (substance presenting low danger)
14.5	Environmental hazards	none (non-environmentally hazardous acc. to the dangerous goods regulations)

14.6 Special precautions for user

Provisions for dangerous goods (ADR) should be complied within the premises.

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

The cargo is not intended to be carried in bulk.

14.8 Information for each of the UN Model Regulations

• Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN)

UN number	2582
Proper shipping name	FERRIC CHLORIDE SOLUTION
Particulars in the transport document	UN2582, FERRIC CHLORIDE SOLUTION, 8, III, (E)
Class	8
Classification code	C1

Packing group	III
Danger label(s)	8

Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 L
Transport category (TC)	3
Tunnel restriction code (TRC)	E
Hazard identification No	80
Emergency Action Code	2X
• International Maritime Dangerous Goods Code (IMDG)	
UN number	2582
Proper shipping name	FERRIC CHLORIDE SOLUTION
Particulars in the shipper's declaration	UN2582, FERRIC CHLORIDE SOLUTION, 8, III
Class	8
Marine pollutant	-
Packing group	III
Danger label(s)	8

Special provisions (SP)	223
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 L
EmS	F-A, S-B
Stowage category	A
Segregation group	1 - Acids
• International Civil Aviation Organization (ICAO-IATA/DGR)	
UN number	2582
Proper shipping name	Ferric chloride solution
Particulars in the shipper's declaration	UN2582, Ferric chloride solution, 8, III
Class	8
Packing group	III
Danger label(s)	8

Special provisions (SP)	A3
Excepted quantities (EQ)	E1
Limited quantities (LQ)	1 L

SECTION 15: Regulatory information

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

Relevant provisions of the European Union (EU)

• Regulation 649/2012/EU concerning the export and import of hazardous chemicals (PIC)

None of the ingredients are listed.

• Regulation 1005/2009/EC on substances that deplete the ozone layer (ODS)

None of the ingredients are listed.

• Regulation 850/2004/EC on persistent organic pollutants (POP)

None of the ingredients are listed.

• Restrictions according to REACH, Annex XVII

Name of substance	Type of registration	Conditions of restriction	No
Iron(III) chloride solution	1907/2006/EC annex XVII	R3	3

Legend

R3 1. Shall not be used in:
- ornamental articles intended to produce light or colour effects by means of different phases, for example in ornamental lamps and ashtrays,
- tricks and jokes,
- games for one or more participants, or any article intended to be used as such, even with ornamental aspects,
2. Articles not complying with paragraph 1 shall not be placed on the market.
3. Shall not be placed on the market if they contain a colouring agent, unless required for fiscal reasons, or perfume, or both, if they:
- can be used as fuel in decorative oil lamps for supply to the general public, and,
- present an aspiration hazard and are labelled with R65 or H304,
4. Decorative oil lamps for supply to the general public shall not be placed on the market unless they conform to the European Standard on Decorative oil lamps (EN 14059) adopted by the European Committee for Standardisation (CEN).
5. Without prejudice to the implementation of other Community provisions relating to the classification, packaging and labelling of dangerous substances and mixtures, suppliers shall ensure, before the placing on the market, that the following requirements are met:
(a) lamp oils, labelled with R65 or H304, intended for supply to the general public are visibly, legibly and indelibly marked as follows: 'Keep lamps filled with this liquid out of the reach of children'; and, by 1 December 2010, 'Just a sip of lamp oil - or even sucking the wick of lamps - may lead to life-threatening lung damage';
(b) grill lighter fluids, labelled with R65 or H304, intended for supply to the general public are legibly and indelibly marked by 1 December 2010 as follows: 'Just a sip of grill lighter may lead to life threatening lung damage';
(c) lamp oils and grill lighters, labelled with R65 or H304, intended for supply to the general public are packaged in black opaque containers not exceeding 1 litre by 1 December 2010.
6. No later than 1 June 2014, the Commission shall request the European Chemicals Agency to prepare a dossier, in accordance with Article 69 of the present Regulation with a view to ban, if appropriate, grill lighter fluids and fuel for decorative lamps, labelled R65 or H304, intended for supply to the general public.
7. Natural or legal persons placing on the market for the first time lamp oils and grill lighter fluids, labelled with R65 or H304, shall by 1 December 2011, and annually thereafter, provide data on alternatives to lamp oils and grill lighter fluids labelled R65 or H304 to the competent authority in the Member State concerned. Member States shall make those data available to the Commission.

Name acc. to inventory	CAS No	Wt%	Listed in	Remarks
Metals and their compounds		40	A)	

Legend

A) Indicative list of the main pollutants

• Restrictions according to REACH, Title VIII

None.

• List of substances subject to authorisation (REACH, Annex XIV)/SVHC - candidate list

none of the ingredients are listed

• Seveso Directive

2012/18/EU (Seveso III)			
No	**Dangerous substance/hazard categories**	**Qualifying quantity (tonnes) for the application of lower and upper-tier requirements**	**Notes**
	not assigned		

• Directive 75/324/EEC relating to aerosol dispensers

Filling batch

Deco-Paint Directive (2004/42/EC)

VOC content	0 % 0 $^{g}/_{l}$

Directive on industrial emissions (VOCs, 2010/75/EU)

VOC content	0 %
VOC content **Water content was discounted**	0 $^{g}/_{l}$

Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) - Annex II

None of the ingredients are listed.

Regulation 166/2006/EC concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)

None of the ingredients are listed.

Directive 2000/60/EC establishing a framework for Community action in the field of water policy (WFD)

Name acc. to inventory	CAS No	Listed in	Remarks
Metals and their compounds		A)	

Legend

A) Indicative list of the main pollutants

Regulation 98/2013/EU on the marketing and use of explosives precursors

none of the ingredients are listed

Regulation 111/2005/EC laying down rules for the monitoring of trade between the Community and third countries in drug precursors

Name of substance	CAS No	Classification	CN Code	Threshold level
Hydrochloric acid .... %	7647-01-0	Category 3	2806 10 00	

National inventories

Country	National inventories	Status
AU	AICS	all ingredients are listed
CA	DSL	all ingredients are listed
CN	IECSC	all ingredients are listed
EU	ECSI	all ingredients are listed
EU	REACH Reg.	all ingredients are listed
JP	CSCL-ENCS	all ingredients are listed
KR	KECI	all ingredients are listed
MX	INSQ	all ingredients are listed
NZ	NZIoC	all ingredients are listed
PH	PICCS	all ingredients are listed
TR	CICR	not all ingredients are listed
TW	TCSI	all ingredients are listed
US	TSCA	all ingredients are listed

Legend

AICS	Australian Inventory of Chemical Substances
CICR	Chemical Inventory and Control Regulation
CSCL-ENCS	List of Existing and New Chemical Substances (CSCL-ENCS)
DSL	Domestic Substances List (DSL)
ECSI	EC Substance Inventory (EINECS, ELINCS, NLP)
IECSC	Inventory of Existing Chemical Substances Produced or Imported in China
INSQ	National Inventory of Chemical Substances
KECI	Korea Existing Chemicals Inventory
NZIoC	New Zealand Inventory of Chemicals
PICCS	Philippine Inventory of Chemicals and Chemical Substances (PICCS)
REACH Reg.	REACH registered substances
TCSI	Taiwan Chemical Substance Inventory
TSCA	Toxic Substance Control Act

15.2 Chemical Safety Assessment

Chemical safety assessments for substances in this mixture were not carried out.

