

Safety data sheet

Hydrogen chloride, anhydrous

Creation date : 28.01.2005
Revision date : 20.05.2011

Version : 1.2

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

1.1. Product identifier

Product name
Hydrogen chloride, anhydrous

EC No (from EINECS): 231-595-7
CAS No: 7647-01-0
Index-Nr. 017-002-00-2
Chemical formula HCl
REACH Registration number:
01-2119484862-27

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

Relevant identified uses
Industrial and professional. Perform risk assessment prior to use.
Uses advised against
Consumer use.

1.3. Details of the supplier of the safety data sheet

Company identification
BOC, PO Box 1201, Bluebell, Dublin
E-Mail Address ReachSDS@boc.com

1.4. Emergency telephone number

Emergency phone numbers (24h): 1850 333 435

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification acc. to Regulation (EC) No 1272/2008/EC (CLP/GHS)

Press. Gas (Liquefied gas) - Contains gas under pressure; may explode if heated.

Acute Tox. 3 - Toxic if inhaled.
Skin Corr. 1A - Causes severe skin burns and eye damage.
- Corrosive to the respiratory tract.

Classification acc. to Directive 67/548/EEC & 1999/45/EC

T; R23 | C; R35
Toxic by inhalation.
Causes severe burns (eyes, respiratory system and skin).
Risk advice to man and the environment
Liquefied gas.

2.2. Label elements

- Labelling Pictograms



- Signal word

Danger

- Hazard Statements

H280 Contains gas under pressure; may explode if heated.
H331 Toxic if inhaled.
H314 Causes severe skin burns and eye damage.
EUH071 Corrosive to the respiratory tract.

- Precautionary Statements

Precautionary Statement Prevention

P260 Do not breathe gas, vapours.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary Statement Response

P304+P340+P315 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get immediate medical advice/attention.
P305+P351+P338+P315 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention.
P303+P361+P353+P315 IF ON SKIN (or hair): Remove / Take off immediately all contaminated clothes. Rinse skin with water/shower. Get immediate medical advice/attention.

Precautionary Statement Storage

P403 Store in a well-ventilated place.
P405 Store locked up.

2.3. Other hazards

None.

SECTION 3: Composition/information on ingredients

Substance / Mixture: Substance.

3.1. Substances

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Contains no other components or impurities which will influence the classification of the product.

3.2. Mixtures

Not applicable.

SECTION 4: First aid measures

4.1. Description of first aid measures

First Aid General Information:

Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

First Aid Inhalation:

Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

First Aid Skin / Eye:

Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Obtain medical assistance. Immediately flush eyes thoroughly with water for at least 15 minutes.

First Aid Ingestion:

Ingestion is not considered a potential route of exposure.

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

May cause severe chemical burns to skin and cornea. Suitable

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first-aid treatment should be immediately available. Seek medical advice before using product.

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

May result in pulmonary oedema. Obtain medical assistance. Treat with a corticosteroid spray as soon as possible after inhalation.

SECTION 5: Fire fighting measures

5.1. Extinguishing media

Suitable extinguishing media

All known extinguishants can be used.

5.2. Special hazards arising from the substance or mixture

Specific hazards

Non flammable. Exposure to fire may cause containers to rupture/explode.

Hazardous combustion products

None that are more toxic than the product itself.

5.3. Advice for firefighters

Specific methods

If possible, stop flow of product. Move container away or cool with water from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.

Special protective equipment for fire fighters

Use self-contained breathing apparatus and chemically protective clothing. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to EN 469 will provide a basic level of protection from chemical incidents. EN 469:2005: Protective clothing for fire-fighters. Performance requirements for protective clothing for fire-fighting.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Evacuate area. Use self-contained breathing apparatus and chemically protective clothing. Ensure adequate air ventilation. Monitor concentration of released product. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

6.2. Environmental precautions

Try to stop release. Reduce vapour with fog or fine water spray. Dispose of waste according to national legislation.

