

SAFETY DATA SHEET
HYDROCHLORIC ACID 1M

According to Regulation (EC) No 1907/2006, Annex II, as amended. Commission Regulation (EU) No 2015/830 of 28 May 2015.

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1. Product identifier**

Product name HYDROCHLORIC ACID 1M
Product number 1042

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

Identified uses Laboratory reagent.
Uses advised against No specific uses advised against are identified.

1.3. Details of the supplier of the safety data sheet**Supplier**

Reagent Chemical Services
11b - 13 Aston Fields Road
Whitehouse Industrial Estate
Runcorn
Cheshire WA7 3DL
T: 01928 716903 (08.30 - 17.00)
F: 01928 716425
E: info@reagent.co.uk

1.4. Emergency telephone number

Emergency telephone OHES Environmental Ltd 24-7
Tel. 0333 333 9939 (24 hour)

SECTION 2: Hazards identification**2.1. Classification of the substance or mixture****Classification (EC 1272/2008)**

Physical hazards Met. Corr. 1 - H290
Health hazards Not Classified
Environmental hazards Not Classified

2.2. Label elements**Pictogram**

Signal word Warning
Hazard statements H290 May be corrosive to metals.
Precautionary statements P234 Keep only in original container.
P406 Store in corrosive resistant container.

HYDROCHLORIC ACID 1M

Supplementary precautionary statements P390 Absorb spillage to prevent material damage.

2.3. Other hazards

This product does not contain any substances classified as PBT or vPvB.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

HYDROCHLORIC ACID ...%			1-5%
CAS number: 7647-01-0	EC number: 231-595-7	REACH registration number: 01-2119484862-27-0000	
Classification			
Met. Corr. 1 - H290			
Skin Corr. 1B - H314			
Eye Dam. 1 - H318			
STOT SE 3 - H335			

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

SECTION 4: First aid measures

4.1. Description of first aid measures

General information	Get medical attention immediately. Show this Safety Data Sheet to the medical personnel.
Inhalation	Remove affected person from source of contamination. Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Maintain an open airway. Loosen tight clothing such as collar, tie or belt. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen. Place unconscious person on their side in the recovery position and ensure breathing can take place.
Ingestion	Rinse mouth thoroughly with water. Remove any dentures. Stop if the affected person feels sick as vomiting may be dangerous. Do not induce vomiting unless under the direction of medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Place unconscious person on their side in the recovery position and ensure breathing can take place. Maintain an open airway. Loosen tight clothing such as collar, tie or belt.
Skin contact	Rinse with water.
Eye contact	Rinse immediately with plenty of water. Remove contact lenses, if present and easy to do. Continue rinsing. Continue to rinse for at least 10 minutes.
Protection of first aiders	First aid personnel should wear appropriate protective equipment during any rescue.

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

General information	See Section 11 for additional information on health hazards. The severity of the symptoms described will vary dependent on the concentration and the length of exposure.
Inhalation	Prolonged inhalation of high concentrations may damage respiratory system.
Ingestion	Gastrointestinal symptoms, including upset stomach. Ingestion may cause severe irritation of the mouth, the oesophagus and the gastrointestinal tract. Nausea, vomiting.
Skin contact	May cause irritation. Prolonged contact may cause dryness of the skin.
Eye contact	May cause temporary eye irritation.

HYDROCHLORIC ACID 1M

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

Notes for the doctor Treat symptomatically.

Specific treatments Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media The product is not flammable. Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog. Use fire-extinguishing media suitable for the surrounding fire.

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

Hazardous combustion products Thermal decomposition or combustion products may include the following substances: Harmful gases or vapours. Chlorine.

5.3. Advice for firefighters

Protective actions during firefighting Avoid breathing fire gases or vapours. Evacuate area. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. If a leak or spill has not ignited, use water spray to disperse vapours and protect men stopping the leak. Control run-off water by containing and keeping it out of sewers and watercourses. If risk of water pollution occurs, notify appropriate authorities.

