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

1.1 Product identifier

Product name	:	DURON TM/MC -E SYNTHETIC 5W-40
Product code	:	DESYN54P20, DESYN54IBC, DESYN54DRR, DESYN54DRM, DESYN54DCT, DESYN54C16, DESYN54C12, DESYN54, DESYN54BLK

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

Use of the Substance/Mixture	:	A synthetic, SAE 5W-40 Heavy Duty Diesel Engine Oil suitable for most 4-stroke engines operating on diesel, gasoline or natural gas fuel in mobile equipment. The low sulphated ash, phosphorus and sulphur design helps to protect emission control equipment such as particulate filters and catalytic converters.

1.3 Details of the supplier of the safety data sheet

Manufacturer or supplier's details

Petro-Canada Europe Lubricants Limited
Wellington House, Starley Way
Birmingham International Park Solihull B37 7HB
United Kingdom

E-mail address of person responsible for the SDS	:	EUSDS@suncor.com

1.4 Emergency telephone number

Emergency telephone number	:	Suncor Energy: +1 403-296-3000; Poison Control Centre: Consult local telephone directory for emergency number(s).

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Not a hazardous substance or mixture.

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

Not a hazardous substance or mixture.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)
Not a hazardous substance or mixture.

Additional Labelling:

EUH210 Safety data sheet available on request.
EUH208 May produce an allergic reaction.
Contains: Benzenesulfonic acid, mono-C16-24-alkyl derivs., calcium salts

2.3 Other hazards

None known.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Hazardous components

Chemical Name	CAS-No. EC-No. Registration number	Classification (67/548/EEC)	Classification (REGULATION (EC) No 1272/2008)	Concentration (%)
Dec-1-ene, oligomers, hydrogenated	68037-01-4		Asp. Tox. 1; Acute Tox. 5;	30 - 50
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based	72623-86-0 276-737-9 01-2119474878-16-0001		Asp. Tox. 1;	1 - 10
Mineral oil.			Asp. Tox. 1; H304	1 - 10
Phosphorodithioic acid, mixed O,O-bis(1,3-dimethylbutyl and iso-Pr) esters, zinc salts	84605-29-8 283-392-8	Xi-N; R38-R41-R51/53	Skin irr/cor. 2; H315 Eye irr/damage 1; H318 Aquatic Chronic 2; H411	1 - 1.5

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

If inhaled : Move to fresh air.
Artificial respiration and/or oxygen may be necessary.

Seek medical advice.

In case of skin contact	:	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash skin thoroughly with soap and water or use recognized skin cleanser. Wash clothing before reuse. Seek medical advice.
In case of eye contact	:	Remove contact lenses. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.
If swallowed	:	Rinse mouth with water. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Seek medical advice.

4.2 Most important symptoms and effects, both acute and delayed

Risks	:	First aider needs to protect himself.

4.3 Indication of any immediate medical attention and special treatment needed

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	:	No information available.

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting	:	Cool closed containers exposed to fire with water spray.
Hazardous combustion products	:	Carbon oxides (CO, CO2), sulphur oxides (SOx), calcium oxides (CaOx), aldehydes, smoke and irritating vapours as products of incomplete combustion.

5.3 Advice for firefighters

Further information	:	Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Use personal protective equipment.
Ensure adequate ventilation.
Evacuate personnel to safe areas.
Material can create slippery conditions.
Mark the contaminated area with signs and prevent access to unauthorized personnel.
Only qualified personnel equipped with suitable protective equipment may intervene.

6.2 Environmental precautions

Environmental precautions : Do not allow uncontrolled discharge of product into the environment.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Prevent further leakage or spillage if safe to do so.
Remove all sources of ignition.
Soak up with inert absorbent material.
Non-sparking tools should be used.
Ensure adequate ventilation.
Contact the proper local authorities.

6.4 Reference to other sections

For personal protection see section 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling : For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Use only with adequate ventilation.
In case of insufficient ventilation, wear suitable respiratory equipment.
Avoid contact with skin, eyes and clothing.
Do not ingest.
Keep away from heat and sources of ignition.
Keep container closed when not in use.

Advice on protection against fire and explosion : None known.

Hygiene measures : Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash face, hands and any

exposed skin thoroughly after handling.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Store in original container. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep in a dry, cool and well-ventilated place. Keep in properly labelled containers. To maintain product quality, do not store in heat or direct sunlight.

7.3 Specific end use(s)

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

8.2 Exposure controls

Engineering measures

No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protective equipment

Eye protection	:	Wear face-shield and protective suit for abnormal processing problems.
Hand protection		
Material	:	neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R).
Remarks	:	Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Skin and body protection	:	Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
Respiratory protection	:	Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Filter type	:	organic vapour filter
Protective measures	:	Wash contaminated clothing before re-use. No special protective equipment required.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	:	viscous liquid
Colour	:	Light amber.
Odour	:	Mild petroleum oil like.
Odour Threshold	:	No data available
pH	:	No data available
Pour point	:	-48 °C (-54 °F)
Boiling point/boiling range	:	No data available
Flash point	:	235 °C (455 °F) Method: Cleveland open cup
Fire Point	:	257 °C (495 °F)
Auto-Ignition Temperature	:	No data available
Evaporation rate	:	No data available
Flammability (solid, gas)	:	Low fire hazard. This material must be heated before ignition will occur.
Upper explosion limit	:	No data available
Lower explosion limit	:	No data available
Vapour pressure	:	No data available
Relative vapour density	:	No data available
Density	:	0.8496 kg/l (15 °C / 59 °F)
Solubility(ies)		
Water solubility	:	insoluble
Partition coefficient: n-octanol/water	:	No data available
Viscosity		
Viscosity, kinematic	:	95.1 cSt (40 °C / 104 °F)
		15.2 cSt (100 °C / 212 °F)
Explosive properties	:	Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

9.2 Other information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

10.2 Chemical stability

10.3 Possibility of hazardous reactions

Hazardous reactions : Hazardous polymerisation does not occur.
Stable under normal conditions.

10.4 Conditions to avoid

Conditions to avoid : No data available

10.5 Incompatible materials

Materials to avoid : Reactive with oxidising agents, acids, halogens and halogenated compounds.

10.6 Hazardous decomposition products

Hazardous decomposition products : May release COx, H2S, aldehydes, alkyl mercaptans, sulfides, methacrylate monomers, smoke and irritating vapours when heated to decomposition.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Information on likely routes of exposure : Eye contact
Ingestion
Inhalation
Skin contact

Acute toxicity

Product:

Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

Components:

lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based:

Acute oral toxicity	:	LD50 Rat: > 5,000 mg/kg,
Acute inhalation toxicity	:	LC50 Rat: > 5.2 mg/l Exposure time: 4 h Test atmosphere: dust/mist
Acute dermal toxicity	:	LD50 Rabbit: > 2,000 mg/kg,

Skin corrosion/irritation

Product:

Remarks: No data available

Components:

Dec-1-ene, oligomers, hydrogenated:
Result: Mild skin irritation

Serious eye damage/eye irritation

Product:

Remarks: No data available

Components:

Dec-1-ene, oligomers, hydrogenated:
Result: Mild eye irritation

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

STOT - single exposure

No data available

STOT - repeated exposure

No data available

Aspiration toxicity

No data available

SECTION 12: Ecological information

12.1 Toxicity

Product:

Toxicity to fish	:	Remarks: No data available
Toxicity to daphnia and other aquatic invertebrates	:	Remarks: No data available
Toxicity to algae	:	Remarks: No data available
Toxicity to bacteria	:	Remarks: No data available

12.2 Persistence and degradability

Product:

Biodegradability	:	Remarks: No data available

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Not relevant

12.6 Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product	:	The product should not be allowed to enter drains, water courses or the soil. Offer surplus and non-recyclable solutions to a licensed disposal company. Waste must be classified and labelled prior to recycling or disposal. Send to a licensed waste management company. Dispose of as hazardous waste in compliance with local and national regulations. Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

SECTION 14: Transport information

International Regulation

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

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

Not applicable for product as supplied.

49 CFR
Not regulated as a dangerous good
TDG
Not regulated as a dangerous good

Special precautions for user

Not applicable

SECTION 15: Regulatory information

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

Water contaminating class (Germany)	:	WGK 2	water endangering

The components of this product are reported in the following inventories:

DSL	:	On the inventory, or in compliance with the inventory
TSCA	:	All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.
IECSC	:	On the inventory, or in compliance with the inventory
ELINCS	:	On the inventory, or in compliance with the inventory

15.2 Chemical Safety Assessment

SECTION 16: Other information

Full text of R-Phrases

R38	:	Irritating to skin.
R41	:	Risk of serious damage to eyes.

R51/53	:	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Full text of H-Statements

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

Full text of other abbreviations

Acute Tox.	:	Acute toxicity
Aquatic Chronic	:	Chronic aquatic toxicity
Asp. Tox.	:	Aspiration hazard
Eye irr/damage	:	Serious eye damage/eye irritation
Skin irr/cor.	:	Skin corrosion/irritation

For Copy of (M)SDS	:	Internet: lubricants.petro-canada.ca/msds Europe, telephone: 00-800-7387-6000 For Product Safety Information: 1 905-804-4752

Prepared by	:	Product Safety: +1 905-804-4752

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.

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

1.1 Product identifier

Commercial Product Name
SUPERFLOC C-6598

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

Use of the Substance/Mixture

Water treatment: treatment of waste waters and WWTP sludge

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; Contaminated surfaces will be extremely slippery.
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, emulsion.

CAS/EU number/REACH Registration Number	Chemical name of the substance	Concentration	Classification according to Regulation (EU) 1272/2008(CLP)
01-2119453414-43	Hydrocarbons, C12-C15, n-alkanes, isoalkanes, cyclics, < 2% aromatics	0 - 25 %	Asp. Tox. Category 1,H304
01-2119485032-45	Hydrocarbons, C13-C15, n-alkanes, isoalkanes, cyclics, < 2% aromatics	0 - 25 %	Asp. Tox. Category 1,H304
01-2119826592-36	Hydrocarbons, C13-C16, n-alkanes, isoalkanes, cyclics, < 0.03% aromatics	0 - 25 %	Asp. Tox. Category 1,H304
77-92-9 201-069-1 01-2119457026-42	Citric acid	1 - 3 %	Eye Irrit. Category 2,H319

Components listed above that have a zero minimum and a common maximum range are interchangeably used components based on availability. Only one of these components is contained in the product up to the maximum amount noted.

