



CHLOROBENZENE-D5 (D, 99%)

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 28/02/2011

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Version: 2.1

DLM-263

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

1.1. Product identifier

Product form : Substance
Substance name : CHLOROBENZENE-D5 (D, 99%)
EC Index-No. : 602-033-00-1 (Unlabeled)
EC-No. : 203-628-5 (Unlabeled)
CAS-No. : 3114-55-4
Product code : DLM-263
Formula : C6D5Cl

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

1.2.1. Relevant identified uses

Main use category : Professional use
Industrial/Professional use spec : For professional use only

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Cambridge Isotope Laboratories, Inc.
50 Frontage Road
Andover, MA 01810
USA

USA: 1-800-322-1174 Int: 1-978-749-8000
cilsales@isotope.com www.isotope.com

Emergency telephone number

Emergency numbers:

Chemtrec: 1-800-424-9300 (24 hours)
International: 1-703-741-5970 (24 hours)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Flam. Liq. 3 H226
Acute Tox. 4 (Oral) H302
Acute Tox. 4 (Inhalation) H332
Skin Irrit. 2 H315
Aquatic Chronic 2 H411

Full text of hazard classes and H-statements : see section 16

Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

R10
Xn; R20/22
N; R51/53
Xi; R38

Full text of R-phrases: see section 16

GHS-US classification

Flam. Liq. 3 H226
Acute Tox. 4 (Oral) H302
Acute Tox. 4 (Inhalation:vapour) H332
Skin Irrit. 2 H315
Aquatic Acute 2 H401
Aquatic Chronic 2 H411

Full text of H statements : see section 16

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Adverse physicochemical, human health and environmental effects

Liver, Kidney, Central nervous system, Thymus, Spleen, Bone marrow, Lungs. Testes.

2.2. Label elements

Labeling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



Signal word (CLP) :

Warning

Hazard statements (CLP) :

H226 - Flammable liquid and vapor
H302+H332 - Harmful if swallowed or if inhaled
H315 - Causes skin irritation
H411 - Toxic to aquatic life with long lasting effects

Precautionary statements (CLP) :

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233 - Keep container tightly closed.
P240 - Ground/bond container and receiving equipment.
P241 - Use explosion-proof electrical equipment
P261 - Avoid breathing dust, fume, gas, mist, spray, vapors.
P264 - Wash Both hands thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P271 - Use only outdoors or in a well-ventilated area.

GHS-US labeling

Hazard pictograms (GHS-US) :



Signal word (GHS-US) :

Warning

Hazard statements (GHS-US) :

H226 - Flammable liquid and vapor
H302+H332 - Harmful if swallowed or if inhaled
H315 - Causes skin irritation
H401 - Toxic to aquatic life
H411 - Toxic to aquatic life with long lasting effects

Precautionary statements (GHS-US) :

P210 - Keep away from heat, open flames, sparks. - No smoking.
P233 - Keep container tightly closed.
P240 - Ground/Bond container and receiving equipment
P241 - Use explosion-proof electrical equipment
P242 - Use only non-sparking tools.
P243 - Take precautionary measures against static discharge.
P261 - Avoid breathing dust, fume, gas, mist, spray, vapors.
P264 - Wash Both hands thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P271 - Use only outdoors or in a well-ventilated area.
P273 - Avoid release to the environment.
P280 - Wear protective clothing, protective gloves.
P301+P312 - If swallowed: Call a poison center or doctor if you feel unwell
P302+P352 - If on skin: Wash with plenty of water
P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P312 - Call a poison center or doctor if you feel unwell
P321 - Specific treatment (see Hazard pictograms (CLP) on this label)
P330 - Rinse mouth.
P332+P313 - If skin irritation occurs: Get medical advice/attention.
P362 - Take off contaminated clothing and wash before reuse.
P370+P378 - In case of fire: Use Alcohol resistant foam, Carbon dioxide, Dry chemical, Water spray to extinguish.
P391 - Collect spillage.
P403+P235 - Store in a well-ventilated place. Keep cool.
P501 - Dispose of contents/container to Dispose in a safe manner in accordance with

