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

1.1 Product identifier

Commercial Product Name
SUPERFLOC C-496HMW

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

Use of the Substance/Mixture

Water treatment chemical

Recommended restrictions on use

-

1.3 Details of the supplier of the safety data sheet

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

1.4 Emergency telephone number

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

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

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

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

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

2.3 Other hazards

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

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

Chemical nature of the mixture: Cationic polyacrylamide.

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

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

Further information

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

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General advice

Show this safety data sheet to the doctor in attendance.

Inhalation

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

Skin contact

Wash off immediately with soap and plenty of water.

Eye contact

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

Ingestion

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

4.2 Most important symptoms and effects, both acute and delayed

Symptoms	:	No information available.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment	:	Symptomatic treatment.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

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

5.2 Special hazards arising from the substance or mixture

Dust can form an explosive mixture in air.

5.3 Advice for firefighters

Wear self-contained breathing apparatus and protective suit.

5.4 Specific methods

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

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

For personal protection see SDS section 8.

6.2 Environmental precautions

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

6.3 Methods and materials for containment and cleaning up

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

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

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

7.2 Conditions for safe storage, including any incompatibilities

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

Materials for packaging

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

Materials to avoid:

Strong oxidizing agents

Storage stability:

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

7.3 Specific end use(s)

Not listed

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Contains no substances with occupational exposure limit values.

PNEC : No data available

8.2 Exposure controls

8.2.1 Appropriate engineering controls

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

Ensure adequate ventilation.

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

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

Eye protection

Safety goggles

Skin and body protection

Protective clothing.

Respiratory protection

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

8.2.3 Environmental exposure controls

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

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

General Information (appearance, odour)

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

Important health safety and environmental information

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

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

9.2 Other data

Surface tension	Not applicable

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

No data available

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions : Hazardous polymerisation does not occur.

10.4 Conditions to avoid

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

10.5 Incompatible materials

Materials to avoid : Strong oxidizing agents

10.6 Hazardous decomposition products

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

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

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

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

Irritation and corrosion

Skin:
No skin irritation

Eyes:
No eye irritation

Sensitisation

Not sensitizing.

Long term toxicity

Repeated dose toxicity

Remarks: No data available

Carcinogenicity

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

Mutagenicity

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

Reproductive toxicity

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

STOT - single exposure

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

STOT - repeated exposure

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

Aspiration toxicity No aspiration toxicity classification

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity

–

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

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

Toxicity to other organisms

No data available

12.2 Persistence and degradability

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

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

12.3 Bioaccumulative potential

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

12.4.Mobility in soil

Mobility

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

12.5. Results of PBT and vPvB assessment

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

12.6 Other adverse effects

No information available.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

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

SECTION 14: TRANSPORT INFORMATION

14.1 UN number

Land transport

Not classified as dangerous in the meaning of transport regulations.

Sea transport

Not classified as dangerous in the meaning of transport regulations.

Air transport

Not classified as dangerous in the meaning of transport regulations.

14.8 Special precautions for user

None known.

SECTION 15: REGULATORY INFORMATION

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

Other regulations : None.

Notification status

:
: All components of this product are included in the European Inventory of Existing Chemical Substances (EINECS) or are not required to be listed on EINECS.
: All components of this product are included in the United States TSCA Chemical Inventory or are not required to be listed on the United States TSCA Chemical Inventory.
: All components of this product are included in the Canada Domestic Substance List (DSL) or are not required to be listed on the Canada Domestic Substance List (DSL).
: All components of this product are included in the Australian Inventory of Chemical Substances (AICS) or are not required to be listed on the Australian Inventory of Chemical Substances (AICS).
: All components of this product are included on the Chinese inventory or are not required to be listed on the Chinese inventory.
: All components of this product are included on the Japanese (ENCS) inventory or are not required to be listed on the Japanese (ENCS) inventory.
: All components of this product are included in the Korean

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

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

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

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

15.2 Chemical Safety Assessment

A Chemical Safety Assessment is not required for this mixture.

SECTION 16: OTHER INFORMATION

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

H319 Causes serious eye irritation.

H319 Causes serious eye irritation.

Training advice

Read the safety data sheet before using the product.

Further information

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

Sources of key data used to compile the Safety Data Sheet

Regulations, databases, literature, own tests.

Additions, Deletions, Revisions

Relevant changes have been marked with vertical lines.

SAFETY DATA SHEET

SUPERFLOC C-498

Ref. 2.0/GB/EN

Revision Date: 13.02.2015 Previous date: 08.05.2014 Print Date:17.03.2015

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

1.1 Product identifier

Commercial Product Name
SUPERFLOC C-498

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

Use of the Substance/Mixture

Flocculating agent.
Recommended restrictions on use
-

1.3 Details of the supplier of the safety data sheet

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

1.4 Emergency telephone number

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

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EU) 1272/2008(CLP)
Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.;
Classification according to EU Directives 67/548/EEC or 1999/45/EC
Not a hazardous substance or mixture according to EC-directives 67/548/EEC or 1999/45/EC.

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)	Classification according to EU Directives 67/548/EEC or 1999/45/EC
124-04-9 204-673-3 01-2119457561-38	Adipic acid	0 - 5 %	Eye Irrit. Category 2,H319	Xi ,R36
77-92-9 201-069-1 01-2119457026-42	Citric acid	0 - 9.9 %	Eye Irrit. Category 2,H319	Xi ,R36

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

Further information

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

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. In case of shortness of breath, give oxygen. If symptoms persist, call a physician.

Skin contact

Wash off with soap and plenty of water.

Eye contact

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

Ingestion

If swallowed, call a poison control centre or doctor immediately. 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.

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 can form an explosive mixture in air.

5.3 Advice for firefighters

Wear self-contained breathing apparatus and protective suit.

5.4 Specific methods

Avoid dust accumulation.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Product becomes slippery when it is wet.

6.2 Environmental precautions

Do not flush into surface water or sanitary sewer system.

6.3 Methods and materials for containment and cleaning up

Take up mechanically and collect into suitable containers for disposal. Flush with plenty of water. Do not let product enter drains.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid dust formation. Provide appropriate exhaust ventilation at places where dust is formed. In case of insufficient ventilation, wear suitable respiratory equipment. Sweep up to prevent slipping hazard.

7.2 Conditions for safe storage, including any incompatibilities

The product is hygroscopic. Keep in a dry place. Store at room temperature.

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

German storage class:

11 Combustible Solids

Storage stability:

Storage temperature	4 - 27 °C
Other data	Stable under recommended storage conditions.
Other data	Reason: integrity

7.3 Specific end use(s)

Not listed

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Contains no substances with occupational exposure limit values.

PNEC : No data available

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and immediately after handling the product. Do not breathe 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, Permeability tests are not available for this product.Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

Eye protection
Safety goggles
Skin and body protection
Protective clothing.

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

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

Important health safety and environmental information

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

Explosive properties:	
Lower explosion limit	No data available
Upper explosion limit	No data available
Vapour pressure	Not applicable
Relative vapour density	Not applicable
Bulk density	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
Oxidising	The substance or mixture is not classified as oxidizing.
Saturation in air (% vol.)	Not applicable
Volatile organic content (VOC)	Not applicable

9.2 Other data

Surface tension	Not applicable
Corrosion	

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 moisture.
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) hydrogen chloride (HCl) Nitrogen oxides (NOx)
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

Adipic acid:
LD50/Oral/Rat: > 5,000 mg/kg
LD50/Dermal/Rabbit: > 5,000 mg/kg

Citric acid:
LD50/Oral/Rat: 11,700 mg/kg

Irritation and corrosion

Skin:
No skin irritation

Eyes:
No eye irritation

Adipic acid:

Skin: No skin irritation

Eyes: Irritating to eyes.

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.

Citric acid:

Carcinogenicity
Oral/Rat/2 years:
Animal testing did not show any carcinogenic effects.

Reproductive toxicity
Oral/Rat:
Result: No impairment of fertility has been observed.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity

–

Remarks: This material is not classified as dangerous for the environment., The toxicological data has

been taken from products of similar composition., 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)/OECD Test Guideline 203: 1 - 10 mg/l
EC50/48 h/Daphnia magna (Water flea)/Immobilization/OECD Test Guideline 202: 10 - 100 mg/l
LC50/72 h/algae/Growth inhibition/OECD Test Guideline 201:
Due to the cationicity of the polymer, test is not appropriate.

Adipic acid:
LC50/96 h/Fish: > 100 mg/l
EC50/48 h/Daphnia (water flea): 85.6 mg/l
EC50/72 h/algae: 31.3 mg/l

Citric acid:
LC50/96 h/Carassius auratus (goldfish)/DIN 38412: 440 - 706 mg/l

Toxicity to other organisms

Citric acid:
/Bacteria/DIN 38412, part 5: > 10,000 mg/l

12.2 Persistence and degradability

Biological degradability:
Modified Sturm Test/OECD Test Guideline 301B/28 d:

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

Biological degradability:
Adipic acid:

Not readily biodegradable.

Citric acid:
/DIN 38412/2 d: 98 %

Readily biodegradable
Biochemical Oxygen Demand (BOD): 575 - 675 mg/g (5 d)
Chemical Oxygen Demand (COD): 700 - 800 mg/g

12.3 Bioaccumulative potential

The product is not expected to bioaccumulate. Because of the high molecular weight of the polymer diffusion through biological membranes is very small.
Partition coefficient: n-octanol/water: Not applicable

Adipic acid:

Does not bioaccumulate.
Partition coefficient: n-octanol/water: log Pow: 0.093

Citric acid:

Does not bioaccumulate.

12.4.Mobility in soil

Mobility

Water solubility: Limited by viscosity.
Surface tension: Not applicable
Adsorption and/or desorption: Strong adsorption to inorganic substances (e.g. clay ground, fine sand) and to leached organic carbon (e.g. humic acid of nature) restricts migration.

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 data available

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product	In accordance with local and national 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.

14.6 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 : Not listed

Notification status

:
: All components of this product are included in the European Inventory of Existing Chemical Substances (EINECS) or are not required to be listed on EINECS.
: All components of this product are included in the United States TSCA Chemical Inventory or are not required to be listed on the United States TSCA Chemical Inventory.
: All components of this product are included in the Canada Domestic Substance List (DSL) or are not required to be listed on the Canada Domestic Substance List (DSL).
: All components of this product are included in the Australian Inventory of Chemical Substances (AICS) or are not required to be listed on the Australian Inventory of Chemical Substances (AICS).
: All components of this product are included on the Chinese inventory or are not required to be listed on the Chinese inventory.
: All components of this product are included on the Japanese (ENCS) inventory or are not required to be listed on the Japanese (ENCS) inventory.
: All components of this product are included in the Korean (ECL) inventory or are not required to be listed on the Korean (ECL) inventory.
: All components of this product are included on the Philippine (PICCS) inventory or are not required to be listed on the Philippine (PICCS) inventory.
: All components of this product are NOT included on the New

Zealand Inventory of Chemical Substances.
: This product's Taiwan Toxic Chemical Substances Control Act Inventory status has NOT been determined.

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.

Text of R-phrases mentioned in Section 3

R36	Irritating to eyes.
R36	Irritating to eyes.

Training advice

Read the safety data sheet before using the product.

Further information

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

Sources of key data used to compile the Safety Data Sheet

Regulations, databases, literature, own tests.

Additions, Deletions, Revisions

Relevant changes have been marked with vertical lines.

Singleton Birch

ange

REACH Regulation EC 1907/2006,

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

1 IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY

1.1 Product identifier

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

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

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

Uses advise against:	There are no uses advised against.

1.3 Details of the supplier of the safety data sheet

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

1.4 Emergency telephone number

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

2 HAZARDS IDENTIFICATION

2.1 Classification of the substance

2.1.1 Classification according to Regulation (EC) 1272/2008

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

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

2.1.2 Classification according to Directive 67/548/EEC

Xi – irritant

2.2 Label elements

2.2.1 Labelling according to Regulation (EC) 1272/2008

Signal word: Danger

Hazard pictogram:

Hazard statements:

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

Precautionary statements:

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

2.2.2 Labelling according to Directive 67/548/EEC

Indication of danger: Xi irritant

Hazard pictogram:

Risk phrases:

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

Singleton Birch Limited.
Mellon Ross Quarries, Barnetby,
Tel: 01652 686000
Fax: 01652 686080
Registered Number 9433 England
Established 1815

Safety phrases:

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

2.3 Other hazards

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

3 COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Main constituent

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

Impurities

No impurities relevant for classification and labelling.

4 FIRST AID MEASURES

4.1 Description of first aid measures

General advice

No known delayed effects. Consult a physician for all exposures except for minor instances.

Following inhalation

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

Following skin contact

Carefully and gently brush the contaminated body surfaces in order to remove all traces of product. Wash affected area immediately with plenty of water. Remove contaminated clothing. If necessary seek medical advice.

Following eye contact

Rinse eyes immediately with plenty of water and seek medical advice.

Following ingestion

Clean mouth with water and drink afterwards plenty of water. Do **NOT** induce vomiting. Obtain medical attention.

4.2 Most important symptoms and effects, both acute and delayed

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

Singleton Birch Limited, Mellon Ross Quarries, Barnetby. Tel: 01652 686000 Fax: 01652 686080 Registered Number 9433 England Established 1815

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

5 FIREFIGHTING MEASURES

5.1 Extinguishing media

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

5.1.2 Unsuitable extinguishing media
Do not use water

5.2 Special hazards arising from the substance or mixture
None

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

6 ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

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

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

6.2 Environmental precautions
Contain the spillage. Keep the material dry if possible. Cover area if possible to avoid unnecessary dust hazard. Avoid uncontrolled spills to watercourses and drains (pH increase). Any large spillage into watercourses must be alerted to the Environment Agency or other regulatory body.

Singleton Birch Limited, Mellon Ross Quarries, Barnetby. Tel: 01652 686000 Fax: 01652 685080 Registered Number 9433 England Established 1815

6.3 Methods and material for containment and cleaning up

In all cases avoid dust formation.
Keep the material dry if possible.
Pick up the product mechanically in a dry way.
Use vacuum suction unit, or shovel into bags.

6.4 Reference to other sections

For more information on exposure controls/personal protection or disposal considerations, please check section 8 and 13 and the Annex of this safety data sheet.

7 HANDLING AND STORAGE

7.1 Precautions for safe handling

7.1.1 Protective measures

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

7.1.2 Advice on general occupational hygiene

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

7.2 Conditions for safe storage, including any incompatibilities

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

7.3 Specific end use(s)

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

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

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

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

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

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

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

PNEC aqua = 490 µg/l

PNEC soil/groundwater = 1080 mg/l

8.2 Exposure controls

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

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

8.2.1 Appropriate engineering controls

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

8.2.2 Individual protection measures, such as personal protective equipment

8.2.2.1 Eye/face protection

Do not wear contact lenses. For powders, tight fitting goggles with side shields, or wide vision full goggles. It is also advisable to have individual pocket eyewash.

8.2.2.2 Skin protection

Since calcium dihydroxide is classified as irritating to skin, dermal exposure has to be minimised as far as technically feasible. The use of protective gloves (nitrile), protective standard working clothes fully covering skin, full length trousers, long sleeved overalls, with close fittings at openings and shoes resistant to caustics and avoiding dust penetration are required to be worn.

8.2.2.3 Respiratory protection

Local ventilation to keep levels below established threshold values is recommended. A suitable particle filter mask is recommended, depending on the expected exposure levels - please check the relevant exposure scenario, given in the Appendix/available via your supplier.

8.2.2.4 Thermal hazards

The substance does not represent a thermal hazard, thus special consideration is not required.

Singleton Birch Limited, Mellon Ross Quarries, Barnetby. Tel: 01652 686000 Fax: 01652 686080 Registered Number 9433 England Established 1815

8.2.3 Environmental exposure controls

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

9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

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

9.2 Other information

Not available

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

10 STABILITY AND REACTIVITY

10.1 Reactivity

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

10.2 Chemical stability

Under normal conditions of use and storage, calcium dihydroxide is stable.

10.3 Possibility of hazardous reactions

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

10.4 Conditions to avoid

Minimise exposure to air and moisture to avoid degradation.

10.5 Incompatible materials

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

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

10.6 Hazardous decomposition products

None

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

11 TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

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

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

Singleton Birch Limited.
Mellon Ross Quarries, Barnetby,
Tel: 01652 686000
Fax: 01652 686080
Registered Number 9433 England
Established 1815

Toxicity endpoints	Outcome of the effects assessment
Acute toxicity	Calcium dihydroxide is not acutely toxic. Oral LD_{50}> 2000 mg/kg bw (OECD 425, rat) Dermal LD_{50}> 2500 mg/kg bw (calcium dihydroxide, OECD 402, rabbit) Inhalation no data available Classification for acute toxicity is not warranted. For irritating effects to the respiratory tract see below.
Irritation / corrosion	Eye Irritation: Calcium dihydroxide entails a risk of serious damage to the eye (eye irritation studies (*in vivo*, rabbit). Skin Irritation: Calcium dihydroxide is irritating to skin (*in vivo*, rabbit). Respiratory Irritation: From human data it is concluded that $Ca(OH)_2$ is irritating to the respiratory tract. Based on experimental results, calcium dihydroxide requires classification as irritating to skin [R38, irritating to skin; Skin Irrit 2 (H315 – Causes skin irritation)] and as severely irritating to the eye [R41, Risk of serious damage to eye; Eye Damage 1 (H318 - Causes serious eye damage)]. As summarised and evaluated in the SCOEL recommendation (Anonymous, 2008), based on human data calcium dihydroxide is classified as irritating to the respiratory system [R37, Irritating to respiratory system; STOT SE 3 (H335 – May cause respiratory irritation)].
Sensitisation	No data available. Calcium dihydroxide is considered not to be a skin sensitiser, based on the nature of the effect (pH shift) and the essential requirement of calcium for human nutrition. Classification for sensitisation is not warranted.
Repeated dose toxicity	Toxicity of calcium via the oral route is addressed by upper intake levels (UL) for adults determined by the Scientific Committee on Food (SCF), being UL = 2500 mg/d, corresponding to 36 mg/kg bw/d (70 kg person) for calcium. Toxicity of $Ca(OH)_2$ via the dermal route is not considered as relevant in view of the anticipated insignificant absorption through skin and due to local irritation as the primary health effect (pH shift). Toxicity of $Ca(OH)_2$ via inhalation (local effect, irritation of mucous membranes) is addressed by an 8-h TWA determined by the Scientific Committee on Occupational Exposure Limits (SCOEL) of 1 mg/m³ respirable dust (see Section 8.1). Therefore, classification of $Ca(OH)_2$ for toxicity upon prolonged exposure is not required.
Mutagenicity	Bacterial reverse mutation assay (Ames test, OECD 471): Negative In view of the omnipresence and essentiality of Ca and of the physiological non-relevance of any pH shift induced by lime in aqueous media, lime is obviously void of any genotoxic potential. Classification for genotoxicity is not warranted.