Special protective equipment for firefighters Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Firefighter's clothing conforming to European standard EN469 (including helmets, protective boots and gloves) will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions No action shall be taken without appropriate training or involving any personal risk. Keep unnecessary and unprotected personnel away from the spillage. Wear protective clothing as described in Section 8 of this safety data sheet. Follow precautions for safe handling described in this safety data sheet. Wash thoroughly after dealing with a spillage. Ensure procedures and training for emergency decontamination and disposal are in place. Do not touch or walk into spilled material.

For emergency responders Wear protective clothing as described in Section 8 of this safety data sheet. Wash thoroughly after dealing with a spillage.

6.2. Environmental precautions

Environmental precautions Large Spillages: Inform the relevant authorities if environmental pollution occurs (sewers, waterways, soil or air).

6.3. Methods and material for containment and cleaning up

HYDROCHLORIC ACID 1M

Methods for cleaning up

Wear protective clothing as described in Section 8 of this safety data sheet. Clear up spills immediately and dispose of waste safely. Approach the spillage from upwind. Small Spillages: If the product is soluble in water, dilute the spillage with water and mop it up. Alternatively, or if it is not water-soluble, absorb the spillage with an inert, dry material and place it in a suitable waste disposal container. Large Spillages: If leakage cannot be stopped, evacuate area. Flush spilled material into an effluent treatment plant, or proceed as follows. Contain and absorb spillage with sand, earth or other non-combustible material. Place waste in labelled, sealed containers. Clean contaminated objects and areas thoroughly, observing environmental regulations. The contaminated absorbent may pose the same hazard as the spilled material. Flush contaminated area with plenty of water. Wash thoroughly after dealing with a spillage. The requirements of the local water authority must be complied with if contaminated water is flushed directly to the sewer. Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

6.4. Reference to other sections

Reference to other sections For personal protection, see Section 8. See Section 11 for additional information on health hazards. See Section 12 for additional information on ecological hazards. For waste disposal, see Section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions

Read and follow manufacturer's recommendations. Wear protective clothing as described in Section 8 of this safety data sheet. Keep away from food, drink and animal feeding stuffs. Handle all packages and containers carefully to minimise spills. Keep container tightly sealed when not in use. Avoid the formation of mists. Do not handle until all safety precautions have been read and understood. Do not handle broken packages without protective equipment. Do not reuse empty containers.

Advice on general occupational hygiene

Wash promptly if skin becomes contaminated. Take off contaminated clothing. Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Wash at the end of each work shift and before eating, smoking and using the toilet. Change work clothing daily before leaving workplace.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions

Store away from incompatible materials (see Section 10). Store in accordance with local regulations. Store away from the following materials: Alkalis. Keep only in the original container. Keep container tightly closed, in a cool, well ventilated place. Keep containers upright. Protect containers from damage. Bund storage facilities to prevent soil and water pollution in the event of spillage. The storage area floor should be leak-tight, jointless and not absorbent.

Storage class

Chemical storage.

7.3. Specific end use(s)

Specific end use(s)

The identified uses for this product are detailed in Section 1.2.

SECTION 8: Exposure Controls/personal protection

8.1. Control parameters

Occupational exposure limits

HYDROCHLORIC ACID ...%

Long-term exposure limit (8-hour TWA): WEL 1 ppm 2 mg/m³ gas and aerosol mists

Short-term exposure limit (15-minute): WEL 5 ppm 8 mg/m³ gas and aerosol mists

WEL = Workplace Exposure Limit

HYDROCHLORIC ACID 1M

HYDROCHLORIC ACID ...% (CAS: 7647-01-0)

DNEL

Workers - Inhalation; Long term local effects: 8 mg/m³

Workers - Inhalation; Short term local effects: 15 mg/m³

General population - Inhalation; Long term local effects: 8 mg/m³

General population - Inhalation; Short term local effects: 15 mg/m³

8.2. Exposure controls

Protective equipment



Appropriate engineering controls

Provide adequate ventilation. Personal, workplace environment or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Use process enclosures, local exhaust ventilation or other engineering controls as the primary means to minimise worker exposure. Personal protective equipment should only be used if worker exposure cannot be controlled adequately by the engineering control measures. Ensure control measures are regularly inspected and maintained. Ensure operatives are trained to minimise exposure.

