

Hydrated Lime Range

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

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

Revision date: March 2013

Printing Date: September 6, 2013

SECTION 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, Biolime [®] H90
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

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

1.2.1 Identified uses

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

1.2.2 Uses advised against

No use identified in Table 1 of the Appendix of this SDS is advised against.

1.3 Details of the supplier of the safety data sheet

Name:	Singleton Birch Limited
Address:	Melton Ross Quarries, Barnetby, North Lincolnshire DN38 6AE
Phone N°:	+44(0)1652 686000
Fax N°:	+44(0)1652 686081
E-mail of competent person 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)

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Available outside office hours: Yes

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance

2.1.1 Classification according to Regulation (EC) 1272/2008

STOT Single Exp. 3, H335 Route of exposure: Inhalation

Skin Irritation 2, H315

Eye Damage 1, H318

2.1.2 Classification according to Directive 67/548/EEC

Xi – irritant: R37, R38, R41

2.1.3 Additional information

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

2.2 Label elements

2.2.1 Labelling according to Regulation (EC) 1272/2008

Signal word:

Danger

Hazard pictogram:



Hazard statements:

H315:

Causes skin irritation

H318:

Causes serious eye damage

H335:

May cause respiratory irritation

Precautionary statements:

P102:

Keep out of reach of children

P280:

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

P305+P351+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

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2.3 Other hazards

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

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Main constituent

CAS number	EC number	Registration No	Identification name	Weight % content (or range)	Classification according to 67/548/EEC
1305-62-0	215-137-3	01-2119475151-45-0019	Calcium hydroxide	>90%	Xi: R37,R38, R41

CAS number	EC number	Registration No	Identification name	Weight % content (or range)	Classification according to Regulation (EC) No 1272/2008 [CLP]
1305-62-0	215-137-3	01-2119475151-45-0019	Calcium hydroxide	>90%	<i>Eye Dam 1 H318 Skin Irrit. 2 H315 STOT SE 3 (inhalation) H335</i>

SECTION 4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice

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

Following inhalation

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

Following skin contact

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

Following eye contact

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

After ingestion

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

4.2 Most important symptoms and effects, both acute and delayed

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

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4.3 Indication of any immediate medical attention and special treatment needed

Follow the advises given in section 4.1

SECTION 5. FIREFIGHTING MEASURES

5.1 Extinguishing media

5.1.1 Suitable extinguishing media

Suitable extinguishing media: The product is not combustible. Use a dry powder, foam or CO₂ 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.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1 For non-emergency personnel

Ensure adequate ventilation.

Keep dust levels to a minimum.

Keep unprotected persons away.

Avoid contact with skin, eyes, and clothing – wear suitable protective equipment (see section 8).

Avoid inhalation of dust – ensure that sufficient ventilation or suitable respiratory protective equipment is used, wear suitable protective equipment (see section 8).

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.

6.3 Methods and material for containment and cleaning up

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

6.4 Reference to other sections

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

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling

7.1.1 Protective measures

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

7.1.2 Advice on general occupational hygiene

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

7.2 Conditions for safe storage, including any incompatibilities

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

7.3 Specific end use(s)

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

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SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

DNEL's

	Workers			
Route of exposure	Acute effect local	Acute effects systemic	Chronic effects local	Chronic effects systemic
Oral	Not required			
Inhalation	4 mg / m ³ (Respirable dust)	No hazard identified	1 mg / m ³ (Respirable dust)	No hazard identified
Dermal	Hazard identified but no DNEL available	No hazard identified	Hazard identified but no DNEL available	No hazard identified

	Consumers			
Route of exposure	Acute effect local	Acute effects systemic	Chronic effects local	Chronic effects systemic
Oral	No exposure expected	No hazard identified	No exposure expected	No hazard identified
Inhalation	4 mg / m ³ (Respirable dust)	No hazard identified	1 mg / m ³ (Respirable dust)	No hazard identified
Dermal	Hazard identified but no DNEL available	No hazard identified	Hazard identified but no DNEL available	No hazard identified

PNEC's

Environment protection target	PNEC	Remarks
Fresh water	0.49 mg / L	
Freshwater sediments	No PNEC available	Insufficient data available
Marine water	0.32 mg / L	
Marine sediments	No PNEC available	Insufficient data available
Food (bioaccumulation)	No hazard identified	No potential for bioaccumulation

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Microorganisms in sewage treatment	3 mg / L	
Soil (agricultural)	1080 mg / kg soil dw	
Air	No hazard identified	

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

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

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

8.2 Exposure controls

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

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

8.2.1 Appropriate engineering controls

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

8.2.2 Individual protection measures, such as personal protective equipment

8.2.2.1 Eye/face protection

Do not wear contact lenses. For powders, tight fitting goggles with side shields, or wide vision full goggles. Eyewash facilities should be readily available.

8.2.2.2 Skin protection

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

8.2.2.3 Respiratory protection

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

8.2.2.4 Thermal hazards

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

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8.2.3 Environmental exposure controls

All ventilation systems should be filtered before discharge to atmosphere.

Avoid releasing to the environment.

Contain the spillage. Any large spillage into watercourses must be alerted to the regulatory authority responsible for environmental protection or other regulatory body.

For detailed explanations of the risk management measures that adequately control exposure of the environment to the substance please check the relevant exposure scenario, available via your supplier.