Singleton Birch Limited, Melton Ross Quarries, Barnetby. Tel: 01652 686000 Fax: 01652 686280 Registered Number 9433 England Established 1815

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

12 ECOLOGICAL INFORMATION

12.1 Toxicity

12.1.1 Acute/Prolonged toxicity to fish

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

12.1.2 Acute/Prolonged toxicity to aquatic invertebrates

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

12.1.3 Acute/Prolonged toxicity to aquatic plants

EC_{50} (72h) for freshwater algae: 184.57 mg/l
NOEC (72h) for freshwater algae: 48 mg/l

12.1.4 Toxicity to micro-organisms e.g. bacteria

At high concentration, through the rise of temperature and pH, calcium dihydroxide is used for disinfection of sewage sludges

12.1.5 Chronic toxicity to aquatic organisms

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

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

12.1.6 Toxicity to soil dwelling organisms
EC_{10}/LC_{10} or NOEC for soil macro organisms: 2000 mg/kg soil dw
EC_{10}/LC_{10} or NOEC for soil micro organisms: 12000 mg/kg soil dw

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

12.1.8 General effect
Acute pH-effect. Although this product is useful to correct water acidity, an excess of more than 1 g/l may be harmful to aquatic life. pH-value of > 12 will rapidly decrease as result of dilution and carbonation

12.2 Persistence and degradability
Not relevant for inorganic substances

12.3 Bioaccumulative potential
Not relevant for inorganic substances

12.4 Mobility in soil
Calcium dihydroxide which is sparingly soluble, and present a low mobility in most soils

12.5 Results of PBT and vPvB assessment
Not relevant for inorganic substances

12.6 Other adverse effects
No other adverse effects are identified

13 DISPOSAL CONSIDERATIONS

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

14 TRANSPORT INFORMATION

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

14.1 UN-Number
Not regulated

Singleton Birch Limited, Mellon Ross Quarries, Barnetby. Tel: 01652 686000 Fax: 01652 686080 Registered Number 9433 England Established 1815

14.2 UN proper shipping name
Not regulated

14.3 Transport hazard class
Not regulated

14.4 Packing group
Not regulated

14.5 Environmental hazards
None

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

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
Not regulated.

15 REGULATORY INFORMATION

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

Authorisations:	Not required
Restrictions on use:	None
Other EU regulations:	Calcium dihydroxide is not a SEVESO substance, not an ozone depleting substance and not a persistent organic pollutant.
National regulations:	Water endangering class 1 (Germany)

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

16 OTHER INFORMATION

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

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

16.2 Precautionary Statements

P102:	Keep out of reach of children
P280:	Wear protective gloves/protective clothing/eye protection/face protection
P305+P351:	IF IN EYES: Rinse cautiously with water for several minutes
P310:	Immediately call a POISON CENTRE or doctor/physician

Singleton Birch Limited, Mellon Ross Quarries, Barnetby. Tel: 01652 686000 Fax: 01652 686080 Registered Number 9433 England Established 1815

P302+P352: IF ON SKIN: Wash with plenty of soap and water
P261: Avoid breathing dust/fume/gas/mist/vapours/spray
P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P501: Dispose of contents/container in accordance with local/regional/national/international regulation - use a registered hazardous waste carrier/licence holder, and/or contact the manufacturer

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

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

16.5 Abbreviations
EC_{50}: median effective concentration
LC_{50}: median lethal concentration
LD_{50}: median lethal dose
NOEC: no observable effect concentration
WEL: workplace exposure limit
OEL: occupational exposure limit
PBT: persistent, bioaccumulative, toxic chemical
PNEC: predicted no-effect concentration
STEL: short-term exposure limit
TWA: time weighted average
vPvB: very persistent, very bioaccumulative chemical
EULA: European Lime Association

16.6 Key literature references
Anonymous, 2006: Tolerable upper intake levels for vitamins and minerals Scientific Committee on Food, European Food Safety Authority, ISBN: 92-9199-014-0 [SCF document]
Anonymous, 2008: Recommendation from the Scientific Committee on Occupational Exposure Limits (SCOEL) for calcium oxide (CaO) and calcium dihydroxide ($Ca(OH)_2$), European Commission, DG Employment, Social Affairs and Equal Opportunities, SCOEL/SUM/137 February 2008

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

16.7 Revision

SDS revised in accordance with EULA SDS format

Disclaimer

This safety data sheet (SDS) is based on the legal provisions of the REACH Regulation (EC 1907/2006; article 31 and Annex II), as amended. Its contents are intended as a guide to the appropriate precautionary handling of the material. It is the responsibility of recipients of this SDS to ensure that the information contained therein is properly read and understood by all people who may use, handle, dispose or in any way come in contact with the product. Information and instructions provided in this SDS are based on the current state of scientific and technical knowledge at the date of issue indicated. It should not be construed as any guarantee of technical performance, suitability for particular applications, and does not establish a legally valid contractual relationship. This version of the SDS supersedes all previous versions.

ANNEX

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

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

Safety Data Sheet

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

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

1.1. Product identifier

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

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

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

1.3. Details of the supplier of the safety data sheet

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

1.4. Emergency telephone number

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

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

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

2.2. Label elements

DANGER

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

2.3. Other hazards

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

SECTION 3: Composition/information on ingredients

3.1. Substances

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

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

Total Sulphur: < 0.1 wt%

SECTION 4: First aid measures

4.1. Description of first aid measures

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

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

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

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

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

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

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

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

SECTION 5: Firefighting measures

5.1. Extinguishing media

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

5.2. Special hazards arising from the substance or mixture

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

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

5.3. Special protective actions for fire-fighters

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

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

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

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

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

6.2. Environmental precautions

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

6.3. Methods and material for containment and cleaning up

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

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

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharge. Use non-sparking tools. Do not breathe vapour or mist. Use only outdoors or in a well-ventilated area. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use good personal hygiene practices and wear appropriate personal protective equipment (see section 8).

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

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

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

oxygen levels.

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

7.2. Conditions for safe storage, including any incompatibilities

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

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

7.3. Specific end use(s)

Refer to supplemental exposure scenarios if attached.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational Exposure Limits:

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

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

Biological Limit Values:

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

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

Relevant DNEL and PNEC:

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

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

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

8.2. Exposure controls

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

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

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

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

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

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

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

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

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

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

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

9.2. Other information

Other information

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

SECTION 10: Stability and reactivity

10.1. Reactivity Not chemically reactive.

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

10.3. Possibility of hazardous reactions Hazardous reactions not anticipated.

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

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

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

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Substance / Mixture

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

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

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

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

Serious Eye Damage/Irritation: Causes mild eye irritation.

Skin Sensitisation: Not expected to be a skin sensitizer.

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

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

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

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

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

11.2 Information on Hazardous Components

Fuels, diesel

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

Kerosine, petroleum

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

Naphthalene

Carcinogenicity: Naphthalene has been evaluated in two year inhalation studies in both rats and mice. The US National Toxicology Programme (NTP) concluded that there is clear evidence of carcinogenicity in male and female rats based on increased incidences of respiratory epithelial adenomas and olfactory epithelial neuroblastomas of the nose. NTP found some evidence of carcinogenicity in female mice (alveolar adenomas) and no evidence of carcinogenicity in male mice. Naphthalene has been identified as a carcinogen by IARC and NTP.

SECTION 12: Ecological information

12.1. Toxicity

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

12.2. Persistence and degradability

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

Persistence per IOPC Fund definition: Non-Persistent

12.3. Bioaccumulative potential

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

12.4. Mobility in soil

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

12.5. Results of PBT and vPvB assessment

Not a PBT or vPvB substance.

12.6. Other adverse effects

None anticipated.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

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

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

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

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

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

SECTION 14: Transport information

14.1. UN number
UN1202

14.2. UN proper shipping name
Diesel fuel

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

14.4. Packing group
III

14.5. Environmental hazards
Marine pollutant - Environmentally Hazardous

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

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

SECTION 15: Regulatory information

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

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

Export Rating: NLR (No Licence Required)

15.2. Chemical safety assessment

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

SECTION 16: Other information

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

List of Relevant Hazard Statements:
H226 - Flammable liquid and vapour
H302 - Harmful if swallowed
H304 - May be fatal if swallowed and enters airways
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H332 - Harmful if inhaled
H336 - May cause drowsiness or dizziness
H340 - May cause genetic defects
H351 - Suspected of causing cancer
H373 - May cause damage to organs through prolonged or repeated exposure
H400 - Very toxic to aquatic life
H410 - Very toxic to aquatic life with long lasting effects
H411 - Toxic to aquatic life with long lasting effects

Regulatory Basis of Classification

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

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

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

1. Manufacture of substance - Industrial

Section 1 Exposure Scenario Vacuum or Hydrocracked Gas Oils and Distillate Fuels	
Title	Manufacture of substance
Use Descriptor	
Sector(s) of use	3, 8, 9
Process category(ies)	1, 2, 3, 4, 8a, 8b, 15
Environmental release category(ies)	1, 4
Specific Environmental Release Category	ESVOC SpERC 1.1.v1
Processes, tasks, activities covered	
Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.	
Section 2 Operational conditions and risk management measures	
2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other operational conditions affecting exposure	Operation is carried out at elevated temperature (>20°C above ambient temperature). Assumes a good basic standard of occupational hygiene is implemented.

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

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

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

2.2 Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	2.8e7
Fraction of regional tonnage used locally	0.021

Frequency and duration of use
Continuous release.

Emission days (days/year)	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other operational conditions of use affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	1.0e-2
Release fraction to wastewater from process (initial release prior to RMM)	3.0e-5
Release fraction to soil from process (initial release prior to RMM)	0.0001

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

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

Treat air emission to provide a typical removal efficiency of (%):	90
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency >= (%):	90.3
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%):	0

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

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%):	94.1
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94.1
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (kg/d):	3.3e6
Assumed domestic sewage treatment plant flow (m^3/d):	10000

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

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

Section 3 Exposure Estimation

3.1 Health

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

2. Use of substance as an intermediate - Industrial

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

Contributing Scenarios / Product Category	**Specific Risk Management Measures & Operating Conditions**
General measures applicable to all activities	Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance.Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to

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

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

2.2 Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	3.5e5
Fraction of regional tonnage used locally	0.043

Frequency and duration of use
Continuous release.

Emission days (days/year)	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other operational conditions of use affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	1.0e-3
Release fraction to wastewater from process (initial release prior to RMM)	3.0e-5
Release fraction to soil from process (initial release prior to RMM)	0.001

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

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

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

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

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%):	94.1
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment	94.1

plant) RMMs (%):	
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (kg/d):	4.1e5
Assumed domestic sewage treatment plant flow (m³/d):	2000
Conditions and measures related to external treatment of waste for disposal	
This substance is consumed during use and no waste of the substance is generated.	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of the substance is generated.	
Section 3 Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Available hazard data does not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterization.	
4.2 Environment	
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (https://cefic.org/app/uploads/2019/01/SPERCs-Specific-Envirnonmental-Release-Classes-REACHImpl-ES-CSA-CSR.pdf).	

3. Distribution of substance - Industrial

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

Contributing Scenarios / Product Category	**Specific Risk Management Measures & Operating Conditions**
General measures applicable to all activities	Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance.Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to

	minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
General exposures (closed systems)	Handle substance within a closed system
General exposures (open systems)	Wear suitable gloves tested to EN374.
Process sampling	No other specific measures identified
Laboratory activities	No other specific measures identified
bulk closed loading and unloading	Handle substance within a closed system Wear suitable gloves tested to EN374.
bulk open loading and unloading	Wear suitable gloves tested to EN374.
Drum and small package filling	Wear suitable gloves tested to EN374.
Equipment cleaning and maintenance	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Storage	Store substance within a closed system

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

2.2 Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	2.8e7
Fraction of regional tonnage used locally	0.002

Frequency and duration of use
Continuous release.

Emission days (days/year)	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other operational conditions of use affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	1.0e-3
Release fraction to wastewater from process (initial release prior to RMM)	1.0e-6
Release fraction to soil from process (initial release prior to RMM)	0.00001

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

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

Treat air emission to provide a typical removal efficiency of (%):	90
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency >= (%):	9.6

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%):	0
Organisation measures to prevent/limit release from site Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%):	94.1
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94.1
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (kg/d):	4.1e5
Assumed domestic sewage treatment plant flow (m^3/d):	2000
Conditions and measures related to external treatment of waste for disposal	
This substance is consumed during use and no waste of the substance is generated.	
Conditions and measures related to external recovery of waste	
This substance is consumed during use and no waste of the substance is generated.	
Section 3 Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Available hazard data does not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterization.	
4.2 Environment	
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (https://cefic.org/app/uploads/2019/01/SPERCs-Specific-Envirnonmental-Release-Classes-REACHImpl-ES-CSA-CSR.pdf).	

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

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

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

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

2.2 Control of environmental exposure

Product characteristics

Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	2.8e7
Fraction of regional tonnage used locally	0.0011

Frequency and duration of use

Continuous release.	
Emission days (days/year)	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other operational conditions of use affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	1.0e-2
Release fraction to wastewater from process (initial release prior to RMM)	2.0e-5
Release fraction to soil from process (initial release prior to RMM)	0.0001
Technical conditions and measures at process level (source) to prevent release Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Risk from environmental exposure is driven by freshwater sediment. Prevent discharge of undissolved substance to or recover from onsite wastewater.	
Treat air emission to provide a typical removal efficiency of (%):	0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency >= (%):	60.0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%):	0
Organisation measures to prevent/limit release from site Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%):	91.1
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94.1
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (kg/d):	6.8e5
Assumed domestic sewage treatment plant flow (m^3/d):	2000
Conditions and measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Section 3 Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Available hazard data does not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterization.	
4.2 Environment	
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (https://cefic.org/app/uploads/2019/01/SPERCs-Specific-Envirnonmental-Release-Classes-REACHImpl-ES-CSA-CSR.pdf).	

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

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

Environmental release category(ies)	4
Specific Environmental Release Category	ESVOC SpERC 4.7a.v1
Processes, tasks, activities covered	
Covers the use in formulated MWFs/rolling oils including transfer operations, rolling and annealing activities, cutting/machining activities, automated and manual application of corrosion protections (including brushing, dipping and spraying), equipment maintenance, draining and disposal of waste oils.	
Section 2 Operational conditions and risk management measures	
2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other operational conditions affecting exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios / Product Category	**Specific Risk Management Measures & Operating Conditions**
General measures applicable to all activities	Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance.Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
General exposures (closed systems)	Handle substance within a closed system
General exposures (open systems)	Provide extract ventilation to points where emissions occur
Bulk transfers	Handle substance within a closed system Wear suitable gloves tested to EN374.
Filling / preparation of equipment from drums or containers	Wear suitable gloves tested to EN374.
Process sampling	No other specific measures identified
Metal machining operations	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.
Treatment by dipping and pouring	Wear suitable gloves tested to EN374.
Spraying	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) Wear suitable gloves (tested to EN374), coverall and eye protection.
Manual Roller, spreader, flow application	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Automated metal rolling/forming	Handle substance within a predominantly closed system provided with extract ventilation
Semi-automated metal rolling/forming	Provide extract ventilation to points where emissions occur
Equipment cleaning and maintenance	Drain down and flush system prior to equipment break-in or maintenance Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.
Storage	Store substance within a closed system

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

2.2 Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	1.0e4
Fraction of regional tonnage used locally	0.01

Frequency and duration of use
Continuous release.

Emission days (days/year)	20
Environmental factors not influenced by risk management	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other operational conditions of use affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	0.02
Release fraction to wastewater from process (initial release prior to RMM)	3.0e-6
Release fraction to soil from process (initial release prior to RMM)	0

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

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

Treat air emission to provide a typical removal efficiency of (%):	70
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency >= (%):	8.3
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%):	0

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

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%):	94.1
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94.1
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (kg/d):	7.8e4
Assumed domestic sewage treatment plant flow (m^3/d):	2000

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

Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations.