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 breathing is difficult, give oxygen. If symptoms persist, call a physician.

Skin contact

Take off contaminated clothing and shoes immediately. Wash off immediately with plenty of water. Wash

contaminated clothing before reuse. Get medical attention if irritation develops and persists.

Eye contact

Rinse immediately with plenty of water for at least 15 minutes. If symptoms persist, call a physician.

Ingestion

If swallowed : Call a physician immediately. 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
Dry chemical
Carbon dioxide (CO2)

Unsuitable extinguishing media : Water spray jet

5.2 Special hazards arising from the substance or mixture

Contaminated surfaces will be extremely slippery.

5.3 Advice for firefighters

Wear full protective clothing and self-contained breathing apparatus. For personal protection see section 8.

5.4 Specific methods

Cool containers/tanks with water spray. Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Where the exposure level is not known, wear approved, positive pressure, self-contained respirator.
Where the exposure level is known, wear approved respirator suitable for the level of exposure.
Chemical resistant boots.

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

Soak up with inert absorbent material. Shovel or sweep up. Flush away traces with water. Contaminated surfaces will be extremely slippery. Spill area should be re-cleaned in case slipperiness remains.

6.4 Reference to other sections

For personal protection see section 8.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

For personal protection see section 8.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Keep away from food and drink. Store in original container.

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, Avoid contact with alkaline materials which will degrade the polymer.

Storage stability:

Storage temperature	4 - 27 °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**

Wash hands and face before breaks and immediately after handling the product. Keep away from food and drink.
Ensure adequate ventilation.

8.2.2 Individual protection measures, such as personal protective equipment

Hand protection

Glove material: Impervious gloves, Gloves should be removed and replaced immediately if there is any indication of degradation or chemical breakthrough.The information on suitable gloves is derived from literature, manufacture information or from data on the use of similar substances.

Eye protection

Ensure that eyewash stations and safety showers are close to the workstation location. Tightly fitting safety goggles or face-shield.

Skin and body protection

Avoid contact with skin. Wear suitable protective clothing.

Respiratory protection

Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Recommended Filter type: (filter A2-P2) (EN 14387)

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

General Information (appearance, odour)

Physical state	liquid (20 °C), viscous, dispersion
Colour	opaque, greenish, to, milky, white
Odour	slight, hydrocarbon-like

Important health safety and environmental information

pH	2.3 - 4.0 (0,5 % solution)
Melting point/range	not determined
Boiling point/boiling range	approximately 100 °C
Flash point	> 100 °C (closed cup)
Evaporation rate	not determined
Explosive properties:	

Lower explosion limit	No data available
Upper explosion limit	No data available
Vapour pressure	similar to water
Relative vapour density	not determined
Density	approximately 1.015 - 1.045 g/cm³
Solubility(ies):	
Water solubility	Limited by viscosity.
Partition coefficient: n-octanol/water	Not applicable
Auto-ignition temperature	> 150 °C
Thermal decomposition	> 200 °C
Viscosity:	
Viscosity, kinematic	> 20.5 mm²/s (40 °C)
Oxidizing	The substance or mixture is not classified as oxidizing.
Saturation in air (% vol.)	No data available

9.2 Other data

Surface tension	not determined

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

Stable under normal conditions.

10.2 Chemical stability

The product is chemically stable.

10.3 Possibility of hazardous reactions

Hazardous reactions : Hazardous polymerisation does not occur.

10.4 Conditions to avoid

Conditions to avoid : Keep away from open flames, hot surfaces and sources of ignition.
Do not freeze.

10.5 Incompatible materials

Materials to avoid : Strong oxidizing agents
Avoid contact with alkaline materials which will degrade the polymer.

10.6 Hazardous decomposition products

Hazardous decomposition products	:	Carbon dioxide (CO2), carbon monoxide (CO), oxides of nitrogen (NOx), dense black smoke. Ammonia
Thermal decomposition	:	> 200 °C

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

Acute toxicity estimate/Oral: > 5,000 mg/kg
Remarks:estimated
Acute toxicity estimate/Inhalation: > 20 mg/l
Remarks: estimated

Acute toxicity estimate/Dermal: > 5,000 mg/kg
Remarks: estimated

Irritation and corrosion

Skin: No skin irritation
Remarks: Based on available data, the classification criteria are not met.

Eyes: No eye irritation
Remarks: Based on available data, the classification criteria are not met.

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

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

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
ErC50/72 h/algae/Growth inhibition:
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:

Not readily biodegradable. 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 determined

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

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

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.

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

Not applicable

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

Notification status

TSCA	:	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.
DSL	:	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).
	:	
EINECS	:	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.
AICS	:	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).
IECSC	:	All components of this product are included on the Chinese inventory or are not required to be listed on the Chinese inventory.
ENCS	:	All components of this product are included on the Japanese (ENCS) inventory or are not required to be listed on the Japanese (ENCS) inventory.
KECI	:	All components of this product are included in the Korean (ECL) inventory or are not required to be listed on the Korean (ECL) inventory.

PICCS	:	All components of this product are included on the Philippine (PICCS) inventory or are not required to be listed on the Philippine (PICCS) inventory.
NZIoC	:	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).
TCSI	:	All components of this product are included on the Taiwan Toxic Chemical Substances Control Act Inventory.

15.2 Chemical safety assessment

not required

SECTION 16: OTHER INFORMATION

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

H304	May be fatal if swallowed and enters airways.
H304	May be fatal if swallowed and enters airways.
H304	May be fatal if swallowed and enters airways.
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.

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

1.1 Product identifier

Commercial Product Name
SUPERFLOC C-498HMW

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: +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)
77-92-9 201-069-1 01-2119457026-42	Citric acid	0 - 9.9 %	Eye Irrit. Category 2,H319
124-04-9 204-673-3 01-2119457561-38	Adipic acid	0 - 5 %	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 symptoms persist, call a physician.

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 : none

5.2 Special hazards arising from the substance or mixture

Dust may form explosive mixture in air.

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 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. Flush with water. Prevent product from entering drains.

6.4 Reference to other sections

For personal protection see section 8.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

The product is hygroscopic. Protect from moisture. Avoid dust formation.

7.2 Conditions for safe storage, including any incompatibilities

Store at room temperature in the original container.

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 - 27 °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. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes and clothing. Do not breathe dust. Ensure that eyewash stations and safety showers are close to the workstation location.
Ensure adequate ventilation.

8.2.2 Individual protection measures, such as personal protective equipment

Hand protection

Glove material: Nitrile rubber, Protective gloves complying with EN 374.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 glasses with side-shields conforming to EN166

Skin and body protection

Protective clothing.

Respiratory protection

Dust safety masks are recommended when the dust concentration is more than 10 mg/m³. Half mask with a particle filter P2 (EN 143)

8.2.3 Environmental exposure controls

No data available

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
Odour Threshold	Not relevant

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
Flammability (solid, gas) :	No data available
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	750 kg/m³
Solubility(ies):	
Water solubility	Limited by viscosity.
Partition coefficient: n-octanol/water	Not applicable
Auto-ignition temperature	> 150 °C
Thermal decomposition	> 150 °C
Viscosity:	
Viscosity, dynamic	Not applicable
Oxidizing	The substance or mixture is not classified as oxidizing.
Saturation in air (% vol.)	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.

10.5 Incompatible materials

Materials to avoid : Strong oxidizing agents

10.6 Hazardous decomposition products

Hazardous decomposition products : Ammonia
Carbon oxides (COx)
Nitrogen oxides (NOx)
hydrogen chloride (HCl)

Thermal decomposition : > 150 °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: > 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

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

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
IC50/algae/Growth inhibition/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:
CO2 Evolution Test/OECD Test Guideline 301B/28 d:

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.
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.
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	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	:	This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

Notification status

TSCA	:	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.
DSL	:	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).
	:	
EINECS	:	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.
AICS	:	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).
IECSC	:	All components of this product are included on the Chinese inventory or are not required to be listed on the Chinese inventory.
ENCS	:	All components of this product are included on the Japanese (ENCS) inventory or are not required to be listed on the Japanese (ENCS) inventory.
KECI	:	All components of this product are included in the Korean (ECL) inventory or are not required to be listed on the Korean (ECL) inventory.
PICCS	:	All components of this product are included on the Philippine (PICCS) inventory or are not required to be listed on the Philippine (PICCS) inventory.
NZIoC	:	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).
TCSI	:	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.

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.

Revision Date 13/08/2015
Revision 18
Supersedes date 15/06/2014

SAFETY DATA SHEET
Ferric sulfate solution 11% - 14%

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

1.1. Product identifier

Product name	Ferric sulfate solution 11% - 14%
Synonyms, Trade Names	Iron (III) sulfate solution
REACH Registration number	01-2119513202-59
REACH Registration notes	Registered as the pure (dry) substance
CAS-No.	10028-22-5
EC No.	233-072-9

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

Identified uses	Treatment of drinking water, has received approval by the European Committee for Standardisation. Laboratory agent Use of selected iron salts in land remediation applications Treatment of waste water. Use of iron salts in biogas production Use of iron salts as precursors to pigments and other iron compounds Use in adhesives and sealants Catalyst. Fertiliser ingredient

1.3. Details of the supplier of the safety data sheet

Supplier

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

1.4. Emergency telephone number

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

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical and Chemical Hazards	Met. Corr. 1 - H290
Human health	Acute Tox. 4 - H302;Eye Dam. 1 - H318;STOT SE 3 - H335
Environment	Not classified.

Classification (1999/45/EEC) Xn;R22. C;R34.