6.3. Methods and material for containment and cleaning up

Ventilate area. Wash contaminated equipment or sites of leaks with copious quantities of water. Hose down area with water. Neutralise with soda or slaked lime.

6.4. Reference to other sections

See also sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

The substance must be handled in accordance with good industrial hygiene and safety procedures. Avoid exposure, obtain special instructions before use. Do not allow backfeed into the container. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. Refer to supplier's handling instructions.

Avoid suckback of water, acid and alkalis. Purge system with dry inert gas (e.g. helium or nitrogen) before gas is introduced and when system is placed out of service. Do not smoke while handling product. Only experienced and properly instructed persons should handle gases under pressure. Protect cylinders from physical damage; do not drag, roll, slide or drop. Never use direct flame or electrical heating devices to raise the pressure of a container. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use. Ensure the complete gas system has been (or is regularly) checked for leaks before use. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Close container valve after each use and when empty, even if still connected to equipment. Never attempt to repair or modify container valves or safety relief devices. Damaged valves should be reported immediately to the supplier. Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment. Keep container valve outlets clean and free from contaminates particularly oil and water. Never attempt to transfer gases from one cylinder/container to another. Installation of a cross purge assembly between the cylinder and the regulator is recommended.

7.2. Conditions for safe storage, including any incompatibilities

Secure cylinders to prevent them falling. Keep container below 50°C in a well ventilated place. Observe all regulations and local requirements regarding storage of containers. Containers should not be stored in conditions likely to encourage corrosion. Containers should be stored in the vertical position and properly secured to prevent falling over. Stored containers should be periodically checked for general conditions and leakage. Container valve guards or caps should be in place. Store containers in location free from fire risk and away from sources of heat and ignition. Keep away from combustible materials.

7.3. Specific end use(s)

None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure limit value

Value type	value	Note
TLV (ACGIH)	5 ppm	ACGIH 1995 - 1996
Great Britain - STEL	5 ppm	EH 40/07
Great Britain - LTEL	1 ppm	EH 40/07

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Derived No Effect Levels

Type	Exposure	Value	Population	Effects
DNEL	Inhalation, acute	15 mg/m ³	Worker	Local
DNEL	Inhalation, long term	8 mg/m ³	Worker	Local

Predicted No Effect Concentrations

Type	Compartment Detail	Value
PNEC	Freshwater	0,036 mg/l
PNEC	Marine water	0,036 mg/l
PNEC	Intermittent release	0,045 mg/l
PNEC	STP (Sewage Treatment Plant)	0,036 mg/l

8.2. Exposure controls

Appropriate engineering controls

A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered. Product to be handled in a closed system. Preferably use permanent leak-tight connections (eg. welded pipes). Systems under pressure should be regularly checked for leakages. Gas detectors should be used when toxic quantities may be released. Provide adequate general or local ventilation. Keep concentrations well below occupational exposure limits. The substance must be handled in accordance with good industrial hygiene and safety procedures. Consider work permit system e.g. for maintenance activities.

Personal protective equipment

Eye and face protection

Protect eyes, face and skin from liquid splashes. Safety eyewear, goggles or face shield, to EN 166 should be used to avoid contact with the substance. Full-face mask recommended.

Guideline:

EN136 Respiratory protective devices. Full face masks. Requirements, testing, marking.

Skin protection

Hand protection

Advice:

Wear working gloves and safety shoes while handling gas cylinders. Chemically resistant gloves complying with EN 374 should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Materials suitable for prolonged, direct contact.

Material:

Nitrile

Min. Breakthrough time:

480 min

Glove thickness:

0,4 mm

Guideline:

EN 374-1/2/3 Protective gloves against chemicals and micro-organisms.

Protection index:

6

Material:

CR(Chloroprene, Polychloroprene rubber)

Min. Breakthrough time:

480 min

Glove thickness:

0,5 mm

Guideline:

EN 374-1/2/3 Protective gloves against chemicals and micro-organisms.