Section 3 Exposure Estimation

3.1 Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Section 4 Guidance to check compliance with the Exposure Scenario

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

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

Section 1 Exposure Scenario Vacuum or Hydrocracked Gas Oils and Distillate Fuels	
Title	Use as binders and release agents
Use Descriptor	
Sector(s) of use	3
Process category(ies)	1, 2, 3, 4, 6, 7, 8b, 10, 13, 14
Environmental release category(ies)	4
Specific Environmental Release Category	ESVOC SpERC 4.10a.v1
Processes, tasks, activities covered	
Covers the use as binders and release agents including material transfers, mixing, application (including spraying and brushing), mold forming and casting, and handling of waste.	
Section 2 Operational conditions and risk management measures	
2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other operational conditions affecting exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios / Product Category	**Specific Risk Management Measures & Operating Conditions**
General measures applicable to all activities	Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance.Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are

	likely to lead to substantial aerosol release, e.g. spraying
Bulk transfers	Handle substance within a closed system
Drum/batch transfers	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Mixing operations (closed systems)	No other specific measures identified
Mixing operations (open systems)	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Mould forming	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Casting operations (open systems)	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Wear suitable gloves tested to EN374.
Machine Spraying	Minimise exposure by extracted full enclosure for the operation or equipment. Wear suitable gloves tested to EN374.
Manual Spraying	Wear a full face respirator conforming to EN140 with Type A/P2 filter or better. Wear suitable gloves (tested to EN374), coverall and eye protection. Ensure operatives are trained to minimise exposures.
Manual Roller, spreader, flow application	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Equipment cleaning and maintenance	Drain down system prior to equipment break-in or maintenance Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Storage	Store substance within a closed system

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

2.2 Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	1.4e4
Fraction of regional tonnage used locally	0.18

Frequency and duration of use
Continuous release.

Emission days (days/year)	100
Environmental factors not influenced by risk management	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other operational conditions of use affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	1.0
Release fraction to wastewater from process (initial release prior to RMM)	3.0e-7
Release fraction to soil from process (initial release prior to RMM)	0

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

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

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

efficiency >= (%):	
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%):	0
Organisation measures to prevent/limit release from site Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%):	94.1
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94.1
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (kg/d):	1.7e5
Assumed domestic sewage treatment plant flow (m³/d):	2000
Conditions and measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Section 3 Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Available hazard data does not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterization.	
4.2 Environment	
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (https://cefic.org/app/uploads/2019/01/SPERCs-Specific-Envirnonmental-Release-Classes-REACHImpl-ES-CSA-CSR.pdf).	

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

Section 1 Exposure Scenario Vacuum or Hydrocracked Gas Oils and Distillate Fuels	
Title	Use as binders and release agents
Use Descriptor	
Sector(s) of use	22
Process category(ies)	1, 2, 3, 4, 6, 8a, 8b, 10, 11, 14
Environmental release category(ies)	8a, 8d
Specific Environmental Release Category	ESVOC SpERC 8.10b.v1
Processes, tasks, activities covered	
Covers the use as binders and release agents including material transfers, mixing, application by spraying, brushing, and handling of waste.	
Section 2 Operational conditions and risk management measures	
2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other operational conditions affecting exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios / Product Category	Specific Risk Management Measures & Operating Conditions
General measures applicable to all activities	Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance.Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying
Material transfers (closed systems)	No other specific measures identified
Drum/batch transfers	Wear suitable gloves tested to EN374.
Mixing operations (closed systems)	No other specific measures identified
Mixing operations (open systems)	Wear suitable gloves tested to EN374.
Mould forming	Provide extract ventilation to points where emissions occur Wear suitable gloves tested to EN374.
Casting operations with local exhaust ventilation	Provide extract ventilation to points where emissions occur Wear suitable gloves tested to EN374.
Casting operations without local exhaust ventilation	Wear a respirator conforming to EN140 with Type A/P2 filter or better. Wear suitable gloves (tested to EN374), coverall and eye protection.
Spraying Manual without local exhaust ventilation	Carry out in a vented booth or extracted enclosure Wear suitable gloves (tested to EN374), coverall and eye protection. Ensure operatives are trained to minimise exposures.
Spraying Manual without local exhaust ventilation	Wear a full face respirator conforming to EN140 with Type A/P2 filter or better. Wear suitable gloves (tested to EN374), coverall and eye protection. Ensure operatives are trained to minimise exposures.
Manual Roller, spreader, flow application	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Equipment cleaning and maintenance	Drain down system prior to equipment break-in or maintenance Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.
Storage	Store substance within a closed system
Vacuum or Hydrocracked Gas Oils and Distillate Fuels exhibits acute inhalation toxicity and is classified R20 (Harmful by inhalation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary / additional RMMs. Vacuum or Hydrocracked Gas Oils and Distillate Fuels exhibits irritation to the skin and is classified R38 (Irritating to skin) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary RMMs. Vacuum or Hydrocracked Gas Oils and Distillate Fuels is classified R65 (Harmful: may cause lung damage if swallowed). The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from this adverse effect. There is limited evidence of carcinogenic effects in Vacuum or Hydrocracked Gas Oils and Distillate Fuels and it is classified R40 (May cause cancer) accordingly. The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aim to define the appropriate RMMs necessary to	

protect from these adverse effects.	
2.2 Control of environmental exposure	
Product characteristics Substance is complex UVCB. Predominantly hydrophobic.	
Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	2.9e3
Fraction of regional tonnage used locally	0.0005
Frequency and duration of use Continuous release.	
Emission days (days/year)	365
Environmental factors not influenced by risk management	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other operational conditions of use affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	0.95
Release fraction to wastewater from process (initial release prior to RMM)	0.025
Release fraction to soil from process (initial release prior to RMM)	0.025
Technical conditions and measures at process level (source) to prevent release Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Risk from environmental exposure is driven by freshwater sediment. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%):	N/A
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency >= (%):	8.3
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%):	0
Organisation measures to prevent/limit release from site Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%):	94.1
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94.1
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (kg/d):	6.2e1
Assumed domestic sewage treatment plant flow (m^3/d):	2000
Conditions and measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or national regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Section 3 Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Available hazard data does not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterization.	
4.2 Environment	
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet (https://cefic.org/app/uploads/2019/01/SPERCs-Specific-Envirnonmental-Release-Classes-REACHImpl-ES-CSA-CSR.pdf).	

8. Use of substance as a Fuel - Industrial

Section 1 Exposure Scenario Vacuum or Hydrocracked Gas Oils and Distillate Fuels	
Title	Use as a fuel
Use Descriptor	
Sector(s) of use	3
Process category(ies)	1, 2, 3, 8a, 8b, 16
Environmental release category(ies)	7
Specific Environmental Release Category	ESVOC SpERC 7.12a.v1
Processes, tasks, activities covered	
Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.	
Section 2 Operational conditions and risk management measures	
2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other operational conditions affecting exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios / Product Category	**Specific Risk Management Measures & Operating Conditions**
General measures applicable to all activities	Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance.Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
Bulk transfers	Wear suitable gloves tested to EN374.
Drum/batch transfers	Wear suitable gloves tested to EN374.
Use as a fuel (closed systems)	No other specific measures identified
Equipment cleaning and maintenance	Drain down system prior to equipment break-in or maintenance Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.
Storage	Store substance within a closed system

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

Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from this adverse effect. There is limited evidence of carcinogenic effects in Vacuum or Hydrocracked Gas Oils and Distillate Fuels and it is classified R40 (May cause cancer) accordingly. The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aim to define the appropriate RMMs necessary to protect from these adverse effects.	
2.2 Control of environmental exposure	
Product characteristics Substance is complex UVCB. Predominantly hydrophobic.	
Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	4.5e6
Fraction of regional tonnage used locally	0.34
Frequency and duration of use Continuous release.	
Emission days (days/year)	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other operational conditions of use affecting environmental exposure	
Release fraction to air from process (initial release prior to RMM)	5.0e-3
Release fraction to wastewater from process (initial release prior to RMM)	0.00001
Release fraction to soil from process (initial release prior to RMM)	0
Technical conditions and measures at process level (source) to prevent release Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Risk from environmental exposure is driven by freshwater sediment. If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%):	95
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency >= (%):	97.7
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%):	60.4
Organisation measures to prevent/limit release from site Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%):	94.1
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	97.7
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (kg/d):	5.5e6
Assumed domestic sewage treatment plant flow (m^3/d):	2000
Conditions and measures related to external treatment of waste for disposal	
Combustion emissions considered in regional exposure assessment.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Section 3 Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Available hazard data does not enable the derivation of a DNEL for dermal irritant effects. Available hazard data does not support the need for a DNEL to be established for other health effects. Risk management measures are based on qualitative risk characterization.	
4.2 Environment	
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to	

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

9. Use of substance as a Fuel - Professional

Section 1 Exposure Scenario Vacuum or Hydrocracked Gas Oils and Distillate Fuels	
Title	Use as a fuel
Use Descriptor	
Sector(s) of use	22
Process category(ies)	1, 2, 3, 8a, 8b, 16
Environmental release category(ies)	9a, 9b
Specific Environmental Release Category	ESVOC SpERC 9.12b.v1
Processes, tasks, activities covered	
Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.	
Section 2 Operational conditions and risk management measures	
2.1 Control of worker exposure	
Product characteristics	
Physical form of product	Liquid, vapour pressure < 0.5 kPa at STP
Concentration of substance in product	Covers percentage substance in the product up to 100 % (unless stated differently).
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other operational conditions affecting exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently. Assumes a good basic standard of occupational hygiene is implemented.

Contributing Scenarios / Product Category	**Specific Risk Management Measures & Operating Conditions**
General measures applicable to all activities	Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance.Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; ensure suitable personal protective equipment is available; clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
General measures (skin irritants)	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
Bulk transfers	Wear suitable gloves tested to EN374.
Drum/batch transfers	Use drum pumps or carefully pour from container Wear suitable gloves tested to EN374.
Refuelling	Wear suitable gloves tested to EN374.
Use as a fuel (closed systems)	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) or Ensure operation is undertaken outdoors
Equipment cleaning and maintenance	Drain down system prior to equipment break-in or maintenance Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training.

Storage	Store substance within a closed system

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

2.2 Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	6.7e6
Fraction of regional tonnage used locally	0.0005

Frequency and duration of use
Continuous release.

Emission days (days/year)	365

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Other operational conditions of use affecting environmental exposure

Release fraction to air from process (initial release prior to RMM)	1.0e-4
Release fraction to wastewater from process (initial release prior to RMM)	0.00001
Release fraction to soil from process (initial release prior to RMM)	0.00001

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

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

Treat air emission to provide a typical removal efficiency of (%):	N/A
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency >= (%):	8.3
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >= (%):	0

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

Conditions and measures related to municipal sewage treatment plant

Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%):	94.1
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (kg/d):	1.4e5
Assumed domestic sewage treatment plant flow (m^3/d):	2000

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

Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations.

Section 3 Exposure Estimation

3.1 Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

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

10. Use of substance as a Fuel - Consumer

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

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

	stated
Vacuum or Hydrocracked Gas Oils and Distillate Fuels exhibits acute inhalation toxicity and is classified R20 (Harmful by inhalation) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary / additional RMMs. Vacuum or Hydrocracked Gas Oils and Distillate Fuels exhibits irritation to the skin and is classified R38 (Irritating to skin) accordingly. The available data for this adverse effect do not provide quantitative dose-response information, but there exists toxicity data appropriate to allow a qualitative risk characterisation; please see section 2 of the SDS for the necessary RMMs. Vacuum or Hydrocracked Gas Oils and Distillate Fuels is classified R65 (Harmful: may cause lung damage if swallowed). The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aims to define the appropriate RMMs necessary to protect from this adverse effect. There is limited evidence of carcinogenic effects in Vacuum or Hydrocracked Gas Oils and Distillate Fuels and it is classified R40 (May cause cancer) accordingly. The available data for this adverse effect do not provide quantitative dose-response information for a D(M)NEL to be derived. Instead, the toxicity data triggers a qualitative risk characterisation and the RMMs in section 2 of the SDS aim to define the appropriate RMMs necessary to protect from these adverse effects.	
2.2 Control of environmental exposure	
Product characteristics Substance is complex UVCB. Predominantly hydrophobic.	
Amounts used	
Fraction of EU tonnage used in region	0.1
Regional use tonnage (tonnes/year)	1.6e7
Fraction of regional tonnage used locally	0.0005
Frequency and duration of use Continuous release.	
Emission days (days/year)	365
Environmental factors not influenced by risk management	
Local freshwater dilution factor	10
Local marine water dilution factor	100
Other operational conditions of use affecting environmental exposure	
Conditions and measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%):	94.1
Maximum allowable site tonnage (Msafe) based on release following total wastewater treatment removal (kg/d):	3.5e5
Assumed domestic sewage treatment plant flow (m^3/d):	2000
Conditions and measures related to external treatment of waste for disposal	
Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or national regulations.	
Section 3 Exposure Estimation	
3.1 Health	
The ECETOC TRA tool has been used to estimate consumer exposures, consistent with the content of ECETOC report #107 and the Chapter R15 of the IR&CSA TGD. Where exposure determinants differ to these sources, then they are indicated.	
3.2 Environment	
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.	
Section 4 Guidance to check compliance with the Exposure Scenario	
4.1 Health	
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.	
4.2 Environment	
Further details on scaling and control technologies are provided in SpERC factsheet (https://cefic.org/app/uploads/2019/01/SPERCs-Specific-Envirnonmental-Release-Classes-REACHImpl-ES-CSA-CSR.pdf).	

SAFETY DATA SHEET

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

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

1.1. Product identifier

Product name: **FLOFOAM™ 380 F**

Type of product: Mixture.

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

Identified uses: Processing aid for industrial applications. Defoamer.

Uses advised against: All non-professional uses.

1.3. Details of the supplier of the safety data sheet

Company: SNF (UK) Limited
1 Red Hall Crescent, Paragon Business Village
Wakefield WF1 2DF
United Kingdom

Telephone: 01924-311000

Telefax: 01924-311099

E-mail address: regs@snf.com

1.4. Emergency telephone number

24-hour emergency number: +33 477 36 87 25

National Poison Information Service: NHS Direct: 0845 4647 or 111 (24/24, 7/7); Scotland: NHS 24 - 08454 24 24 24 (24/24, 7/7)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Not classified.

2.2. Label elements

Labelling according to Regulation (EC) 1272/2008:

Hazard pictogram(s): None.

Signal word: None.

Hazard statement(s):	None.
Precautionary statement(s):	None.
Additional elements:	EUH208 - Contains Reaction mass of 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H-isothiazol-3-one [EC no. 220-239-6] (3:1). May produce an allergic reaction EUH210 - Safety data sheet available on request

2.3. Other hazards

Spills produce extremely slippery surfaces.

PBT and vPvB assessment:
This information is not available.

SECTION 3: Composition/information on ingredients

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

3.2. Mixtures

Hazardous components

Petroleum distillates, hydrotreated heavy paraffinic

Concentration/ -range:	< 50%
EC-No.:	265-157-1
REACH Registration Number:	01-2119484627-25-XXXX
Classification according to Regulation (EC) No.1272/2008:	Asp. Tox. 1;H304

Notes:
Does not result in classification of the mixture if the kinematic viscosity is greater than 20.5 mm²/s measured at 40°C.

Alcohol alkoxylate

Concentration/ -range:	< 25%
EC-No.:	Polymer
REACH Registration Number:	Not applicable (polymer).
Classification according to Regulation (EC) No.1272/2008:	Aquatic Chronic 3;H412

Reaction mass of 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H-isothiazol-3-one [EC no. 220-239-6] (3:1)

Concentration/ -range:	0.00015 - 0.0015%
ECHA List Number: *(Assigned by ECHA to substances without an EC Number)*	611-341-5
REACH Registration Number:	Exempt
Classification according to Regulation (EC) No.1272/2008:	Acute Tox. 3;H301, Acute Tox. 2;H310, Acute Tox. 2;H330, Skin Corr. 1C;H314, Eye Dam. 1;H318, Skin Sens. 1A;H317, Aquatic Acute 1;H400, Aquatic Chronic 1;H410, M = 100, EUH071

Notes:
Can be identified as Mixture of 5-chloro-2-methyl-4-isothiazolin-3-one (CAS 26172-55-4) and 2-methyl-4-isothiazolin-3-one (CAS 2682-20-4)

For explanation of abbreviations see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:
If inhaled, remove to fresh air. Get medical attention if symptoms appear.

Skin contact:
Remove soaked clothing immediately and wash affected skin with soap and water. Get medical attention if irritation develops and persists.

Eye contact:
In case of eye contact, remove contact lens and rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get prompt medical attention.

Ingestion:
Do NOT induce vomiting. Rinse mouth thoroughly with water and give large amounts of milk or water if person is conscious. Get medical attention.

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

Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.

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

None reasonably foreseeable.

Other information:
None.

SECTION 5: Firefighting measures

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:
Water. Water spray. Foam. Carbon dioxide (CO2). Dry powder.
Warning! Spills produce extremely slippery surfaces.

Unsuitable extinguishing media:
High volume water jet.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products:
Thermal decomposition may produce: nitrogen oxides (NOx), carbon oxides (COx).

5.3. Advice for firefighters

Protective measures:
Wear full protective clothing and self-contained breathing apparatus.

Other information:
Do not allow run-off from fire fighting to enter drains or water courses. 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

Personal precautions:
Avoid contact with skin and eyes. Spills produce extremely slippery surfaces.

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

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

6.2. Environmental precautions

As with all chemical products, do not flush into surface water. Try to prevent the material from entering drains or water courses. If the product contaminates rivers and lakes or drains inform respective authorities.

6.3. Methods and material for containment and cleaning up

Small spills:
Do not flush with water.Use a non-combustable material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.

Large spills:
Do not flush with water. Prevent product from entering drains. Dam up. Use a non-combustable material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.

Residues:
After cleaning, flush away traces with water.

6.4. Reference to other sections

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

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid contact with the skin and the eyes. Use personal protective equipment. Wash hands before eating, drinking, or smoking.

7.2. Conditions for safe storage, including any incompatibilities

Keep away from sources of ignition - No smoking. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipments must be grounded.
Incompatible with oxidizing agents.

7.3. Specific end use(s)

This information is not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

National occupational exposure limits:
None known.