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

2.2. Label elements

EC No.	233-072-9
Contains	Ferric sulfate

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

Ferric sulfate solution 11% - 14%

Signal Word	Danger	
Hazard Statements		
	H290	May be corrosive to metals.
	H302	Harmful if swallowed.
	H318	Causes serious eye damage.
	H335	May cause respiratory irritation.
Precautionary Statements		
	P305+351+338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
	P302+352	IF ON SKIN: Wash with plenty of soap and water.
	P501	Dispose of contents/container in accordance with national regulations.
Supplementary Precautionary Statements		
	P280	Wear protective gloves/protective clothing/eye protection/face protection.
	P301+312	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
	P304+340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
	P310	Immediately call a POISON CENTER or doctor/physician.
	P406	Store in corrosive resistant/… container with a resistant inner liner.

2.3. Other hazards

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixtures

Ferric sulfate **40-60%**

CAS-No.: 10028-22-5 **EC No.: 233-072-9** **Registration Number: 01-2119513202-59**

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

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

REACH Registration number	01-2119513202-59
REACH Registration notes	Registered as the pure (dry) substance
CAS-No.	10028-22-5
EC No.	233-072-9

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Inhalation

Move the exposed person to fresh air at once. Get medical attention. Check for lung congestion if NOx present.

Ingestion

DO NOT induce vomiting. Get medical attention immediately. Immediately rinse mouth and drink plenty of water (200-300 ml). If confined to the mouth, rinse mouth thoroughly and ensure water is not swallowed. If swallowed, drink plenty of water.

Skin contact

Remove contaminated clothes and rinse skin thoroughly with water. Get medical attention if any discomfort continues.

Eye contact

Promptly wash eyes with plenty of water while lifting the eye lids. Obtain medical attention and bring these instructions.

Ferric sulfate solution 11% - 14%

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

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

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Extinguishing media

The product is non-combustible. However NOx will support combustion. Use fire-extinguishing media appropriate for surrounding materials. Dry chemicals. Water spray. Carbon dioxide (CO2).

5.2. Special hazards arising from the substance or mixture

Hazardous combustion products

Oxides of: Sulphur. Residual dissolved NOx

5.3. Advice for firefighters

Protective equipment for fire-fighters

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

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

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

6.2. Environmental precautions

Spillages or uncontrolled discharges into watercourses must be IMMEDIATELY alerted to the Environmental Agency or other appropriate regulatory body.

6.3. Methods and material for containment and cleaning up

Small Spillages: Flush away small spillages with plenty of water. Large Spillages: Contain, neutralise with lime or soda ash, and dispose of in accordance with local regulations.

6.4. Reference to other sections

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Wear appropriate protective clothing. Avoid contact with skin and eyes. Avoid forming spray/aerosol mists. If brown NOx gasses observed, do not breathe fumes. Do not wear contact lenses when handling this material.

7.2. Conditions for safe storage, including any incompatibilities

Avoid contact with oxidising agents. Ensure adequate ventilation to avoid build up of NOx gasses Storage tanks and day tanks must be vented to the outside atmosphere, using suitable piping. Store separated from: Store in vessels suitable for substances of low pH. Store away from: Alkalis. Avoid contact with metals (except 316 and 340 stainless steel).

7.3. Specific end use(s)

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Name	STD	TWA - 8 Hrs		STEL - 15 Min		Notes
Ferric sulfate			1 mg/m3		2 mg/m3	

Ingredient Comments

Nitrogen oxides STEL (15min) 5ppm (nitrogen dioxide - OSHA limit). Immediately dangerous for life or health 20ppm (nitrogen dioxide - NIOSH); 8hr TWA 25ppm (nitric oxide - OSHA limit), Immediately dangerous for life or health 100ppm (nitric oxide - NIOSH)

Ferric sulfate solution 11% - 14%

8.2. Exposure controls

Respiratory equipment

If mists are formed, a respirator must be worn. If brown NOx gasses are observed in a confined space, use self - contained breathing apparatus. If outside, move to upwind position.

Hand protection

PVC or rubber gloves are recommended.

Eye protection

Goggles/face shield are recommended.

Other Protection

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

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance	Liquid
Colour	Brown.
Solubility	(Of nitric oxide) 46ml/l at 20'C (62g/ton of water)
Initial boiling point and boiling range (°C)	~120'C
Melting point (°C)	< -20'C
Relative density	1.45 - 1.65 20
Vapour density (air=1)	1.04 (nitric oxide) & 1.58 (nitrogen dioxide)
pH-Value, Conc. Solution	0.5 - 1.0
Viscosity	45 cP 20'C
	90 cps at 5'C

9.2. Other information

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

N.B. Product produced by oxidation of ferrous sulfate with nitric acid. Some small quantities of residual nitrogen oxides may be given off (clearly visible reddish brown, and acrid odour) O: Oxidising, T+: very toxic, C: corrosive. Not believed to be carcinogenic or mutagenic.

10.2. Chemical stability

Do not store near sources of heat If diluted to <~1% in water, ferric hydroxide is formed and flocculates out. In the event of release to the aquatic environment, this process counteracts the potential hazards of the substance, and does not add significantly to the ubiquitous iron in the environment.

10.3. Possibility of hazardous reactions

10.4. Conditions to avoid

Dilution to < ~ 1% results in ferric hydroxide formation In contact with metals generates hydrogen gas, which together with air can form explosive mixtures.

10.5. Incompatible materials

Materials To Avoid

Powdered metal. Solid metals (except stainless steel).

10.6. Hazardous decomposition products

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Toxic Dose 1 - LD 50

2100 mg/kg (oral rat)

Acute toxicity:

Ferric sulfate solution 11% - 14%

Acute Toxicity (Dermal LD50)

2000 mg/kg Rabbit

General information

Product may give off small amounts of nitrogen oxides: low levels in the air can irritate the eyes, nose throat and lungs. Coughing, nausea, shortness of breath and tiredness may result. Higher levels of NOx can cause rapid burning, spasms, swelling of tissue in the respiratory tract, build up of fluids in the lung, and even death.

Inhalation

Dust in high concentrations may irritate the respiratory system.

Ingestion

May cause chemical burns in mouth, oesophagus and stomach. May cause liver and/or renal damage. Diarrhoea. Fibrosis of the pancreas. Irregular heartbeat, vomiting blood. Possibly fatal in large quantities.

Skin contact

Irritating to skin. Prolonged and frequent contact may cause redness and irritation. Can cause burns by repeated / prolonged exposure

Eye contact

Irritating to eyes. Risk of corneal damage.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity

No data on possible environmental effects have been found. Due to its acidic nature, spillage of ferric sulfate solution may cause localised damage to plants. If diluted and neutralised no lasting effects will occur.

12.1. Toxicity

Acute Toxicity - Fish

LC50 96 hours > 28 mg/l Onchorhynchus mykiss (Rainbow trout)

Acute Toxicity - Aquatic Invertebrates

EC50 48 hours 11 mg/l Freshwater invertebrates

Chronic Toxicity - Aquatic Invertebrates

EC50 21 days 4.5 mg/l Freshwater invertebrates

12.2. Persistence and degradability

12.3. Bioaccumulative potential

12.4. Mobility in soil

12.5. Results of PBT and vPvB assessment

12.6. Other adverse effects

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Small amounts can be neutralised with lime or caustic soda, and washed away with copious amounts of water. Small amounts may be flushed with water to sewer. Larger volumes must be sent to approved plant for destruction. Dispose of waste and residues in accordance with local authority requirements. Do not dispose directly into rivers or drains

SECTION 14: TRANSPORT INFORMATION

14.1. UN number

UN No. (ADR/RID/ADN)	1760
UN No. (IMDG)	1760
UN No. (ICAO)	1760

Ferric sulfate solution 11% - 14%

14.2. UN proper shipping name

Proper Shipping Name	CORROSIVE LIQUID, N.O.S. (Ferric sulfate solution).
Proper Shipping Name	CORROSIVE LIQUID, N.O.S.

14.3. Transport hazard class(es)

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

Transport Labels

14.4. Packing group

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

14.5. Environmental hazards

14.6. Special precautions for user

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

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

SECTION 15: REGULATORY INFORMATION

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

Uk Regulatory References

The Control of Substances Hazardous to Health Regulations 2002 (S.I 2002 No. 2677) with amendments.

Guidance Notes

Workplace Exposure Limits EH40.

EU Legislation

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

15.2. Chemical Safety Assessment

A chemical safety assessment has been carried out.

SECTION 16: OTHER INFORMATION

Ferric sulfate solution 11% - 14%

General information

Ferric sulfate solution is used as a chemical for the treatment if drinking water, as approved by the European Committee for Standardisation under EN 890:2004. The transport and regulatory information given are in accordance with EN 890:2004, with R22 added. However, that document indicates ferric sulfate falls under packing group 1, as a "Substance presenting high danger". ICL believes that this classification is not justified for ferric sulfate, which only represents a low danger. 11.0% and 12.5% grades are assigned to Packing Group III, but the 8.5% grade is assigned to Packing Group II, because of the added sulfuric acid content. Some sedimentation can occur in this product. Even after filtering, slow sedimentation will occur. To avoid problems caused by this sedimentation, storage tanks should be cleaned every 1 to 2 years.

Revision Comments

Updated hazard phrases.

Issued By	Chief Chemist
Revision Date	13/08/2015
Revision	18
Supersedes date	15/06/2014

Risk Phrases In Full

R34	Causes burns.
R22	Harmful if swallowed.
R38	Irritating to skin.
R41	Risk of serious damage to eyes.

Hazard Statements In Full

H290	May be corrosive to metals.
H302	Harmful if swallowed.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H335	May cause respiratory irritation.