SECTION 16: Other information

Indication of changes (revised safety data sheet)

Section	Former entry (text/value)	Actual entry (text/value)	Safety-relev-ant
2.1	Remarks: For full text of Hazard- and EU Hazard-state-ments: see SECTION 16.		yes
2.2		Pictograms: change in the listing (table)	yes
2.2	Hazardous ingredients for labelling: Iron(III) chloride	Hazardous ingredients for labelling: Iron(III) chloride, Hydrochloric acid .... %	yes
2.2	contains: Iron(III) chloride	contains: Iron(III) chloride, Hydrochloric acid .... %	yes
3.2		Description of the mixture: change in the listing (table)	yes

Section	Former entry (text/value)	Actual entry (text/value)	Safety-relevant
8.1	Occupational exposure limit values (Workplace Exposure Limits): Data are not available.	Occupational exposure limit values (Workplace Exposure Limits)	yes
8.1		Occupational exposure limit values (Workplace Exposure Limits): change in the listing (table)	yes
8.1		• relevant DNELs of components of the mixture: change in the listing (table)	yes
14.2	Hazardous ingredients: Iron(III) chloride	Hazardous ingredients: Iron(III) chloride, Hydrochloric acid .... %	yes
14.3	Transport hazard class(es)	Transport hazard class(es): class 8 hazard - corrosive substances	yes
14.8		Marine pollutant: -	yes
14.8	Packing group: III8	Packing group: III	yes
14.8		Danger label(s): 8	yes

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
2000/39/EC	Commission Directive establishing a first list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC
Acute Tox.	acute toxicity
ADN	Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)
ADR	Accord européen relatif au transport international des marchandises dangereuses par route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
ATE	Acute Toxicity Estimate
BCF	bioconcentration factor
BOD	Biochemical Oxygen Demand
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
Ceiling-C	ceiling value
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
CMR	Carcinogenic, Mutagenic or toxic for Reproduction
CN Code	Combined Nomenclature
COD	chemical oxygen demand
DGR	Dangerous Goods Regulations (see IATA/DGR)
DMEL	Derived Minimal Effect Level
DNEL	Derived No-Effect Level
EC No	The EC Inventory (EINECS, ELINCS and the NLP-list) is the source for the seven-digit EC number, an identifier of substances commercially available within the EU (European Union)
EH40/2005	EH40/2005 Workplace exposure limits (http://www.nationalarchives.gov.uk/doc/open-government-licence/)

Abbr.	Descriptions of used abbreviations
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
EmS	Emergency Schedule
Eye Dam.	seriously damaging to the eye
Eye Irrit.	irritant to the eye
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
index No	the Index number is the identification code given to the substance in Part 3 of Annex VI to Regulation (EC) No 1272/2008
IOELV	indicative occupational exposure limit value
log KOW	n-octanol/water
MARPOL	International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant")
Met. Corr.	substance or mixture corrosive to metals
NLP	No-Longer Polymer
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
ppm	parts per million
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)
Skin Corr.	corrosive to skin
Skin Irrit.	irritant to skin
Skin Sens.	skin sensitisation
STEL	short-term exposure limit
STOT SE	specific target organ toxicity - single exposure
SVHC	Substance of Very High Concern
TWA	time-weighted average
VOC	Volatile Organic Compounds
vPvB	very Persistent and very Bioaccumulative
WEL	workplace exposure limit

Key literature references and sources for data

- Regulation (EC) No. 1907/2006 (REACH), amended by 2015/830/EU
- Regulation (EC) No. 1272/2008 (CLP, EU GHS)
- Dangerous Goods Regulations (DGR) for the air transport (IATA)
- International Maritime Dangerous Goods Code (IMDG)

List of relevant phrases (code and full text as stated in chapter 2 and 3)

Code	Text
H290	may be corrosive to metals
H302	harmful if swallowed
H314	causes severe skin burns and eye damage
H315	causes skin irritation
H317	may cause an allergic skin reaction
H318	causes serious eye damage
H335	may cause respiratory irritation

Disclaimer

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

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

1.1 Product identifier

Commercial Product Name
KemFoamX 2500

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

Use of the Substance/Mixture

Defoamer, Process aid for industrial applications.

Recommended restrictions on use

There are no uses advised against.

1.3 Details of the supplier of the safety data sheet

Kemira Oyj
P.O. Box 33000101 HELSINKI FINLAND
Telephone+358108611, Telefax. +358108621124
ProductSafety.FI.Helsinki@kemira.com

1.4 Emergency telephone number

Carechem 24 International (Europe): +44 (0) 1235 239 670

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EU) 1272/2008(CLP)
Chronic aquatic toxicity; Category 4; May cause long lasting harmful effects to aquatic life.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard statements	:	H413	May cause long lasting harmful effects to aquatic life.

Precautionary statements	:	P273	Avoid release to the environment.
		Disposal:	
		P501	Dispose of contents/ container to an approved waste disposal plant.

Hazardous components which must be listed on the label:

- 68002-96-0 (C16 - C18) Alkyl alcohol ethoxylate propoxylate

2.3 Other hazards

Advice; Contaminated surfaces will be extremely slippery.
Remarks; This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Chemical name	CAS-No. EINECS-No. / ELINCS No.	Concentration [%]
(C16 - C18) Alkyl alcohol ethoxylate propoxylate	68002-96-0	>= 99

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General advice

Show this safety data sheet to the doctor in attendance.

Inhalation

Move to fresh air. Call a physician if symptoms occur.

Skin contact

Wash off with plenty of water. Remove and wash contaminated clothing and gloves, including the inside, before re-use.

Eye contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a physician if symptoms occur.

Ingestion

Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : No hazards to be specially mentioned.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Symptomatic treatment., There is no specific antidote available.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Extinguishing media : Water mist
Carbon dioxide (CO2)
Foam
Dry powder
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media : High volume water jet

5.2 Special hazards arising from the substance or mixture

Fire may cause evolution of: Fumes harmful gases and vapours

5.3 Advice for firefighters

Wear self-contained breathing apparatus and protective suit.