Protection index:

6

Body protection

Keep suitable chemically resistant protective clothing readily available for emergency use. Personal protective equipment for the body should be selected based on the task being performed and the risks involved.

Guideline:

EN 943: Protective clothing against liquid and gaseous chemicals, aerosols and solid particles.

Other protection

Wear working gloves and safety shoes while handling gas cylinders.

ISO 20345 Safety footwear

Respiratory protection

Keep self contained breathing apparatus readily available for emergency use. Use SCBA in the event of high concentrations. The selection of the Respiratory Protective Device (RPD) must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected RPD. When allowed by a risk assessment a RPD may be used.

Guideline:

EN 136: Respiratory protective devices. Full face masks. Requirements, testing, marking.

Material:

Filter E

Guideline:

EN 14387: Respiratory protective devices. Gas filter(s) and combined filter(s). Requirements, testing, marking

Thermal hazards

If there is a risk of contact with the liquid, all protective equipment should be suitable for extremely low temperatures.

Environmental Exposure Controls

Specific risk management measures are not required beyond good industrial hygiene and safety procedures. Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

General information

Appearance/Colour: Colourless gas. Gives off white fumes in moist air.

Odour: Pungent

Odour threshold:

Odour threshold is subjective and inadequate to warn for over exposure.

pH value: If dissolved in water pH-value will be affected.

Melting point: -114 °C

Boiling point: -85 °C

Flammability range: Non flammable.

Vapour Pressure 20 °C: 42,6 bar

Relative density, gas: 1,3

Solubility in water: Hydrolyses.

Autoignition temperature: Not applicable.

Molecular weight: 36,5 g/mol

Critical temperature: 51,4 °C

Relative density, liquid: 1,2

9.2. Other information

Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

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SECTION 10: Stability and reactivity

10.1. Reactivity

Unreactive under normal conditions.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Exothermic reaction.

10.4. Conditions to avoid

Avoid moisture in installation systems.

10.5. Incompatible materials

Reacts with most metals in the presence of moisture, liberating hydrogen, an extremely flammable gas. With water causes rapid corrosion of some metals. Moisture. Reacts with water to form corrosive acids. May react violently with alkalis. For material compatibility see latest version of ISO-11114.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute oral toxicity

Not applicable.

Acute inhalation toxicity

Value: LC50

Species: Rat

Exposure time: 0,5 h

Value in standard unit mg/l: 8,3 mg/l

Delayed fatal pulmonary oedema possible.

Value: LC50

Species: Rat

Exposure time: 4 h

Value in non-standard unit: 1405 ppm

Acute dermal toxicity

Not applicable.

Acute toxicity other routes

Not applicable.

Skin irritation

Severe corrosion to the skin at high concentrations.

Eye irritation

Species: Rabbit

Result: Irreversible damage (OECD Guideline 405)

Risk of serious damage to eyes.

Sensitization

No known effects from this product.

Repeated dose toxicity

Severe corrosion to skin, eyes and respiratory tract at high concentrations.

Genetic toxicity in vitro

No known effects from this product.

Genetic toxicity in vivo

Result: No known effects from this product.

Assessment mutagenicity

Memo: There is no evidence of mutagenic potential.

Assessment carcinogenicity

No evidence of carcinogenic effects.

Assessment toxicity to reproduction

No known effects from this product.

Assessment teratogenicity

No indication of teratogenic effects.

Other relevant toxicity information

Toxic by inhalation.

Experiences with human exposure

Delayed fatal pulmonary oedema possible.

SECTION 12: Ecological information

12.1. Toxicity

May cause pH changes in aqueous ecological systems., Harmful to aquatic organisms.

Acute and prolonged toxicity fish

Species: Bluegill (*Lepomis macrochirus*)

Exposure time: 96 h

Value type: LC50

Value in standard unit mg/l: 3,25 mg/l

The result refers to an unneutralised sample.