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local/national regulations

2.3. Other hazards

No additional information available

SECTION 3: Composition/Information on ingredients

3.1. Substances

| Name | Product identifier | % | Classification according to Directive 67/548/EEC |
|---------------------------|--|-----|--|
| CHLOROBENZENE-D5 (D, 99%) | (CAS-No.) 3114-55-4 (EC-No.) 203-628-5 (Unlabeled) (EC Index-No.) 602-033-00-1 (Unlabeled) | 100 | R10 Xn; R20/22 N; R51/53 Xi; R38 |

| Name | Product identifier | % | Classification according to Regulation (EC) No. 1272/2008 [CLP] |
|---------------------------|--|-----|--|
| CHLOROBENZENE-D5 (D, 99%) | (CAS-No.) 3114-55-4 (EC-No.) 203-628-5 (Unlabeled) (EC Index-No.) 602-033-00-1 (Unlabeled) | 100 | Flam. Liq. 3, H226 Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation), H332 Skin Irrit. 2, H315 Aquatic Chronic 2, H411 |

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

| Name | Product identifier | % | GHS-US classification |
|---|---------------------|-----|---|
| CHLOROBENZENE-D5 (D, 99%) (Main constituent) | (CAS-No.) 3114-55-4 | 100 | Flam. Liq. 3, H226 Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation:vapour), H332 Skin Irrit. 2, H315 Aquatic Acute 2, H401 Aquatic Chronic 2, H411 |

Full text of H-phrases: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

| | |
|---------------------------------------|---|
| First-aid measures general | : Move out of dangerous area. Consult a physician and show this safety data sheet. |
| First-aid measures after inhalation | : If breathed in, move person to fresh air. If not breathing, give artificial respiration. Consult a physician. |
| First-aid measures after skin contact | : Wash with soap and plenty of water. Consult a physician. |
| First-aid measures after eye contact | : Flush eyes with water as a precaution. |
| First-aid measures after ingestion | : Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician. |

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

| | |
|-------------------------------------|--|
| Symptoms/effects after inhalation | : May be harmful if inhaled. May cause respiratory tract irritation. |
| Symptoms/effects after skin contact | : May be harmful if absorbed through the skin. Causes skin irritation. |
| Symptoms/effects after eye contact | : Contact may cause eye irritation. |
| Symptoms/effects after ingestion | : Harmful if swallowed. |

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

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.

5.2. Special hazards arising from the substance or mixture

Reactivity : Vapors may form explosive mixture with air.

5.3. Advice for firefighters

Firefighting instructions : Wear a self contained breathing apparatus.
Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

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Other information : Use water spray to cool unopened containers.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Flammable in presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking.

6.1.1. For non-emergency personnel

Emergency procedures : Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3. Methods and material for containment and cleaning up

For containment : Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations.

6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed : Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking. Take measures to prevent build up of electrostatic charge.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Keep container tightly closed in a cool, dry and well-ventilated place. Opened containers must be carefully resealed and kept upright to prevent leakage.

Storage conditions : Store at room temperature away from light and moisture.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

| CHLOROBENZENE-D5 (D, 99%) (3114-55-4) | | |
|---------------------------------------|-------------------------------------|--|
| Italy - Portugal - USA ACGIH | ACGIH TWA (ppm) | 10.0000000 ppm Liver damage. Confirmed animal carcinogen with unknown relevance to humans. |
| Italy - Portugal - USA ACGIH | Remark (ACGIH) | 4-chlorocatechol - 100 mg/g Creatinine - Urine Remarks: End of shift at end of workweek; p-Chlorophenol - 20 mg/g Creatinine - Urine Remarks: End of shift at end of workweek. |
| USA OSHA | OSHA PEL (TWA) (mg/m ³) | 350 mg/m ³ The value in mg/m ³ is approximate. |
| USA OSHA | OSHA PEL (TWA) (ppm) | 75 ppm |

8.2. Exposure controls

Personal protective equipment : Gloves. Protective clothing. Protective goggles. Self-contained breathing apparatus.