Eye/face protection

Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible. Personal protective equipment for eye and face protection should comply with European Standard EN166. Unless the assessment indicates a higher degree of protection is required, the following protection should be worn: Tight-fitting safety glasses.

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn if a risk assessment indicates skin contact is possible. To protect hands from chemicals, gloves should comply with European Standard EN374. Considering the data specified by the glove manufacturer, check during use that the gloves are retaining their protective properties and change them as soon as any deterioration is detected. Frequent changes are recommended. It is recommended that gloves are made of the following material: Nitrile rubber. Butyl rubber. The breakthrough time for any glove material may be different for different glove manufacturers. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material.

Other skin and body protection

Appropriate footwear and additional protective clothing complying with an approved standard should be worn if a risk assessment indicates skin contamination is possible.

Hygiene measures

Provide eyewash station and safety shower. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Clean equipment and the work area every day. Good personal hygiene procedures should be implemented. Wash at the end of each work shift and before eating, smoking and using the toilet. When using do not eat, drink or smoke. Preventive industrial medical examinations should be carried out. Warn cleaning personnel of any hazardous properties of the product.

Respiratory protection

Respiratory protection complying with an approved standard should be worn if a risk assessment indicates inhalation of contaminants is possible. Ensure all respiratory protective equipment is suitable for its intended use and is 'CE'-marked. Check that the respirator fits tightly and the filter is changed regularly. Gas and combination filter cartridges should comply with European Standard EN14387. Full face mask respirators with replaceable filter cartridges should comply with European Standard EN136. Half mask and quarter mask respirators with replaceable filter cartridges should comply with European Standard EN140. Gas filter, type E.

Environmental exposure controls

Keep container tightly sealed when not in use.

HYDROCHLORIC ACID 1M

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Appearance	Liquid.
Colour	Colourless.
Odour	Pungent.
pH	pH (concentrated solution): 1
Melting point	Not determined.
Initial boiling point and range	Not determined.
Flash point	Scientifically unjustified.
Evaporation rate	Not determined.
Evaporation factor	Not determined.
Flammability (solid, gas)	Technical impossibility to obtain the data.
Upper/lower flammability or explosive limits	Not relevant.
Vapour pressure	Not determined.
Vapour density	Not determined.
Relative density	~ 1.0 - 1.05 @ 20°C
Bulk density	Not relevant.
Solubility(ies)	Miscible with water.
Partition coefficient	No specific test data are available.
Auto-ignition temperature	Not relevant.
Decomposition Temperature	No specific test data are available.
Viscosity	Not determined.
Explosive properties	Not considered to be explosive.
Explosive under the influence of a flame	No
Oxidising properties	Does not meet the criteria for classification as oxidising.
Comments	Information given is applicable to the product as supplied.

9.2. Other information

Other information	None.
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SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	May be corrosive to metals. The following materials may react with the product: Alkalis. Oxidising agents.
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10.2. Chemical stability

Stability	Stable at normal ambient temperatures and when used as recommended. Stable under the prescribed storage conditions.
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HYDROCHLORIC ACID 1M

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions May generate heat. Will not polymerise.

10.4. Conditions to avoid

Conditions to avoid Avoid excessive heat for prolonged periods of time. Avoid contact with incompatible materials stated in section 10.5.

10.5. Incompatible materials

Materials to avoid Alkalis. Amines. Mild steel. Aluminium. May be corrosive to metals. Sulphides Cyanides

10.6. Hazardous decomposition products

Hazardous decomposition products Does not decompose when used and stored as recommended.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity - oral

Notes (oral LD₅₀) Based on available data the classification criteria are not met.

Acute toxicity - dermal

Notes (dermal LD₅₀) Based on available data the classification criteria are not met.