Conforms to regulation (EC) No 1907/2006 (REACh) Annex II

IRONSIDES LUBRICANTS

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Revised 2014

Section 1. IDENTIFICATION

1.1 PRODUCT IDENTIFIER	**Tufgrease plus / WYMARK GREASE OG** 0250/0635
1.2 RELEVANT IDENTIFIED USE OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST	As an Industrial Lubricant
1.3 DETAILS OF THE SUPPLIER OF THE SDS	THE IRONSIDES LUBRICANTS LTD Shield Street Stockport SK3 ODS Tel: +44 (0)161 477 5858 Fax: +44 (0)161 480 6203
1.4 EMERGENCY TELEPHONE NUMBER	Emergency tel: +44 (0)161 477 5858 (Monday – Friday 9.00 – 17.00 hrs GMT) +44 (0)161 480 6203 e-mail : msds@ironsideslubricants.co.uk

Section 2 HAZARDS IDENTIFICATION

2.1 CLASSIFICATION OF THE SUBSTANCE MIXTURE	Not Classified
CLASSIFICATION ACCORDING TO DIRECTIVE 67/584EEC	Not Classified
CLASSIFICATION ACCORDING TO DIRECTIVE 1272/2008 (GHS/CLP)	Not Classified
2.2 LABEL REQUIREMNETS	
HAZARD PICTOGRAMS	N/a
SIGNAL WORD	N/a
HAZARD STATEMENT	N/a
PRECAUTIONARY STATEMENTS	
PREVENTION	N/a
RESPONSE.	N/a
STORAGE.	N/a
DISPOSAL	N/a

Section 3 COMPOSTION/INFORMATION ON INGREDIENTS

3.2 **HAZARDOUS INGREDIENTS:** Not Classified
Blend of blend oils with multifunctional additives

Ingredients	CAS	Reach	Classification 67/548/EEC	Regulation (EC) No 1272/2008 [CLP]
Blend of mineral oils	64742-52-5 64742-54-7	01-2119467170-45 01-2119484627-70	Not Classified Not classified	Not Classified Not Classified

The Mineral oil contains less than 3 % DMSO extract as measured by IP 346.

SECTION 4 FIRST AID MEASURES

4.1 DESCRIPTION OF FIRST AID MEASURES	EYE CONTACT Wash out eye with plenty of water. Obtain medical attention if soreness or redness persists SKIN CONTACT: Wash skin with soap and water. If grease has been injected under the skin, seek Medical advice immediately. INGESTION: Do not induce vomiting. Obtain medical attention
4.2 MOST IMPORTANT SYMPTOMS AND EFFECTS,BOTH ACUTE AND DELAYED	No ill effects
4.3 INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED IF NECESSARY	Eye Contact: immediately washout with plenty of water

SECTION 5 FIRE FIGHTING MEASURES

5.1EXTINGUISHING MEDIA:	Use water Spray to cool containers. Use foam, dry chemical, carbon dioxide or suitable extinguishing media..
5.2EXPOSURE HAZARDS:	This product may give rise to hazardous fumes in a fire.
5.3 PROTECTION FOR FIRE- FIGHTERS:	Wear self-contained breathing apparatus.

SECTION 6 ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS:	Refer to section 8 for personal protection details.
6.2 ENVIROMENTAL PRECAUTIONS	Do not pour grease directly into the Main drains or water course
6.3 METHODS AND MATRERAILS FOR CONTAINMENT AND CLEANING UP SPILLAGES:	Transfer into suitable containers for recovery or disposal.

SECTION 7. HANDLING AND STORAGE

IRONSIDES LUBRICANTS

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7.1 PRECAUTION FOR SAFE HANDLING:	Avoid direct contact with the substance.
7.2 CONDITIONS FOR SAFE STORAGE INCLUDING ANY INCOMATIBILITIES :	Store in cool well ventilated area
7.3 SPECIFIC END USES	Industrial lubricant

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 PROTECTIVE EQUIPMENT:


HAND PROTECTION:	PVC gloves
EYE PROTECTION:	Wear approved safety goggles
BODY PROTECTION:	Normal work wear
RESPIRATORY PROTECTION:	Not normally required

Section 9 PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	Smooth Grease
COLOUR:	Black
ODOUR	Odourless.
PH:	Neutral
MELTING POINT (°C):	Melts above 200
FLASH POINT (PMCC) (°C)	Exceed 200.
FLAMMABILITY	Above 200.
UPPER/LOWER FLAMMABILITY RATES	No data
VAPOUR PRESSURE (MBAR@20°C)	No data
VAPOUR DENSITY	No data
RELATIVE DENSITY	0.82-0.85 (Measured as kg/litre)
SOLUBILITY IN OIL	SOLUBLE
SOLUBILITY IN WATER (KG/M3):	Insoluble.
AUTOIGNITION TEMPERTURE	Exceeds 200
DECOMPOSTION TEMPERTURE	No data
VISCOSITY	No data

SECTION10. STABILITY AND REACTIVITY

10.1 REACTIVITY	No dangerous reactions known
10.2 CHEMICALSTABILITY:	Stable under normal conditions
10.3 POSSIBILITY OF HAZARDOUS REACTIONS	None known
10.4 CONDITIONS TO AVOID:	Heat.
10.5 MATERIALS TO AVOID:	Strong oxidising agents.
10.6HAZARDOUS DECOMPOSITION PRODUCTS:	Combustion will generate: smoke, carbon dioxide and carbon monoxide

SECTION 11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY	No toxic components
CORROSIVITY/IRRITATION	Non irritating to skin/eye/respiratory track
SENTSITISATION	No evidence of sensitisation
REPEAT DOSE TOXICITY	No evidence
MUTAGENICITY	No Evidence
CARCINOGENCITY	No evidence
REPRODUCTIVE TOXICITY	No Evidence

SECTION 12. ECOLOGICAL INFORMATION

12.1TOXICITY :	Not Classified
12.2 PERSISTENCE & DEGRADABILITY:	Only slightly biodegradable.
12.3BIO-ACCUMULATION POTENTIAL	Product is not expected to bio-accumulate.
12.4MOBILITY IN SOIL	Non volatile. The product is poorly absorbed onto soils or sediments.
12.5 RESULTS OF PBT OR vPvB ASSESSMENT:	No present

SECTION 13. DISPOSAL RECOMMENDATIONS

PRODUCT DISPOSAL:	Dispose in a regulated landfill site or other method for hazardous or toxic waste. Dispose of in accordance with local and national regulations.
HAZARDOUS WASTE	Within the present knowledge of the supplier, this product is not regarded as hazardous waste, as defined by EU Directive 91/689/EEC

IRONSIDES LUBRICANTS

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Revised 2014

SECTION 14. TRANSPORT INFORMATION

UN CLASS:	Not classified.
ADR/RID – CLASS:	Not classified.
IMDG – CLASS:	Not classified.
IATA – CLASS:	Not classified.

15. REGULATORY INFORMATION

15.1 SAFETY ,HEALTH AND ENVIROMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE	Supply regulations; classified as non Hazardous under DPD/GHS/CLP criteria Transport regulations classified as non hazardous under ADR/RID/IMDG/ICAO/IATA

16. OTHER INFORMATION

PRODUCT USE:	For industrial use only. Lubricant.

To the best of our knowledge, the information contained herein is accurate. Although certain hazards may be described we cannot predict that these are the only hazards, or combination of hazards, that may exist in a workplace. This MSDS, therefore, forms a component only of a risk assessment carried out by, or on behalf of, the user.

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

1.1 Product identifier

Product name	:	COMPRO TM/MC 68
Product code	:	CP68P20, CP68, CP68DRM

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

Use of the Substance/Mixture	:	COMPRO Compressor Fluids are used for the lubrication of air and inert gas compressors of the reciprocating, rotary screw, and rotary vane types. These compressor oils should NEVER be used in equipment compressing pure oxygen or other chemically active gases such as chlorine or hydrogen chloride. DO NOT USE in breathing air apparatus or medical equipment.

1.3 Details of the supplier of the safety data sheet

Manufacturer or supplier's details

Petro-Canada Europe Lubricants Limited
Wellington House, Starley Way
Birmingham International Park Solihull B37 7HB
United Kingdom

E-mail address of person responsible for the SDS	:	EUSDS@suncor.com

1.4 Emergency telephone number

Emergency telephone number	:	Suncor Energy: +1 403-296-3000; Poison Control Centre: Consult local telephone directory for emergency number(s).

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Not a hazardous substance or mixture.

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

Not a hazardous substance or mixture.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)
Not a hazardous substance or mixture.

2.3 Other hazards

None known.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Hazardous components

Remarks : No hazardous ingredients

SECTION 4: First aid measures

4.1 Description of first aid measures

If inhaled : Move to fresh air.
Artificial respiration and/or oxygen may be necessary.
Seek medical advice.

In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash skin thoroughly with soap and water or use recognized skin cleanser.
Wash clothing before reuse.
Seek medical advice.

In case of eye contact : Remove contact lenses.
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Obtain medical attention.

If swallowed : Rinse mouth with water.
DO NOT induce vomiting unless directed to do so by a physician or poison control center.
Never give anything by mouth to an unconscious person.
Seek medical advice.

4.2 Most important symptoms and effects, both acute and delayed

Risks : First aider needs to protect himself.

4.3 Indication of any immediate medical attention and special treatment needed

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	:	No information available.

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting	:	Cool closed containers exposed to fire with water spray.
Hazardous combustion products	:	Carbon oxides (CO, CO2), nitrogen oxides (NOx), phosphorus oxides (POx), sulphur oxides (SOx), smoke and irritating vapours as products of incomplete combustion.

5.3 Advice for firefighters

Further information	:	Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Use personal protective equipment. Ensure adequate ventilation. Evacuate personnel to safe areas. Material can create slippery conditions. Mark the contaminated area with signs and prevent access to unauthorized personnel. Only qualified personnel equipped with suitable protective equipment may intervene.

6.2 Environmental precautions

Environmental precautions	:	If the product contaminates rivers and lakes or drains inform respective authorities.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up	:	Prevent further leakage or spillage if safe to do so. Remove all sources of ignition. Soak up with inert absorbent material. Non-sparking tools should be used. Ensure adequate ventilation.

Contact the proper local authorities.

6.4 Reference to other sections

For personal protection see section 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling	:	For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin, eyes and clothing. Do not ingest. Keep away from heat and sources of ignition. Keep container closed when not in use.
Advice on protection against fire and explosion	:	None known.
Hygiene measures	:	Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash face, hands and any exposed skin thoroughly after handling.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Store in original container. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep in a dry, cool and well-ventilated place. Keep in properly labelled containers. To maintain product quality, do not store in heat or direct sunlight.