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

SECTION 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 ₂ O)
Viscosity:	not applicable (solid with a melting point > 450 °C)
Oxidising properties:	no oxidising properties (Based on the chemical structure, the substance does not contain a surplus of oxygen or any structural groups known to be correlated with a tendency to react exothermally with combustible material)

9.2 Other information

Not available

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SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity

In aqueous media $\text{Ca}(\text{OH})_2$ 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

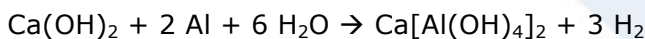
Calcium dihydroxide reacts exothermically with acids. When heated above 580 °C, calcium dihydroxide decomposes to produce calcium oxide (CaO) and water (H₂O): $\text{Ca}(\text{OH})_2 \rightarrow \text{CaO} + \text{H}_2\text{O}$. Calcium oxide reacts with water and generates heat. This may cause risk 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.



10.6 Hazardous decomposition products

None

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

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

a. Acute toxicity

Oral LD50 > 2000 mg/kg bw (OECD 425, rat)

Dermal LD50 > 2500 mg/kg bw (OECD 402, rabbit)

Inhalation no data available

Calcium hydroxide is not acutely toxic.

Classification for acute toxicity is not warranted.

b. Skin corrosion/irritation

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

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

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c. Serious eye damage/irritation

Calcium hydroxide entails a risk of serious damage to the eye (eye irritation studies (in vivo, rabbit). Based on experimental results, calcium hydroxide requires classification as severely irritating to the eye [R41, Risk of serious damage to eye; Eye Damage 1 (H318 - Causes serious eye damage)].

d. Respiratory or skin sensitisation

No data available.

Calcium hydroxide is considered not to be a skin sensitiser, based on the nature of the effect (pH shift) and the essential requirement of calcium for human nutrition. Classification for sensitisation is not warranted.

e. Germ cell mutagenicity

Bacterial reverse mutation assay (Ames test, OECD 471): Negative

Mammalian chromosome aberration test: Negative

In view of the omnipresence and essentiality of Ca and of the physiological non-relevance of any pH shift induced by lime in aqueous media, lime is obviously void of any genotoxic potential, including germ cell mutagenicity.

Classification for genotoxicity is not warranted.

f. Carcinogenicity

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

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

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

Classification for carcinogenicity is not warranted.

g. Reproductive toxicity

Calcium (administered as Ca-carbonate) is not toxic to reproduction (experimental result, mouse).

The pH effect does not give rise to a reproductive risk.

Human epidemiological data support lack of any potential for reproductive toxicity of calcium hydroxide.

Both in animal studies and human clinical studies on various calcium salts no reproductive or developmental effects were detected. Also see the Scientific Committee on Food (Section 16.6).

Thus, calcium hydroxide is not toxic for reproduction and/or development.

Classification for reproductive toxicity according to regulation (EC) 1272/2008 is not required.

h. STOT-single exposure

From human data it is concluded that $\text{Ca}(\text{OH})_2$ is irritating to the respiratory tract.

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

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i. STOT-repeated exposure

Toxicity of calcium via the oral route is addressed by upper intake levels (UL) for adults determined by the Scientific Committee on Food (SCF), being

UL = 2500 mg/d, corresponding to 36 mg/kg bw/d (70 kg person) for calcium.

Toxicity of 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.

j. Aspiration hazard

Calcium hydroxide is not known to present an aspiration hazard.

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity

12.1.1 Acute/Prolonged toxicity to fish

LC₅₀ (96h) for freshwater fish: 50.6 mg/l

LC₅₀ (96h) for marine water fish: 457 mg/l

12.1.2 Acute/Prolonged toxicity to aquatic invertebrates

EC₅₀ (48h) for freshwater invertebrates: 49.1 mg/l

LC₅₀ (96h) for marine water invertebrates: 158 mg/l

12.1.3 Acute/Prolonged toxicity to aquatic plants

EC₅₀ (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

12.1.6 Toxicity to soil dwelling organisms

EC₁₀/LC₁₀ or NOEC for soil macro organisms: 2000 mg/kg soil dw

EC₁₀/LC₁₀ or NOEC for soil micro organisms: 12000 mg/kg soil dw

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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

SECTION 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.

SECTION 14. TRANSPORT INFORMATION

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

14.1 UN-Number

Not regulated

14.2 UN proper shipping name

Not regulated

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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.

SECTION 15. REGULATORY INFORMATION

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

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

15.2 Chemical safety assessment

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

SECTION 16. OTHER INFORMATION

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

16.1 Hazard Statements

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

16.2 Precautionary Statements

- P102: Keep out of reach of children
- P280: Wear protective gloves/protective clothing/eye protection/face protection
- P305+P351: IF IN EYES: Rinse cautiously with water for several minutes
- P310: Immediately call a POISON CENTRE or doctor/physician
- P302+P352: IF ON SKIN: Wash with plenty of soap and water
- P261: Avoid breathing dust/fume/gas/mist/vapours/spray

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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

EC₅₀: median effective concentration

LC₅₀: median lethal concentration

LD₅₀: 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

DNEL: derived no-effect level

16.6 Key literature references

Anonymous, 2006: Tolerable upper intake levels for vitamins and minerals Scientific Committee on Food, European Food Safety Authority, ISBN: 92-9199-014-0 [SCF document] Anonymous, 2008: Recommendation from the Scientific Committee on Occupational Exposure Limits (SCOEL) for calcium oxide (CaO) and calcium hydroxide (Ca(OH)₂), European Commission, DG Employment, Social Affairs and Equal Opportunities, SCOEL/SUM/137 February 2008.

16.7 Revision

SDS revised in accordance with EULA SDS format

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The word "SECTION" has been included in each chapter.