Acute toxicity - inhalation

Acute toxicity inhalation (LC₅₀ vapours mg/l) 8.3

Notes (inhalation LC₅₀) Based on available data the classification criteria are not met.

Skin corrosion/irritation

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

Extreme pH ≤ 2 Corrosive.

Serious eye damage/irritation

Serious eye damage/irritation Based on available data the classification criteria are not met.

Respiratory sensitisation

Respiratory sensitisation Based on available data the classification criteria are not met.

Skin sensitisation

Skin sensitisation Based on available data the classification criteria are not met.

Germ cell mutagenicity

Genotoxicity - in vitro Based on available data the classification criteria are not met.

Carcinogenicity

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

IARC carcinogenicity None of the ingredients are listed or exempt.

Reproductive toxicity

Reproductive toxicity - fertility Based on available data the classification criteria are not met.

Reproductive toxicity - development Based on available data the classification criteria are not met.

Specific target organ toxicity - single exposure

HYDROCHLORIC ACID 1M

STOT - single exposure Not classified as a specific target organ toxicant after a single exposure.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure Not classified as a specific target organ toxicant after repeated exposure.

Aspiration hazard

Aspiration hazard Based on available data the classification criteria are not met.

General information

The severity of the symptoms described will vary dependent on the concentration and the length of exposure.

Inhalation

Prolonged inhalation of high concentrations may damage respiratory system.

Ingestion

Gastrointestinal symptoms, including upset stomach. Nausea, vomiting. May cause irritation.

Skin contact

Prolonged contact may cause dryness of the skin.

Eye contact

May cause temporary eye irritation.

Route of entry

Ingestion Inhalation Skin and/or eye contact

Target organs

No specific target organs known.

SECTION 12: Ecological Information

Ecotoxicity

The product may affect the acidity (pH) of water which may have hazardous effects on aquatic organisms.

12.1. Toxicity

Toxicity

Based on available data the classification criteria are not met.

Chronic toxicity - fish early life stage

Not available.
No supplied or registered information

12.2. Persistence and degradability

Persistence and degradability

The product contains inorganic substances which are not biodegradable.

12.3. Bioaccumulative potential

Bioaccumulative potential

No data available on bioaccumulation.

Partition coefficient

No specific test data are available.

12.4. Mobility in soil

Mobility

The product is water-soluble and may spread in water systems. The product is non-volatile.

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment

This product does not contain any substances classified as PBT or vPvB.

12.6. Other adverse effects

Other adverse effects

None known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

HYDROCHLORIC ACID 1M

General information	The generation of waste should be minimised or avoided wherever possible. Reuse or recycle products wherever possible. This material and its container must be disposed of in a safe way. Disposal of this product, process solutions, residues and by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any local authority requirements. When handling waste, the safety precautions applying to handling of the product should be considered. Care should be taken when handling emptied containers that have not been thoroughly cleaned or rinsed out. Empty containers or liners may retain some product residues and hence be potentially hazardous.
Disposal methods	Do not empty into drains. Dispose of surplus products and those that cannot be recycled via a licensed waste disposal contractor. Waste, residues, empty containers, discarded work clothes and contaminated cleaning materials should be collected in designated containers, labelled with their contents. Incineration or landfill should only be considered when recycling is not feasible.

SECTION 14: Transport information

General For limited quantity packaging/limited load information, consult the relevant modal documentation using the data shown in this section.

14.1. UN number

UN No. (ADR/RID)	1789
UN No. (IMDG)	1789
UN No. (ICAO)	1789
UN No. (ADN)	1789

14.2. UN proper shipping name

Proper shipping name (ADR/RID)	HYDROCHLORIC ACID
Proper shipping name (IMDG)	HYDROCHLORIC ACID
Proper shipping name (ICAO)	HYDROCHLORIC ACID
Proper shipping name (ADN)	HYDROCHLORIC ACID

14.3. Transport hazard class(es)

ADR/RID class	8
ADR/RID classification code	C1
ADR/RID label	8
IMDG class	8
ICAO class/division	8
ADN class	8

Transport labels



14.4. Packing group

ADR/RID packing group	III
IMDG packing group	III

HYDROCHLORIC ACID 1M

ADN packing group III

ICAO packing group III

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant

No.