5.4 Specific methods

Contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Contaminated surfaces will be extremely slippery.

Wear personal protective equipment. For personal protection see section 8.

6.2 Environmental precautions

Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Do not allow contact with soil, surface or ground water.

6.3 Methods and materials for containment and cleaning up

Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).

6.4 Reference to other sections

See Sections 7 and 8 for proper handling and protective measures and Section 13 for proper waste disposal measures.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid contact with skin, eyes and clothing. Provide adequate ventilation. For personal protection see section 8.

Handle in accordance with good industrial hygiene and safety practice.

7.2 Conditions for safe storage, including any incompatibilities

Store in original container. Keep containers tightly closed in a cool, well-ventilated place. Protect from frost, heat and sunlight.

Avoid temperatures above 60°C, direct sunlight and contact with sources of heat.

Incompatible products

Keep away from oxidizing agents and strongly acid or alkaline materials.

Materials for packaging

Suitable material: Stainless steel

Suitable material: Carbon steel

Suitable material: polyethylene containers

Materials to avoid:

Strong acids and oxidizing agents

7.3 Specific end use(s)

Defoamer

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Contains no substances with occupational exposure limit values.

8.2 Exposure controls

8.2.1 **Appropriate engineering controls**

Handle in accordance with good industrial hygiene and safety practice. Ensure adequate ventilation. Ensure that eyewash stations and safety showers are close to the workstation location. Wash hands before breaks and immediately after handling the product.
Wear suitable protective equipment.

8.2.2 Individual protection measures, such as personal protective equipment

Hand protection

Glove material: butyl-rubber, Break through time: 480 min, Glove thickness: 0.7 mm

Glove material: Nitrile rubber, Break through time: 30 min, Glove thickness: 0.4 mm

Protective gloves complying with EN 374.Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

Eye protection

Safety glasses with side-shields conforming to EN166

Skin and body protection

Protective suit

Respiratory protection

No special protective equipment required. Ensure adequate ventilation. In the case of vapour formation use a respirator with an approved filter. Type A (filter A-P2) (filter ABEK-P2)

8.2.3 Environmental exposure controls

Should not be released into the environment.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

General Information (appearance, odour)

Physical state	liquid,
Colour	colourless, Yellowish
Odour	odourless

Important health safety and environmental information

pH	5 - 7 in water, 5,0%.
Melting point/freezing point	ca. -7 °C
Boiling point/boiling range	> 200 °C
Flash point	> 125 °C (DIN 51758)
Explosive properties:	
Lower explosion limit	Not applicable
Upper explosion limit	Not explosive, Not applicable
Vapour pressure	< 0.0015 hPa (20 °C)
Relative vapour density	not determined
Density	approximately 0.98 g/cm³ (20 °C) (DIN 51757)
Relative density	ca. 0.98(25 °C,)
Bulk density	No data available, liquid
Solubility(ies):	
Water solubility	practically insoluble, dispersible
Solubility in other solvents	solvent-like: mineral oil soluble solvent-like: Hydrocarbons soluble solvent-like: Alcohols soluble
Partition coefficient: n-octanol/water	Not applicable
Auto-ignition temperature	> 200 °C (DIN 51794)
Thermal decomposition	> 200 °C
Viscosity:	
Viscosity, dynamic	250 - 500 mPa.s (20 °C) (Brookfield)
Viscosity, kinematic	not determined

9.2 Other data

Surface tension	not determined

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

The product is chemically stable.

10.3 Possibility of hazardous reactions

Hazardous reactions	:	None reasonably foreseeable.

10.4 Conditions to avoid

Conditions to avoid	:	Hazardous polymerisation does not occur. Direct heating, dirt, chemical contamination, sunlight, UV or ionising radiation.

10.5 Incompatible materials

Materials to avoid	:	Strong acids and oxidizing agents

10.6 Hazardous decomposition products

Hazardous decomposition products	:	Carbon oxides (COx)
	:	No decomposition if stored normally.
Thermal decomposition	:	> 200 °C

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

LD50/Oral/Rat/Calculation method: > 2,000 mg/kg
Based on available data, the classification criteria are not met.
LC50/Inhalation:
No data available

LD50 Dermal/Dermal:
No data available

Irritation and corrosion

Skin: Rabbit:
Remarks: Literary reference
Based on available data, the classification criteria are not met.

Eyes: Rabbit:
Remarks: Literary reference
Based on available data, the classification criteria are not met.

Sensitisation

Based on available data, the classification criteria are not met.

Long term toxicity

Repeated dose toxicity

Remarks: No information available.

Carcinogenicity

Based on available data, the classification criteria are not met.

Mutagenicity

Based on available data, the classification criteria are not met.

Reproductive toxicity

Based on available data, the classification criteria are not met.

Teratogenicity

Based on available data, the classification criteria are not met.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity

EC50/48 h/Daphnia magna (Water flea)/static test/Directive 84/449/EEC, C.2: > 100 mg/l

Toxicity to other organisms

EC10/bacteria of activated sludge/DEV-L2: > 2,000 mg/l
The inhibition of the degradation activity of activated sludge is not anticipated when introduced in appropriate low concentrations.

12.2 Persistence and degradability

Biological degradability:
CO2 Evolution Test/OECD Test Guideline 301B/28 d: < 60 %

Not readily biodegradable. Due to the low solubility in water, the product is easily separated through mechanical route e.g. in waste water treatment plant.
Chemical Oxygen Demand (COD): 2,150 mg/g

12.3 Bioaccumulative potential

No data is available on the product itself.
Partition coefficient: n-octanol/water: Not applicable

12.4.Mobility in soil

Mobility

Vapour pressure: < 0.0015 hPa (20 °C)
Water solubility: practically insoluble
Surface tension: not determined

12.5. Results of PBT and vPvB assessment

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

12.6 Other adverse effects

Adsorbed organic bound halogens (AOX):
Product does not contain any organic halogens.
None known.
Additional ecological information: Do not discharge product into the aquatic environment without pretreatment (biological treatment plant).

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product Must be disposed of in accordance with local and national regulations.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number

Land transport

Not classified as dangerous in the meaning of transport regulations.

Sea transport

Not classified as dangerous in the meaning of transport regulations.

Air transport

Not classified as dangerous in the meaning of transport regulations.

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

Not classified as marine pollutant

14.8 Special precautions for user

None known.

SECTION 15: REGULATORY INFORMATION

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

Other regulations : None known.

: None

Notification status

:

: All components of this product are included in the Australian Inventory of Chemical Substances (AICS) or are not required to be listed 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 on the Japanese (ENCS) inventory or are not required to be listed on the Japanese (ENCS) inventory.

: All components of this product are included in the Korean (ECL) inventory or are not required to be listed on the Korean (ECL) inventory.