Section 1.2 Relevant identified uses of the substance and uses advised against amended.

Section 2.1.1 Classification of the substance – 'H' numbers added.

Section 2.1.2 Classification of the substance – 'R' numbers added.

Section 2.1.3 'Additional information' added.

Section 2.2.2 'Labelling according to Directive 67/548/EEC' removed.

Section 3.2 'Hazardous ingredients' tabulised.

Section 4, 4.1 Description of first aid measures, Following ingestion – word 'following' changed to 'after' ingestion

Section 8, 8.1 Control parameters, DNEL's, Oral 'No exposure expected' changed to 'Not required'. Information tabulised.

Section 8, 8.2.2.1 Eye/Face protection - It is also advisable to have individual pocket eyewash.' replaced with 'Eyewash facilities should be readily available.'

Section 11, 11.1 Information on toxicological effects amended.

Section 14: TRANSPORT INFORMATION - 'The mixture is not classified as hazardous for transport (ADR (Road), RID (Rail), IMDG / GGVSea (Sea)).' replaced with 'Calcium hydroxide is not classified as hazardous for transport [ADR (Road), RID (Rail), ICAO/IATA (air), AND (inland waterways) and IMDG (Sea)].'.

Section 16, 16.6 Key literature references – removed.

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.

Safety Data Sheet

according to Regulation (EC) No. 1907/2006

a) HOK® - Medium b) HOK® - Pulverized c) HOK® - Super

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

1.1. Product identifier

a) HOK® - Medium b) HOK® - Pulverized c) HOK® - Super

Further trade names

activated carbon, activated coke

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

Use of the substance/mixture

adsorbent
filter material

Uses advised against

In case of doubt please contact our responsible department.

1.3. Details of the supplier of the safety data sheet

Manufacturer

Company name:	RWE Power AG	
	Lignite Upgrading	
Street:	Stüttgenweg 2	
Place:	D-50935 Cologne	
Telephone:	+49 (0)221 480 0	Telefax: +49 (0)221 480 1369
Contact person:	Andreas Kuphal	Telephone: +49 (0)221 480 72105
e-mail:	VLQMVeredlung@RWE.com	
Internet:	www.rwe.com / www.HOK.de	
Responsible Department:	Rheinbraun Brennstoff GmbH Abt. Industrieverkauf Tel: +49 (0)221 480 22274 Fax: +49 (0)221 480 1369 RBB_IND@RWE.com	

Supplier

Company name:	Rheinbraun Brennstoff GmbH
Street:	Stüttgenweg 2
Place:	D-50935 Cologne

1.4. Emergency telephone: +49 (0) 221 480 22274 (8-17h)
+49 (0) 172 2424379 (17-8h)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

This substance is not classified as dangerous according to Directive 67/548/EEC.

GHS classification

This substance is not classified as dangerous according to Regulation (EC) No. 1272/2008.

2.2. Label elements

Additional advice on labelling

The product is not subject to labelling.

2.3. Other hazards

Possible development of an explosive dust/air mixture. The product is not hazardous to health or environment when used as intended.

Safety Data Sheet

according to Regulation (EC) No. 1907/2006

a) HOK® - Medium b) HOK® - Pulverized c) HOK® - Super

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SECTION 3: Composition/information on ingredients

3.1. Substances

Chemical characterization (reference values)

a) HOK® - Medium	
Water:	0,5 % w/w
Ash:	10,0 % w/w
Volatile Content:	3,0 % w/w
C-fix:	86,5 % w/w
Granulation:	<1,5 mm
b) HOK® - Pulverized	
Water:	0,5 % w/w
Ash:	10,0 % w/w
Volatile Content:	3,0 % w/w
C-fix:	86,5 % w/w
Granulation:	<0,4 mm
c) HOK® - Super	
Water:	0,5 % w/w
Ash:	10,0 % w/w
Volatile Content:	3,0 % w/w
C-fix:	86,5 % w/w
Granulation:	<0,1 mm

The proportion of calcium oxide (C, R34; Skin corrosion 1B; H314) is below 1.5%. According to expertise, this does not lead to classification according to EU-GHS.

Hazardous components

EC No.	Chemical name	Quantity
CAS No.	Classification	
Index No.	GHS classification	
REACH No.		
266-010-4	Coke (contains calcium oxide)	100 %
65996-77-2		

Full text of R- and H-phrases: see section 16.

Further Information

According to Article 2, paragraph 7 b of Regulation 1907/2006 of the European Parliament and the Council - Registration, Evaluation and Authorisation of Chemicals - (REACH), coke need not be registered.

SECTION 4: First aid measures

4.1. Description of first aid measures

General information

First-aider: Pay attention to self-protection!

After inhalation

Provide fresh air.
Not harmful; also see section 11.

After contact with skin

After contact with skin, wash immediately with: Water. If necessary, change contaminated clothing.

Safety Data Sheet

according to Regulation (EC) No. 1907/2006

a) HOK® - Medium b) HOK® - Pulverized c) HOK® - Super

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In case of skin irritation, seek medical treatment.

After contact with eyes

Rinse immediately and thoroughly with eye wash or water. In case of troubles or persistent symptoms, consult an ophthalmologist.

After ingestion

If swallowed drink water. Seek medical attention if problems persist.

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

Skin contact may cause skin irritation. The dust is irritating to the conjunctiva.

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

Extinguishing materials should be selected according to the surroundings. In the closed silo the fire is extinguished by: Hermetical closure. Outside the closed silo: Water with wetting agent (only use spray jet), fire foam (only use medium expansion foam), cover with humid soil, sand or similar material.