14.6. Special precautions for user

Always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

EmS F-A, S-B

ADR transport category 3

Hazard Identification Number (ADR/RID) 80

Tunnel restriction code (E)

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

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

SECTION 15: Regulatory information

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

National regulations	Health and Safety at Work etc. Act 1974 (as amended). The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (SI 2009 No. 1348) (as amended) ["CDG 2009"]. EH40/2005 Workplace exposure limits.
EU legislation	Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (as amended). Commission Regulation (EU) No 2015/830 of 28 May 2015. Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended).
Guidance	Workplace Exposure Limits EH40.
Authorisations (Title VII Regulation 1907/2006)	No specific authorisations are known for this product.
Restrictions (Title VIII Regulation 1907/2006)	No specific restrictions on use are known for this product.

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

Inventories

EU - EINECS/ELINCS

None of the ingredients are listed or exempt.

SECTION 16: Other information

HYDROCHLORIC ACID 1M

Abbreviations and acronyms used in the safety data sheet	<p>ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.</p> <p>ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.</p> <p>RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail.</p> <p>IATA: International Air Transport Association.</p> <p>ICAO-TI: Technical Instructions for the Safe Transport of Dangerous Goods by Air.</p> <p>IMDG: International Maritime Dangerous Goods.</p> <p>CAS: Chemical Abstracts Service.</p> <p>ATE: Acute Toxicity Estimate.</p> <p>LC₅₀: Lethal Concentration to 50 % of a test population.</p> <p>LD₅₀: Lethal Dose to 50% of a test population (Median Lethal Dose).</p> <p>EC₅₀: 50% of maximal Effective Concentration.</p> <p>PBT: Persistent, Bioaccumulative and Toxic substance.</p> <p>vPvB: Very Persistent and Very Bioaccumulative.</p>
Classification abbreviations and acronyms	Met. Corr. = Corrosive to metals
General information	Only trained personnel should use this material.
Key literature references and sources for data	Source: European Chemicals Agency, http://echa.europa.eu/
Classification procedures according to Regulation (EC) 1272/2008	Met. Corr. 1 - H290: : Expert judgement.
Training advice	Only trained personnel should use this material.
Revision date	17/12/2019
Revision	6
Supersedes date	20/10/2017
SDS number	11778
SDS status	Approved.
Hazard statements in full	<p>H290 May be corrosive to metals.</p> <p>H314 Causes severe skin burns and eye damage.</p> <p>H318 Causes serious eye damage.</p> <p>H335 May cause respiratory irritation.</p>

This 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. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.

CONTACT
0800 990 3258
enquiries@reagent.co.uk



ReAgent

SAFETY DATA SHEET ANTIFREEZE

According to Regulation (EC) No 1907/2006

1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

PRODUCT NAME	ANTIFREEZE
PRODUCT NO.	2718
APPLICATION	General chemical reagent
SUPPLIER	Reagent Chemical Services 18 Aston Fields Road Whitehouse Industrial Estate Runcorn Cheshire WA7 3DL T: 01928 716903 (08.30 - 17.00) F: 01928 716425 E: info@reagent.co.uk
EMERGENCY TELEPHONE	Emergency Telephone : +44 (0) 1928 716903 Between 08.30 - 17.00

2 HAZARDS IDENTIFICATION

Harmful if swallowed.

CLASSIFICATION (1999/45) Xn;R22.

ENVIRONMENT

Although not classified as harmful to the environment the material should not be discharged to land or water systems, this may have an impact on the organisms in the local area. The Environment Agency or other regulatory body must be informed of large or uncontrolled discharges to land or water. The product is miscible with water and will spread in water systems. Spillages may cause slippery surfaces.