: All components of this product are included on the Philippine (PICCS) inventory or are not required to be listed on the Philippine (PICCS) inventory.

: 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 included in the New Zealand inventory (NZIoC) or are not required to be listed on the New Zealand inventory(NZIoC).

: 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.

15.2 Chemical safety assessment

SECTION 16: OTHER INFORMATION

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.

Sources of key data used to compile the Safety Data Sheet

Regulations, databases, literature, own tests.

Additions, Deletions, Revisions

Relevant changes have been marked with vertical lines.

Singleton Birch

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REACH Regulation EC 1907/2006,

Regulation (EC) 1272/2008 and Regulation (EC) 453/2010

1 IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY

1.1 Product identifier

Substance name:	Hydrated lime, Calcium dihydroxide
Synonyms:	Slaked lime, Air slaked lime, Building lime, Fat lime, Chemical lime, Finishing lime, Mason's lime, Calcium dihydroxide, Calcium hydroxide, Calcium hydrate, Lime, Lime water
Chemical name and formula:	Calcium dihydroxide – $Ca(OH)_2$
Trade name:	Ultralime® Hydrated Lime
CAS:	1305-62-0
EINECS:	215-137-3
Molecular Weight:	74.09 g/mol
REACH Registration number:	01-2119475151-45-0019

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

Please check the identified uses in table 1 of the Appendix of this SDS.

Uses advise against:	There are no uses advised against.

1.3 Details of the supplier of the safety data sheet

Name:	Singleton Birch Limited
Address:	Melton Ross Quarries, Barnetby, North Lincolnshire DN38 6AE
Phone N°:	+44(0)1652 686000
Fax N°:	+44(0)1652 686081
E-mail of competent person responsible for SDS in the MS or in the EU:	kb@singletonbirch.co.uk; jt@singletonbirch.co.uk

1.4 Emergency telephone number

European Emergency N°:	112
National centre for Prevention & Treatment of Intoxications N°:	National Chemicals Emergency Centre (NCEC) +44 (0) 870 190 6621
Emergency telephone at the company	+44(0)1652 686000 (24 hours)
Available outside office hours:	Yes

2 HAZARDS IDENTIFICATION

2.1 Classification of the substance

2.1.1 Classification according to Regulation (EC) 1272/2008

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

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2.1.2 Classification according to Directive 67/548/EEC

Xi – irritant

2.2 Label elements

2.2.1 Labelling according to Regulation (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 a 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 local, regional, national and international regulation – use a registered hazardous waste carrier/licence holder, and/or contact the manufacturer

2.2.2 Labelling according to Directive 67/548/EEC

Indication of danger: Xi irritant

Hazard pictogram:

Risk phrases:

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

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Safety phrases:

S2: Keep out of the 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 Substances

Main constituent

Name:	Calcium dihydroxide
CAS:	1305-62-0
EINECS:	215-137-3

Impurities

No impurities relevant for classification and labelling.

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 inhalation

Move source of dust or move person to fresh air. Obtain medical attention immediately.

Following skin contact

Carefully and gently brush the contaminated body surfaces in order to remove all traces of product. 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.

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

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4.3 Indication of any immediate medical attention and special treatment needed
Follow the advises given in section 4.1

5 FIREFIGHTING MEASURES

5.1 Extinguishing media

5.1.1 Suitable extinguishing media
Suitable extinguishing media: The product is not combustible. Use a dry powder, foam or CO_2 fire extinguisher to extinguish the surrounding fire. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.1.2 Unsuitable extinguishing media
Do not use water

5.2 Special hazards arising from the substance or mixture
None

5.3 Advice for fire fighters
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 responders
Keep dust levels to a minimum.
Ensure adequate ventilation.
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 Environmental precautions
Contain the spillage. Keep the material dry if possible. Cover area if possible to avoid unnecessary dust hazard. Avoid uncontrolled spills to watercourses and drains (pH increase). Any large spillage into watercourses must be alerted to the Environment Agency or other regulatory body.

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6.3 Methods and material for containment and cleaning up

In all cases avoid dust formation.
Keep the material dry if possible.
Pick up the product mechanically in a dry way.
Use vacuum suction unit, 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 and the Annex of this safety data sheet.

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. Minimize 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 via your supplier/given in the Appendix, and check section 2.1: Control of worker exposure.

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Established 1815

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

SCOEL recommendation (SCOEL/SUM/137 February 2008; see Section 16.6):

Workplace Exposure Limit (WEL), 8 h TWA: 5 mg/m³

Occupational Exposure Limit (OEL), 8h TWA: 1 mg/m³ respirable dust of calcium oxide

Short-term exposure limit (STEL), 15 min: 4 mg/m³ respirable dust of calcium oxide

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.

Please check the relevant exposure scenario, given in the Appendix/available via your supplier.

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 dihydroxide 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.

8.2.2.3 Respiratory 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.

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8.2.3 Environmental exposure controls

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.
For further detailed information, please check the Appendix of this SDS.

9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance:	White or off white (beige) fine powder
Odour:	odourless
Odour threshold:	not applicable
pH:	12.4 (saturated solution at 20 °C)
Melting point:	> 450 °C (study result, EU A.1 method)
Boiling point:	not applicable (solid with a melting point > 450 °C)
Flash point:	not applicable (solid with a melting point > 450 °C)
Evaporation rate:	not applicable (solid with a melting point > 450 °C)
Flammability:	non flammable (study result, EU A.10 method)
Explosive limits:	non explosive (void of any chemical structures commonly associated with explosive properties)
Vapour pressure:	not applicable (solid with a melting point > 450 °C)
Vapour density:	not applicable
Relative density:	2.24 (study result, EU A.3 method)
Solubility in water:	1844.9 mg/L (study results, EU A.6 method)
Partition coefficient:	not applicable (inorganic substance)
Auto ignition temperature:	no relative self-ignition temperature below 400 °C (study result, EU A.16 method)
Decomposition temperature:	When heated above 580°C, calcium dihydroxide decomposes to produce calcium oxide (CaO) and water (H_2O)
Viscosity:	not applicable (solid with a melting point > 450 °C)
Oxidising properties:	no oxidising properties (Based on the chemical structure, the substance does not contain a surplus of oxygen or any structural groups known to be correlated with a tendency to react exothermally with combustible material)

9.2 Other information

Not available

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Established 1815

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 dihydroxide is stable.

10.3 Possibility of hazardous reactions

Calcium dihydroxide reacts exothermically with acids. When heated above 580 °C, calcium dihydroxide decomposes to produce calcium oxide (CaO) and water (H2O): Ca(OH)2→CaO + H2O. Calcium oxide reacts with water and generates heat. This may cause risk to flammable material.