Derived No and Minimum Effect Levels (DNELs/DMELs)

Reaction mass of 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H-isothiazol-3-one [EC no. 220-239-6] (3:1)

Workers:

Long-term local effects:

Inhalation	0.02 mg/m³

Acute local effects:

Inhalation	0.04 mg/m³

Consumer:

Long-term systemic effects:

Ingestion	0.09 mg/kg/day

Acute systemic effects:

Ingestion	0.11 mg/kg/day

Long-term local effects:

Inhalation	0.02 mg/m³

Acute local effects:

Inhalation	0.04 mg/m³

Predicted no-effect concentrations (PNEC)

Petroleum distillates, hydrotreated heavy paraffinic

Oral (secondary poisoning):	9.33 mg/kg

Reaction mass of 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H-isothiazol-3-one [EC no. 220-239-6] (3:1)

Freshwater:	3.39 µg/L
Intermittent release:	3.39 µg/L
Marine water:	3.39 µg/L
Sewage treatment plant:	0.23 mg/L
Sediment (freshwater):	0.027 mg/kg
Sediment (marine water):	0.027 mg/kg
Soil:	0.01 mg/kg
Oral (secondary poisoning):	The product is not expected to bioaccumulate.

8.2. Exposure controls

Appropriate engineering controls:

Use local exhaust if misting occurs. Natural ventilation is adequate in absence of mists.

Individual protection measures, such as personal protective equipment:

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

b) Skin protection:

i) Hand protection: For prolonged or repeated contact use protective gloves. The selected protective gloves have to satisfy the specifications of EU Directive 89/689/EEC and the standard EN 374 derived from it.
ii) Other: Protective suit. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

c) Respiratory protection:
Use with adequate ventilation. Do not breathe vapor or mist. No personal respiratory protective equipment normally required. In case of insufficient ventilation wear suitable respiratory equipment. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

d) Additional advice:
Wash hands before breaks and at the end of workday. Wash hands before breaks and immediately after handling the product. Wash hands before eating, drinking, or smoking. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls:

Do not allow uncontrolled discharge of product into the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

a) Appearance:	Liquid, Milky, Off-white.
b) Odour:	Hydrocarbon-like
c) Odour Threshold:	No data available.
d) pH:	Not applicable.
e) Melting point/freezing point:	No data available.
f) Initial boiling point and boiling range:	> 100°C
g) Flash point:	> 180°C
h) Evaporation rate:	No data available.
i) Flammability (solid, gas):	Not applicable.
j) Upper/lower flammability or explosive limits:	No data available.
k) Vapour pressure:	No data available.
l) Vapour density:	No data available.
m) Relative density:	0.9 - 1.0 @ 20°C (See Technical Bulletin or Product Specifications for a more precise value, if available)
n) Solubility(ies):	Negligible in water
o) Partition coefficient:	> 3.9
p) Autoignition temperature:	> 300°C
q) Decomposition temperature:	No data available.

r) Viscosity:	See Technical Bulletin.
s) Explosive properties:	Not applicable.
t) Oxidizing properties:	Not applicable.

9.2. Other information

None.

SECTION 10: Stability and reactivity

10.1. Reactivity

Stable at normal conditions.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reaction known under conditions of normal use.

10.4. Conditions to avoid

Keep away from heat and sources of ignition.

10.5. Incompatible materials

Strong oxidizing agents.

10.6. Hazardous decomposition products

Thermal decomposition may produce: nitrogen oxides (NOx), carbon oxides (COx).

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Information on the product as supplied:

Acute oral toxicity:	LD50/oral/rat > 2000 mg/kg (Estimated)
Acute dermal toxicity:	The product is not expected to be toxic in contact with the skin.
Acute inhalation toxicity:	The product is not expected to be toxic by inhalation.
Skin corrosion/irritation:	The product is not expected to be irritating.
Serious eye damage/eye irritation:	The product is not expected to be irritating.
Respiratory/skin sensitisation:	The product contains a small amount of sensitising substances which may provoke an allergic reaction among sensitive individuals in contact with skin.
Mutagenicity:	Based on available data, product is not expected to be mutagenic.
Carcinogenicity:	Based on available data, product is not expected to be carcinogenic.
Reproductive toxicity:	Based on available data, product is not expected to be toxic for reproduction.

STOT - Single exposure:	No known effects.
STOT - Repeated exposure:	No known effect.
Aspiration hazard:	Due to the viscosity, this product does not present an aspiration hazard.

Relevant information on the hazardous components:

Petroleum distillates, hydrotreated heavy paraffinic

Acute oral toxicity:	LD0/oral/rat > 5000 mg/kg (OECD 401)
Acute dermal toxicity:	LD0/dermal/rabbit > 5000 mg/kg (OECD 402)
Acute inhalation toxicity:	LC50/inhalation/4 hours/rat > 5.53 mg/L (OECD 403)
Skin corrosion/irritation:	Not irritating. (OECD 404)
Serious eye damage/eye irritation:	Not irritating. (OECD 405)
Respiratory/skin sensitisation:	Not sensitizing. (OECD 406)
Mutagenicity:	Based on available data, product is not expected to be mutagenic. In vitro tests showed mutagenic effects which were not observed with in vivo test. Not mutagenic. (OECD 474)
Carcinogenicity:	Based on available data, product is not expected to be carcinogenic. Carcinogenicity study in rats (OECD 451): Negative. Not carcinogenic. (OECD 453)
Reproductive toxicity:	Based on available data, product is not expected to be toxic for reproduction. NOAEL/rat >= 1000 mg/kg/day (OECD 421) Prenatal Development Toxicity Study (OECD 414) - NOAEL/Developmental toxicity/rat >= 2000 mg/kg/day
STOT - Single exposure:	No known effects.
STOT - Repeated exposure:	Based on available data, product is not expected to demonstrate chronic toxic effects. LOAEL/oral/rat/90 days = 125 mg/kg/day (OECD 408) (Based on results obtained from tests on analogous products) NOAEC/inhalation/120 h/rat > 980 mg/m³
Aspiration hazard:	May be fatal if swallowed and enters airways.

Reaction mass of 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H-isothiazol-3-one [EC no. 220-239-6] (3:1)

Acute oral toxicity:	LD50/oral/rat = 64 - 66 mg/kg

Acute dermal toxicity:	LD50/dermal/rabbit = 87.12 mg/kg
Acute inhalation toxicity:	LC50/inhalation/4 hours/rat = 0.171 - 0.33 mg/L (aerosol / mist) (OECD 403)
Skin corrosion/irritation:	Causes burns. (OECD 404)
Serious eye damage/eye irritation:	Causes burns. (OECD 405)
Respiratory/skin sensitisation:	Sensitizing to skin. (OECD 406)
Mutagenicity:	Based on available data, product is not expected to be mutagenic. Not mutagenic. (OECD 472, 482) Positive in the Ames Test (OECD 471). Positive in the In vitro Mammalian Cell Gene Mutation Test (OECD 476). In vivo tests did not show mutagenic effects. (OECD 474, 475, 477, 486)
Carcinogenicity:	Based on available data, product is not expected to be carcinogenic. Carcinogenicity study in rat (OCDE 453): NOAEL = 17 - 27 mg/kg/day Carcinogenicity study in mice (OECD 451): Negative
Reproductive toxicity:	Based on available data, product is not expected to be toxic for reproduction. Two-Generation Reproduction Toxicity (OECD 416) - NOAEL/rat = 300 ppm Prenatal Development Toxicity Study (OECD 414) - NOAEL/Maternal toxicity/rat = 15 mg/kg/day - NOAEL/Developmental toxicity/rat = 15 mg/kg/day
STOT - Single exposure:	Corrosive to the respiratory tract.
STOT - Repeated exposure:	Based on available data, product is not expected to demonstrate chronic toxic effects. NOAEL/oral/rat/90 days = 16.3 - 24.7 mg/kg/day (OECD 408) NOAEC/inhalation/rat = 0.34 mg/m³ (aerosol / mist) (OECD 413)
Aspiration hazard:	No known effects.

SECTION 12: Ecological information

12.1. Toxicity

Information on the product as supplied:

Acute toxicity to fish:	LC50/Fish/96 hours > 100 mg/L (Estimated)
Acute toxicity to invertebrates:	EC50/Daphnia magna/48 hours > 100 mg/L (Estimated)
Acute toxicity to algae:	IC50/Algae/72 hours > 100 mg/L (Estimated)
Chronic toxicity to fish:	No data available.
Chronic toxicity to invertebrates:	No data available.

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

Relevant information on the hazardous components:

Petroleum distillates, hydrotreated heavy paraffinic

Acute toxicity to fish:	NOEC/Pimephales promelas/96 hours >= 100 mg/L (OECD 203)
Acute toxicity to invertebrates:	NOEC/Daphnia magna/96 hours >= 10000 mg/L (OECD 202)
Acute toxicity to algae:	NOEC/Pseudokirchneriella subcapitata/96 hours >= 10000 mg/L (OECD 201)
Chronic toxicity to fish:	NOEC/Oncorhynchus mykiss/14 days >= 1000 mg/L (Estimated)
Chronic toxicity to invertebrates:	NOEC/Daphnia magna/21 days = 10 mg/L (OECD 211)
Toxicity to microorganisms:	EC50/Tetrahymena pyriformis/ 40 h > 1000 mg/L.
Effects on terrestrial organisms:	No data available.
Sediment toxicity:	No data available.

Reaction mass of 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H-isothiazol-3-one [EC no. 220-239-6] (3:1)

Acute toxicity to fish:	LC50/Oncorhynchus mykiss/96 hours = 0.19 mg/L (OECD 203) LC50/Lepomis macrochirus/96 hours = 0.28 mg/L
Acute toxicity to invertebrates:	EC50/Daphnia magna/48 hours = 0.16 mg/L (OECD 202)
Acute toxicity to algae:	IC50/Selenastrum capricornutum/72 hours = 0.027 mg/L (OECD 201)
Chronic toxicity to fish:	NOEC/Pimephales promelas/36 days = 0.02 mg/L (EPA OPP 72-4) NOEC/Oncorhynchus mykiss/28 days = 0.098 mg/L (OECD 215)
Chronic toxicity to invertebrates:	NOEC/Daphnia magna/21 days = 0.0036 mg/L (OECD 211)
Toxicity to microorganisms:	EC50/activated sludge/3 hours = 4.5 - 7.92 mg/L (OECD 209)
Effects on terrestrial organisms:	NOEC/Eisenia fetida/14 days = 5.07 - 14.47 mg/kg (OECD 207)
Sediment toxicity:	EC50/Sediment/28 days = 0.37 - 0.46 mg/kg

12.2. Persistence and degradability

Information on the product as supplied:

Degradation:	Expected to be biodegradable.
Hydrolysis:	Does not hydrolyse.
Photolysis:	No data available.

Relevant information on the hazardous components:

Petroleum distillates, hydrotreated heavy paraffinic

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

Reaction mass of 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H-isothiazol-3-one [EC no. 220-239-6] (3:1)

Degradation:	Inherently biodegradable. > 60% / 28 days (OECD 301 B, 301 D) (without fulfilling the 10-day window criterion) Half-life: 1.82 - 1.92 d (OECD 308)
Hydrolysis:	Does not hydrolyse. (@ pH 4 - 7)
Photolysis:	Half-life: 0.529 - 1.246 days

12.3. Bioaccumulative potential

Information on the product as supplied:

Partition co-efficient (Log Pow):	> 3.9
Bioconcentration factor (BCF):	No data available.

Relevant information on the hazardous components:

Petroleum distillates, hydrotreated heavy paraffinic

Partition co-efficient (Log Pow):	1.99 - 18.02
Bioconcentration factor (BCF):	No data available.

Reaction mass of 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H-isothiazol-3-one [EC no. 220-239-6] (3:1)

Partition co-efficient (Log Pow): <= 0.75 (OECD 107)

Bioconcentration factor (BCF): <= 54 (OECD 305)

12.4. Mobility in soil

Information on the product as supplied:

No data available.

Relevant information on the hazardous components:

Petroleum distillates, hydrotreated heavy paraffinic

Koc: No data available.

Reaction mass of 5-chloro-2-methyl-4-isothiazolin-3-one [EC no. 247-500-7] and 2-methyl-2H-isothiazol-3-one [EC no. 220-239-6] (3:1)

Koc: <= 310.4

12.5. Results of PBT and vPvB assessment

PBT assessment:
No data available.

vPvB assessment:
No data available.

12.6. Other adverse effects

None known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste from residues/unused products:

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

Contaminated packaging:

If recycling is not practicable, dispose of in compliance with local regulations. Can be landfilled or incinerated, when in compliance with local and national regulations.

Recycling:

In accordance with local and national regulations.

SECTION 14: Transport information

Land transport (ADR/RID)

Not classified.

Sea transport (IMDG)

Not classified.

Air transport (IATA)

Not classified.

SECTION 15: Regulatory information

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

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

15.2. Chemical safety assessment

This information is not available.

SECTION 16: Other information

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

SECTION 3. Composition/information on ingredients, SECTION 6. Accidental release measures, SECTION 7. Handling and storage, SECTION 8. Exposure controls/personal protection, SECTION 11. Toxicological information, SECTION 12. Ecological information, SECTION 15. Regulatory information, SECTION 16. Other Information.

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

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

Abbreviations
Acute Tox. 2 = Acute toxicity, Hazard Category 2
Acute Tox. 3 = Acute toxicity, Hazard Category 3
Aquatic Acute 1 = Hazardous to the aquatic environment — Acute Hazard, Category 1
Aquatic Chronic 1 = Hazardous to the aquatic environment — Chronic Hazard, Category 1
Aquatic Chronic 3 = Hazardous to the aquatic environment — Chronic Hazard, Category 3
Asp. Tox. 1 = Aspiration hazard, Hazard Category 1
Eye Dam 1 = Serious eye damage/eye irritation, Hazard Category 1
Skin Corr. 1C = Skin corrosion/irritation, Hazard Category 1C
Skin Sens. 1A = Sensitisation — Skin, hazard category 1A

Hazard statements
EUH071 - Corrosive to the respiratory tract
H301 - Toxic if swallowed
H304 - May be fatal if swallowed and enters airways
H310 - Fatal in contact with skin
H314 - Causes severe skin burns and eye damage
H317 - May cause an allergic skin reaction
H318 - Causes serious eye damage
H330 - Fatal if inhaled
H400 - Very toxic to aquatic life
H410 - Very toxic to aquatic life with long lasting effects
H412 - Harmful to aquatic life with long lasting effects

Training advice:

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

This SDS was prepared in accordance with the following:

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

Version: 20.01.a

DEFM077

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 according to Regulation (EC) No. 1907/2006

Sodium hypochlorite 10-15% (All grades)

Version 7.1
Revision Date 2011/01/20

Print Date 2011/01/20
MSDS code: MSHY100

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

1.1. Product identifier

Trade name	:	Sodium hypochlorite 10-15% (All grades)
Substance name	:	sodium hypochlorite, solution 10-15 % Cl active
Index-No.	:	017-011-00-1
CAS-No.	:	7681-52-9
EC-No.	:	231-668-3

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

Use of the Substance/Mixture	:	At this time we do not yet have information on identified uses. They will be included in this safety data sheet when available.
Recommended restrictions on use	:	At that time we do not yet have information on use restrictions. They will be included in this safety data sheet when available.

1.3. Details of the supplier of the safety data sheet

Company	:	Brenntag UK & Ireland Albion House, Rawdon Park GB LS19 7XX Leeds Yeadon
Telephone	:	0113 3879 200
Telefax	:	0113 3879 280
E-mail address	:	msds@brenntag.co.uk

1.4. Emergency telephone number

Emergency telephone number	:	Emergency only telephone number (open 24 hours): 01865 407333 (N.C.E.C. Culham)

2. Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

REGULATION (EC) No 1272/2008

Hazard class	Hazard category	Target Organs	Hazard statements
Skin corrosion	**Category 1B**		**H314**
Acute aquatic toxicity	**Category 1**		**H400**

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

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

Directive 67/548/EEC or 1999/45/EC	
Hazard symbol / Category of danger	**Risk phrases**
Corrosive (C)	R34
	R31
Dangerous for the environment (N)	R50

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

Most important adverse effects

Human Health : See section 11 for toxicological information.
No further information available.

Physical and chemical hazards : See section 9 for physicochemical information., No further information available.

Potential environmental effects : See section 12 for environmental information.

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008

Hazard symbols :

Signal word : Danger

Hazard statements	:	H314	Causes severe skin burns and eye damage.
		H400	Very toxic to aquatic life.
Precautionary statements			
Prevention	:	P260	Do not breathe vapours.
		P273	Avoid release to the environment.
		P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response	:	P301 + P330 + P331	IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
		P303 + P361 + P353	IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
		P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Additional Labelling:

EUH031 Contact with acids liberates toxic gas.

Hazardous components which must be listed on the label:

- sodium hypochlorite, solution

2.3. Other hazards

No other information is available.

3. Composition/information on ingredients

3.1. Substances

Chemical nature : sodium hypochlorite
Aqueous solution

Chemical Name	Identification Number	Amount [%]

sodium hypochlorite, solution	Index-No. : 017-011-00-1 CAS-No. : 7681-52-9 EC-No. : 231-668-3 Registration number : 01-2119488154-34-xxxx		>= 10 - <= 15
sodium hydroxide	Index-No. : 011-002-00-6 CAS-No. : 1310-73-2 EC-No. : 215-185-5		>= 0 - < 5

4. First aid measures

4.1 Description of first aid measures

General advice : Take off all contaminated clothing immediately.

If inhaled : In case of accident by inhalation: remove casualty to fresh air and keep at rest. If breathing is irregular or stopped, administer artificial respiration. Call a physician immediately.

In case of skin contact : Wash off immediately with soap and plenty of water. If irritation appears or if the contamination is important, seek medical advice.

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Consult an eye specialist immediately. Go to an ophthalmic hospital if possible.