Hand protection : Wear suitable protective clothing and gloves.

Eye protection : Wear safety glasses with side shields (or goggles) and a face shield.

Skin and body protection : Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Respiratory protection : When appropriate, use NIOSH/CEN approved respirator.

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SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|---|--|
| Physical state | : Liquid |
| Appearance | : Liquid, clear. |
| Molecular mass | : 117.59 g/mol (Labeled) |
| Color | : Colorless. |
| Odor | : No data available |
| Odor threshold | : No data available |
| pH | : No data available |
| Relative evaporation rate (butyl acetate=1) | : No data available |
| Melting point | : -45 °C (-49 °F) - lit |
| Freezing point | : No data available |
| Boiling point | : 132 °C (270 °F) - lit |
| Flash point | : 27 °C (80.6 °F) - closed cup |
| Auto-ignition temperature | : 637 °C (1,178.6 °F) |
| Decomposition temperature | : No data available |
| Flammability (solid, gas) | : No data available |
| Vapor pressure | : 15.7 hPa (11.8 mmHg) at 25 °C (77 °F) |
| Relative vapor density at 20 °C | : No data available |
| Relative density | : No data available |
| Specific gravity / density | : 1.106 g/ml at 25 °C (77 °F) |
| Solubility | : Soluble in alcohols. Soluble in chloroform. Soluble in benzene. Water: 0.207 g/l at 20 °C (68 °F) Ether: Soluble |
| Log Pow | : 2.89 |
| Log Kow | : No data available |
| Viscosity, kinematic | : No data available |
| Viscosity, dynamic | : No data available |
| Explosive properties | : No data available |
| Oxidizing properties | : No data available |
| Explosion limits | : 1.3 - 7.1 % (V) |

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Vapors may form explosive mixture with air.

10.2. Chemical stability

Five years after receipt if stored as stated in "Storage" section. Re-QC after 5 years.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

Avoid Heat, Flames and Sparks.

10.5. Incompatible materials

Strong oxidizing agents.

10.6. Hazardous decomposition products

Formed under fire conditions: carbon oxides, Hydrogen chloride gas.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Oral: Harmful if swallowed. Inhalation: Harmful if inhaled.

| CHLOROBENZENE-D5 (D, 99%) (3114-55-4) | |
|---------------------------------------|--|
| LD50 oral rat | 1110 mg/kg Remarks: Behavioral: Somnolence (general depressed activity). Behavioral: Tremor. Behavioral: Ataxia. |
| LC50 inhalation rat (ppm) | 2965 ppm |
| ATE CLP (oral) | 1110.000 mg/kg body weight |

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| CHLOROBENZENE-D5 (D, 99%) (3114-55-4) | |
|---------------------------------------|------------------|
| ATE CLP (gases) | 4500.000 ppmV/4h |
| ATE CLP (vapors) | 11.000 mg/l/4h |
| ATE CLP (dust, mist) | 1.500 mg/l/4h |

| | |
|---|--|
| Skin corrosion/irritation | : Skin - Rabbit Result: irritating to skin - 4 h No data available |
| Serious eye damage/irritation | : Eyes - Rabbit Result: No eye irritation No data available |
| Respiratory or skin sensitization | : Not available No data available |
| Germ cell mutagenicity | : Not available |
| Carcinogenicity | : This product is or contains a component that is not classifiable as to its carcinogenicity on its IARC, ACGIH, NTP, or EPA classification. |
| Reproductive toxicity | : Not available |
| Specific target organ toxicity – single exposure | : Not classified No data available |
| Specific target organ toxicity – repeated exposure | : Not classified No data available |
| Aspiration hazard | : Not classified |
| Potential Adverse human health effects and symptoms | : Incoordination. The chemical, physical, and toxicological properties have not been thoroughly investigated. |
| Symptoms/effects after inhalation | : May be harmful if inhaled. May cause respiratory tract irritation. |
| Symptoms/effects after skin contact | : May be harmful if absorbed through the skin. Causes skin irritation. |
| Symptoms/effects after eye contact | : Contact may cause eye irritation. |
| Symptoms/effects after ingestion | : Harmful if swallowed. |