10.4 Conditions to avoid

Minimise exposure to air and moisture to avoid degradation.

10.5 Incompatible materials

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

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

10.6 Hazardous decomposition products

None

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

11 TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Calcium dihydroxide is classified as irritating to skin and the respiratory tract and it entails a risk of serious damage to the eye. The occupational exposure limit for the prevention of local sensory irritation and decrease of lung function parameters as critical effects is OEL (8 h) = 1 mg/m³ respirable dust.

Toxicity endpoints	Outcome of the effects assessment
Absorption	The primary health effect of calcium dihydroxide is local irritation due to a pH shift. Therefore, absorption is not a relevant parameter for the effects assessment.

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Registered Number 9433 England
Established 1815

Toxicity endpoints	Outcome of the effects assessment
Acute toxicity	Calcium dihydroxide is not acutely toxic. Oral LD_{50}> 2000 mg/kg bw (OECD 425, rat) Dermal LD_{50}> 2500 mg/kg bw (calcium dihydroxide, OECD 402, rabbit) Inhalation no data available Classification for acute toxicity is not warranted. For irritating effects to the respiratory tract see below.
Irritation / corrosion	Eye Irritation: Calcium dihydroxide entails a risk of serious damage to the eye (eye irritation studies (*in vivo*, rabbit). Skin Irritation: Calcium dihydroxide is irritating to skin (*in vivo*, rabbit). Respiratory Irritation: From human data it is concluded that $Ca(OH)_2$ is irritating to the respiratory tract. Based on experimental results, calcium dihydroxide requires classification as irritating to skin [R38, irritating to skin; Skin Irrit 2 (H315 – Causes skin irritation)] and as severely irritating to the eye [R41, Risk of serious damage to eye; Eye Damage 1 (H318 - Causes serious eye damage)]. As summarised and evaluated in the SCOEL recommendation (Anonymous, 2008), based on human data calcium dihydroxide is classified as irritating to the respiratory system [R37, Irritating to respiratory system; STOT SE 3 (H335 – May cause respiratory irritation)].
Sensitisation	No data available. Calcium dihydroxide 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.
Repeated dose toxicity	Toxicity of calcium via the oral route is addressed by upper intake levels (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.
Mutagenicity	Bacterial reverse mutation assay (Ames test, OECD 471): 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. Classification for genotoxicity is not warranted.

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Toxicity endpoints	Outcome of the effects assessment
Carcinogenicity	Calcium (administered as Ca-lactate) is not carcinogenic (experimental result, rat). The pH effect of calcium oxide does not give rise to a carcinogenic risk. Human epidemiological data support lack of any carcinogenic potential of calcium oxide. 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 dihydroxide. 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 dihydroxide is not toxic for reproduction and/or development. Classification for reproductive toxicity according to regulation (EC) 1272/2008 is not required.

12 ECOLOGICAL INFORMATION

12.1 Toxicity

12.1.1 Acute/Prolonged toxicity to fish

LC_{50} (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 mg/l

12.1.3 Acute/Prolonged toxicity to aquatic plants

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 dihydroxide is used for disinfection of sewage sludges

12.1.5 Chronic toxicity to aquatic organisms

NOEC (14d) for marine water invertebrates: 32 mg/l

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Established 1815

12.1.6 Toxicity to soil dwelling organisms
EC_{10}/LC_{10} or NOEC for soil macro organisms: 2000 mg/kg soil dw
EC_{10}/LC_{10} or NOEC for soil micro organisms: 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 substances

12.3 Bioaccumulative potential
Not relevant for inorganic substances

12.4 Mobility in soil
Calcium dihydroxide which is sparingly soluble, and present 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 methods
Disposal of calcium dihydroxide 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 dihydroxide is not classified as hazardous for transport (ADR (Road), RID (Rail), IMDG / GGVSea (Sea).

14.1 UN-Number
Not regulated

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14.2 UN proper shipping name
Not regulated

14.3 Transport hazard class
Not regulated

14.4 Packing group
Not regulated

14.5 Environmental hazards
None

14.6 Special precautions for user
Avoid any release of dust during transportation, by using air-tight tanks

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 dihydroxide is not a SEVESO substance, not an ozone depleting substance and not a persistent organic pollutant.
National regulations:	Water endangering class 1 (Germany)

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:	IF IN EYES: Rinse cautiously with water for several minutes
P310:	Immediately call a POISON CENTRE or doctor/physician

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P302+P352: IF ON SKIN: Wash with plenty of soap and water
P261: Avoid breathing dust/fume/gas/mist/vapours/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 local/regional/national/international regulation - use a registered hazardous waste carrier/licence holder, and/or contact the manufacturer

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 the 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
WEL: workplace exposure limit
OEL: occupational exposure limit
PBT: persistent, bioaccumulative, toxic chemical
PNEC: predicted no-effect concentration
STEL: short-term exposure limit
TWA: time weighted average
vPvB: very persistent, very bioaccumulative chemical
EULA: European Lime Association

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 dihydroxide ($Ca(OH)_2$), European Commission, DG Employment, Social Affairs and Equal Opportunities, SCOEL/SUM/137 February 2008

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16.7 Revision

SDS revised in accordance with EULA SDS format

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.

ANNEX

Addition of exposure Scenarios as applicable - Please see Appendix SD30A SDS – Hydrate Lime Range.

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Melton Ross Quarries, Barnetby,
Tel: 01652 686000
Fax: 01652 686080
Registered Number 9433 England
Established 1815

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

1.1 Product identifier

Commercial Product Name
SUPERFLOC C-494

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

Use of the Substance/Mixture

Flocculating agent

Recommended restrictions on use

-

1.3 Details of the supplier of the safety data sheet

Kemira Oyj
P.O. Box 33000101 HELSINKI FINLAND
Telephone+358108611, Telefax. +358108621124
ProductSafety.FI.Helsinki@kemira.com

1.4 Emergency telephone number

Carechem 24 International: +44 (0) 1235 239 670

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EU) 1272/2008(CLP)
Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.;

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard statements	:	Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
	EUH210	Safety data sheet available on request.

2.3 Other hazards

Advice; Forms slippery/greasy layers with water.
Potential environmental effects; This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

Chemical nature of the mixture: Cationic Polyacrylamide.

CAS/EU number/REACH Registration Number	Chemical name of the substance	Concentration	Classification according to Regulation (EU) 1272/2008(CLP)
124-04-9 204-673-3 01-2119457561-38	Adipic acid	0 - 5 %	Eye Irrit. Category 2,H319
77-92-9 201-069-1 01-2119457026-42	Citric acid	0 - 9.9 %	Eye Irrit. Category 2,H319

The total combined concentration of Adipic acid and Citric acid does not exceed 9.9%.

Further information

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

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General advice

Show this safety data sheet to the doctor in attendance.