PHYSICAL AND CHEMICAL HAZARDS

The product can form explosive vapour / air mixtures. Violent reaction with oxidisers, oxidising acids and sulphuric acid. Forms explosive mixture with sodium perchlorate. Incompatible with strong acids, alkalis, aliphatic amines, isocyanates, chlorosulphonic acid, oleum, potassium dichromate, phosphorous pentasulphide, sodium chlorate. Causes ignition at room temperature with chromium trioxide, potassium permanganate and sodium peroxide.

HUMAN HEALTH

The acute effects of ingesting large amounts are similar to alcohol intoxication, followed by vomiting, headache, elevated breathing and heart rate, collapse and unconsciousness. May be fatal, the lethal dose for humans is 100ml. Repeated small exposures can produce skin allergies, kidney problems and brain damage. May aggravate pre-existing skin, eye, liver, kidney or respiratory conditions.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Name	EC No.	CAS-No.	Content %	Classification (67/548/EEC)
ETHANEDIOL	203-473-3	107-21-1	60-100%	Xn;R22

The Full Text for all R-Phrases is Displayed in Section 16

COMPOSITION COMMENTS

A mixture comprising mainly of ethanediol with a small amount of benzotriazole. The information is based on the hazards and properties of ethanediol.

4 FIRST-AID MEASURES

GENERAL INFORMATION

CAUTION! First aid personnel must be aware of own risk during rescue! Always consider any dangers in the vicinity before approaching to treat the casualty. First aid personnel must protect themselves with all necessary personal protective equipment during the assistance of casualties. When breathing is difficult, properly trained personnel may assist the casualty by administering oxygen. Place unconscious person on the side in the recovery position and ensure breathing can take place. Never give anything by mouth to an unconscious person. If casualty needs to be resuscitated avoid mouth to mouth contact, use a mechanical device such as a bag and mask to provide artificial respiration. If medical assistance is needed take as much detail as possible about the incident and hazardous materials involved with the casualty.

INHALATION

Remove victim immediately from source of exposure. Provide rest, warmth and fresh air. Get medical attention if any discomfort continues.

ANTIFREEZE**INGESTION**

Do not induce vomiting. Rinse mouth thoroughly with plenty of water. Get medical attention immediately!

SKIN CONTACT

Immediately remove contaminated clothing and wash before re-use. Wash the skin immediately with soap and water. In serious cases or if discomfort continues obtain medical attention.

EYE CONTACT

Promptly wash eyes with plenty of water or eye wash solution while lifting the eyelids. If possible remove any contact lenses and continue to wash. Get medical attention.

5 FIRE-FIGHTING MEASURES**EXTINGUISHING MEDIA**

The product is not classed as flammable but would be combustible in the event of a fire. It would form explosive vapour / air mixtures. Water spray, dry powder, carbon dioxide or alcohol resistant foam. Do not use water jet.

SPECIAL FIRE FIGHTING PROCEDURES

Prevent run-off from entering drains and watercourses. Containers close to the fire area should be cooled with water if safe to do so. Be aware that any flammable substance containers are liable to explode when heated.

SPECIFIC HAZARDS

In case of fire, toxic fumes or vapours may be formed. Carbon monoxide (CO). Carbon dioxide (CO₂). Oxides of nitrogen.

PROTECTIVE MEASURES IN FIRE

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

6 ACCIDENTAL RELEASE MEASURES**PERSONAL PRECAUTIONS**

Wear protective clothing as described in Section 8 of this safety data sheet. Avoid inhalation of vapours and contact with skin and eyes.

ENVIRONMENTAL PRECAUTIONS

Avoid unauthorised discharge to the environment. Clean up any spillages immediately, prevent material from spreading and entering drains or sewage systems. If the product has entered a foul drain or sewage system in significant amounts to cause a hazard then the local water treatment company must be informed. Large spillages or uncontrolled discharge to water systems must be alerted to the Environmental Agency or other regulatory body. If spillages to land cannot be treated safely or if contamination will occur the Environment Agency must be alerted immediately.