Extinguishing media which must not be used for safety reasons

Fire-extinguishing equipment with a high extinguishing agent output. Water in the form of a full jet.

5.2. Special hazards arising from the substance or mixture

If there are whirl ups and sufficient ignition energy, flash fires or explosions may occur.

5.3. Advice for firefighters

If necessary use self-contained breathing apparatus and protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid ignition sources and whirl-ups.

6.2. Environmental precautions

none

6.3. Methods and material for containment and cleaning up

Remove material mechanically. Clean polluted areas with: Water. If necessary remove material with explosion-proof suction system.

6.4. Reference to other sections

Treat the collected material according to the section on waste disposal.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling

Store product only in closed systems.

Advice on protection against fire and explosion

Prepare explosion protection document according to operating safety ordinance. Remove accumulations outside the system immediately.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Storage temperature must not exceed 80°C. Silo must allow hermetical closure. Avoid ignition sources. Use only approved equipment in the defined explosion protection zones. Silo components have to be earthed and connected conductively.

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Advice on storage compatibility

Do not store near heat sources and easily flammable materials.

Further information on storage conditions

No smoking, naked light or fire near the silo and loading facilities.

Storageclass (VCI, D): not applicable

7.3. Specific end use(s)

adsorbent, filter material

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Additional advice on limit values

Occupational exposure limits (Germany, TRGS 900): 3 mg/m³ alveolar dust portion (gen. dust threshold value) / 10 mg/m³ respirable dust portion (gen. dust threshold value)

8.2. Exposure controls

Protective and hygiene measures

Avoid dust development.

If necessary, change contaminated clothing. Wash hands before breaks and at the end of work. When using do not eat or drink.

Respiratory protection

Depending on dust development: Dust protecting mask (DIN EN 140) level P1.

Hand protection

Nitrile gloves or combined leather/cotton gloves. Type of chemical protective gloves to choose depends on the concentration and quantity of dangerous substances as well as on work place specifications. Use skin protection cream in case of longer dust exposition.

Eye protection

In case of dust development: Dust protection goggles.

Environmental exposure controls

Clean conveying air, fluidization air and leakage air by using appropriate filters.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state: solid (dustlike, flowable)

Colour: black

Odour: no specific odour

Test method

pH-Value: alkaline in the supernatant of a 10% solution

Changes in the physical state

Melting point: No data available

Boiling point: not applicable

Flash point: not applicable

Explosive properties

explosive in a mixture with air

Dust explosion group: St 1 according to VDI 2263

Auto-ignition temperature

Solid: not self-heating according to ADR / RID

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Oxidizing properties

none

Vapour pressure:	not applicable
Density:	not applicable
Water solubility:	insoluble
Viscosity / dynamic:	not applicable
Vapour density:	not applicable
Solvent separation test:	not applicable
Solvent content:	not applicable

9.2. Other information

a) HOK® - Medium

bulk density: ca. 0,59 g/cm³
 ignition point: >850°C
 lower explosion limit: 250 g/m³
 flammable solid substance (fire class A)
 Combustion behavior according to VDI 2263 at 100 °C: BZ 2
 (brief ignition and rapid extinction).
 not easily flammable according to VDI 2263

b) HOK® - Pulverized

bulk density: ca. 0,55 g/cm³
 ignition point: 560°C
 lower explosion limit: 60 g/m³
 flammable solid substance (fire class A)
 Combustion behavior according to VDI 2263 at 100 °C: BZ 2
 (brief ignition and rapid extinction).
 not easily flammable according to VDI 2263

c) HOK® - Super

bulk density: ca. 0,55 g/cm³
 ignition point: 590°C
 lower explosion limit: 60 g/m³
 flammable solid substance (fire class A)
 Combustion behavior according to VDI 2263 at 100°C: BZ 3
 (local burning or glowing with at most marginal expansion).
 not easily flammable according to VDI 2263

SECTION 10: Stability and reactivity

10.1. Reactivity

No dangerous reactivity under regular conditions.

10.2. Chemical stability

The product is stable under regular conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions to be expected if used properly.

10.4. Conditions to avoid

To avoid self-ignition, prevent air leakage.

10.5. Incompatible materials

none known

10.6. Hazardous decomposition products

none known

Safety Data Sheet

according to Regulation (EC) No. 1907/2006

a) HOK® - Medium b) HOK® - Pulverized c) HOK® - Super

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SECTION 11: Toxicological information

11.1. Information on toxicological effects

Toxicokinetics, metabolism and distribution

Due to its chemical nature, dust is not metabolized to toxic metabolites in significant amounts.

Acute toxicity

The product is non-toxic. The main portion of the dust is too coarse to enter the lungs. Only if there are high dust concentrations, may the fine dust portion that is able to enter the lungs exceed the general dust exposure limit (see section 8.1). In this case, the purification mechanisms of the lungs might be overstrained. The dust can irritate the mucous membranes of the upper respiratory tract.

Irritation and corrosivity

Decades of experience gained by the manufacturer in handling the product have shown only weak irritant effects. Skin irritation can occur, especially with sensitive skin types or sweaty skin. The dust is irritating to the conjunctiva.

Sensitizing effects

Decades of experience gained by the manufacturer in handling the product have shown no sensitizing effects.

Severe effects after repeated or prolonged exposure

Without taking respiratory protection measures (e.g. personal protection equipment according to section 8.2), alveolar particles inhaled with air in the course of years or decades may cause chronic obstructive respiratory diseases if the general dust exposure limits (see section 8.1) are exceeded.