Inhalation

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

Skin contact

Wash off with soap and water.

Eye contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If possible use lukewarm water.

Ingestion

Consult a physician. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms	:	No information available.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment	:	Symptomatic treatment.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Extinguishing media	:	Water spray Carbon dioxide (CO2) Dry chemical Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	:	none

5.2 Special hazards arising from the substance or mixture

Dust may form explosive mixture in air. Forms slippery/greasy layers with water.

5.3 Advice for firefighters

Wear self-contained breathing apparatus and protective suit.

5.4 Specific methods

Avoid dust accumulation.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

For personal protection see SDS section 8.

6.2 Environmental precautions

Try to prevent the material from entering drains or water courses.

6.3 Methods and materials for containment and cleaning up

Product becomes slippery when it is wet. Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water. Prevent product from entering drains.

6.4 Reference to other sections

Local authorities should be advised if significant spillages cannot be contained.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid dust formation. For personal protection see SDS section 8.

7.2 Conditions for safe storage, including any incompatibilities

Store in original container. Store at room temperature. Protect from moisture. The product is hygroscopic.
Materials to avoid:
Strong oxidizing agents

To avoid product degradation and equipment corrosion, do not use iron, copper or aluminium containers or equipment.
Storage stability:

Storage temperature	4 - 32 °C
Other data	Stable under recommended storage conditions.
Other data	Reason: integrity

7.3 Specific end use(s)

Not listed

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Contains no substances with occupational exposure limit values.

PNEC : No data available

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and immediately after handling the product. Do not breathe vapours/dust. Ensure that eyewash stations and safety showers are close to the workstation location.
Ensure adequate ventilation.

Wash hands before breaks and immediately after handling the product.

8.2.2 Individual protection measures, such as personal protective equipment

Hand protection

Glove material: Nitrile rubber

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

Eye protection

Safety glasses

Skin and body protection

Protective clothing.

Respiratory protection

In case of insufficient ventilation wear suitable respiratory equipment. (filter P2)

8.2.3 Environmental exposure controls

Should not be released into the environment.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

General Information (appearance, odour)

Physical state	solid, powder
Colour	white
Odour	odourless

Important health safety and environmental information

pH	3 - 5 (0.5 %) (as aqueous solution)
Melting point/range	No data available
Boiling point/boiling range	

	Not applicable
Flash point	Not applicable
Evaporation rate	Not applicable
Explosive properties:	
Lower explosion limit	No data available
Upper explosion limit	No data available
Vapour pressure	Not applicable
Relative vapour density	Not applicable
Bulk density	700 - 800 kg/m³
Solubility(ies):	
Water solubility	Limited by viscosity.
Partition coefficient: n-octanol/water	Not applicable
Auto-ignition temperature	200 °C
Thermal decomposition	200 °C
Viscosity:	
Viscosity, dynamic	Not applicable
Oxidizing	The substance or mixture is not classified as oxidizing.
Saturation in air (% vol.)	Not applicable
Volatile organic content (VOC)	Not applicable

9.2 Other data

Surface tension	Not applicable

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

No data available

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions : Hazardous polymerisation does not occur.

10.4 Conditions to avoid

Conditions to avoid	:	Avoid dust formation.

10.5 Incompatible materials

Materials to avoid	:	Strong oxidizing agents
	:	To avoid product degradation and equipment corrosion, do not use iron, copper or aluminium containers or equipment.

10.6 Hazardous decomposition products

Hazardous decomposition products	:	Ammonia Carbon oxides (COx) Nitrogen oxides (NOx) hydrogen chloride (HCl)
Thermal decomposition	:	200 °C

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

The acute toxicological results displayed may not be the results of actual testing of this material but based on a similar tested material.
LD50/Oral/Rat: > 5,000 mg/kg
Remarks:estimated
LC50/Inhalation/4 h/Rat: > 20 mg/l
Remarks: estimated

LD50/Dermal/Rabbit: > 10,000 mg/kg
Remarks: estimated

Irritation and corrosion

Skin:
No skin irritation

Eyes:
No eye irritation

Sensitisation

Not sensitizing.

Long term toxicity

Repeated dose toxicity

Remarks: No data available

Carcinogenicity

Based on available data, the classification criteria are not met.

Mutagenicity

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

The substance or mixture is not classified as specific target organ toxicant, single exposure.

STOT - repeated exposure

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration toxicity No aspiration toxicity classification

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity

–

This material is not classified as dangerous for the environment. The effects on aquatic organisms are due to an external (non-systemic) mode of action and are significantly reduced (by a factor of 7-20) within 30 minutes due to the binding of the product to dissolved organic carbon and inorganic sorbents such as clays and silts. Ecotoxicological information provided is based on a structurally or compositionally similar

product.

LC50/96 h/Branchydanio rerio (zebra fish)/Acute toxicity/OECD Test Guideline 203: > 1 - 10 mg/l
Remarks: fresh water
EC50/48 h/Daphnia magna (Water flea)/Immobilization/OECD Test Guideline 202: > 10 - 100 mg/l
/algae/Acute toxicity/OECD Test Guideline 201:
Due to the cationicity of the polymer, test is not appropriate.

Toxicity to other organisms

No data available

12.2 Persistence and degradability

Biological degradability:

Remarks: Ecotoxicological information provided is based on a structurally or compositionally similar product.

CO2 Evolution Test/OECD Test Guideline 301B/28 d: < 70 %

The polymeric ingredient is not readily biodegradable, but degradable by hydrolysis.

12.3 Bioaccumulative potential

Bioaccumulation is unlikely. Because of the high molecular weight of the polymer diffusion through biological membranes is very small.
Partition coefficient: n-octanol/water: Not applicable

12.4.Mobility in soil

Mobility

Water solubility: Limited by viscosity.
Surface tension: Not applicable

12.5. Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects

No information available.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product Recycling, recovery and reuse of materials is recommended if permitted by regulations.If recycling is not practicable, dispose of in compliance with local regulations.Incineration is recommended.

Contaminated packaging Dirty package must be disposed of in the same way as the product itself.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number

Land transport

Not classified as dangerous in the meaning of transport regulations.

Sea transport

Not classified as dangerous in the meaning of transport regulations.

Air transport

Not classified as dangerous in the meaning of transport regulations.

14.8 Special precautions for user

No data available

SECTION 15: REGULATORY INFORMATION

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

Other regulations : None.