SPILL CLEAN UP METHODS

Remove ignition sources when treating spillages, no smoking. Small Spillages: Absorb with sand or other inert absorbent. Large Spillages: Dam and absorb spillages with sand, earth or other inert, non-combustible material. Collect spillage in containers, seal securely and deliver for disposal according to local regulations. Containers with collected spillage must be properly labelled with correct contents and hazard symbol. Wash spillage site well with water and detergent, be aware of the potential for surfaces to become slippery. Ventilate area and allow to dry before allowing access. Wash thoroughly after dealing with a spillage.

7 HANDLING AND STORAGE**USAGE PRECAUTIONS**

Avoid ingestion of the product, inhalation of any vapours/mists when produced and contact with skin and eyes.

STORAGE PRECAUTIONS

Store in closed original container at temperatures between 5°C and 30°C. Store away from heat, direct sunlight and moisture. Avoid sources of ignition. Store away from incompatible materials. Store in a stable situation to avoid spillages. It is advisable to store in a bunded area or use other protective measures such as a sump pallet or storage tray.

STORAGE CLASS

Chemical storage.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Name	STD	TWA - 8 Hrs	STEL - 15 Min	Notes
ETHANEDIOL	WEL	52 mg/m ³ (Sk)	104 mg/m ³ (Sk)	

WEL = Workplace Exposure Limit.

ENGINEERING MEASURES

The mixture is non-volatile and will not require any engineering measures under normal use. However if sprays or mists are generated then use appropriate ventilation and extraction to avoid occupational exposure.

RESPIRATORY EQUIPMENT

Not generally required but if excessive amounts of vapours, mists or sprays are generated wear suitable respiratory equipment when there is insufficient ventilation or extraction. Consult with the supplier as to the compatibility of the equipment with the chemical of concern.

CAUTION: Air purifying respirators do not protect the user in oxygen deficient atmospheres, use air supplied system.

ANTIFREEZE**HAND PROTECTION**

Wear protective gloves. Be aware that the liquid may penetrate the gloves. Frequent change is advisable. The most suitable glove must be chosen in consultation with the gloves supplier, who can inform about the breakthrough time of the glove material.

EYE PROTECTION

Wear approved safety goggles.

OTHER PROTECTION

Wear suitable protective clothing as protection against splashing or contamination. Have facilities in place to wash eyes in case of contact. If handling large amounts it is recommended to have a safety shower. Wear rubber apron and full length gloves if handling large amounts. If there is a risk of splashing then wear a face shield.

HYGIENE MEASURES

Wash at the end of each work shift and before eating, smoking and using the toilet. Wash promptly if skin becomes wet or contaminated. Promptly remove any clothing that becomes wet or contaminated. When using do not eat, drink or smoke.

9 PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	Liquid
COLOUR	Colourless.
ODOUR	Sweetish.
SOLUBILITY	Miscible with water
BOILING POINT (°C)	193 - 204
MELTING POINT (°C)	-13
RELATIVE DENSITY	1.13 g/cm ³
VAPOUR PRESSURE	<10 Pa
VISCOSITY	21 mPas
FLASH POINT (°C)	116
AUTO IGNITION	417
TEMPERATURE (°C)	
FLAMMABILITY LIMIT - LOWER(%)	3.2
FLAMMABILITY LIMIT - UPPER(%)	53
PARTITION COEFFICIENT (N-Octanol/Water)	log Pow -1.36

10 STABILITY AND REACTIVITY**STABILITY**

Stable under normal temperatures and prescribed storage conditions.

CONDITIONS TO AVOID

Avoid direct sunlight and moisture. Avoid extremes of temperatures. Avoid storage with incompatible materials. Avoid flames and other high energy sources of ignition.

HAZARDOUS POLYMERISATION

Will not polymerise.

MATERIALS TO AVOID

Strong acids. Strong alkalis. Strong oxidising substances. Aluminium. Aldehydes. Aliphatic amines Isocyanates.