Carcinogenic/mutagenic/toxic effects for reproduction

Practical handling of the products for decades monitored by the occupational health department has not given any indication of cancerogenic, mutagenic or adverse effects on fertility.

Empirical data on effects on humans

Due to its nature, the aforementioned product has only weak skin-irritating effects. The inhaled dust has no cancerogenic, mutagenic, fibrogenic, allergic or chemo-toxic effects.

SECTION 12: Ecological information

12.1. Toxicity

Not applicable since the product is not soluble in water.

12.2. Persistence and degradability

Irrelevant. The product can be separated in mechanical sewage treatment plants.

12.3. Bioaccumulative potential

no bioaccumulation potential

12.4. Mobility in soil

The product does not endanger the ground water (see section 15.1).

12.5. Results of PBT and vPvB assessment

This substance does not meet the criteria for classification as PBT or vPvB.

12.6. Other adverse effects

none

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Advice on disposal

Recycling or dumping.

Note transport regulations.

According to the European Waste Catalogue (EWC), allocation of waste identity numbers/waste descriptions must be carried out in a specific way for every industry and process.

Safety Data Sheet

according to Regulation (EC) No. 1907/2006

a) HOK® - Medium b) HOK® - Pulverized c) HOK® - Super

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SECTION 14: Transport information

Land transport (ADR/RID)

- 14.1. UN number:** -
14.2. UN proper shipping name: -
14.3. Transport hazard class(es): -
14.4. Packing group: -

Other applicable information (land transport)
Not restricted

Marine transport

- 14.1. UN number:** -
14.2. UN proper shipping name: -
14.3. Transport hazard class(es): -
14.4. Packing group: -

Other applicable information (marine transport)
Not restricted

Air transport

- 14.1. UN/ID number:** -
14.2. UN proper shipping name: -
14.3. Transport hazard class(es): -
14.4. Packing group: -

Other applicable information (air transport)
Not restricted

14.5. Environmental hazards

Dangerous for the environment: no

14.6. Special precautions for user

see section 7

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

Distribution may only take place if packaging is legally authorized and appropriate.

SECTION 15: Regulatory information

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

EU regulatory information

Additional information

Consider the according regulations.

National regulatory information

Water contaminating class (D): - - not water contaminating

15.2. Chemical Safety Assessment

For this substance a chemical safety assessment is not required.

SECTION 16: Other information

Changes

Version 1,00 - First creation - 01.10.2007

Version 1,01 - Adaption and completion of the SDS according to regulation 453/2010 - 22.02.2011

Safety Data Sheet

according to Regulation (EC) No. 1907/2006

a) HOK® - Medium b) HOK® - Pulverized c) HOK® - Super

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Further Information

The information provided in this safety data sheet should describe the product with regard to the necessary safety precautions. It is no contractual guarantee of quality characteristics of the product discussed and reflects the level of knowledge of the manufacturer.

Further information:

- Recommendations for dealing with lignite coke.
- Expertise on the usability of a granular activated carbon for treatment of water intended for human consumption

SAFETY DATA SHEET

Creation Date 17-Sep-2010

Revision Date 25-Apr-2019

Revision Number 4

1. Identification

Product Name Urea

Cat No. : BP169-10; BP169-212; BP169-500 ; XXBP169100KG; NC131771;
XXBP1695KG; NC1798093

CAS-No 57-13-6
Synonyms Carbamide

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.
Details of the supplier of the safety data sheet

Company

Fisher Scientific Company
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number

CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Label Elements

None required

Hazards not otherwise classified (HNOC)

None identified

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Urea	57-13-6	>95

4. First-aid measures

Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If symptoms persist, call a physician.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Get medical attention immediately if symptoms occur.
Inhalation	Remove to fresh air. Get medical attention immediately if symptoms occur. If not breathing, give artificial respiration.
Ingestion	Do NOT induce vomiting. Get medical attention if symptoms occur.
Most important symptoms and effects	None reasonably foreseeable.
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	Substance is nonflammable; use agent most appropriate to extinguish surrounding fire.
Unsuitable Extinguishing Media	No information available
Flash Point	No information available
Method -	No information available
Autoignition Temperature	No information available
Explosion Limits	
Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical

Thermal decomposition can lead to release of irritating gases and vapors. Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products

Carbon monoxide (CO). Carbon dioxide (CO₂). Nitrogen oxides (NO_x).

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
0	1	0	N/A

6. Accidental release measures

Personal Precautions	Ensure adequate ventilation. Use personal protective equipment as required. Avoid dust formation.
Environmental Precautions	Should not be released into the environment. See Section 12 for additional Ecological Information.

Methods for Containment and Clean Up Sweep up and shovel into suitable containers for disposal. Avoid dust formation.

7. Handling and storage

Handling Wear personal protective equipment/face protection. Ensure adequate ventilation. Avoid ingestion and inhalation. Avoid contact with skin, eyes or clothing. Avoid dust formation. Protect from moisture.

Storage Keep containers tightly closed in a dry, cool and well-ventilated place.

8. Exposure controls / personal protection

Exposure Guidelines This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Engineering Measures None under normal use conditions.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection No protective equipment is needed under normal use conditions.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Solid
Appearance	White
Odor	Ammonia-like
Odor Threshold	No information available
pH	7.5-9.5 10% aq. solution
Melting Point/Range	131 - 135 °C / 267.8 - 275 °F
Boiling Point/Range	No information available
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	1.25 mmHg @ 25 °C
Vapor Density	Not applicable
Specific Gravity	No information available
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	> 132°C
Viscosity	Not applicable
Molecular Formula	C H4 N2 O

Molecular Weight 60.06

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products. Excess heat. Avoid dust formation. Protect from moisture.