If swallowed : Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. If swallowed, do not induce vomiting - seek medical advice. If a person vomits when lying on his back, place him in the recovery position.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : Inhalation may provoke the following symptoms:
Cough
Headache
Lung oedema

Effects : Risk of serious damage to the lungs (by aspiration).

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.
Later control for pneumonia and lung oedema.

5. Fire-fighting measures

5.1. Extinguishing media

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
The product itself does not burn.

Unsuitable extinguishing media : Exempt

5.2. Special hazards arising from the substance or mixture

Specific hazards during fire fighting : Fire may cause evolution of:
Chlorine
Hydrogen chloride gas
chlorine oxides

5.3. Advice for firefighters

Special protective equipment for fire-fighters : In the event of fire, wear self-contained breathing apparatus.
Wear appropriate body protection (full protective suit)

Further information : Cool closed containers exposed to fire with water spray.
Heating will cause a pressure rise - with risk of bursting.
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Use personal protective equipment. Wear respiratory

protection. Keep people away from and upwind of spill/leak. Provide adequate ventilation. Danger of slipping if spilled Avoid contact with skin and eyes. Do not breathe vapour.

6.2 Environmental precautions

Environmental precautions	:	Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration. If the product contaminates rivers and lakes or drains inform respective authorities. If material reaches soil inform authorities responsible for such cases.

6.3 Methods and materials for containment and cleaning up

Methods and materials for containment and cleaning up	:	Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders). Keep in suitable, closed containers for disposal.
Further information	:	Treat recovered material as described in the section "Disposal considerations".

6.4 Reference to other sections

For personal protection see section 8.

7. Handling and storage

7.1 Precautions for safe handling

Advice on safe handling	:	Do not keep the container sealed. Handle and open container with care. Ensure adequate ventilation. Use personal protective equipment. Avoid contact with the skin and the eyes. Do not breathe vapours or spray mist. Use respirator with appropriate filter if vapours or aerosol are released. Emergency eye wash fountains and emergency showers should be available in the immediate vicinity.
Hygiene measures	:	Keep away from food, drink and animal feedingstuffs. Smoking,

eating and drinking should be prohibited in the application area. Wash hands before breaks and at the end of workday. Take off all contaminated clothing immediately. Avoid contact with the skin and the eyes. Do not breathe vapours or spray mist.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Keep in an area equipped with alkali resistant flooring. Keep only in the original container. Store in a receptacle equipped with a vent.
Advice on protection against fire and explosion	:	The product is not flammable. Normal measures for preventive fire protection.
Further information on storage conditions	:	Keep in a well-ventilated place. Protect against light. Store in cool place. Do not keep the container sealed.
Advice on common storage	:	Keep away from food, drink and animal feedingstuffs. Do not store together with acids and ammonium salts.
German storage class	:	8B: Non-combustible substances, corrosive

7.3 Specific end uses

Specific use(s) : No information available.

8. Exposure controls/personal protection

8.1. Control parameters

Component: sodium hydroxide	**CAS-No. 1310-73-2**

Other OELs

Regulatory Basis	:	UK. EH40 Workplace Exposure Limits (WELs)
Regulatory List	:	EH40 WEL
Value type	:	Short Term Exposure Limit (STEL):
Value	:	2 mg/m3

Component: chlorine	**CAS-No. 7782-50-5**

Other OELs

Regulatory Basis	:	EU. Indicative Exposure and Directives relating to the protection of risks related to work exposure to chemical, physical, and biological agents.
Regulatory List	:	EU ELV
Value type	:	Short Term Exposure Limit (STEL):
Value	:	0.5 ppm
Value	:	1.5 mg/m3
Remarks	:	Indicative

Regulatory Basis	:	UK. EH40 Workplace Exposure Limits (WELs)
Regulatory List	:	EH40 WEL
Value type	:	Short Term Exposure Limit (STEL):
Value	:	0.5 ppm
Value	:	1.5 mg/m3

8.2. Exposure controls

Engineering measures

Refer to protective measures listed in sections 7 and 8.

Personal protective equipment

Respiratory protection

Advice	:	Use respirator with appropriate filter if vapours or aerosol are released. Recommended Filter type: Combination filter:B-P2 Combination filter:B-P3

Hand protection

Advice	:	The glove material has to be impermeable and resistant to the product / the substance / the preparation. Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact). Protective gloves should be replaced at first signs of wear.
Material	:	butyl-rubber
Gloves	:	8 h
Glove thickness	:	0.5 mm

Material	:	Polyvinylchloride
Gloves	:	8 h
Glove thickness	:	0.5 mm

Material	:	polychloroprene
Gloves	:	8 h
Glove thickness	:	0.5 mm

Eye protection

Advice	:	Tightly fitting safety goggles

Skin and body protection

Advice	:	alkali resistant protective clothing

Environmental exposure controls

General advice	:	Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration. If the product contaminates rivers and lakes or drains inform respective authorities.

If material reaches soil inform authorities responsible for such cases.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Form	:	liquid
Colour	:	yellowish green
Odour	:	slight chlorine
Odour Threshold	:	Currently we do not have any Information from our supplier about this.
pH	:	> 11
Melting point/range	:	-17 °C
Boiling point/boiling range	:	110 °C
Flash point	:	not applicable
Evaporation rate	:	Currently we do not have any Information from our supplier about this.
Flammability (solid, gas)	:	does not ignite
Upper explosion limit	:	not applicable
Lower explosion limit	:	not applicable
Vapour pressure	:	Currently we do not have any Information from our supplier about this.
Relative vapour density	:	> 1.0 (Air = 1.0)
Density	:	1.2 - 1.3 g/cm3
Water solubility	:	completely soluble
Partition coefficient: n-octanol/water	:	Currently we do not have any Information from our supplier about this.

Ignition temperature	:	not applicable
Thermal decomposition	:	Currently we do not have any Information from our supplier about this.
Viscosity, dynamic	:	3.45 mPa.s 20 °C (Aqueous, solution, 15 %)
Explosive properties	:	Not explosive
Oxidizing properties	:	Currently we do not have any Information from our supplier about this.

9.2 Other information

No further information available.

10. Stability and reactivity

10.1. Reactivity

Advice : This product is a very reactive substance that can react with many inorganic and organic compounds.

10.2. Chemical stability

Advice : Decomposes on heating.
Decomposes on exposure to light.

10.3. Possibility of hazardous reactions

Hazardous reactions : May develop chlorine if mixed with acidic solutions.

10.4. Conditions to avoid

Conditions to avoid : Heat.

10.5. Incompatible materials

Materials to avoid : Acids
ammonium compounds
Acetic anhydride
Organic materials
Hydrogen peroxide

metal salts
Copper
Nickel
Iron

10.6. Hazardous decomposition products

Hazardous decomposition products : Hydrogen chloride gas
Chlorine
chlorine oxides

11. Toxicological information

11.1. Information on toxicological effects

Product:	**sodium hypochlorite, solution 10-15 % Cl active**	**CAS-No. 7681-52-9**

Acute toxicity

Oral

Value type : LD50
Value : 2,900 - 3,400 mg/kg
Species : mouse
Remarks : Cause serious burns with severe pains, vomiting, pains in the stomach, possibly chock and damaged kidneys. The burn may occur even if only small amounts have been swallowed.

Inhalation

Value type : LC50
Value : > 10.5 mg/l
Species : rat

Dermal

Value type : LD50

Value	:	> 2,000 mg/kg
Species	:	rabbit

Irritation

Skin

Species	:	rabbit
Result	:	Severe skin irritation
Method	:	OECD Test Guideline 404

Species	:	human.
Result	:	corrosive effects

Eyes

Species	:	rabbit
Result	:	corrosive effects
Remarks	:	Risk of serious damage to eyes.

Sensitisation

Species	:	guinea pig
Result	:	not sensitizing

Further information

Other relevant toxicity information	:	All numerical values for acute toxicity are calculated on the pure substances. If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach. Handle in accordance with good industrial hygiene and safety practice.

12. Ecological information

12.1. Toxicity

Product:	**sodium hypochlorite, solution 10-15 % Cl active**	**CAS-No. 7681-52-9**

Acute toxicity

Fish

Species	:	Pimephales promelas
Exposure Time	:	96 h
Value type	:	LC50
Value	:	0.22 - 0.62 mg/l

Toxicity to daphnia and other aquatic invertebrates.

Species	:	Daphnia magna
Exposure time	:	96 h
Value type	:	EC50
Value	:	2.1 mg/l

algae

Species	:	Desmodesmus subspicatus (green algae)
Exposure time	:	24 h
Value type	:	EC50
Value	:	28 mg/l

12.2. Persistence and degradability

Product:	**sodium hypochlorite, solution 10-15 % Cl active**	**CAS-No. 7681-52-9**

Persistence and degradability

Persistence

Remarks	:	no data available

Biodegradability

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

12.3. Bioaccumulative potential

Product:	**sodium hypochlorite, solution 10-15 % Cl active**	**CAS-No. 7681-52-9**
Bioaccumulation		

Remarks : Bioaccumulation is not expected.

12.4. Mobility in soil

Product:	**sodium hypochlorite, solution 10-15 % Cl active**	**CAS-No. 7681-52-9**
Mobility		

Remarks : The product is mobile in water enviroment.

12.5. Results of PBT and vPvB assessment

Product:	**sodium hypochlorite, solution 10-15 % Cl active**	**CAS-No. 7681-52-9**
Results of PBT and vPvB assessment		

Remarks : No information available.

12.6. Other adverse effects

Product:	**sodium hypochlorite, solution 10-15 % Cl active**	**CAS-No. 7681-52-9**

Additional ecological information

Remarks : All numerical values for ecotoxicity effects are calculated on the pure substances.
Do not flush into surface water or sanitary sewer system.

13. Disposal considerations

13.1. Waste treatment methods

Product : Disposal together with normal waste is not allowed. Special disposal required according to local regulations. Do not let product enter drains. Contact waste disposal services.

Contaminated packaging : Empty contaminated packagings thoroughly. They can be recycled after thorough and proper cleaning. Packagings that cannot be cleaned are to be disposed of in the same manner as the product.

European Waste Catalogue Number : No waste code according to the European Waste Catalogue can be assigned for this product, as the intended use dictates the assignment. The waste code is established in consultation with the regional waste disposer.

14. Transport information

14.1. UN number

1791

14.2. UN proper shipping name

ADR : HYPOCHLORITE SOLUTION
RID : HYPOCHLORITE SOLUTION
IMDG : HYPOCHLORITE SOLUTION

14.3. Transport hazard class(es)

ADR-Class (Labels; Classification Code; Hazard identification No; Tunnel restriction code)	:	8 8; C9; 80; (E)
RID-Class (Labels; Classification Code; Hazard identification No)	:	8 8; C9; 80
IMDG-Class (Labels; EmS)	:	8 8; F-A, S-B

14.4. Packaging group

ADR	:	III
RID	:	III
IMDG	:	III

14.5. Environmental hazards

Labeling according to 5.2.1.8 ADR	:	Fish and tree
Labeling according to 5.2.1.8 RID	:	Fish and tree
Labeling according to 5.2.1.6.3 IMDG	:	Fish and tree
Classification as environmentally hazardous according to 2.9.3 IMDG	:	yes

14.6. Special precautions for user

Note : not applicable

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

IMDG : Not applicable.

15. Regulatory information

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

15.2. Chemical Safety Assessment

Currently we do not have any Information from our supplier about this.

16. Other information

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

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

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

H314	Causes severe skin burns and eye damage.
H400	Very toxic to aquatic life.

Further information

Other information : Restricted to professional users. Attention - Avoid exposure - obtain special instructions before use.
The information provided in this Safety Data Sheet is correct to our knowledge at the date of its revision. The information given only describes the products with regard to safety arrangements and is not to be considered as a warranty or quality specification and does not constitute a legal relationship.
The information contained in this Safety Data Sheet relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text

|| Indicates updated section.

SAFETY DATA SHEET

SODIUM HYDROXIDE PEARL/SOLID MAAB037

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

Product name	: **SODIUM HYDROXIDE PEARL/SOLID**	**Supplier**	:	Brenntag UK and Ireland Albion House Rawdon Park Green Lane Yeadon Leeds LS19 7XX
Chemical product name	: SODIUM HYDROXIDE			
Synonyms	: SODIUM HYDRATE			
EMERGENCY ONLY TELEPHONE NUMBER	: (N.C.E.C. CULHAM) 01865 407333	**Telephone No.**	:	(0113) 3879200
		Fax No.	:	(0113) 3879280
Formula	: NaOH	**Molecular Mass**	:	40.01

2. Composition/information on ingredients

Substance/Preparation : Substance

Chemical name*	CAS No.	%	EC Number	Symbol	R-Phrases
1) SODIUM HYDROXIDE	1310-73-2	100	215-185-5	C	R35

*** Occupational Exposure Limit(s), if available, are listed in Section 8**

Composition BOTH SOLID AND PEARL FORMS CONTAIN 99.0% (MIN) BY MASS OF SODIUM HYDROXIDE AND 0.5% (MAX) BY MASS OF SODIUM CARBONATE.

CAS No. 1310-73-2

EINECS Number 215-185-5

3. Hazards identification

Human health hazards : Causes severe burns.

4. First-aid measures

First-Aid measures

Inhalation : Remove from exposure. Keep warm and at rest. If there is difficulty in breathing, give oxygen. If breathing stops or shows signs of failing, give artificial respiration. Do not use mouth to mouth ventilation. Obtain medical attention urgently.

Ingestion : Wash out mouth with water. Do not induce vomiting. Have victim drink 1-3 glasses of water to dilute stomach contents. Followed by 1% acetic acid (dilute vinegar) or fruit juice. Obtain medical attention immediately.

Skin contact : Wash skin with water. Remove contaminated clothing as washing proceeds. Obtain medical attention if blistering occurs or redness persists.

Eye Contact : Obtain medical attention urgently. Immediately flood the eye with plenty of water for at least 10 minutes, holding the eye open. Speed is essential! Particles should be removed with a cotton wool bud.

Effects and symptoms

Inhalation : Exposure to dust and vapour may have the following effects:- severe irritation to nose, throat and respiratory tract and possibly lung damage. coughing. difficulty with breathing. bronchitis. pulmonary oedema.

Ingestion : Swallowing may have the following effects:- corrosion of mouth, throat and digestive tract. haematemisis. perforation of the oesophagus. gastric perforation.

Skin contact : Product will cause severe chemical burns.

Eye Contact : Dust will cause conjunctival irritation and possibly corneal damage.

Aggravating conditions : Repeated exposure of the eyes to a low level of dust can produce eye irritation. Repeated skin exposure can produce local skin destruction or dermatitis. Repeated inhalation of dust can produce varying degrees of respiratory irritation or lung damage.

Notes to physician : In the case where material has entered the eyes, a sterile pad and bandage should be applied.

5. Fire-fighting measures

Extinguishing Media

Suitable : Select extinguishing agent appropriate to other materials involved. Use water spray.

Unusual fire/explosion Hazards : The product reacts with water to generate heat which may be sufficient to ignite nearby combustible materials.

Hazardous thermal (de)composition products : Attacks many metals liberating hydrogen gas.

Special fire-fighting procedures : Fire fighters should wear self-contained positive pressure breathing apparatus (SCBA) and full turnout gear.

Protection of fire-fighters : Wear full protective clothing and self-contained breathing apparatus.

6. Accidental release measures

Personal Precautions : Ventilate the area to dispel possible toxic decomposition fumes. Wear appropriate protective clothing.

Environmental precautions and cleanup methods : Sweep up into suitable containers for recovery or disposal. Dilute with excess water and carefully neutralise with acid. (Take care:-highly exothermic!) Finally flush area with plenty of water.
: Advise Authorities if spillage has entered water course or sewer or has contaminated soil or vegetation.

7. Handling and storage

Handling : Use in well ventilated area. Avoid inhaling dust. Avoid contact with eyes, skin and clothing. Emergency shower and eye wash facilities should be readily available.

Storage : Storage area should be: cool. dry. well ventilated.
Keep containers closed to prevent ingress of moisture.
If outdoor storage of solid caustic is unavoidable, pallets should be protected by black sheets to prevent extremes of weather.
Suitable storage materials are:- stainless steel.
Do not store in:- aluminium and its alloys . brass. tin. zinc.

Packaging materials

Recommended use : Use original container.

8. Exposure controls/personal protection

Engineering measures : Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Hygiene measures : Wash hands after handling compounds and before eating, smoking, using lavatory, and at the end of day.

Ingredient Name	Workplace Exposure Limits
1) SODIUM HYDROXIDE ...%	**EH40 (United Kingdom (UK)).** OES: 2 mg/m^3 Period: 15 minute(s).

Personal protective equipment

Respiratory system : Respiratory protection if there is a risk of uncontrolled exposure to vapour.

Skin and body : Wear: overall or apron. rubber boots.
If there is danger of splashing, wear: PVC or other impermeable suit.

Hands : PVC or rubber gloves.

Eyes : Chemical goggles.

9. Physical and chemical properties

Physical state : Solid. Crystals.

Colour : White. Opaque.

Odour : Faint. Characteristic.

Boiling point : 1390

Melting point : 318

Density : Not available.

Vapour pressure : 1 mmHg 739°C

Solubility : 111g/100ml

pH : Alkaline

Flash point : Not available.

Viscosity : 80 cP AT 20°C (50% SOLN)

10. Stability and reactivity

Stability : The product is stable.

Conditions to Avoid : Exposure to air or oxygen. Exposure to water or moisture.

Materials to avoid : Acids. Ammonium salts. Aluminium. Brass. Tin. Zinc. Halogenated solvents. Nitroalkanes. Acid anhydrides. Water.

Hazardous decomposition products : Attacks many metals liberating hydrogen gas.