7.3 Specific end use(s)

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

8.2 Exposure controls

Engineering measures

No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protective equipment

Eye protection	:	Wear face-shield and protective suit for abnormal processing problems.

Hand protection

Material	:	neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R).
Remarks	:	Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Skin and body protection	:	Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
Respiratory protection	:	Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Filter type	:	organic vapour filter
Protective measures	:	Wash hands and face before breaks and immediately after handling the product. Wash contaminated clothing before re-use. Ensure that eyewash station and safety shower are proximal to the work-station location.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	:	viscous liquid
Colour	:	Pale yellow.
Odour	:	Mild petroleum oil like.
Odour Threshold	:	No data available
pH	:	No data available
Pour point	:	-30 °C (-22 °F)
Boiling point/boiling range	:	No data available
Flash point	:	238 °C (460 °F) Method: Cleveland open cup
Fire Point	:	266 °C (511 °F)
Auto-Ignition Temperature	:	No data available
Evaporation rate	:	No data available

Flammability (solid, gas)	:	Low fire hazard. This material must be heated before ignition will occur.
Upper explosion limit	:	No data available
Lower explosion limit	:	No data available
Vapour pressure	:	No data available
Relative vapour density	:	No data available
Density	:	0.869 kg/l (15 °C / 59 °F)
Solubility(ies)		
Water solubility	:	insoluble
Partition coefficient: n-octanol/water	:	No data available
Viscosity		
Viscosity, kinematic	:	68 cSt (40 °C / 104 °F)
		8.7 cSt (100 °C / 212 °F)
Explosive properties	:	Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

9.2 Other information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

10.2 Chemical stability

10.3 Possibility of hazardous reactions

Hazardous reactions	:	Hazardous polymerisation does not occur. Stable under normal conditions.

10.4 Conditions to avoid

Conditions to avoid	:	No data available

10.5 Incompatible materials

Materials to avoid	:	Reactive with oxidising agents, acids, alkalis and reducing agents.

10.6 Hazardous decomposition products

Hazardous decomposition products	:	May release COx, NOx, POx, SOx, methacrylate monomers, smoke and irritating vapours when heated to decomposition.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Information on likely routes of exposure	:	Eye contact Ingestion Inhalation Skin contact

Acute toxicity

Product:

Acute oral toxicity	:	Remarks: No data available
Acute inhalation toxicity	:	Remarks: No data available
Acute dermal toxicity	:	Remarks: No data available

Skin corrosion/irritation

Product:

Remarks: No data available

Serious eye damage/eye irritation

Product:

Remarks: No data available

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

STOT - single exposure

No data available

STOT - repeated exposure

No data available

Aspiration toxicity

No data available

SECTION 12: Ecological information

12.1 Toxicity

Product:

Toxicity to fish	:	Remarks: No data available
Toxicity to daphnia and other aquatic invertebrates	:	Remarks: No data available
Toxicity to algae	:	Remarks: No data available
Toxicity to bacteria	:	Remarks: No data available

12.2 Persistence and degradability

Product:

Biodegradability	:	Remarks: No data available

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Not relevant

12.6 Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product	:	The product should not be allowed to enter drains, water courses or the soil. Offer surplus and non-recyclable solutions to a licensed disposal company. Waste must be classified and labelled prior to recycling or disposal. Send to a licensed waste management company. Dispose of as hazardous waste in compliance with local and

national regulations.
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

SECTION 14: Transport information

International Regulation

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

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

Not applicable for product as supplied.

49 CFR
Not regulated as a dangerous good
TDG
Not regulated as a dangerous good

Special precautions for user

Not applicable

SECTION 15: Regulatory information

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

Water contaminating class (Germany)	:	WGK 1	slightly water endangering

The components of this product are reported in the following inventories:

DSL	:	On the inventory, or in compliance with the inventory
TSCA	:	All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.
IECSC	:	On the inventory, or in compliance with the inventory
EINECS	:	On the inventory, or in compliance with the inventory

15.2 Chemical Safety Assessment

SECTION 16: Other information

For Copy of (M)SDS	:	Internet: lubricants.petro-canada.ca/msds Europe, telephone: 00-800-7387-6000 For Product Safety Information: 1 905-804-4752
Prepared by	:	Product Safety: +1 905-804-4752

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

SAFETY DATA SHEET

(REACH regulation (EC) n° 1907/2006 - n° 453/2010)

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

1.1. Product identifier

Product name : AddSorb VA4

Product code : Activated Carbon.

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

Use as an adsorbent in industrial, professional and consumer setting.

Use descriptor system (REACH) :

SU3 : PROC 1, 2, 3, 4, 5, 8a, 8b, 9, 14, 15, 22

SU22 : PROC 1, 2, 3, 4, 5, 8a, 8b, 9, 15

SU21 : PC 2, 3, 29, 35, 37, 39

1.3. Details of the supplier of the safety data sheet

Registered company name : Jacobi Carbons Ltd.

Address : E12, Croft Court, Moss Estate.WN7 3PT.Leigh, Lancashire.United Kingdom.

Telephone : +44 1942 670 600. Fax : +44 1942 670 605.

infouk@jacobi.net

www.jacobi.net

1.4. Emergency telephone number : +44 1942 670 600.

Association/Organisation : Jacobi Carbons Ltd.

SECTION 2 : HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

In compliance with EC regulation No. 1272/2008 and its amendments.

This mixture does not present a physical hazard. Refer to the recommendations regarding the other products present on the site.

This mixture does not present a health hazard with the exception of possible occupational exposure thresholds (see paragraphs 3 and 8).

This mixture does not present an environmental hazard. No known or foreseeable environmental damage under standard conditions of use.

In compliance with directives 67/548/EEC, 1999/45/EC and their amendments.

This mixture does not present a physical hazard. Refer to the recommendations regarding the other products present on the site.

This mixture does not present a health hazard with the exception of possible occupational exposure thresholds (see paragraphs 3 and 8).

This mixture does not present an environmental hazard. No known or foreseeable environmental damage under standard conditions of use.

2.2. Label elements

In compliance with EC regulation No. 1272/2008 and its amendments.

Additional labeling :

EUH210 Safety data sheet available on request.

2.3. Other hazards

In the event of dust formed by mechanical action (sanding, sawing, etc..), this dust may cause irritation by inhalation and contact with eyes.

The mixture does not contain substances classified as ‘Substances of Very High Concern’ (SVHC) >= 0.1% published by the European CHemicals Agency (ECHA) under article 57 of REACH: http://echa.europa.eu/fr/candidate-list-table

The mixture satisfies neither the PBT nor the vPvB criteria for mixtures in accordance with annexe XIII of the REACH regulations EC 1907/2006.

May cause CO and CO2 emanations in the event of a fire.

Wet Activated Carbon depletes oxygen from air and, therefore, dangerously low levels of oxygen may be encountered. Whenever workers enter a vessel containing activated carbon, the oxygen content should be determined and work procedures for potentially low oxygen areas should be followed.

SECTION 3 : COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixtures

Composition :

*The concentrations (of the substances other than Activated Carbon) are expressed as maximum values

Identification	(EC) 1272/2008	67/548/EEC	Note	%
CAS: 7440-44-0 EC: 931-328-0 REACH: 01-2119488894-16-0013 ACTIVATED CARBON - HIGH DENSITY SKELETON (AC-HDS)			[1]	90.00 %
CAS: 1317-38-0 EC: 215-269-1 COPPER OXIDE	GHS09 Wng Aquatic Chronic 3, H412 Aquatic Acute 1, H400 M Acute = 1	N N;R50		10.00 %

Information on ingredients :

[1] Substance for which maximum workplace exposure limits are available.

SECTION 4 : FIRST AID MEASURES

As a general rule, in case of doubt or if symptoms persist, always call a doctor.

NEVER induce swallowing by an unconscious person.

4.1. Description of first aid measures

In the event of exposure by inhalation :

If breathing is irregular or has stopped, effect mouth-to-mouth resuscitation and call a doctor.

In the event of splashes or contact with eyes :

Wash thoroughly with soft, clean water for 15 minutes holding the eyelids open.

If there is any redness, pain or visual impairment, consult an ophthalmologist.

In the event of splashes or contact with skin :

Watch out for any remaining product between skin and clothing, watches, shoes, etc.

In the event of swallowing :

Do not give the patient anything orally.

In the event of swallowing, if the quantity is small (no more than one mouthful), rinse the mouth with water and consult a doctor.

Seek medical attention immediately, showing the label.

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

When large amounts are ingested orally, congestion may occur.

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

No data available.

SECTION 5 : FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable methods of extinction

In the event of a fire, use :
- sprayed water or water mist
- foam
- powder
- carbon dioxide (CO2)

Unsuitable methods of extinction

In the event of a fire, do not use :
- water jet

in the closed areas, in order to avoid the water contamination.

5.2. Special hazards arising from the substance or mixture

A fire will often produce a thick black smoke. Exposure to decomposition products may be hazardous to health.

Do not breathe in smoke.

In the event of a fire, the following may be formed :
- carbon monoxide (CO)
- carbon dioxide (CO2)
- other decomposition products for the saturated activated carbon.

5.3. Advice for firefighters

Due to the toxicity of the gas emitted on thermal decomposition of the products, fire-fighting personnel are to be equipped with autonomous insulating breathing apparatus.

SECTION 6 : ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Consult the safety measures listed under headings 7 and 8.

For first aid worker

First aid workers will be equipped with suitable personal protective equipment (See section 8).

6.2. Environmental precautions

Prevent any material from entering drains or waterways.

6.3. Methods and material for containment and cleaning up

Retrieve the product by mechanical means (sweeping/vacuuming).

6.4. Reference to other sections

See also sections 2 & 8

SECTION 7 : HANDLING AND STORAGE

Requirements relating to storage premises apply to all facilities where the mixture is handled.

7.1. Precautions for safe handling

Always wash hands after handling.

Fire prevention :

Prevent access by unauthorised personnel.