SECTION 12: Ecological information

12.1. Toxicity

| CHLOROBENZENE-D5 (D, 99%) (3114-55-4) | |
|---------------------------------------|--|
| LC50 fish 1 | 10 mg/l Cyprinodon variegatus (sheepshead minnow) - 96 h |
| EC50 Daphnia 1 | 4.3 - 16 mg/l Daphnia magna (Water flea) - 24 h |
| EC50 other aquatic organisms 1 | 10.7 mg/l Daphnia magna (Water flea) - 48 h |
| LC50 fish 2 | 4.5 - 7.4 mg/kg Lepomis macrochirus (Bluegill) - 76 h |
| EC50 Daphnia 2 | 7.6 mg/l Other - 24 h |
| EC50 other aquatic organisms 2 | 235 mg/l Other - 48 h |
| ErC50 (algae) | 12.5 mg/l Pseudokirchneriella subcapitata (Green algae) - 96 h |
| NOEC (acute) | <1.4 mg/l Daphnia magna (Water flea) - 11 d |
| NOEC (chronic) | 6.2 mg/l Cyprinodon variegatus (Sheepshead minnow) - 96 h |

12.2. Persistence and degradability

| CHLOROBENZENE-D5 (D, 99%) (3114-55-4) | |
|---------------------------------------|---------------------------------|
| Persistence and degradability | Aerobic - exposure time: 28 d. |
| Biodegradation | 15 % Not readily biodegradable. |

12.3. Bioaccumulative potential

| CHLOROBENZENE-D5 (D, 99%) (3114-55-4) | |
|---------------------------------------|--|
| BCF fish 1 | 0.05 mg/l Leuciscus idus (Golden orfe) - 3 d |
| Bioconcentration factor (BCF REACH) | 75 |
| Log Pow | 2.89 |

12.4. Mobility in soil

| CHLOROBENZENE-D5 (D, 99%) (3114-55-4) | |
|---------------------------------------|----------------|
| Ecology - soil | Not available. |

12.5. Results of PBT and vPvB assessment

No additional information available

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12.6. Other adverse effects

Other adverse effects : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional legislation (waste) : Waste materials should be disposed of under conditions which meet Federal, State, and local environmental control regulations.

Product/Packaging disposal recommendations : Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Ecology - waste materials : Dispose of as unused product.

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

14.1. UN number

UN-No.(DOT) : 1134
DOT NA no. UN1134

14.2. UN proper shipping name

Proper Shipping Name (DOT) : Chlorobenzene
Class (DOT) : 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120
Hazard labels (DOT) : 3 - Flammable liquid



Packing group (DOT) : III - Minor Danger

DOT Special Provisions (49 CFR 172.102) : B1 - If the material has a flash point at or above 38 C (100 F) and below 93 C (200 F), then the bulk packaging requirements of 173.241 of this subchapter are applicable. If the material has a flash point of less than 38 C (100 F), then the bulk packaging requirements of 173.242 of this subchapter are applicable.
IB3 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1 and 31HA2, 31HB2, 31HN2, 31HD2 and 31HH2). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized, except for UN2672 (also see Special Provision IP8 in Table 2 for UN2672).
T2 - 1.5 178.274(d)(2) Normal..... 178.275(d)(3)
TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = $97 / 1 + a (tr - tf)$ Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling.

DOT Packaging Exceptions (49 CFR 173.xxx) : 150
DOT Packaging Non Bulk (49 CFR 173.xxx) : 203
DOT Packaging Bulk (49 CFR 173.xxx) : 242
DOT RQ : 100 lbs
Marine pollutant : No



14.3. Additional information

Other information : No supplementary information available.