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 included in the European Inventory of Existing Chemical Substances (EINECS) or are not required to be listed on EINECS.
: 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 Japanese (ENCS) inventory or are not required to be listed on the Japanese (ENCS) inventory.
: All components of this product are included in the Australian Inventory of Chemical Substances (AICS) or are not required to be listed on the Australian Inventory of Chemical Substances (AICS).
: All components of this product are included in the Korean (ECL) inventory or are not required to be listed on the Korean (ECL) inventory.
: All components of this product are included on the Philippine (PICCS) inventory or are not required to be listed on the Philippine (PICCS) inventory.
: 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 on the Taiwan Toxic Chemical Substances Control Act Inventory.
: All components of this product are included in the New Zealand inventory (NZIoC) or are not required to be listed on the New Zealand inventory(NZIoC).

15.2 Chemical Safety Assessment

A Chemical Safety Assessment is not required for this mixture.

SECTION 16: OTHER INFORMATION

Full text of H-Statements referred to under section 3.

H319 Causes serious eye irritation.
H319 Causes serious eye irritation.

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.

Sources of key data used to compile the Safety Data Sheet

Regulations, databases, literature, own tests.

Additions, Deletions, Revisions

Relevant changes have been marked with vertical lines.

Ref No: CAT 054 **FINNING (UK) LTD**

COSHH ASSESSMENT FORM

NAME OF SUBSTANCE:	**MOBILE PEGASUS 605**
PART NUMBER:	**201525104010, 405563, 605980-60**
SUPPLIER & MSDS DATE:	**MOBIL OIL COMPANY LTD 07/2012**
BRIEF DESCRIPTION OF HAZARD:	**FLAMMABLE, IRRITANT**

WORKPLACE LOCATION: WORKSHOP & FIELD OPERATIONS

HOW IS IT USED:
Amber liquid with a mild odour. Supplied in 25/205 litre containers.
Gas engine oil.
Considerable and ongoing contact with oil arises when carrying out work to any equipment.
Used oil is drained into drip trays and placed into labelled containers for waste oil disposal.
Used frequently by Engineers but for a short duration.

NO OF EMPLOYEES INVOLVED:	**EMPLOYEES AND OTHERS THAT MAY BE AFFECTED:**
1 - 2	**NONE**

OCCUPATIONAL EXPOSURE LIMITS (From HSG Guidance Note EH40)

Substance	MEL or OES	Long-Term exposure Limit	Short-Term exposure limit
Oil mist	**OES**	**5 mg/m^3**	

EXPOSURE(S) TO SUBSTANCE(S)

SKIN: Practically non-irritating. May defat the skin and cause possible irritation and dermatitis on repeated or prolonged contact. HIGH PRESSURE INJECTION UNDER THE SKIN MAY OCCUR DUE TO RUPTURE OF PRESSURISED LINES. ALWAYS SEEK MEDICAL ATTENTION.

EYES: Practically non-irritating.

INHALATION: Harmful concentrations of mists/ and or vapours are unlikely to be encountered through any customary or reasonably foreseeable handling, use or misuse of this product.

INGESTION: Practically non-toxic.

OTHER: Fire will produce dense black smoke and hazardous products of combustion.

CAUSE OF EXPOSURE: Handling, pouring oil into or draining oil from engines.

FREQUENCY & DURATION: As necessary. Not likely to exceed 5 minutes

AIR MONITORING RESULTS:- (if any)

Substance	MEL or OES exceeded	Air monitoring Ref No
N/A		

CONTROL MEASURES IN USE: (e.g. local exhaust ventilation (LEV), systems of work, cleaning, storage and spillage procedures)

Description of control	In Control Effective
General ventilation	Yes

Storage: Do not store in open or unlabelled containers. Store away from strong oxidising agents and combustible materials. Avoid extreme heat, sparks and open flame.
In the event of spill or leakage: Use safety glasses as minimum eye protection when eye contact may occur. Oil impervious gloves if prolonged contact is expected.
Absorb on fire resistant material. Shovel up and dispose of according to Local Authority Regulations.

PREVENT SPILLS FROM ENTERING SEWERS OR DRAINS.
IT IS VITAL THAT IMMEDIATE ATTENTION IS PAID TO SPILLAGES TO REDUCE THE RISK OF SLIPS/ FALLS

PERSONAL PROTECTIVE EQUIPMENT (PPE) AND CLOTHING

Activity	PPE supplied (type)	Is the PPE

		Adequate	properly used
Filling/ draining oil to/ from engines.	Safety glasses	Yes	Yes
	Oil impervious gloves (prolonged contact)	Yes	Yes

FIRST AID MEASURES:

SKIN: Remove contaminated clothing and wash skin thoroughly with soap and water. Do not re-use clothing until thoroughly cleaned. If skin irritation persists obtain medical attention. Accidental high-pressure injection through the skin requires IMMEDIATE medical attention for possible incision, irrigation/ debridement.

EYES: Flush eyes with water for 15 minutes lifting eyelids occasionally. If irritation occurs obtain medical help.

INHALATION: Not expected to be a problem, but if respiratory discomfort, irritation dizziness, nausea or unconsciousness occurs, remove to fresh air seek immediate medical attention and call ambulance. If breathing has stopped, apply artificial respiration.

INGESTION: Not expected to be a problem. However if greater than 1/2 litre (1 pint) is ingested seek medical advice. Do not inducing vomiting or give anything by mouth to an unconscious person.

SPECIAL: **IF CASUALTY SENT TO HOSPITAL OR DOCTOR, A COPY OF THIS RISK ASSESSMENT IS TO BE BE SENT WITH THEM.**

EMERGENCY CONTACT No: 01908 853000

INFORMATION INSTRUCTION AND TRAINING

Supervisors to advise users on:

- The hazards of the substance (see EXPOSURE TO SUBSTANCE)
- The precautions to be adopted for its safe use i.e.
- Wear safety glasses as a minimum eye protection.
- Wear oil impervious gloves if prolonged or repeated skin contact is likely.
- Observe good standard of personal hygiene. Wash hands and other exposed areas at end of each work shift, before smoking, eating or using the toilet. However, short-term skin contact does not require immediate action.
- Make sure substance does not enter eyes by contact with contaminated fingers etc.
- Generally avoid skin contact with heavily contaminated clothing. Do not keep heavily oiled rags in pockets.
- Always ensure adequate ventilation during use.
- Avoid extreme heat, sparks and open flame.
- Make use barrier creams.
- REFRAIN FROM SMOKING whilst using the substance, and do not expose the substance to flames or sources of heat.
- Saline eye wash bottles to be available nearby and substance users to be aware of their location.