Incompatible Materials Strong oxidizing agents

Hazardous Decomposition Products Carbon monoxide (CO), Carbon dioxide (CO₂), Nitrogen oxides (NO_x)

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Urea	LD50 = 8471 mg/kg (Rat)	Not listed	Not listed

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation May cause irritation of respiratory tract

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Urea	57-13-6	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known

STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects, both acute and delayed No information available

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Urea	Not listed	LC50: 16200 - 18300 mg/L, 96h (Poecilia reticulata)	= 23914 mg/L EC50 Photobacterium phosphoreum 5 min	EC50: > 10000 mg/L, 24h (Daphnia magna Straus) EC50: = 3910 mg/L, 48h Static (Daphnia magna)

Persistence and Degradability Persistence is unlikely

Bioaccumulation/ Accumulation No information available.

Mobility . Will likely be mobile in the environment due to its water solubility.

Component	log Pow
Urea	-1.59

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT Not regulated
TDG Not regulated
IATA Not regulated
IMDG/IMO Not regulated

15. Regulatory information

United States of America Inventory

Component	CAS-No	TSCA	TSCA Inventory notification - Active/Inactive	TSCA - EPA Regulatory Flags
Urea	57-13-6	X	ACTIVE	-

Legend:

TSCA - Toxic Substances Control Act, (40 CFR Part 710)

X - Listed

'-' - Not Listed

TSCA 12(b) - Notices of Export Not applicable

International Inventories

Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Australia (AICS), China (IECSC), Korea (ECL).

Component	CAS-No	DSL	NDSL	EINECS	PICCS	ENCS	AICS	IECSC	KECL
Urea	57-13-6	X	-	200-315-5	X	X	X	X	KE-35144

U.S. Federal Regulations

SARA 313 Not applicable

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act) Not applicable

Clean Air Act Not applicable

OSHA - Occupational Safety and Health Administration	Not applicable
CERCLA	Not applicable
California Proposition 65	This product does not contain any Proposition 65 chemicals.
U.S. State Right-to-Know Regulations	Not applicable
U.S. Department of Transportation	
Reportable Quantity (RQ):	N
DOT Marine Pollutant	N
DOT Severe Marine Pollutant	N
U.S. Department of Homeland Security	This product does not contain any DHS chemicals.
<u>Other International Regulations</u>	
Mexico - Grade	No information available

16. Other information

Prepared By	Regulatory Affairs Thermo Fisher Scientific Email: EMSDS.RA@thermofisher.com
Creation Date	17-Sep-2010
Revision Date	25-Apr-2019
Print Date	25-Apr-2019
Revision Summary	This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer

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

End of SDS

Safety Data Sheet

According to OSHA HCS 2012 (29 CFR 1910.1200)



SECTION 1: Identification

Product Identifier: **No. 2 Diesel Fuel**

Other means of identification: #2DSL ULS (All Grades); #2DSL HS (All Grades); #2DSL LS (All Grades); CARB DSL (All Grades); DIST CARB-Diesel (All Grades); Distillate,Diesel (All Grades); Gas Oil (All Grades); Hydrodewaxer Diesel (All Grades); Diesel Fuel (All Grades); EPA Diesel Fuel (All Grades); No. 2 Diesel (All Grades); No. 2 Diesel Fuel Oil (All Grades); No. 2 Distillate; No. 2 Diesel with Renewable Diesel (All Grades); Super Diesel Fuel (All Grades); Distillate Blend Stock; Fuels, Diesel; Virgin Diesel Fuel; PCR - HOD – Heating Oil Distillate

SDS Number: **001847**

MARPOL Annex I Category: Gas Oils, Including Ship's Bunkers

Relevant identified uses: Fuel

Uses Advised Against: All others

24 Hour Emergency Phone Number: CHEMTREC 1-800-424-9300
CANUTEC 613-996-6666
CHEMTREC Mexico 01-800-681-9531

Manufacturer/Supplier: Phillips 66 Company
P.O. Box 4428
Houston, Texas 77210

SDS Information:
Phone: 800-762-0942
Email: SDS@P66.com
URL: www.Phillips66.com

SECTION 2: Hazard Identification

Classified Hazards

H226 -- Flammable liquids -- Category 3
H315 -- Skin corrosion/irritation -- Category 2
H304 -- Aspiration Hazard -- Category 1
H332 -- Acute toxicity, Inhalation -- Category 4
H373 -- Specific target organ toxicity (repeated exposure) -- Category 2
H351 -- Carcinogenicity -- Category 2
H411 -- Hazardous to the aquatic environment, chronic toxicity -- Category 2

Other Hazards

Electrostatic charge may be generated during pumping and other operations

Label Elements



DANGER

Flammable liquid and vapor
Causes skin irritation
May be fatal if swallowed and enters airways
Harmful if inhaled
May cause damage to organs through prolonged or repeated exposure
Suspected of causing cancer
Toxic to aquatic life with long lasting effects



Obtain special instructions before use; Do not handle until all safety precautions have been read and understood; Keep away from heat/sparks/open flames/hot surfaces. - No smoking; Ground/bond container and receiving equipment; Use only non-sparking tools; Take precautionary measures against static discharge; Do not breathe dust/fume/gas/mist/vapours/spray; Wash skin thoroughly after handling; Use only outdoors or in a well-ventilated area; Avoid release to the environment; Wear protective gloves/protective clothing and eye/face protection; IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician; Do NOT induce vomiting; IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower; IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing; Call a POISON CENTER or doctor/physician if you feel unwell; Take off contaminated clothing and wash before reuse; In case of fire: Use CO2, dry chemical, or foam for extinction; Store in a well-ventilated place. Keep cool; Dispose of contents/ container to an approved waste disposal plant

SECTION 3: Composition/information on ingredients

Chemical Name	CASRN	Concentration ¹
Fuels, diesel, no. 2	68476-34-6	95-100
Naphthalene	91-20-3	<1

¹ All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

SECTION 4: 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 (Breathing): 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 (Swallowing): 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.