Recommended equipment and procedures :

For personal protection, see section 8.

Observe precautions stated on label and also industrial safety regulations.

Prohibited equipment and procedures :

No smoking, eating or drinking in areas where the mixture is used.

7.2. Conditions for safe storage, including any incompatibilities

Keep away from any chemical (solvents and strong oxidisers).

Keep away from heat sources.

Store in a well-ventilated area.

Storage

Store and keep away from any chemical (solvents and strong oxidisers).

Store in the closed, original packaging.

Storage of wet activated carbon in a closed area can deplete oxygen from air.

Packaging

Always keep in packaging made of an identical material to the original.

7.3. Specific end use(s)

No data available.

SECTION 8 : EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Occupational exposure limits :

Non otherwise classified dusts : 10 mg/m3

- UK / WEL (Workplace exposure limits, EH40/2005, 2007) :

CAS	TWA :	STEL :	Ceiling :	Definition :	Criteria :
7440-44-0	4 mg/m3	-	-	-	R

Derived no effect level (DNEL) or derived minimum effect level (DMEL):

ACTIVATED CARBON - HIGH DENSITY SKELETON (AC-HDS) (CAS: 7440-44-0)

Final use: **Workers.**

Exposure method: Inhalation.
Potential health effects: Short term local effects.
DNEL : 3 mg of substance/m3

Exposure method: Inhalation.
Potential health effects: Long term systemic effects.
DNEL : 3 mg of substance/m3

Final use: **Consumers.**

Exposure method: Inhalation.
Potential health effects: Short term local effects.
DNEL : 0.5 mg of substance/m3

Exposure method: Inhalation.
Potential health effects: Long term systemic effects.
DNEL : 0.5 mg of substance/m3

Predicted no effect concentration (PNEC):

COPPER OXIDE (CAS: 1317-38-0)
Environmental compartment: Soil.

PNEC :	65 mg/kg
Environmental compartment:	Fresh water.
PNEC :	7.8 µg/l
Environmental compartment:	Sea water.
PNEC :	5.2 µg/l
Environmental compartment:	Fresh water sediment.
PNEC :	87 mg/kg
Environmental compartment:	Marine sediment.
PNEC :	676 mg/kg
Environmental compartment:	Waste water treatment plant.
PNEC :	230 µg/l

8.2. Exposure controls

Suitable technical inspections

For the use of Granular Activated Carbon, no risk management measures are mandatory, but only recommended.

Local exhaust ventilation is recommended.

Personal protection measures, such as personal protective equipment

Use personal protective equipment that is clean and has been properly maintained.

Store personal protective equipment in a clean place, away from the work area.

Never eat, drink or smoke during use. Remove and wash contaminated clothing before re-using. Ensure that there is adequate ventilation, especially in confined areas.

- Eye / face protection

Avoid contact with eyes.

Before handling powders or dust emission, wear mask goggles in accordance with standard EN166.

Wear goggles if dust emission can occur.

- Hand protection

Wear suitable protective gloves in the event of prolonged or repeated skin contact.

Type of gloves recommended :

- Natural latex

- Body protection

Work clothing worn by personnel shall be laundered regularly.

After contact with the product, all parts of the body that have been soiled must be washed.

- Respiratory protection

Avoid breathing dust.

Type of FFP mask :

Wear a disposable half-mask dust filter in accordance with standard EN149.

Category :

- FFP2

Particle filter according to standard EN143 :

- P2 (White)

Exposure controls linked to environmental protection

Local exhaust ventilation to remove material at source.

Contained storage.

Regulated waste disposal.

SECTION 9 : PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

General information :

Physical state :	Solid in granules.
Color:	Black
Odour:	None

Important health, safety and environmental information

pH :	Not stated. Slightly basic.
Boiling point/boiling range :	Not specified.
Flash point interval :	Not relevant.
Vapour pressure (50°C) :	Not relevant.
Density :	400-600 kg/m3 Method for determining the density : ASTM D2854
Water solubility :	Insoluble. Method for determining the water solubility : OCDE Guideline 105 (Water solubility).
Melting point/melting range :	Not specified.
Self-ignition temperature :	Not specified.
Decomposition point/decomposition range :	Not specified.

9.2. Other information

Physical and chemical properties of the saturated activated carbon may be different from the virgin material.

SECTION 10 : STABILITY AND REACTIVITY

10.1. Reactivity

This product shows no reactivity under the specified conditions of storage, shipment and use.

10.2. Chemical stability

This mixture is stable under the recommended handling and storage conditions in section 7.

10.3. Possibility of hazardous reactions

In contact with solvents and strong oxidisers.

10.4. Conditions to avoid

Avoid :
- formation of dusts
- heat
- heating

Dusts can form an explosive mixture with air.

10.5. Incompatible materials

Keep away from :
- strong oxidising agents
- flammable material
- solvents

10.6. Hazardous decomposition products

The thermal decomposition may release/form :
- carbon monoxide (CO)
- carbon dioxide (CO2)

SECTION 11 : TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

In the event of dust formed by mechanical action (sanding, sawing, etc..), this dust may cause irritation by inhalation and contact with eyes.

11.1.1. Substances

Acute toxicity :

COPPER OXIDE (CAS: 1317-38-0)

Oral route :	LD50 > 2500 mg/kg Species : Rat OECD Guideline 423 (Acute Oral toxicityAcute Toxic Class Method)
Dermal route :	LD50 > 2000 mg/kg Species : Rat OECD Guideline 402 (Acute Dermal Toxicity)

ACTIVATED CARBON - HIGH DENSITY SKELETON (AC-HDS) (CAS: 7440-44-0)

Oral route :	LD50 > 2000 mg/kg Species : Rat OECD Guideline 423 (Acute Oral toxicityAcute Toxic Class Method)
Inhalation route :	LC50 > 64.4 mg/l Species : Rat OECD Guideline 403 (Acute Inhalation Toxicity)

Skin corrosion/skin irritation :

COPPER OXIDE (CAS: 1317-38-0)

Corrosivity :	No observed effect. Species : Rabbit OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
Irritation :	Average score = 0 Species : Rabbit Duration of exposure : 72 h OECD Guideline 404 (Acute Dermal Irritation / Corrosion)

ACTIVATED CARBON - HIGH DENSITY SKELETON (AC-HDS) (CAS: 7440-44-0)

Corrosivity :	No observed effect. Species : Rabbit OECD Guideline 404 (Acute Dermal Irritation / Corrosion)

Serious damage to eyes/eye irritation :

COPPER OXIDE (CAS: 1317-38-0)

Corneal haze :	Average score = 0.33 Species : Rabbit Duration of exposure : 72 h OECD Guideline 405 (Acute Eye Irritation / Corrosion)
Iritis :	Average score = 0.22 Species : Rabbit Duration of exposure : 72 h

OECD Guideline 405 (Acute Eye Irritation / Corrosion)

Conjunctival redness : Average score = 0.77
Species : Rabbit
Duration of exposure : 72 h
OECD Guideline 405 (Acute Eye Irritation / Corrosion)

Conjunctival oedema : Average score = 0.66
Species : Rabbit
Duration of exposure : 72 h
OECD Guideline 405 (Acute Eye Irritation / Corrosion)

ACTIVATED CARBON - HIGH DENSITY SKELETON (AC-HDS) (CAS: 7440-44-0)

Corneal haze : Average score = 0.00
Species : Rabbit
Duration of exposure : 72 h
OECD Guideline 405 (Acute Eye Irritation / Corrosion)

Iritis : Average score = 0.00
Species : Rabbit
Duration of exposure : 72 h
OECD Guideline 405 (Acute Eye Irritation / Corrosion)

Conjunctival redness : Average score = 0.67
Species : Rabbit
Duration of exposure : 72 h
OECD Guideline 405 (Acute Eye Irritation / Corrosion)

Conjunctival oedema : Average score = 0.33
Species : Rabbit
Duration of exposure : 72 h
OECD Guideline 405 (Acute Eye Irritation / Corrosion)

Respiratory or skin sensitisation :

COPPER OXIDE (CAS: 1317-38-0)

Guinea Pig Maximisation Test (GMPT) : Non-sensitiser.
Species : Guinea pig
OECD Guideline 406 (Skin Sensitisation)

ACTIVATED CARBON - HIGH DENSITY SKELETON (AC-HDS) (CAS: 7440-44-0)

Local lymph node stimulation test : Non-Sensitiser.
Species : Mouse
OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay)

Germ cell mutagenicity :

ACTIVATED CARBON - HIGH DENSITY SKELETON (AC-HDS) (CAS: 7440-44-0)

Mutagenesis (in vitro) : Negative.
Species : Bacteria
OECD Guideline 471 (Bacterial Reverse Mutation Assay)

Ames test (in vitro) : Negative.
With or without metabolic activation.
Species : S. typhimurium TA1535

COPPER OXIDE (CAS: 1317-38-0)

Mutagenesis (in vivo) :	Negative. Species : Mouse REACH Method B.12 (Mutagenicity - In Vivo Mammalian Erythrocyte Micronucleus Test)
Mutagenesis (in vitro) :	Negative. Species : Bacteria OECD Guideline 471 (Bacterial Reverse Mutation Assay)
Ames test (in vitro) :	Positive. With or without metabolic activation. Species : S. typhimurium TA1535

Carcinogenicity :

COPPER OXIDE (CAS: 1317-38-0)

Carcinogenicity Test :	Negative. No carcinogenic effect.

Reproductive toxicant :

COPPER OXIDE (CAS: 1317-38-0)
No toxic effect for reproduction

Study on development :	Species : Rat OECD Guideline 416 (Two-Generation Reproduction Toxicity Study)

Specific target organ systemic toxicity - single exposure :

ACTIVATED CARBON - HIGH DENSITY SKELETON (AC-HDS) (CAS: 7440-44-0)

Oral route :	C > 2000 mg/kg bodyweight Species : Rat

Specific target organ systemic toxicity - repeated exposure :

COPPER OXIDE (CAS: 1317-38-0)

Oral route :	C > 1000 mg/kg bodyweight/jour Species : Mouse Duration of exposure : 90 days REACH Method B.26 (Sub-Chronic Oral Toxicity Test: Repeated Dose 90-Day Oral Toxicity Study in Rodents) Species : Rat OECD Guideline 412 (Repeated Dose Inhalation Toxicity: 28/14-Day)

11.1.2. Mixture

No toxicological data available for the mixture.