ASSESSMENT OF RISK

Is exposure to hazardous substances adequately controlled	YES

HEALTH SURVEILLANCE

Is health surveillance of employees in the section carried out	NO
Is health surveillance required	NO

ACTION REQUIRED

Details	By Whom	Target completion date
N/A		

ASSESSED BY (name and position)	DATE	DATE OF PREVIOUS ASSESSMENT	NEXT REVIEW (5 years)
S Thomas Safety & Quality	01/ 2014	01/2007	01/2019

Ref No: CAT/ 046 **FINNING (UK) LTD**

COSHH ASSESSMENT FORM

NAME OF SUBSTANCE:	**CAT (DEO) ANTIFREEZE**
PART NUMBER:	**1562649 2P9868 8C3684 8C3686 9X6585-86**
SUPPLIER & MSDS DATE	**CHEVRON TEXACO GLOBAL PRODUCTS - 11/2004**
BRIEF DESCRIPTION OF HAZARD:	**IRRITANT, INHALABLE, INGESTABLE HARMFUL/FATAL IF SWALLOWED**

WORKPLACE LOCATION: WORKSHOP & FIELD OPERATIONS

HOW IS IT USED:
Purple liquid with a mild odour. Used in closed cooling water systems.
Used by Engineers regularly as a standard service routine, but for a short duration.
This assessment applies to drained fluid that should be placed in specially labelled containers for disposal.

NO OF EMPLOYEES INVOLVED:	**EMPLOYEES/ OTHERS THAT MAY BE AFFECTED:**
1 – 2	**NONE**

OCCUPATIONAL EXPOSURE LIMITS (From HSG Guidance Note EH40)

Substance	**WEL**	**Long-Term exposure Limit**	**Short-Term exposure limit**
Ethylene glycol			
Particulate		**10mg/m^3**	
Vapour		**52mg/m^3**	**104mg/m^3**

EXPOSURE(S) TO SUBSTANCE(S)

SKIN:	Brief contact may cause slight irritation. Prolonged contact, as with clothing wetted with product, may cause more sever irritation and discomfort seen as local redness and swelling. Can be absorbed through the skin.
EYES:	May cause irritation, experienced as mild discomfort and seen as slight excess redness of the eye.
INHALATION:	Vapours or mist, in excess of permissible concentrations, or in unusually high concentrations generated from spraying, heating the material or as from exposure on poorly ventilated areas or confined spaces, may cause irritation of the nose & throat, coughing, difficulty breathing, headache, nausea, vomiting and drowsiness.
INGESTION:	May cause irritation of the mouth, throat and stomach with abdominal and chest discomfort, nausea, vomiting, diarrhea and weakness. Aspirations may occur during swallowing or vomiting, which may result in lung damage.
OTHER:	**TOXIC. HARMFUL IF SWALLOWED**. Symptoms include headache, weakness, confusion, dizziness, staggering, slurred speech, loss of co-ordination, faintness, nausea and vomiting, increased heart rate, decreased blood pressure, difficulty breathing and seeing, pulmonary oedema, unconsciousness, convulsions, collapse and coma. Repeated ingestion may cause kidney damage. Symptoms may be delayed. Decreased urine output and kidney failure may occur. Aspirations may occur during swallowing or vomiting, which may result in lung damage.
CAUSE OF EXPOSURE:	Handling, pouring product into or draining product from cooling systems.
FREQUENCY & DURATION:	As necessary. Not likely to exceed 5 minutes

AIR MONITORING RESULTS:- (if any)

Substance	**WEL exceeded**	**Air monitoring Ref No**
N/A		

CONTROL MEASURES IN USE: (e.g. local exhaust ventilation (LEV), systems of work, cleaning, storage and spillage procedures)

Description of control	**In Control Effective**
General ventilation	Yes

Storage: Store in tightly closed containers away from acids and oxidising materials.
In the event of spill or leakage:
Eliminate sources of ignition.
Ventilate area well. Avoid breathing the vapours.
Use self-contained breathing apparatus or supplied air for large spills or confined spaces.
Wear chemical safety glasses.
Wear nitrile, neoprene, PVC, rubber gloves
Avoid contact with skin and eyes.
Contain spill if possible, wipe up or absorb on suitable material.
Shovel into labelled container for disposal.

PREVENT ENTRY INTO WATERCOURSES, SEWERS AND DRAINS.

PERSONAL PROTECTIVE EQUIPMENT (PPE) AND CLOTHING

Activity	**PPE supplied (type)**	**Is the PPE**	
		Adequate	**properly used**

Draining/filling cooling systems	Chemical safety glasses	Yes	Yes
	Nitrile, neoprene, PVC, rubber gloves	Yes	Yes

FIRST AID MEASURES:

SKIN: Remove contaminated clothing. Wash skin thoroughly with water and then soap and water for several minutes. Launder clothing before re-use. Obtain medical attention if skin irritation develops or persists.

EYES: Flush immediately with water for 15 minutes. Remove contact lenses if worn. Hold eyelids apart whilst flushing to rinse entire surface if eyes and lids with water. Obtain medical attention if discomfort continues.

INHALATION: Remove to fresh air immediately. Obtain medical attention if discomfort continues. Administer oxygen if breathing is difficult. Apply artificial respiration if breathing stopped.

INGESTION: Get immediate medical attention. DO NOT INDUCE VOMITING.

NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. IF CASUALTY IS SENT TO HOSPITAL OR DOCTOR, A COPY OF THIS RISK ASSESSMENT IS TO BE SENT WITH THEM

EMERGENCY CONTACT No: **USA 800 2331 0623**

INFORMATION INSTRUCTION AND TRAINING

Supervisors to advise users on:

- The hazards of the substance (see EXPOSURE TO SUBSTANCE)
- The precautions to be adopted for its safe use i.e.
- Wear chemical safety glasses as minimum eye protection.
- Exercise care when using/ draining the liquid to avoid splashing and possible eye contact.
- Wear impervious nitrile, neoprene, PVC, rubber gloves to reduce skin contact.
- Observe good standard of personal hygiene.
- Close container after use.
- Ensure substance does not enter eyes by contact with contaminated fingers etc.
- Wash hands at end of each work shift, before smoking, eating or using the toilet.
- Soiled work clothes should be laundered at least once a week.
- NEVER EAT, DRINK OR SMOKE in work areas whilst using the substance.
- Use in well ventilated areas to control exposure. Airborne concentrations should be kept to lowest possible levels.
- If vapour or mist is generated a respirator should be used.
- Air supplied respirator should always be worn when airborne concentrations of the contaminant or oxygen content is unknown.
- Saline eye wash bottles to be available nearby and substance users to be aware of their location.

ASSESSMENT OF RISK

Is exposure to hazardous substances adequately controlled	YES

HEALTH SURVEILLANCE

Is health surveillance of employees in the section carried out	YES
Is health surveillance required	YES

ACTION REQUIRED

Details	By Whom	Target completion date
N/A		

ASSESSED BY (name and position)	DATE	DATE OF PREVIOUS ASSESSMENT	NEXT REVIEW (5 years)
S Thomas EHSQ Adviser	12/ 2015	05/ 2009	10/ 2019