11. Toxicological information

Local effects

Skin irritation : Extremely hazardous in case of skin contact (corrosive).

Eye irritation : Extremely hazardous in case of eye contact (irritant).

Acute toxicity : Oral LD50 (mouse) 40mg/kg.
Estimated lowest lethal dose in man is 5g.

Chronic toxicity : Repeated exposure of the eyes to a low level of dust can produce eye irritation. Repeated skin exposure can produce local skin destruction or dermatitis. Repeated inhalation of dust can produce varying degrees of respiratory irritation or lung damage.

12. Ecological information

Ecotoxicity : The product is rated as practically non-toxic to aquatic species. High concentrations injure aquatic life by effect on pH.

13. Disposal considerations

Methods of disposal ; Waste of residues ; Contaminated packaging : Dispose of in accordance with all applicable local and national regulations.

Waste Classification : Not applicable.

14. Transport information

International transport regulations

UN :	**UN number**	1823
UN :	**Proper shipping name**	Sodium hydroxide, solid.
UN :	**Class**	8
UN :	**Packing group**	II
ADR/RID :	**Class**	8
ADR/RID :	**Item Number**	41(b)
ADR/RID :	**Hazard identification number**	80
TREMCARD TEC(R)		TEC(R)-121 , 80G13
IMDG :	**Packing group**	II
IMDG :	**Class**	8
IATA :	**Packing group**	II
IATA :	**Class**	8

15. Regulatory information

EU Regulations

Hazard symbol(s) :

Classification : Corrosive

Risk Phrases : R35 Causes severe burns.

Safety Phrases : S1/2 Keep locked up and out of reach of children.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37/39 Wear suitable gloves and eye/face protection.
S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Contains : - SODIUM HYDROXIDE

Product Use : Classification and labe lling have be e n pe rforme d according to EU dire ctive s 67/548/EEC, 88/379/EEC, including amendments and the intended use.
- Consumer applications.

16. Other information

HISTORY

Date of printing	:	**27/02/2009.**
Date of issue	:	**23/04/2007.**
Date of previous issue	:	**No Previous Validation.**
Version	:	**1**
Prepared by	:	**Michael Hale / Alistair Hunter**

Notice to Reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

Sulphuric acid 15 - 50% (Battery acid 1140-1400 SG)

Version 5.1 Print Date 2011/12/08

Revision Date 2011/12/08 **MSDS code: MSUA104**

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

1.1. Product identifier

Trade name	:	Sulphuric acid 15 - 50% (Battery acid 1140-1400 SG)
Substance name	:	sulphuric acid
Index-No.	:	016-020-00-8
CAS-No.	:	7664-93-9
EC-No.	:	231-639-5

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

Use of the Substance/Mixture	:	At this time we do not yet have information on identified uses. They will be included in this safety data sheet when available.
Uses advised against	:	At this moment we have not identified any uses advised against

1.3. Details of the supplier of the safety data sheet

Company	:	Brenntag UK & Ireland Albion House, Rawdon Park GB LS19 7XX Leeds Yeadon
Telephone	:	0113 3879 200
Telefax	:	0113 3879 280
E-mail address	:	msds@brenntag.co.uk

1.4. Emergency telephone number

Emergency telephone number	:	Emergency only telephone number (open 24 hours): 01865 407333 (N.C.E.C. Culham)

2. Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

REGULATION (EC) No 1272/2008			
Hazard class	**Hazard category**	**Target Organs**	**Hazard statements**
Corrosive to metals	Category 1	---	H290
Skin corrosion	Category 1A	---	H314

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

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

Directive 67/548/EEC or 1999/45/EC	
Hazard symbol / Category of danger	**Risk phrases**
Corrosive (C)	R35

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

Most important adverse effects

Human Health : See section 11 for toxicological information.

Physical and chemical hazards : See section 9 for physicochemical information.

Potential environmental effects : See section 12 for environmental information.

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008

Hazard symbols :

Signal word : Danger

Hazard statements :

H290 May be corrosive to metals.

H314 Causes severe skin burns and eye damage.

Precautionary statements

Prevention :

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

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

Response :

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

P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.

		P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Storage	:	P405	Store locked up.

Hazardous components which must be listed on the label:

• sulphuric acid

2.3. Other hazards

For Results of PBT and vPvB assessment see section 12.5.

3. Composition/information on ingredients

3.1. Substances

Chemical nature : Aqueous solution

Hazardous components	Amount [%]	Classification (REGULATION (EC) No 1272/2008)		Classification (67/548/EEC)
		Hazard class / Hazard category	Hazard statements	
sulphuric acid Index-No. : 016-020-00-8 CAS-No. : 7664-93-9 EC-No. : 231-639-5 C&L-No. : 02-2119752444-38-0000	>= 15 - < 50	Skin Corr.1A	H314	C; R35

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

4. First aid measures

4.1. Description of first aid measures

General advice : Take off all contaminated clothing immediately.

If inhaled : In case of accident by inhalation: remove casualty to fresh air and keep at rest. If breathing is irregular or stopped, administer artificial respiration. Call a physician immediately.

In case of skin contact	: First swab the concentrated acid with dry pulp or textile; because the acid reacts vigorously with water and with strong evolution of heat. Wash off with plenty of water. Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.
In case of eye contact	: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Consult an eye specialist immediately. Go to an ophthalmic hospital if possible.
If swallowed	: Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Call a physician immediately.

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

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

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

Treatment	: Treat symptomatically.

5. Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. The product itself does not burn.
Unsuitable extinguishing media	:	No information available.

5.2. Special hazards arising from the substance or mixture

Specific hazards during firefighting	:	May decompose in a fire giving off toxic fumes, Hazardous decomposition products, Sulphur oxides, Reacts exothermic with water

5.3. Advice for firefighters

Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus.Wear appropriate body protection (full protective suit)
Further information	:	Collect contaminated fire extinguishing water separately. This

must not be discharged into drains.Cool closed containers exposed to fire with water spray.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Use personal protective equipment. Provide adequate ventilation. Avoid contact with skin and eyes. Do not breathe vapours or spray mist.

6.2. Environmental precautions

Environmental precautions	:	Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration. If the product contaminates rivers and lakes or drains inform respective authorities. Local authorities should be advised if significant spillages cannot be contained.

6.3. Methods and materials for containment and cleaning up

Methods and materials for containment and cleaning up	:	Neutralize with lime milk or soda and flush with plenty of water. Taking into account local regulations the product may be disposed of as waste water after neutralisation. Clean-up methods - small spillage: Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders). Keep in suitable, closed containers for disposal.
Further information	:	Treat recovered material as described in the section "Disposal considerations".

6.4. Reference to other sections

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

7. Handling and storage

7.1. Precautions for safe handling

Advice on safe handling	:	Keep container tightly closed. Use personal protective equipment. Avoid contact with the skin and the eyes. Do not breathe vapours or spray mist. Emergency eye wash fountains and emergency showers should be available in the immediate vicinity. When diluting, always add the product to water. Never add water to the product.

Hygiene measures	:	Keep away from food, drink and animal feedingstuffs. Smoking, eating and drinking should be prohibited in the application area. Wash hands before breaks and at the end of workday. Take off all contaminated clothing immediately. Avoid contact with skin, eyes and clothing. Do not breathe vapours or spray mist.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Keep in an area equipped with acid resistant flooring. Store in original container.
Advice on protection against fire and explosion	:	The product is not flammable. Normal measures for preventive fire protection. Gives off hydrogen by reaction with metals. Risk of explosion.
Further information on storage conditions	:	Keep tightly closed in a dry and cool place. Keep in a well-ventilated place. Product is hygroscopic.
Advice on common storage	:	Keep away from food, drink and animal feedingstuffs. Keep away from combustible material.

7.3. Specific end uses

Specific use(s)	:	No information available.

8. Exposure controls/personal protection

8.1. Control parameters

Component: sulphuric acid	**CAS-No. 7664-93-9**
Other Occupational Exposure Limit Values	

EU ELV, Time Weighted Average (TWA):
0.05 mg/m3
Indicative

EH40 WEL, Time Weighted Average (TWA):
0.05 mg/m3

8.2. Exposure controls

Engineering measures
Refer to protective measures listed in sections 7 and 8.

Personal protective equipment

Respiratory protection

Advice	:	Required if vapours or aerosol are released. Recommended Filter type: Combination filter:E-P2

Hand protection

Advice	:	The glove material has to be impermeable and resistant to the product / the substance / the preparation. Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact). Protective gloves should be replaced at first signs of wear. The following materials are suitable:
Material	:	Fluorinated rubber
Break through time	:	>= 8 h
Glove thickness	:	0.5 mm
Material	:	butyl-rubber
Break through time	:	>= 2 h
Glove thickness	:	0.5 mm

Eye protection

Advice	:	Tightly fitting safety goggles

Skin and body protection

Advice	:	Acid resistant protective clothing.

Environmental exposure controls

General advice	:	Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration. If the product contaminates rivers and lakes or drains inform respective authorities. Local authorities should be advised if significant spillages cannot be contained.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Form	:	liquid
Colour	:	colourless
Odour	:	odourless
Odour Threshold	:	no data available
pH	:	ca. 1 (5 g/l; 20 °C)
Solidification point	:	ca. -40 °C
Boiling point/boiling range	:	ca. 120 °C
Flash point	:	not applicable
Evaporation rate	:	no data available
Flammability (solid, gas)	:	The product is not flammable.
Upper explosion limit	:	not applicable
Lower explosion limit	:	not applicable
Vapour pressure	:	Currently we do not have any information from our supplier about this.
Relative vapour density	:	3.4
Density	:	ca. 1.3 g/cm3 (20 °C)
Water solubility	:	completely miscible
Partition coefficient: n-octanol/water	:	no data available
Ignition temperature	:	not applicable
Thermal decomposition	:	Decomposes on heating.
Viscosity, kinematic	:	no data available
Explosivity	:	Product is not explosive.
Oxidizing properties	:	Currently we do not have any information from our supplier about this.

9.2. Other information

Molecular Weight	:	98.1 g/mol

10. Stability and reactivity

10.1. Reactivity

Advice	:	No information available.

10.2. Chemical stability

Advice	:	Stable under normal conditions.

10.3. Possibility of hazardous reactions

Hazardous reactions	:	Gives off hydrogen by reaction with metals. Reacts exothermic with water

10.4. Conditions to avoid

Conditions to avoid	:	Reacts with the following substances:BasesWater
Thermal decomposition	:	Decomposes on heating.

10.5. Incompatible materials

Materials to avoid	:	Organic materials, Bases, Reducing agents, Metals

10.6. Hazardous decomposition products

Hazardous decomposition products	:	Sulphur oxides, Stable under recommended storage conditions.

11. Toxicological information

11.1. Information on toxicological effects

Acute toxicity
Oral
Currently we do not have any information from our supplier about this.
Inhalation
Currently we do not have any information from our supplier about this.

Dermal

Currently we do not have any information from our supplier about this.

Irritation

Skin

Very corrosive (rabbit)

Eyes

Very corrosive (rabbit)
Risk of serious damage to eyes.

Sensitisation

Did not cause sensitization on laboratory animals.

CMR effects

CMR Properties

Carcinogenicity	:	Currently we do not have any information from our supplier about this.
Mutagenicity	:	Currently we do not have any information from our supplier about this.
Teratogenicity	:	Currently we do not have any information from our supplier about this.
Reproductive toxicity	:	Currently we do not have any information from our supplier about this.

Specific Target Organ Toxicity

Single exposure

Currently we do not have any information from our supplier about this.

Repeated exposure

Currently we do not have any information from our supplier about this.

Aspiration toxicity

Currently we do not have any information from our supplier about this.

Further information

Other relevant toxicity information : If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach.

Component: sulphuric acid	**CAS-No. 7664-93-9**

Acute toxicity

Oral

LD50 : 2140 mg/kg (rat)

12. Ecological information

12.1. Toxicity

Component: sulphuric acid	**CAS-No. 7664-93-9**

Acute toxicity

Fish

LC50 : 42 mg/l (Gambusia affinis; 96 h)

Toxicity to daphnia and other aquatic invertebrates.

EC50 : 29 mg/l (Daphnia magna; 24 h)

Bacteria

EC50 : 58 mg/l (activated sludge; 120 h)

12.2. Persistence and degradability

Component: sulphuric acid	**CAS-No. 7664-93-9**
Persistence and degradability	
Persistence	
Result : no data available	
Biodegradability	
Result : The methods for determining the biological degradability are not applicable to inorganic substances.	

12.3. Bioaccumulative potential

Component: sulphuric acid	**CAS-No. 7664-93-9**
Bioaccumulation	
Result : no data available	

12.4. Mobility in soil

Component: sulphuric acid	**CAS-No. 7664-93-9**
Mobility	
: no data available	

12.5. Results of PBT and vPvB assessment

Component: sulphuric acid	**CAS-No. 7664-93-9**
Results of PBT and vPvB assessment	
Result : not applicable	

12.6. Other adverse effects

Additional ecological information		
Result	:	All numerical values for ecotoxicity effects are calculated on the pure substances. Harmful effects to aquatic organisms due to pH-shift. Neutralization is normally necessary before waste water is discharged into water treatment plants. Do not flush into surface water or sanitary sewer system.

13. Disposal considerations

13.1. Waste treatment methods

Product	:	Disposal together with normal waste is not allowed. Special disposal required according to local regulations. Do not let product enter drains. Contact waste disposal services.
Contaminated packaging	:	Empty contaminated packagings thoroughly. They can be recycled after thorough and proper cleaning. Packagings that cannot be cleaned are to be disposed of in the same manner as the product.
European Waste Catalogue Number	:	No waste code according to the European Waste Catalogue can be assigned for this product, as the intended use dictates the assignment. The waste code is established in consultation with the regional waste disposer.

14. Transport information

14.1. UN number

2796

14.2. UN proper shipping name

ADR : SULPHURIC ACID
RID : SULPHURIC ACID
IMDG : SULPHURIC ACID

14.3. Transport hazard class(es)

ADR-Class	: 8
(Labels; Classification Code; Hazard identification No; Tunnel restriction code)	8; C1; 80; (E)
RID-Class	: 8
(Labels; Classification Code; Hazard identification No)	8; C1; 80
IMDG-Class	: 8
(Labels; EmS)	8; F-A, S-B

14.4. Packaging group

ADR	: II
RID	: II
IMDG	: II

14.5. Environmental hazards

Labeling according to 5.2.1.8 ADR	: no
Labeling according to 5.2.1.8 RID	: no
Labeling according to 5.2.1.6.3 IMDG	: no
Classification as environmentally hazardous according to 2.9.3 IMDG	: no
Classified as “P” according to 2.10 IMDG	: no

14.6. Special precautions for user

Not applicable.

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

IMDG : Not applicable.

15. Regulatory information

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

Notification status

sulphuric acid:

Regulatory List	Notification	Notification number
AICS	YES	
DSL	YES	
INV (CN)	YES	
ENCS (JP)	YES	(1)-430

ISHL (JP)	YES	(1)-430
TSCA	YES	
EINECS	YES	231-639-5
KECI (KR)	YES	97-1-405
KECI (KR)	YES	KE-32570
PICCS (PH)	YES	

15.2. Chemical Safety Assessment

Currently we do not have any information from our supplier about this.

16. Other information

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

R35	Causes severe burns.

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

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

Further information

Other information : Restricted to professional users. Attention - Avoid exposure - obtain special instructions before use.The information provided in this Safety Data Sheet is correct to our knowledge at the date of its revision. The information given only describes the products with regard to safety arrangements and is not to be considered as a warranty or quality specification and does not constitute a legal relationship.
The information contained in this Safety Data Sheet relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text

|| Indicates updated section.

SAFETY DATA SHEET

According to Regulation (EC) No. 1907/2006 (REACH) Article 31, Annex II as amended.

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

1.1 Product identifier

Product name: TITAN GANYMET ULTRA LA

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

Identified uses: Lubricant
Uses advised against: No uses advised against identified.

1.3 Details of the supplier of the safety data sheet

Manufacturer / Supplier	Fuchs Schmierstoffe GmbH Friesenheimer Str. 19 68169 Mannheim
Telephone:	+49 621 3701-0 (ZENTRALE)
Fax:	+49 621 3701-570
Contact Person:	Fuchs Schmierstoffe GmbH Abteilung Produktsicherheit
Telephone:	+49 621 3701-1333
Fax:	+49 621 3701-7303
E-mail:	produktsicherheit-FS@fuchs.com

US Distributor
Fuchs Lubricants Co.
17050 Lathrop Avenue
Harvey, IL 60426
(708) 333-8900
(800) 255-3924 24 hrs Emergency

1.4 Emergency telephone number:

+49 621 3701-1333 / +49 621 3701-0 (Mo-Do 8-17, Fr 8-16)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

The product has not been classified as hazardous, but needs to be labelled according to regulation (EU) 1272/2008 (CLP).

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

Hazard summary
Physical Hazards: No data available.

2.2 Label Elements

EUH208: Contains Alkyl phenol, long chain. May produce an allergic reaction.

EUH210: Safety data sheet available on request.

2.3 Other hazards: By handling of mineral oil products and chemical products no particular hazard is known when normal precautions (item 7) and personal protective equipment (item 8) are kept. The product may not be released into the environment without control.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

General information: Mixture containing severely refined base oils and additives.

Chemical name	Identifier	Concentration *	REACH Registration No.	Notes
alkylphenol	EINECS: 406-040-9	1,00 - <5,00%	01-0000015551-76	
alkarylamine, longchained	EINECS: 253-249-4	1,00 - <5,00%	01-2119488911-28	
Alkyl phenol, long chain	EC: 931-468-2	1,00 - <5,00%	01-2119498288-19	

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.
PBT: persistent, bioaccumulative and toxic substance.
vPvB: very persistent and very bioaccumulative substance.