SECTION 12 : ECOLOGICAL INFORMATION

12.1. Toxicity

12.1.1. Substances

As Activated Carbon is insoluble in water, no toxicity is expected.

COPPER OXIDE (CAS: 1317-38-0)

Fish toxicity :	10 < LC50 <= 100 mg/l

Duration of exposure : 96 h

12.1.2. Mixtures

No aquatic toxicity data available for the mixture.

12.2. Persistence and degradability

Activated Carbon - HDS type is a refractory materail and not amenable to break down by any natural chemical or enzymatic processes.

AC - HDS cannot be rendered into a soluble form capable of being absorbed.

Therefore it cannot find its way to any cell site where it could be conceivably be biodegraded.

The substance has no log Kow, the substance size will impede passing membranes (particles with size > 0.5µm) and is not soluble in water. The bioaccumulation study is thus infeasible.

12.2.1. Substances

COPPER OXIDE (CAS: 1317-38-0)

Biodegradability :	no degradability data is available, the substance is considered as not degrading quickly.

12.3. Bioaccumulative potential

The substance has a very low potential to bioaccumulate in aquatic species (e.g. fish), i.e. a BCF < 10.

The substance has no log Kow, the substance size will impede passing membranes (particles with size > 0.5µm) and is not soluble in water. The bioaccumulation study is thus infeasible.

12.4. Mobility in soil

No data available, as the substance is insoluble.

12.5. Results of PBT and vPvB assessment

According to the ECHA Guidance on chemical safety assessment, Chapter R11, section R11.1.2.1: "The PBT and vPvB criteria of Annex XIII to the Regulation do not apply to inorganic substances". As Activated Carbon - HDS type is to be considered as an inorganic substance, the PBT assessment is not applicable.

12.6. Other adverse effects

Large quantities of Activated Carbon of HDS type in water may cause a pH increase.

SECTION 13 : DISPOSAL CONSIDERATIONS

Proper waste management of the mixture and/or its container must be determined in accordance with Directive 2008/98/EC.

13.1. Waste treatment methods

Do not pour into drains or waterways.

Waste :

Waste management is carried out without endangering human health, without harming the environment and, in particular without risk to water, air, soil, plants or animals.

Recycle or dispose of waste in compliance with current legislation, preferably via a certified collector or company.

Do not contaminate the ground or water with waste, do not dispose of waste into the environment.

Soiled packaging :

Empty container completely. Keep label(s) on container.

Give to a certified disposal contractor.

SECTION 14 : TRANSPORT INFORMATION

Transport product in compliance with provisions of the ADR for road, RID for rail, IMDG for sea and ICAO/IATA for air transport (ADR 2013 - IMDG 2012 - ICAO/IATA 2014).

14.1. UN number

1362

14.2. UN proper shipping name

UN1362=CARBON, ACTIVATED

14.3. Transport hazard class(es)

- Classification :

4.2

- Exemption

ADR/RID: special provision 646

IMDG: special provision 925

IATA: special provision A3

Steam activated carbon

Does not meet the defined criteria, after having been submitted to the 4.2 test (UN Manual of Tests and Criteria (§ 33.3.1.3.3))

14.4. Packing group

III

14.5. Environmental hazards

-

14.6. Special precautions for user

ADR/RID	Class	Code	Pack gr.	Label	Ident.	LQ	Provis.	EQ	Cat.	Tunnel
	4.2	S2	III	4.2	40	0	646	E1	4	E
IMDG	Class	2°Label	Pack gr.	LQ	EMS	Provis.	EQ			
	4.2	-	III	0	F-A,S-J	223 925	E1			
IATA	Class	2°Label	Pack gr.	Passager	Passager	Cargo	Cargo	note	EQ	
	4.2	-	III	472	0.5 kg	472	0.5 kg	A3	E1	
	4.2	-	III	Forbidden	Forbidden	-	-	A3	E1	

For limited quantities, see part 2.7 of the OACI/IATA and chapter 3.4 of the ADR and IMDG.

For excepted quantities, see part 2.6 of the OACI/IATA and chapter 3.5 of the ADR and IMDG.

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

No data available.

SECTION 15 : REGULATORY INFORMATION

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

- Classification and labelling information included in section 2:

The following regulations have been used:

- Directive 67/548/EEC and its adaptations
- Directive 1999/45/EC and its adaptations
- EU Regulation No. 1272/2008 amended by EU Regulation No. 487/2013.
- EU Regulation No. 1272/2008 amended by EU Regulation No. 758/2013.
- EU Regulation No. 1272/2008 amended by EU Regulation No. 944/2013.
- EU Regulation No. 1272/2008 amended by EU Regulation No. 605/2014.

- Container information:

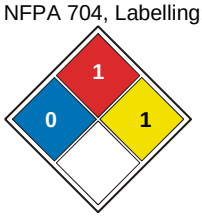
No data available.

- Particular provisions :

No data available.

- Standardised American system for the identification of hazards presented by the product in view of emergency procedures (NFPA 704) :

NFPA 704, Labelling: Health=0 Inflammability=1 Instability/Reactivity=1 Specific Risk=none



15.2. Chemical safety assessment

A chemical safety assessment according to the rules stipulated in REACH directive has been performed. The appendices provide an overview of the risk management measures as based on this assessment.

SECTION 16 : OTHER INFORMATION

Since the user's working conditions are not known by us, the information supplied on this safety data sheet is based on our current level of knowledge and on national and community regulations.

The mixture must not be used for other uses than those specified in section 1 without having first obtained written handling instructions.

It is at all times the responsibility of the user to take all necessary measures to comply with legal requirements and local regulations.

The information in this safety data sheet must be regarded as a description of the safety requirements relating to the mixture and not as a guarantee of the properties thereof.

In compliance with directives 67/548/EEC, 1999/45/EC and their amendments.

No labelling requirements for this mixture.

Title for H, EUH and R indications mentioned in section 3 :

H400	Very toxic to aquatic life.
H412	Harmful to aquatic life with long lasting effects.
R 50	Very toxic to aquatic organisms.

Abbreviations :

DNEL : Derived No-Effect Level
PNEC : Predicted No-Effect Concentration
ADR : European agreement concerning the international carriage of dangerous goods by Road.
IMDG : International Maritime Dangerous Goods.
IATA : International Air Transport Association.
ICAO : International Civil Aviation Organisation
RID : Regulations concerning the International carriage of Dangerous goods by rail.
WGK : Wassergefahrdungsklasse (Water Hazard Class).

SD20 Safety Data Sheet
Quicklime Range

Prepared in accordance with Annex II of the REACH Regulation EC 1907/2006,

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

Revision date: December 2022 **Printing Date: January 4, 2023**

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

1.1 Product identifier

Substance name:	Calcium oxide
Synonyms:	Lime, Burnt lime, Un-slaked lime, Building lime, Fat lime, Chemical lime, Fluxing lime, Hard burnt lime, Soft burnt lime, Pebble lime, Calcium oxide, Calcium monoxide, Quicklime, Calcined limestone.
Chemical name and formula:	Calcium oxide - CaO
Trade name:	Burnt Lime, Microlime®, Granulime®, Finelime®, Birch Biolime®, Biolime®, Microflo™
CAS:	1305-78-8
EINECS:	215-138-9
Molecular Weight:	56.08 g/mol
REACH Registration number:	01-2119475325-36-0061

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

Use of the substance: The substance is intended for the following non-exhaustive list of uses: Building material industry, Chemical industry, Agriculture, Biocidal use, Environmental protection (e.g. flue gas treatment, waste water treatment, sludge treatment), Drinking water treatment, Feed, food and pharmaceutical industry, Civil engineering, Paper and paint industry

1.2.1 Identified uses

All uses listed in table 1 of the Appendix of this SDS are identified uses.

1.2.2 Uses advised against

No use identified in Table 1 of the Appendix of this SDS is 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(s) responsible for the SDS:	ldownes@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) 1865 407333 (24Hr)
Emergency telephone Number at the company:	+44 (0) 1652 686000

Available outside office hours: Yes

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance

2.1.1 Classification according to Regulation (EC) 1272/2008

STOT Single Exp. 3, H335 Route of exposure: Inhalation
Skin Irritation 2, H315
Eye Damage 1, H318

2.1.2 Classification according to Directive 67/548/EEC

Xi – irritant: R37, R38, R41

2.1.3 Additional information

For full text of H-statements and R-phrases: see SECTION 16

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+P338:	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P302+P352:	IF ON SKIN: Wash with plenty of water
P310:	Immediately call a poison centre or doctor/physician
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.

2.3 Other hazards

The substance does not meet the criteria for PBT or vPvB substance.

No other hazards identified.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Main constituent

CAS number	EC number	Registration No	Identification name	Weight % content (or range)	Classification according to 67/548/EEC
1305-78-8	215-138-9	01-2119475325-36-0061	Calcium oxide	>90%	Xi: R37,R38, R41

CAS number	EC number	Registration No	Identification name	Weight % content (or range)	Classification according to Regulation (EC) No 1272/2008 [CLP]
1305-78-8	215-138-9	01-2119475325-36-0061	Calcium oxide	>90%	*Eye Dam 1 H318* *Skin Irrit. 2 H315* *STOT SE 3 (inhalation) H335*

SECTION 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 oxide 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.

4.3 Indication of any immediate medical attention and special treatment needed

Follow the advises given in section 4.1

SECTION 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. Avoid humidification.

5.2 Special hazards arising from the substance or mixture

Calcium oxide reacts with water and generates heat. This may cause risk to flammable material.

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.

SECTION 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).
Avoid humidification.

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).
Avoid humidification.

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.