Overland transport

Packing group (ADR) : III
Class (ADR) : 3 - Flammable liquid
Hazard identification number (Kemler No.) : 30
Classification code (ADR) : F1

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Orange plates



Tunnel restriction code (ADR) : D/E

Limited quantities (ADR) : 5I

EAC : 2Y

Excepted quantities (ADR) : E1

Transport by sea

DOT Vessel Stowage Location : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.

MFAG-No : 130

Air transport

DOT Quantity Limitations Passenger aircraft/rail : 60 L
(49 CFR 173.27)

DOT Quantity Limitations Cargo aircraft only (49 : 220 L
CFR 175.75)

14.4. Environmental hazards

Dangerous for the environment :



Other information : No supplementary information available.

14.5. Special precautions for user

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

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

| CHLOROBENZENE-D5 (D, 99%) (3114-55-4) | |
|--|--|
| SARA Section 302 Threshold Planning Quantity (TPQ) | Not subject to reporting requirements of the United States SARA Section 302. |
| SARA Section 311/312 Hazard Classes | Fire hazard Immediate (acute) health hazard |
| SARA Section 313 - Emission Reporting | Subject to reporting requirements of United States SARA Section 313. |

15.2. International regulations

CANADA

| CHLOROBENZENE-D5 (D, 99%) (3114-55-4) |
|---|
| Listed on the Canadian DSL (Domestic Substances List) |

15.2.1. National regulations

No additional information available

15.3. US State regulations

| CHLOROBENZENE-D5 (D, 99%)(3114-55-4) | |
|---|----|
| U.S. - California - Proposition 65 - Carcinogens List | No |
| U.S. - California - Proposition 65 - Developmental Toxicity | No |
| U.S. - California - Proposition 65 - Reproductive Toxicity - Female | No |
| U.S. - California - Proposition 65 - Reproductive Toxicity - Male | No |

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State or local regulations

U.S. - Massachusetts - Right To Know List
U.S. - Pennsylvania - RTK (Right to Know) List
U.S. - New Jersey - Right to Know Hazardous Substance List

SECTION 16: Other information

Other information : This product is not radioactive. The data given for this product are those of the corresponding unlabeled compound, unless specifically indicated otherwise. Health and safety data for labeled compounds are generally not available, but are assumed to be similar or identical to the corresponding unlabeled compound.

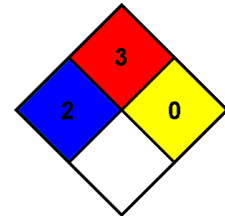
Full text of R-, H- and EUH-phrases:

| | |
|---------------------------|--|
| Acute Tox. 4 (Inhalation) | Acute toxicity (inhalation) Category 4 |
| Acute Tox. 4 (Oral) | Acute toxicity (oral) Category 4 |
| Aquatic Chronic 2 | Hazardous to the aquatic environment - Chronic Hazard Category 2 |
| Flam. Liq. 3 | Flammable liquids Category 3 |
| Skin Irrit. 2 | Skin corrosion/irritation Category 2 |
| H226 | Flammable liquid and vapor |
| H302 | Harmful if swallowed |
| H315 | Causes skin irritation |
| H332 | Harmful if inhaled |
| H411 | Toxic to aquatic life with long lasting effects |
| R10 | Flammable |
| R20/22 | Harmful by inhalation and if swallowed |
| R38 | Irritating to skin |
| R51/53 | Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment |
| N | Dangerous for the environment |
| Xi | Irritant |
| Xn | Harmful |

NFPA health hazard : 2 - Materials that, under emergency conditions, can cause temporary incapacitation or residual injury.

NFPA fire hazard : 3 - Liquids and solids (including finely divided suspended solids) that can be ignited under almost all ambient temperature conditions.

NFPA reactivity : 0 - Material that in themselves are normally stable, even under fire conditions.



Hazard Rating

Health : 2 Moderate Hazard - Temporary or minor injury may occur

Flammability : 3 Serious Hazard

Physical : 0 Minimal Hazard

CIL Substance SDS

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product