Classification

Chemical name	Identifier	Classification	
alkylphenol	EINECS: 406-040-9	CLP:	Aquatic Chronic 4;H413
alkarylamine, longchained	EINECS: 253-249-4	CLP:	Aquatic Chronic 4;H413
Alkyl phenol, long chain	EC: 931-468-2	CLP:	Skin Sens. 1B;H317, STOT RE 2;H373

CLP: Regulation No. 1272/2008.

For the wording of the listed hazard statements refer to section 16.

Please note that the mineral oils and petroleum distillates used in our products are severely refined and have a DMSO extract < 3% as measured by method IP 346 and are not classified as carcinogenic according to Note L of Annex VI of Regulation EC 1272/2008."

SECTION 4: First aid measures

General: Instantly remove any clothing soiled by the product.

4.1 Description of first aid measures

Inhalation: Supply fresh air; consult doctor in case of symptoms.

Eye contact: Promptly wash eyes with plenty of water while lifting the eye lids.

Skin Contact: Wash with soap and water.

Ingestion: Rinse mouth thoroughly.

4.2 Most important symptoms and effects, both acute and delayed: May cause skin and eye irritation.

4.3 Indication of any immediate medical attention and special treatment needed	Get medical attention if symptoms occur.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media:	CO2, fire extinguishing powder or fog like water spraying. Extinguish larger fires with alcohol resistant foam or spray water with suitable surfactant added
Unsuitable extinguishing media:	Water with a full water jet.
5.2 Special hazards arising from the substance or mixture:	During fire, gases hazardous to health may be formed.

5.3 Advice for firefighters

Special fire fighting procedures:	Move container from fire area if it can be done without risk. Dispose of fire debris and contaminated fire fighting water inaccordance with official regulations. Collect contaminated fire fighting water separately. It must not enter drains.
Special 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:	In case of spills, beware of slippery floors and surfaces.
6.2 Environmental Precautions:	Prevent from spreading (e.g. by binding or oil barriers). Avoid release to the environment. Environmental manager must be informed of all major spillages. Prevent further leakage or spillage if safe to do so. Do not allow to enter drainage system, surface or ground water.
6.3 Methods and material for containment and cleaning up:	Absorb with liquid-binding material (sand, diatomite, acidbinders, universal binders, sawdust). Dispose of the material collected according to regulations. Stop the flow of material, if this is without risk.
6.4 Reference to other sections:	See Section 8 of the SDS for Personal Protective Equipment. See Section 7 for information on safe handling See Section 13 for information on disposal.

SECTION 7: Handling and storage:

7.1 Precautions for safe handling:

Prevent formation of aerosols. Do not eat, drink or smoke when working with the product. Take usual precautions when handling mineral oil products or chemical products. Observe good industrial hygiene practices. Provide adequate ventilation.

7.2 Conditions for safe storage, including any incompatibilities:

Local regulations concerning handling and storage of waterpolluting products have to be followed. Do not heat up to temperatures close to the flash point.

7.3 Specific end use(s):

No data available.

Storage Class:

10, Combustible liquids

SECTION 8: Exposure controls/personal protection

8.1 Control Parameters

Occupational Exposure Limits

None of the components have assigned exposure limits.

8.2 Exposure controls

Appropriate engineering controls:

Provide adequate ventilation. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

General information:

Wash hands before breaks and after work. Use personal protective equipment as required. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment. The usual precautionary measures should be adhered to inhandling the chemicals or the mineral oil products.

Eye/face protection:

Avoid contact with skin and eyes. Goggles/face shield are recommended. If risk of splashing, wear safety goggles or face shield.

Skin protection

Hand Protection:

Material: Nitrile-butadiene rubber (NBR).
Min. Breakthrough time: >= 480 min
Recommended thickness of the material: >= 0,38 mm

Avoid long-term and repeated skin contact. Suitable gloves can be recommended by the glove supplier. Use skin protection cream for preventive skin protection. Protective gloves, where permitted in acc. to safety directions. The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Other:

Do not carry cleaning cloths impregnated with the product in trouser pockets. Wear suitable protective clothing.

Respiratory Protection:	Ensure good ventilation/exhaustion at the workplace. Avoid breathing vapour/ aerosol.
Thermal hazards:	Not known.
Hygiene measures:	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing to remove contaminants. Discard contaminated footwear that cannot be cleaned.
Environmental Controls:	No data available.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	
Physical state:	liquid
Form:	liquid
Color:	Light brown
Odor:	Characteristic
Odor Threshold:	Not applicable for mixtures
pH:	Not applicable
Freezing point:	Not applicable for mixtures
Boiling Point:	Value not relevant for classification
Flash Point:	260 °C
Evaporation Rate:	Not applicable for mixtures
Flammability (solid, gas):	Value not relevant for classification
Flammability Limit - Upper (%)–:	Value not relevant for classification
Flammability Limit - Lower (%)–:	Value not relevant for classification
Vapor pressure:	Not applicable for mixtures
Vapor density (air=1):	Not applicable for mixtures
Density:	0,87 g/cm3 (15 °C)
Solubility(ies)	
Solubility in Water:	Insoluble in water
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	Not applicable for mixtures
Autoignition Temperature:	Value not relevant for classification
Decomposition Temperature:	Value not relevant for classification
Kinematic viscosity:	120,8 mm2/s (40 °C)
Explosive properties:	Value not relevant for classification
Oxidizing properties:	Value not relevant for classification

9.2 Other information No data available.

SECTION 10: Stability and reactivity

10.1 Reactivity:	Stable under normal use conditions.
10.2 Chemical Stability:	Stable under normal use conditions.
10.3 Possibility of hazardous reactions:	Stable under normal use conditions.
10.4 Conditions to avoid:	Stable under normal use conditions.
10.5 Incompatible Materials:	Strong oxidizing substances. Strong acids. Strong bases.
10.6 Hazardous Decomposition Products:	Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapors.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Oral

Product:

Not classified for acute toxicity based on available data.

Specified substance(s)

alkarylamine, long-chained	LD 50 (Rat): > 5.001 mg/kg (OECD 423)

Dermal

Product:

Not classified for acute toxicity based on available data.

Inhalation

Product:

Not classified for acute toxicity based on available data.

Skin Corrosion/Irritation:

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

Specified substance(s)

alkylphenol	OECD 404 (Rabbit): Not irritant.
alkarylamine, long-chained	OECD 404 (Rabbit): Not irritant.

Serious Eye Damage/Eye Irritation:

Product:	Based on available data, the classification criteria are not met.
Specified substance(s)	
alkylphenol	OECD 405 (Rabbit): Not irritant.
alkarylamine, long-chained	OECD 405 (Rabbit): Not irritant.

Respiratory or Skin Sensitization:

Product:	Skin sensitizer: Based on available data, the classification criteria are not met. Respiratory sensitizer: Based on available data, the classification criteria are not met.
Specified substance(s)	
alkylphenol	No sensitizing effect (guinea pig); OECD 406
alkarylamine, long-chained	No sensitizing effect (guinea pig); OECD 406

Germ Cell Mutagenicity

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

Carcinogenicity

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

Reproductive toxicity

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

Specific Target Organ Toxicity - Single Exposure

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

Specific Target Organ Toxicity - Repeated Exposure

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

Aspiration Hazard

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

Other adverse effects: No data available.

SECTION 12: Ecological information

12.1 Toxicity

Acute toxicity

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

Fish

Specified substance(s)	
alkarylamine, long-chained	LC 50 (Fish, 96 h): > 101 mg/l (OECD 203)

Aquatic Invertebrates
Specified substance(s)

alkylphenol	EC 50 (Water Flea, 24 h): > 101 mg/l (OECD 202)
alkarylamine, long-chained	EC 50 (Water Flea, 48 h): > 101 mg/l (OECD 202)

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

Toxicity to Aquatic Plants
Specified substance(s)

alkarylamine, long-chained	EC 50 (Alga, 72 h): > 101 mg/l (OECD 201)

12.2 Persistence and Degradability

Biodegradation

Product:	Not applicable for mixtures
Specified substance(s)	
alkylphenol	(OECD 301B) Not easily biodegradable
alkarylamine, long-chained	1 % (28 d, OECD 301B) Not easily biodegradable

12.3 Bioaccumulative potential

Product:	Not applicable for mixtures
Specified substance(s)	
alkylphenol	Oncorhynchus mykiss, Bioconcentration Factor (BCF): 260 (OECD 305) May be accumulated in organism
alkarylamine, long-chained	Bioconcentration Factor (BCF): 1.584

12.4 Mobility in soil:

Product: Not applicable for mixtures

12.5 Results of PBT and vPvB assessment: The product does not contain any substances fulfilling the PBT/vPvB criteria.

12.6 Other adverse effects: No data available.

Water Hazard Class (WGK): WGK 1: slightly water-endangering.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

General information: Dispose in accordance with all applicable regulations.

Disposal methods: Do not empty into drains; dispose of this material and its container in a safe way. When storing used products, ensure that the waste categories and mixing instructions are observed.

European Waste Codes

13 02 05*: mineral-based non-chlorinated engine, gear and lubricating oils

SECTION 14: Transport information

ADR/RID

14.1 UN Number:	–
14.2 UN Proper Shipping Name:	–
14.3 Transport Hazard Class(es)	
Class:	Non-dangerous goods
Label(s):	–
Hazard No. (ADR):	–
Tunnel restriction code:	–
14.4 Packing Group:	–
14.5 Environmental hazards:	–
14.6 Special precautions for user:	–

ADN

14.1 UN Number:	–
14.2 UN Proper Shipping Name:	–
14.3 Transport Hazard Class(es)	
Class:	Non-dangerous goods
Label(s):	–
14.3 Packing Group:	–
14.5 Environmental hazards:	–
14.6 Special precautions for user:	–

IMDG

14.1 UN Number:	–
14.2 UN Proper Shipping Name:	–
14.3 Transport Hazard Class(es)	
Class:	Non-dangerous goods
Label(s):	–
EmS No.:	–
14.3 Packing Group:	–
14.5 Environmental hazards:	–
14.6 Special precautions for user:	–

IATA

14.1 UN Number:	–
14.2 Proper Shipping Name:	–
14.3 Transport Hazard Class(es):	
Class:	Non-dangerous goods
Label(s):	–
14.4 Packing Group:	–
14.5 Environmental hazards:	–
14.6 Special precautions for user:	–

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

SECTION 15: Regulatory information

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

EU Regulations

Regulation (EC) No. 2037/2000 Substances that deplete the ozone layer: none

Regulation (EC) No. 850/2004 on persistent organic pollutants: none

National Regulations

Water Hazard Class (WGK): WGK 1: slightly water-endangering.

15.2 Chemical safety assessment: No Chemical Safety Assessment has been carried out.

SECTION 16: Other information

Revision Information: Vertical lines in the margin indicate an amendment.

Wording of the H-statements in section 2 and 3

H317	May cause an allergic skin reaction.
H373	May cause damage to organs through prolonged or repeated exposure.
H413	May cause long lasting harmful effects to aquatic life.

Other information: The classification complies with the current EU lists; however, it has been supplemented with expert literature information and information provided by/about our company. It was derived from the test data and/or the application of the conventional method.

Revision Date: 02.03.2020

Disclaimer: The data contained in this safety data sheet are based on our current knowledge and experience and are given to the best of our knowledge and belief. It characterizes the product only with regard to safety requirements for handling, transport and disposal. The data do not describe the product's properties (tech. product specification). Neither should any agreed property nor the suitability of the product for any specific technical application be deduced from the data contained in this safety data sheet. Modifications on this document are not allowed. The data are not transferable to other products. In the case of mixing the product with other products or in the case of processing, the data in this safety data sheet are not necessarily valid for the new-made material. It is the responsibility of the recipient of the product to observe federal, state and local law. Please contact us to obtain up-to-date safety data sheets. This document was issued electronically and has no signature.

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:

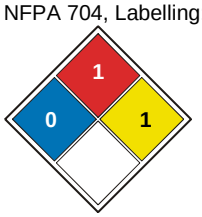
No data available.

- 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).

SAFETY DATA SHEET

acc.to ISO/DIS 11014 for USA

1 PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifier

Product name: MAINTAIN FRICOFIN

Other means of identification: For further information, please refer to section 9 of the SDS.

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

Identified uses: Antifreeze/coolant

Uses advised against: No uses advised against identified.

1.3 Details of the supplier of the safety data sheet

Manufacturer	Fuchs Schmierstoffe GmbH Friesenheimer Str. 19 68169 Mannheim	US Distributor Fuchs Lubricants Co. 17050 Lathrop Avenue Harvey, IL 60426
Telephone:	+49 621 3701-0 (ZENTRALE)	
Fax:	+49 621 3701-570	
Contact Person:	Fuchs Schmierstoffe GmbH Abteilung Produktsicherheit	
Telephone:	+49 621 3701-1333	
Fax:	+49 621 3701-7303	
E-mail:	PRODUKTSICHERHEIT@FUCHS-SCHMIERSTOFFE.DE	

1.4 US contact telephone : 708-333-8900

Emergency telephone: **800-255-3924**

2 HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

The product has been classified and labelled as hazardous according to the legislation in force.

Health Hazards

Acute toxicity (Oral)	Category 4
Toxic to reproduction	Category 2
Specific Target Organ Toxicity - Repeated Exposure	Category 2

Hazard summary

Physical Hazards: No data available.

2.2 Label Elements

Signal Words: Warning

Hazard Statement(s):
H302: Harmful if swallowed.
H361: Suspected of damaging fertility or the unborn child.
H373: May cause damage to organs through prolonged or repeated exposure.

Precautionary Statements

Prevention:
P264: Wash thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P281: Use personal protective equipment as required.
P260: Do not breathe dust or mists.

Response:
P301+P312: IF SWALLOWED: Call a POISON CENTERdoctor/ if you feel unwell.
P330: Rinse mouth.
P308+P313: If exposed or concerned: Get medical advice/attention.

Storage: P405: Store locked up.

Disposal: P501: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

2.3 Other hazards: By handling of mineral oil products and chemical products no particular hazard is known when normal precautions (item 7) and personal protective equipment (item 8) are kept. The product may not be released into the environment without control.

Unknown toxicity: Due to information available product does not contain any ingredients of unknown toxicity.

3 COMPOSITION / INFORMATION ON INGREDIENTS

General information: Mixture of the substances listed below with harmless additions.

Chemical name	Identifier	Concentration *	Notes
Ethanediol	107-21-1	50.00 - <100.00%	
Na-salt of carboxylic acid	19766-89-3	1.00 - <3.00%	
sodium borate	12179-04-3	1.00 - <5.00%	

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.
PBT: persistent, bioaccumulative and toxic substance.
vPvB: very persistent and very bioaccumulative substance.
** Regulation (EC) No. 1907/2006, REACH Article 59(1). Candidate List

Classification

Chemical name	Classification	
Ethanediol	107-21-1	Acute Tox. 4;H302, STOT RE 2;H373
Na-salt of carboxylic acid	19766-89-3	Repr. 2;H361d
sodium borate	12179-04-3	Repr. 1B;H360FD, Eye Irrit. 2;H319

4 FIRST AID MEASURES

General: Instantly remove any clothing soiled by the product.

4.1 Description of first aid measures

Inhalation: Supply fresh air; consult doctor in case of symptoms.

Eye contact: Promptly wash eyes with plenty of water while lifting the eye lids.

Skin Contact: Wash with soap and water.

Ingestion: Rinse mouth. Call a POISON CENTER/doctor/ if you feel unwell.

4.2 Most important symptoms and effects, both acute and delayed: Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

4.3 Indication of any immediate medical attention and special treatment needed Get medical attention if symptoms occur.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media:	CO_2, fire extinguishing powder or fog like water spraying. Extinguish larger fires with alcohol resistant foam or spray water with suitable surfactant added
Unsuitable extinguishing media:	Water with a full water jet.
5.2 Special hazards arising from the substance or mixture:	During fire, gases hazardous to health may be formed.

5.3 Advice for firefighters

Special fire fighting procedures:	Move container from fire area if it can be done without risk. Dispose of fire debris and contaminated fire fighting water inaccordance with official regulations. Collect contaminated fire fighting water separately. It must not enter drains.
Special 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:	In case of spills, beware of slippery floors and surfaces.
6.2 Environmental Precautions:	Prevent from spreading (e.g. by binding or oil barriers). Avoid release to the environment. Environmental manager must be informed of all major spillages. Prevent further leakage or spillage if safe to do so. Do not allow to enter drainage system, surface or ground water.
6.3 Methods and material for containment and cleaning up:	Absorb with liquid-binding material (sand, diatomite, acidbinders, universal binders, sawdust). Dispose of the material collected according to regulations. Stop the flow of material, if this is without risk.
6.4 Reference to other sections:	See Section 8 of the SDS for Personal Protective Equipment. See Section 7 for information on safe handling See Section 13 for information on disposal. Dike for later disposal. Prevent entry into waterways, sewer, basements or confined areas. Stop the flow of material, if this is without risk.

SECTION 7: Handling and storage:

7.1 Precautions for safe handling: Do not eat, drink or smoke when working with the product. Take usual precautions when handling mineral oil products or chemical products. Prevent formation of aerosols. Observe good industrial hygiene practices. Provide adequate ventilation.

7.2 Conditions for safe storage, including any incompatibilities: Local regulations concerning handling and storage of waterpolluting products have to be followed.