Acute toxicity aquatic invertebrates

Species: *Daphnia magna*

Value type: EC50

Value in standard unit mg/l: 4,92 mg/l

The result refers to an unneutralised sample.

Toxicity aquatic plants

Species: *Chlorella vulgaris*

Exposure time: 72 h

Value type: EC50

Value in standard unit mg/l: 4,7 mg/l

The result refers to an unneutralised sample.

Toxicity microorganisms

Test type: Activated sludge, domestic.

Species: Bacteria

Exposure time: 3 h

Value type: EC50

Value in standard unit mg/l: 5 mg/l

The result refers to an unneutralised sample.

Chronic toxicity fish

Not applicable.

Chronic toxicity aquatic invertebrates

Not applicable.

Toxicity to soil dwelling organisms

Not applicable.

Toxicity terrestrial plants

Not applicable.

12.2. Persistence and degradability

Stability in water

Not applicable.

Biodegradation

Not readily biodegradable. Inorganic compound.

Physical chemical eliminability

Not readily biodegradable. Inorganic compound.

12.3. Bioaccumulative potential

Accumulation in organisms is not to be expected.

12.4. Mobility in soil

Not applicable.

Transport between environment compartments

Not applicable.

12.5. Results of PBT and vPvB assessment

Not classified as PBT or vPvB.

12.6. Other adverse effects

May cause pH changes in aqueous ecological systems. Harmful to aquatic organisms.

Adsorption organic bound halogen (AOX)

The substance/product may have a halogenising effect and

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therefore contributes to the OBH.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Must not be discharged to atmosphere. Do not discharge into any place where its accumulation could be dangerous. Refer to the EIGA code of practice (Doc.30 "Disposal of Gases", downloadable at <http://www.eiga.org>) for more guidance on suitable disposal methods.

Contact supplier if guidance is required. Dispose of cylinder via gas supplier only. Gases in pressure containers (including halons) containing dangerous substances

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SECTION 14: Transport information

ADR/RID

14.1. UN number
1050

14.2. UN proper shipping name
Hydrogen chloride, anhydrous

14.3. Transport hazard class(es)
Class: 2
Classification Code: 2TC
Labels: 2.3, 8
Hazard number: 268
Tunnel restriction code: (C/D)
Emergency Action Code: 2RE

14.4. Packing group (Packing Instruction)
P200

14.5. Environmental hazards
None.

14.6. Special precautions for user
None.

IMDG

14.1. UN number
1050

14.2. UN proper shipping name
Hydrogen chloride, anhydrous

14.3. Transport hazard class(es)
Class: 2.3
Labels: 2.3, 8
EmS: F-C,S-U

14.4. Packing group (Packing Instruction)
P200

14.5. Environmental hazards
None.

14.6. Special precautions for user
None.

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

Not applicable.

IATA

14.5. Environmental hazards
None.

14.6. Special precautions for user
None.

Other transport information

Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers ensure that they are firmly secured. Ensure that the cylinder valve is closed and not leaking. Ensure that the valve outlet cap nut or plug (where provided) is correctly fitted. Ensure that the valve protection device (where provided) is correctly fitted. Ensure adequate ventilation. Ensure compliance with applicable regulations.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
Seveso Directive 96/82/EC: Listed

15.2. Chemical safety assessment
CSA has been carried out.

SECTION 16: Other information

Ensure all national/local regulations are observed. Ensure operators understand the toxicity hazard. Users of breathing apparatus must be trained. Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.

Advice

Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted. Details given in this document are believed to be correct at the time of going to press.

Further information

Note:

When using this document care should be taken, as the decimal sign and its position complies with rules for the structure and drafting of international standards, and is a comma on the line.

As an example 2,000 is two (to three decimal places) and not two thousand, whilst 1.000 is one thousand and not one (to three decimal places).

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