Most important symptoms and effects, both acute and delayed: While significant vapor 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. Dry skin and possible irritation with repeated or prolonged exposure.

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

NFPA 704 Hazard Class

Health: 1 Flammability: 2 Instability: 0



- 0 (Minimal)
- 1 (Slight)
- 2 (Moderate)
- 3 (Serious)
- 4 (Severe)

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.

Specific hazards arising from the chemical

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). Vapors may travel considerable distances to a source of ignition where they can ignite, flash back, or explode. May create vapor/air explosion hazard indoors, in confined spaces, outdoors, or in sewers. This product will float and can be reignited on surface water. Vapors 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 sulfur may also be formed.

Special protective actions for firefighters: 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 immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done safely. Avoid spreading burning liquid with water used for cooling purposes.

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

SECTION 6: Accidental release measures

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 unauthorized 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.

Environmental Precautions: Stop and contain spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Use foam on spills to minimize vapors. 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. Spills into or upon navigable waters, the contiguous zone, or adjoining shorelines that cause a sheen or discoloration on the surface of the water, may require notification of the National Response Center (phone number 800-424-8802).

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

Precautions for safe handling: Keep away from ignition sources such as heat/sparks/open flame – No smoking. Take precautionary measures against static discharge. Nonsparking tools should be used. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe vapors or mists. Use only outdoors or in well-ventilated area. Wear protective gloves/clothing and eye/face protection. Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment (see section 8). Flammable. May vaporize easily at ambient temperatures. The vapor 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. The use of explosion-proof electrical equipment is recommended and may be required (see appropriate fire codes). Refer to NFPA-70 and/or API RP 2003 for specific bonding/grounding requirements. Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. 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 sulfur 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.

Static Accumulation Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding of tanks, transfer piping, and storage tank level floats are necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures. Special care should be given to ensure that special slow load procedures for "switch loading" are followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil or diesel) is loaded into tanks previously containing low flash point products (such as gasoline or naphtha). For more information, refer to OSHA Standard 29 CFR 1910.106, 'Flammable and Combustible Liquids', National Fire Protection Association (NFPA 77, 'Recommended Practice on Static Electricity', and/or the American Petroleum Institute (API) Recommended Practice 2003, 'Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents'.

Conditions for safe storage: 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. Outdoor or detached storage is preferred. Indoor storage should meet OSHA standards and appropriate fire codes.

"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 OSHA regulations, ANSI Z49.1, and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

SECTION 8: Exposure controls/personal protection

Chemical Name	ACGIH	OSHA	Other
Fuels, diesel, no. 2	TWA: 100 mg/m ³ Skin	---	100 mg/m ³ TWA8hr 50 mg/m ³ TWA12hr 13 ppm TWA8hr 6.5 ppm TWA12hr (Phillips 66 Guidelines)

Naphthalene	STEL: 15 ppm TWA: 10 ppm 10 ppm TWA; skin; A3 - confirmed animal carcinogen with unknown relevance to humans; TLV basis: upper respiratory tract irritation Skin	TWA: 10 ppm : 50 mg/m ³	---
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Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

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 ANSI Z.87.1 is recommended to protect against potential eye contact, irritation, or injury. Depending on conditions of use, a face shield may be necessary.

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

Respiratory Protection: Where there is potential for airborne exposure above the exposure limit a NIOSH certified air purifying respirator equipped with organic vapor cartridges/canisters may be used.

A respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 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 (IDLH).

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.

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

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm). Data represent typical values and are not intended to be specifications.

Appearance: Straw colored to dyed red	Flash Point: 125 - 180 °F / 52 - 82 °C
Physical Form: Liquid	Test Method: Pensky-Martens Closed Cup (PMCC), ASTM D93, EPA 1010
Odor: Diesel fuel	Initial Boiling Point/Range: 300 - 690 °F / 149 - 366 °C
Odor Threshold: No data	Vapor Pressure: 0.40 mm Hg
pH: Not applicable	Partition Coefficient (n-octanol/water) (Kow): No data
Vapor Density (air=1): > 3	Melting/Freezing Point: No data
Upper Explosive Limits (vol % in air): 10.0	Auto-ignition Temperature: 500 °F / 260 °C
Lower Explosive Limits (vol % in air): 0.3	Decomposition Temperature: No data
Evaporation Rate (nBuAc=1): <1	Specific Gravity (water=1): 0.81-0.88 @ 60°F (15.6°C)
Particle Size: Not applicable	Bulk Density: 7.08 lbs/gal
Percent Volatile: Negligible @ ambient conditions	Viscosity: N/D
Flammability (solid, gas): Not applicable	Solubility in Water: Negligible

SECTION 10: Stability and reactivity

Reactivity: Not chemically reactive.

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

Possibility of hazardous reactions: Hazardous reactions not anticipated.