7.3 Specific end use(s): not applicable

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Exposure Limits

Chemical name	Type	Exposure Limit Values		Source
Ethanediol	Ceiling	50 ppm	125 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)
Ethanediol - Aerosol.	Ceiling		100 mg/m3	US. ACGIH Threshold Limit Values (02 2012)
sodium borate	TWA		10 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)
sodium borate - Inhalable fraction.	TWA		2 mg/m3	US. ACGIH Threshold Limit Values (02 2012)
sodium borate - Inhalable fraction.	STEL		6 mg/m3	US. ACGIH Threshold Limit Values (02 2012)

8.2. Exposure controls

Appropriate engineering controls: Provide adequate ventilation. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

General information: Wash hands before breaks and after work. Use personal protective equipment as required. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment. The usual precautionary measures should be adhered to inhandling the chemicals or the mineral oil products.

Eye/face protection: Safety glasses (EN 166) recommended during refilling.

Skin protection

Hand Protection:	Material: Nitrile butyl rubber (NBR). Min. Breakthrough time: >= 480 min Recommended thickness of the material: >= 0.38 mm Avoid long-term and repeated skin contact. Suitable gloves can be recommended by the glove supplier. Use skin protection cream for preventive skin protection. Protective gloves, where permitted in acc. to safety directions. The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
Other:	Do not carry cleaning cloths impregnated with the product in trouser pockets. Wear suitable protective clothing.
Respiratory Protection:	Ensure good ventilation/exhaustion at the workplace. Avoid breathing vapour/ aerosol.
Thermal hazards:	No data available.
Hygiene measures:	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing to remove contaminants. Discard contaminated footwear that cannot be cleaned.
Environmental Controls:	No data available.

9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties **Appearance**

Physical state:	liquid
Form:	liquid
Color:	Various
Odor:	Characteristic
Odor Threshold:	Not applicable for mixtures
pH:	7.2 (, 20 °C)
Freezing point:	Not applicable for mixtures
Boiling Point:	> 165 °C
Flash Point:	120 °C
Evaporation Rate:	Not applicable for mixtures
Flammability (solid, gas):	Value not relevant for classification
Flammability Limit - Upper (%)–:	Not applicable for mixtures
Flammability Limit - Lower (%)–:	Not applicable for mixtures

Vapor pressure:	Not applicable for mixtures
Vapor density (air=1):	Not applicable for mixtures
Density:	1.12 g/cm3 (20 °C)
Solubility(ies)	
Solubility in Water:	Soluble
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	Not applicable for mixtures
Autoignition Temperature:	Value not relevant for classification
Decomposition Temperature:	Value not relevant for classification
Kinematic viscosity:	20 - 30 mm2/s (20 °C)
Explosive properties:	Value not relevant for classification
Oxidizing properties:	Value not relevant for classification
9.2 Other information	No data available.

SECTION 10: Stability and reactivity

10.1 Reactivity:	Stable under normal use conditions.
10.2 Chemical Stability:	Stable under normal use conditions.
10.3 Possibility of hazardous reactions:	Stable under normal use conditions.
10.4 Conditions to avoid:	Stable under normal use conditions.
10.5 Incompatible Materials:	Strong oxidizing substances. Strong acids. Strong bases.
10.6 Hazardous Decomposition Products:	Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapors.

11 TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation:	No data available.
Ingestion:	Harmful if swallowed.
Skin Contact:	No data available.
Eye contact:	No data available.

Acute toxicity

Oral

Product:	LD 50 (Human): 1,600 mg/kg
Specified substance(s)	
Ethanediol	LD 50 (Human): 1,600 mg/kg

Dermal

Product:	
Specified substance(s)	
Ethanediol	LD 50 (Mouse): 3,500 mg/kg

Inhalation

Product:

Not classified for acute toxicity based on available data.

Skin Corrosion/Irritation:

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

Serious Eye Damage/Eye Irritation:

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

Respiratory or Skin Sensitization:

Product: Skin sensitizer: Based on available data, the classification criteria are not met.
Respiratory sensitizer: Based on available data, the classification criteria are not met.

Specified substance(s)

Ethanediol	No sensitizing effect (guinea pig); OECD 406

Germ Cell Mutagenicity

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

Carcinogenicity

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

IARC: IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

No carcinogenic components identified

NTP: US. National Toxicology Program (NTP) Report on Carcinogens:

No carcinogenic components identified

OSHASP: US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

No carcinogenic components identified

Reproductive toxicity
Product: Based on available data, the classification criteria are met.

Specific Target Organ Toxicity - Single Exposure
Product: Based on available data, the classification criteria are not met.

Specific Target Organ Toxicity - Repeated Exposure
Product: Based on available data, the classification criteria are met.

Aspiration Hazard
Product: Based on available data, the classification criteria are not met.

12 ECOLOGICAL INFORMATION

12.1 Toxicity

Acute toxicity
Product: Based on available data, the classification criteria are not met.

Fish
Product: LC 50 (Fish, 96 h): > 101 mg/l

Aquatic Invertebrates
Product: EC 50 (Water Flea, 48 h): > 101 mg/l

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

Fish
Specified substance(s)
Ethanediol NOEC (Fish, 7 d): 15,380 mg/l

Aquatic Invertebrates
Specified substance(s)
Ethanediol NOEC (Water Flea, 7 d): 8,590 mg/l

Toxicity to Aquatic Plants
Product: EC 50 (Alga, 72 h): > 101 mg/l

12.2 Persistence and Degradability

Biodegradation
Product: Not applicable for mixtures

Specified substance(s)

Ethanediol	> 90 % (10 d, OECD 301A) The product is easily biodegradable.

12.3 Bioaccumulative potential

Product: Not applicable for mixtures

12.4 Mobility in soil:

Product: Not applicable for mixtures

12.5 Results of PBT and vPvB assessment: The product does not contain any substances fulfilling the PBT/vPvB criteria.

12.6 Other adverse effects: No data available.

13 Disposal considerations

13.1 Waste treatment methods

General information: Dispose in accordance with all applicable regulations.

Disposal methods: Discharge, treatment, or disposal may be subject to national, state, or local laws.

14 TRANSPORT INFORMATION

DOT

Not regulated.

IMDG - International Maritime Dangerous Goods Code

Not regulated.

IATA

Not regulated.

15 REGULATORY INFORMATION

US Federal Regulations

US State Regulations

US. California Proposition 65

This product contains chemical(s) known to the State of California to cause cancer and/or to cause birth defects or other reproductive harm.

Inventory Status

TSCA	On or in compliance with the inventory

16 OTHER INFORMATION

Revision Information: Vertical lines in the margin indicate an amendment.

Wording of the R-phrases and H-statements in section 2 and 3

H302	Harmful if swallowed.
H319	Causes serious eye irritation.
H360FD	May damage fertility. May damage the unborn child.
H361	Suspected of damaging fertility or the unborn child.
H361d	Suspected of damaging the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.

Revision Date: 10.11.2017

Disclaimer: The data contained in this safety data sheet are based on our current knowledge and experience and are given to the best of our knowledge and belief. It characterizes the product only with regard to safety requirements for handling, transport and disposal. The data do not describe the product's properties (tech. product specification). Neither should any agreed property nor the suitability of the product for any specific technical application be deduced from the data contained in this safety data sheet. Modifications on this document are not allowed. The data are not transferable to other products. In the case of mixing the product with other products or in the case of processing, the data in this safety data sheet are not necessarily valid for the new-made material. It is the responsibility of the recipient of the product to observe federal, state and local law. Please contact us to obtain up-to-date safety data sheets. This document was issued electronically and has no signature.

SAFETY DATA SHEET

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

As of the revision date above, this SDS meets the regulations in the United Kingdom excluding Northern Ireland.

1.1. PRODUCT IDENTIFIER

Product Name: **MOBIL PEGASUS 1005**
Product Description: Base Oil and Additives
Product Code: 201525106025, 606996-60

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

Intended Use: Natural gas engine oil

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

1.3. DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

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

Product Technical Information:	(UK) 0800 028 2851
Supplier General Contact:	(UK) 0800 028 2851
SDS Internet Address:	www.msds.exxonmobil.com
E-Mail:	sds.uk@exxonmobil.com
Supplier / Registrant:	(BE) +32 3 790 3111

1.4. EMERGENCY TELEPHONE NUMBER

24 Hour Emergency Telephone:	(UK) (+44) 870 8200418
National Poison Control Centre:	(UK) 111

SECTION 2 HAZARDS IDENTIFICATION

2.1. CLASSIFICATION OF SUBSTANCE OR MIXTURE

Classification according to GB CLP

Not Classified

2.2. LABEL ELEMENTS

Label elements according to GB CLP

Hazard Statements:

Supplemental:
EUH210: Safety data sheet available on request.
EUH208: Contains: C14-16-18 ALKYL PHENOL May produce an allergic reaction.

2.3. OTHER HAZARDS

Physical / Chemical Hazards:
No significant hazards.

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

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

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

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

3.2. MIXTURES

This material is defined as a mixture.

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

Name	CAS#	EC#	Registration#	Concentration *	GHS/CLP classification
2-PENTANOL, 4-METHYL-, HYDROGEN PHOSPHORODITHIOATE, ZINC SALT	2215-35-2	218-679-9	01-2119953275-34	0.1 - < 1%	[Acute Tox. 5 H303], [Aquatic Acute 2 H401], Aquatic Chronic 2 H411, Skin Irrit. 2 H315, Eye Dam. 1 H318
reaction mass of isomers of: C7-9-alkyl 3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionate	125643-61-0	406-040-9	01-2119830067-43	1 - < 5%	Aquatic Chronic 4 H413
C14-16-18 ALKYL PHENOL	-	931-468-2	01-2119498288-19	0.1 - < 1%	Skin Sens. 1B H317, STOT RE 2 H373

Note - any classification in brackets is a GHS building block that was not adopted in GB CLP and therefore is not applicable in the countries which have implemented CLP and is shown for informational purposes only.

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

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

SECTION 4 FIRST AID MEASURES

4.1. DESCRIPTION OF FIRST AID MEASURES

INHALATION

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

SKIN CONTACT

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

EYE CONTACT

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

INGESTION

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

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

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

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

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

SECTION 5 FIRE FIGHTING MEASURES

5.1. EXTINGUISHING MEDIA

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

Unsuitable Extinguishing Media: Straight streams of water

5.2. SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

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

5.3. ADVICE FOR FIRE FIGHTERS

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

FLAMMABILITY PROPERTIES

Flash Point [Method]: >220°C (428°F) [ASTM D-92]
Upper/Lower Flammable Limits (Approximate volume % in air): UEL: 7.0 LEL: 0.9 [Estimated]
Autoignition Temperature: No data available

SECTION 6 ACCIDENTAL RELEASE MEASURES

6.1. PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

NOTIFICATION PROCEDURES

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

PROTECTIVE MEASURES

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

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

6.2. ENVIRONMENTAL PRECAUTIONS

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

6.3. METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP

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

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

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

6.4. REFERENCES TO OTHER SECTIONS

See Sections 8 and 13.

SECTION 7 HANDLING AND STORAGE

7.1. PRECAUTIONS FOR SAFE HANDLING

Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). When the material is handled in bulk, an electrical spark could ignite any flammable vapors from liquids or residues that may be present (e.g., during switch-loading operations). Use proper bonding and/or earthing procedures. However, bonding and earthing may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

Static Accumulator: This material is a static accumulator.

7.2. CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

The type of container used to store the material may affect static accumulation and dissipation. Do not store in open or unlabelled containers. Keep away from incompatible materials.

7.3. SPECIFIC END USES

Section 1 informs about identified end-uses. No industrial or sector specific guidance available.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. CONTROL PARAMETERS

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

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

UK Health and Safety Executive (HSE)

8.2. EXPOSURE CONTROLS

ENGINEERING CONTROLS

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

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

PERSONAL PROTECTION

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

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

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

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

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

No protection is ordinarily required under normal conditions of use.

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

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

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

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

ENVIRONMENTAL CONTROLS

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

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

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

9.1. INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid
Colour: Amber
Odour: Characteristic
Odour Threshold: No data available
pH: Not technically feasible
Melting Point: Not technically feasible
Freezing Point: No data available
Initial Boiling Point / and Boiling Range: > 288°C (550°F) [Estimated]
Flash Point [Method]: >220°C (428°F) [ASTM D-92]
Evaporation Rate (n-butyl acetate = 1): No data available
Flammability (Solid, Gas): Not technically feasible
Upper/Lower Flammable Limits (Approximate volume % in air): UEL: 7.0 LEL: 0.9 [Estimated]

Vapour Pressure: < 0.013 kPa (0.1 mm Hg) at 20 °C [Estimated]
Vapour Density (Air = 1): > 2 at 101 kPa [Estimated]
Relative Density (at 15 °C): [No data available] [test method unavailable]
Solubility(ies): water Negligible
Partition coefficient (n-Octanol/Water Partition Coefficient): > 3.5 [Estimated]
Autoignition Temperature: No data available
Decomposition Temperature: No data available
Viscosity: [N/D at 40ºC] | 13.6 cSt (13.6 mm2/sec) at 100°C [ASTM D 445]
Explosive Properties: None
Oxidizing Properties: None

9.2. OTHER INFORMATION

Pour Point: -12°C (10°F) [ASTM D97]
DMSO Extract (mineral oil only), IP-346: < 3 %wt

SECTION 10 STABILITY AND REACTIVITY

10.1. REACTIVITY: See sub-sections below.

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

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

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

10.5. INCOMPATIBLE MATERIALS: Strong oxidisers

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

SECTION 11 TOXICOLOGICAL INFORMATION

11.1. INFORMATION ON TOXICOLOGICAL EFFECTS

Hazard Class	Conclusion / Remarks
Inhalation	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Irritation: No end point data for material.	Negligible hazard at ambient/normal handling temperatures.
Ingestion	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin Corrosion/Irritation: No end point data for material.	Negligible irritation to skin at ambient temperatures. Based on assessment of the components.
Eye	
Serious Eye Damage/Irritation: No end point	May cause mild, short-lasting discomfort to eyes. Based on

data for material.	assessment of the components.
Sensitisation	
Respiratory Sensitization: No end point data for material.	Not expected to be a respiratory sensitizer.
Skin Sensitization: No end point data for material.	Not expected to be a skin sensitizer. Based on assessment of the components.
Aspiration: Data available.	Not expected to be an aspiration hazard. Based on physico-chemical properties of the material.
Germ Cell Mutagenicity: No end point data for material.	Not expected to be a germ cell mutagen. Based on assessment of the components.
Carcinogenicity: No end point data for material.	Not expected to cause cancer. Based on assessment of the components.
Reproductive Toxicity: No end point data for material.	Not expected to be a reproductive toxicant. Based on assessment of the components.
Lactation: No end point data for material.	Not expected to cause harm to breast-fed children.
Specific Target Organ Toxicity (STOT)	
Single Exposure: No end point data for material.	Not expected to cause organ damage from a single exposure.
Repeated Exposure: No end point data for material.	Not expected to cause organ damage from prolonged or repeated exposure. Based on assessment of the components.

TOXICITY FOR SUBSTANCES

NAME	ACUTE TOXICITY
2-PENTANOL, 4-METHYL-, HYDROGEN PHOSPHORODITHIOATE, ZINC SALT	Oral Lethality: LD 50 2230 mg/kg (Rat)

OTHER INFORMATION

For the product itself:

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

Contains:

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

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data for the material, components of the material, or for similar materials, through the application of bridging principals.

12.1. TOXICITY

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

12.2. PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component -- Expected to be inherently biodegradable

12.3. BIOACCUMULATIVE POTENTIAL

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

12.4. MOBILITY IN SOIL

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

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

Material does not meet the Reach Annex XIII criteria for PBT or vPvB.

12.6. OTHER ADVERSE EFFECTS

No adverse effects are expected.

SECTION 13 DISPOSAL CONSIDERATIONS

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

13.1. WASTE TREATMENT METHODS

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

European Waste Code: 13 02 05*

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

This material is considered as hazardous waste pursuant to The Hazardous Waste Regulations (HWR), and subject to the provisions of those Regulations.

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

SECTION 14 TRANSPORT INFORMATION

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

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

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

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

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

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

SECTION 15 REGULATORY INFORMATION

REGULATORY STATUS AND APPLICABLE LAWS AND REGULATIONS

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

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

Applicable UK legislation:

UK REACH [... Registration, Evaluation, Authorisation and Restriction of Chemicals ... and amendments thereto]
GB CLP [Classification, labelling and packaging of substances and mixtures.. and amendments thereto]

REACH Restrictions on the manufacturing, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII):
The following entries of Annex XVII may be considered for this product: None

15.2. CHEMICAL SAFETY ASSESSMENT

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

SECTION 16 OTHER INFORMATION

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

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

Acronym	Full text

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

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):
[Acute Tox. 5 H303]: May be harmful if swallowed; Acute Tox Oral, Cat 5
Skin Irrit. 2 H315: Causes skin irritation; Skin Corr/Irritation, Cat 2
Skin Sens. 1 H317: May cause allergic skin reaction; Skin Sensitization, Cat 1
Eye Dam. 1 H318: Causes serious eye damage; Serious Eye Damage/Irr, Cat 1
STOT RE 2 H373: May cause damage to organs through prolonged or repeated exposure; Target Organ, Repeated, Cat 2
[Aquatic Acute 2 H401]: Toxic to aquatic life; Acute Env Tox, Cat 2
Aquatic Chronic 2 H411: Toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 2
Aquatic Chronic 4 H413: May cause long lasting harmful effects to aquatic life; Chronic Env Tox, Cat 4

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
Hazard Identification: Section 3 Footnotes for CLP tables information was modified.
Section 15: EU Directives and Regulations information was modified.

---

convenience, and may include any one or more of ExxonMobil Chemical Company, Exxon Mobil Corporation, or any affiliates in which they directly or indirectly hold any interest.

Internal Use Only

MHC: 0B, 0B, 0, 0, 0, 0 PPEC: A

DGN: 7083715XGB (1013658)

This product is not classified for human health and environmental hazards, and an exposure scenario is not required. This SDS conveys the appropriate risk management measures.

ANNEX

Annex not required for this material.