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide (CO). Carbon dioxide (CO₂). May form nitrogen oxides in small amounts.

11 TOXICOLOGICAL INFORMATION**INHALATION**

Vapours or mists in high concentration may irritate the respiratory system and be harmful. In high concentrations vapours may cause nausea, headache and dizziness.

INGESTION

Harmful if swallowed. Ingestion of large amounts may cause unconsciousness and can be fatal.

SKIN CONTACT

The product can exaggerate existing skin conditions in sensitive individuals.

EYE CONTACT

May irritate the eyes, especially people with pre-existing conditions.

TARGET ORGANS

Repeated exposure can effect the: Liver Kidneys Brain

MEDICAL SYMPTOMS

The initial effects of ingestion are similar to alcohol consumption followed by nausea, vomiting, abdominal pain, muscle weakness and collapse. If not treated death can occur between 8 and 24 hours.

ANTIFREEZE

SPECIFIC EFFECTS

Exposure to alcohol can increase the toxic effects.

12 ECOLOGICAL INFORMATION

ECOTOXICITY

Although not classified as environmentally hazardous, harmful effects cannot be excluded in the event of improper handling or disposal. The product contains a substance which is harmful to aquatic organisms and which may cause long term adverse effects in the aquatic environment. Do not allow to enter drinking water, waste water or soil.

LC 50, 96 Hrs, FISH mg/l Oncorhynchus mykiss (Rainbow trout) - 18, 500 (Ethanediol)

MOBILITY

The product will be absorbed into the soil and is expected to evaporate slowly. It will travel into groundwater when large amounts remain in contact with the soil or through continual discharge. The product is miscible with water and mobile in water systems. It will spread in the aquatic environment and travel through groundwater.

BIOACCUMULATION

Low bioaccumulation potential.

DEGRADABILITY

The product is biodegradable. In water and air the product is expected to have a half-life of between 1 and 10 days.

13 DISPOSAL CONSIDERATIONS

GENERAL INFORMATION

Any waste material is classed as hazardous waste, it should only be disposed of through licenced waste handlers and treatment sites. Do not allow unauthorised disposal to the environment. If operators are exposed to vapours during the disposal process then suitable respiratory protection should be worn. All other personal protective equipment as described in section 8 should be worn.

DISPOSAL METHODS

Dispose of waste and residues in accordance with local authority requirements. Avoid unauthorised disposal. Do not dump illegally onto land or into water. Respiratory protection should be worn if disposal methods are producing vapours and there is insufficient extraction or ventilation.

14 TRANSPORT INFORMATION

GENERAL	The product is not covered by international regulation on the transport of dangerous goods (IMDG, IATA, ADR/RID).
	No transport warning sign required.
ENVIRONMENTALLY HAZARDOUS SUBSTANCE/MARINE POLLUTANT	No.

15 REGULATORY INFORMATION

LABELLING



Harmful

CONTAINS ETHANEDIOL

RISK PHRASES R22 Harmful if swallowed.

SAFETY PHRASES S46 If swallowed, seek medical advice immediately and show this container or label.

EU DIRECTIVES

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

STATUTORY INSTRUMENTS

The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (S.I 2009 No. 716). Control of Substances Hazardous to Health.

GUIDANCE NOTES

Workplace Exposure Limits EH40. Approved Classification and Labelling Guide (CHIP 4)

ANTIFREEZE**16 OTHER INFORMATION****GENERAL INFORMATION**

This datasheet is not intended to be a replacement for a full risk assessment, these should always be carried out by competent persons. Under REACH Material Safety Datasheets (MSDS) are referred to as Safety Datasheets (SDS).

INFORMATION SOURCES

ESIS Database Raw material safety data sheets. Web-based literature.

REVISION COMMENTS

This is first issue.

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REV. NO./REPL. SDS GENERATED 1

SDS NO. 11679

SAFETY DATA SHEET STATUS

Approved.

RISK PHRASES IN FULL

R22 Harmful if swallowed.