Conditions to avoid: Avoid high temperatures and all sources of ignition. Prevent vapor accumulation.

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

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

SECTION 11: Toxicological information

Information on Toxicological Effects

Substance / Mixture			
Acute Toxicity	Hazard	Additional Information	LC50/LD50 Data
Inhalation	Harmful if inhaled		4.65 mg/L (mist)
Dermal	Unlikely to be harmful		>2 g/kg
Oral	Unlikely to be harmful		> 5 g/kg

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

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

Serious Eye Damage/Irritation: Causes mild eye irritation.

Skin Sensitization: Not expected to be a skin sensitizer.

Respiratory Sensitization: Not expected to be a respiratory sensitizer.

Specific Target Organ Toxicity (Single Exposure): Not expected to cause organ effects from single exposure.

Specific Target Organ Toxicity (Repeated Exposure): May cause damage to organs through prolonged or repeated exposure. 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 hematopoiesis and lymphocyte depletion.

Carcinogenicity: Suspected of causing cancer. Petroleum middle distillates have been shown to cause skin tumors in mice following repeated and prolonged skin contact. Follow-up studies have shown that these tumors are produced through a non-genotoxic mechanism associated with frequent cell damage and repair, and that they are not likely to cause tumors in the absence of prolonged skin irritation.

Germ Cell Mutagenicity: Not expected to cause heritable genetic effects.

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 Program (NTP) as a carcinogen.

Information on Toxicological Effects of Components

Naphthalene

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

SECTION 12: Ecological information



GHS Classification:
H411 -- Hazardous to the aquatic environment, chronic toxicity -- Category 2
Toxic to aquatic life with long lasting effects.

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.

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

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.

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

Other adverse effects: None anticipated.

SECTION 13: Disposal considerations

The generator of a waste is always responsible for making proper hazardous waste determinations and needs to consider state and local requirements in addition to federal regulations. This material, if discarded as produced, would not be a federally regulated RCRA "listed" hazardous waste. However, it would likely be identified as a federally regulated RCRA hazardous waste for the following characteristic(s) shown below. See Sections 7 and 8 for information on handling, storage and personal protection and Section 9 for physical/chemical properties. It is possible that the material as produced contains constituents which are not required to be listed in the SDS but could affect the hazardous waste determination. Additionally, use which results in chemical or physical change of this material could subject it to regulation as a hazardous waste. Container contents should be completely used and containers should be emptied prior to discard. Container residues and rinseates could be considered to be hazardous wastes.

EPA Waste Number(s)

- D001 - Ignitability characteristic

SECTION 14: Transport information

UN Number: UN1202

UN proper shipping name: Diesel fuel

Transport hazard class(es): 3 or Combustible liquid

Packing Group: III

Environmental Hazards: Marine pollutant - Environmentally Hazardous

Special precautions for user: *Combustible liquid classification is dependent on a flash point of >60° C (140° F) and <93° C (200° F).*

**NA1993 may be used instead of UN1202 for domestic land transportation.

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

Container(s) greater than 5 liters (liquids) or 5 kilograms (solids), shipped by water mode and ALL bulk shipments may require the shipping description to contain the "Marine Pollutant" notation [49 CFR 172.203(l)] and the container(s) to display the [Marine Pollutant Mark] [49 CFR 172.322].

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

SECTION 15: Regulatory information

CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs (in pounds):

This material does not contain any chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372.

CERCLA/SARA - Section 311/312 (Title III Hazard Categories)

Acute Health Hazard: Yes
Chronic Health Hazard: Yes
Fire Hazard: Yes
Pressure Hazard: No
Reactive Hazard: No

CERCLA/SARA - Section 313 and 40 CFR 372:

This material contains the following chemicals subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR 372:

Chemical Name	Concentration ¹	de minimis
Naphthalene	<1	0.1%

EPA (CERCLA) Reportable Quantity (in pounds):

EPA's Petroleum Exclusion applies to this material - (CERCLA 101(14)).

California Proposition 65:

Warning: This material may contain detectable quantities of the following chemicals, known to the State of California to cause cancer, birth defects or other reproductive harm, and which may be subject to the warning requirements of California Proposition 65 (CA Health & Safety Code Section 25249.5):

Chemical Name	Type of Toxicity
Naphthalene	Cancer

Diesel engine exhaust is on the Proposition 65 list of chemicals known to the State of California to cause cancer.

International Hazard Classification

Canada:

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all the information required by the Regulations.

WHMIS Hazard Class:

- B3 - Combustible liquid
- D1B - Toxic materials
- D2A - Very toxic materials
- D2B - Toxic materials

International Inventories

All components are either listed on the US TSCA Inventory, or are not regulated under TSCA. All components are either on the DSL, or are exempt from DSL listing requirements.

U.S. Export Control Classification Number: EAR99

SECTION 16: Other information

Date of Issue:	Previous Issue Date:	SDS Number:	Status:
06-Apr-2015	01-Oct-2014	001847	FINAL

Revised Sections or Basis for Revision:

Technical Information (Section 1); Identified Hazards (Section 2); Environmental hazards (Section 12); Shipping information (Section 14)

Guide to Abbreviations:

ACGIH = American Conference of Governmental Industrial Hygienists; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; GHS = Globally Harmonized System; IARC = International Agency for Research on Cancer; INSHT = National Institute for Health and Safety at Work; IOPC = International Oil Pollution Compensation; LEL = Lower Explosive Limit; NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; WHMIS = Worker Hazardous Materials Information System (Canada)

Disclaimer of Expressed and implied Warranties:

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