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.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling

7.1.1 Protective measures

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

7.1.2 Advice on general occupational hygiene

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

7.2 Conditions for safe storage, including any incompatibilities

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

7.3 Specific end use(s)

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

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

DNEL's

	Workers			
Route of exposure	**Acute effect local**	**Acute effects systemic**	**Chronic effects local**	**Chronic effects systemic**
Oral	Not required			

Inhalation	4 mg / m³ (Respirable dust)	No hazard identified	1 mg / m³ (Respirable dust)	No hazard identified
Dermal	Hazard identified but no DNEL available	No hazard identified	Hazard identified but no DNEL available	No hazard identified

	Consumers			
Route of exposure	**Acute effect local**	**Acute effects systemic**	**Chronic effects local**	**Chronic effects systemic**
Oral	No exposure expected	No hazard identified	No exposure expected	No hazard identified
Inhalation	4 mg / m³ (Respirable dust)	No hazard identified	1 mg / m³ (Respirable dust)	No hazard identified
Dermal	Hazard identified but no DNEL available	No hazard identified	Hazard identified but no DNEL available	No hazard identified

PNEC's

Environment protection target	**PNEC**	**Remarks**
Fresh water	0.49 mg / L	
Freshwater sediments	No PNEC available	Insufficient data available
Marine water	0.32 mg / L	
Marine sediments	No PNEC available	Insufficient data available
Food (bioaccumulation)	No hazard identified	No potential for bioaccumulation
Microorganisms in sewage treatment	3 mg / L	
Soil (agricultural)	1080 mg / kg soil dw	
Air	No hazard identified	

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

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. Eyewash facilities should be readily available.

8.2.2.2 Skin protection

Since calcium oxide 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.

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.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance:	White or off white (beige) solid material of varying sizes: Lump, granular or fine powder
Odour:	odourless
Odour threshold:	not applicable
pH:	12.3 (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:	3.31 (study result, EU A.3 method)
Solubility in water:	1337.6 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:	not applicable
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

SECTION 10. STABILITY AND REACTIVITY
10.1 Reactivity
Calcium oxide reacts exothermically with water to form Calcium hydroxide.

10.2 Chemical stability
Under normal conditions of use and storage (dry conditions), calcium oxide is stable.

10.3 Possibility of hazardous reactions
Calcium oxide reacts exothermically with acids to form calcium salts.

10.4 Conditions to avoid
Minimise exposure to air and moisture to avoid degradation.

10.5 Incompatible materials
Calcium oxide reacts exothermically with water to form calcium dihydroxide:
$CaO + H_2O \rightarrow Ca(OH)_2 + 1155$ kJ/kg CaO
Calcium oxide reacts exothermically with acids to form calcium salts.
Calcium oxide reacts with aluminium and brass in the presence of moisture leading to the production of hydrogen: $CaO + 2\ Al + 7\ H_2O \rightarrow Ca(Al\ (OH)_4)_2 + 3\ H_2$

10.6 Hazardous decomposition products

None.

Further information: calcium oxide absorbs moisture and carbon dioxide from air to form calcium carbonate, which is a common material in nature.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

a. Acute toxicity

Oral	LD50 > 2000 mg/kg bw (OECD 425, rat)
Dermal	LD50 > 2500 mg/kg bw (OECD 402, rabbit); by read across these results are also applicable to calcium oxide, since in contact with moisture calcium hydroxide is formed.
Inhalation	no data available

Calcium oxide is not acutely toxic.

Classification for acute toxicity is not warranted.

b. Skin corrosion/irritation

Calcium oxide is irritating to skin (in vivo, rabbit).

Based on experimental results, calcium oxide requires classification as irritating to skin [R38, irritating to skin; Skin Irrit 2 (H315 – Causes skin irritation)].

c. Serious eye damage/irritation

Calcium oxide entails a risk of serious damage to the eye (eye irritation studies (in vivo, rabbit).

Based on experimental results, calcium hydroxide requires classification as severely irritating to the eye [R41, Risk of serious damage to eye; Eye Damage 1 (H318 - Causes serious eye damage)].

d. Respiratory or skin sensitisation

No data available. Calcium oxide 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.

e. Germ cell 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,CaO is obviously void of any genotoxic potential, including germ cell mutagenicity.

Classification for genotoxicity is not warranted.

f. Carcinogenicity

Calcium (administered as Ca-lactate) is not carcinogenic (experimental result, rat).

The pH effect of calcium hydroxide does not give rise to a carcinogenic risk.

Human epidemiological data support lack of any carcinogenic potential of calcium hydroxide.

Classification for carcinogenicity is not warranted.

g. Reproductive toxicity

Calcium (administered as Ca-carbonate) is not toxic to reproduction (experimental result, mouse). The pH effect does not give rise to a reproductive risk.
Human epidemiological data support lack of any potential for reproductive toxicity of calcium hydroxide.
Both in animal studies and human clinical studies on various calcium salts no reproductive or developmental effects were detected. Also see the Scientific Committee on Food (Section 16.6).
Thus, calcium hydroxide is not toxic for reproduction and/or development.
Classification for reproductive toxicity according to regulation (EC) 1272/2008 is not required.

h. STOT-single exposure

From human data it is concluded that CaO is irritating to the respiratory tract.
As summarised and evaluated in the SCOEL recommendation (Anonymous, 2008), based on human data calcium hydroxide is classified as irritating to the respiratory system [R37, Irritating to respiratory system; STOT SE 3 (H335 – May cause respiratory irritation)].

i. STOT-repeated exposure

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 CaO 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 CaO 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 CaO for toxicity upon prolonged exposure is not required.

j. Aspiration hazard

Calcium hydroxide is not known to present an aspiration hazard.

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity

12.1.1 Acute/Prolonged toxicity to fish

LC_{50} (96h) for freshwater fish: 50.6 mg/l (calcium hydroxide)
LC_{50} (96h) for marine water fish: 457 mg/l (calcium hydroxide)

12.1.2 Acute/Prolonged toxicity to aquatic invertebrates

EC_{50} (48h) for freshwater invertebrates: 49.1 mg/l (calcium hydroxide)
LC_{50} (96h) for marine water invertebrates: 158 mg/l (calcium hydroxide)

12.1.3 Acute/Prolonged toxicity to aquatic plants

EC_{50} (72h) for freshwater algae: 184.57 mg/l (calcium hydroxide)

NOEC (72h) for freshwater algae: 48 mg/l (calcium hydroxide)

12.1.4 Toxicity to micro-organisms e.g. bacteria
At high concentration, through the rise of temperature and pH, calcium oxide is used for disinfection of sewage sludges

12.1.5 Chronic toxicity to aquatic organisms
NOEC (14d) for marine water invertebrates: 32 mg/l (calcium hydroxide)

12.1.6 Toxicity to soil dwelling organisms
EC_{10}/LC_{10} or NOEC for soil macro organisms: 2000 mg/kg soil dw (calcium hydroxide)
EC_{10}/LC_{10} or NOEC for soil microorganisms: 12000 mg/kg soil dw (calcium hydroxide)

12.1.7 Toxicity to terrestrial plants
NOEC (21d) for terrestrial plants: 1080 mg/kg (calcium hydroxide)

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

12.1.9 Further information
The results by read across are also applicable to calcium oxide, since in contact with moisture calcium hydroxide is formed

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 oxide reacts with water and/or carbon dioxide to form respectively calcium dihydroxide and/or calcium carbonate, which are 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

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Disposal of calcium oxide 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.

SECTION 14. TRANSPORT INFORMATION

Calcium oxide is not classified as hazardous for transport [ADR (Road), RID (Rail), AND (inland waterways) and IMDG (Sea)]. Calcium oxide is, however, classified as hazardous for air transport (ICAO/IATA).

14.1 UN-Number

UN 1910

14.2 UN proper shipping name

Calcium oxide

14.3 Transport hazard class

Class 8 (ICAO/IATA)

14.4 Packing group

Group III (ICAO/IATA)

14.5 Environmental hazards

None

14.6 Special precautions for user

Avoid any release of dust during transportation, by using air-tight tanks for powders and covered trucks for pebbles.

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

Not regulated.

SECTION 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 oxide 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.

SECTION 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+P338:	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P302+P352:	IF ON SKIN: Wash with plenty of water
P310:	Immediately call a poison centre or doctor/physician
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/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

16.7 Revision

SDS revised in accordance with EULA SDS format
The word "SECTION" has been included in each chapter.
Section 1.2 Relevant identified uses of the substance and uses advised against amended.
Section 2.1.1 Classification of the substance – 'H' numbers added.
Section 2.1.2 Classification of the substance – 'R' numbers added.
Section 2.1.3 'Additional information' added.
Section 2.2.2 'Labelling according to Directive 67/548/EEC' removed.
Section 3.1 'Substances' tubulised.
Section 8, 8.1 Control parameters, DNEL's, Oral 'No exposure expected' changed to 'Not required'. Information tabulised.
Section 8, 8.2.2.1 Eye/Face protection - It is also advisable to have individual pocket eyewash.' replaced with 'Eyewash facilities should be readily available.'
Section 11, 11.1 Information on toxicological effects amended.
Section 14: TRANSPORT INFORMATION - 'Calcium oxide is not classified as hazardous for transport (ADR (Road), RID (Rail), IMDG / GGVSea (Sea).' replaced with 'Calcium oxide is not classified as hazardous for transport [ADR (Road), RID (Rail), AND (inland waterways) and IMDG (Sea)]. Calcium oxide is, however, classified as hazardous for air transport (ICAO/IATA).'.
Section 14.3 'Class 8. Calcium oxide is listed in IMDG (Amendment 34-08).' replaced with 'Class 8 (ICAO/IATA)'.
Section 14.4 'Group III (Air transport (ICAO/IATA))' replaced with 'Group III (ICAO/IATA)'.
Section 2.2.1 and 16.2 wording changed from….
Precautionary statements:
'P305+P351: IF IN EYES: Rinse cautiously with water for several minutes' replaced with 'P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.'

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.

Revision date: December 2022 Printing Date: January 4, 2023

ANNEX

Addition of exposure Scenarios as applicable -Please see Appendix SD20A SDS – Quicklime Range.