

## Hydrogen chloride

HCl

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

#### 1.1. Product identifier

<b>Name of product</b>	Hydrogen chloride Art-Nr(n): 0400-0409
<b>Name of substance</b>	hydrogen chloride
<b>Index No</b>	017-002-00-2
<b>EC No</b>	231-595-7
<b>REACH registration number</b>	01-2119484862-27
<b>CAS No</b>	7647-01-0

#### Manufacturer / Distributor:

#### Ehsan International Gases

40/9, Aurangabad, Nazimabad  
#3, Karachi 74600, Pakistan.  
+92 21 36612091 – 36612907

[info@ehsan.com.pk](mailto:info@ehsan.com.pk)

[www.ehsan.com.pk](http://www.ehsan.com.pk)

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

##### Identified uses

##### Sector of uses [SU]

- SU10 - Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
- SU15 - Manufacture of fabricated metal products, except machinery and equipment
- SU16 - Manufacture of computer, electronic and optical products, electrical equipment
- SU22 - Professional uses: Public domain (administration, education, entertainment, services, craftsmen) SU0-2  
- Other activity related to manufacture and services.
- SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites.
- SU9 - Manufacture of fine chemicals

##### Product categories [PC]

- PC14 - Metal surface treatment products, including galvanic and electroplating products
- PC19 - Intermediate
- PC21 - Laboratory chemicals
- PC33 - Semiconductors

##### Process categories [PROC]

- PROC1 - Use in closed process, no likelihood of exposure.
- PROC2 - Use in closed, continuous process with occasional controlled exposure.
- PROC3 - Use in closed batch process (synthesis or formulation)

##### Environmental release categories [ERC]

- ERC1 - Manufacture of substances
- ERC8d - Wide dispersive outdoor use of processing aids in open systems
- ERC2 - Formulation of preparations (mixtures)
- ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles
- ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

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ERC6b - Industrial use of reactive processing aids

### Recommended intended purpose(s)

Catalyst.  
Raw material.  
Process chemical. Intermediate.

### 1.4. Emergency telephone number

#### Emergency advice

Giftinformationszentrum (Poison Control Centre) Mainz  
Phone +49 6131 19240

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

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

T; R23  
C; R35

#### R-phrases

23 Toxic by inhalation.  
35 Causes severe burns.

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

Hazard classes and Hazard	Hazard Statements	Classification procedure categories
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Liquef. Gas	H280
Acute Tox. 3	H331
Skin Corr. 1A	H314
Eye Dam. 1	H318

#### Hazard statements for physical hazards

H280 Contains gas under pressure; may explode if heated.

#### Hazard statements for health hazards

H314 Causes severe skin burns and eye damage.  
H318 Causes serious eye damage.

H331 Toxic if inhaled.

### 2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008 [CLP/GHS]



GHS04



GHS05



GHS06

#### Signal word

Danger

#### Hazard statements for physical hazards

H280 Contains gas under pressure; may explode if heated.

#### Hazard statements for health hazards

H314 Causes severe skin burns and eye damage.  
H318 Causes serious eye damage. H331

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**HCl****Toxic if inhaled.****Precautionary Statements****Prevention**

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

**Response**

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

**Storage**

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

**Hazardous ingredients for labeling**

hydrogen chloride

**Supplemental Hazard information (EU)****Health properties**

Corrosive to the respiratory tract.

**2.3. Other hazards****Information pertaining to special dangers for human and environment**

Irritating to eyes, respiratory system and skin.

Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level. Contact with liquid may cause cold burns/frostbite.

**Results of PBT and vPvB assessment**

This substance does not meet the PBT/vPvB criteria of REACH, annex XIII.

## SECTION 3: Composition/ information on ingredients

**3.1. Substances**

**CAS No 7647-01-0** hydrogen chloride  
EC No 231-595-7  
Index No 017-002-00-2  
REACH registration number 01-2119484862-27

**3.2. Mixtures**

not applicable

## SECTION 4: First aid measures

**4.1. Description of first aid measures****General information**

Remove contaminated soaked clothing immediately.  
Adhere to personal protective measures when giving first aid.  
Seek medical advice immediately.

**In case of inhalation**

Remove the casualty into fresh air and keep him immobile.  
In the event of pulmonary irritation treat initially with corticoid spray, e.g. Ventolair- or Pulmicort- metered-dose aerosol (Ventolair and Pulmicort are registered trademarks).

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In case of respiratory standstill give artificial respiration by respiratory bag (Ambu bag) or respirator. Send for a doctor.

### In case of skin contact

In case of contact with skin wash off immediately with plenty of water.

In case of frostbite rinse with plenty of water. Don't remove clothing.

In case of frostbite spray with lukewarm (not hot) water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.

### In case of eye contact

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Call for a doctor immediately.

### In case of ingestion

Ingestion is not considered a potential route of exposure.

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

### Physician's information / possible symptoms

The following symptoms may occur in case of strong exposition:

Coughing

Shortness of breath

Cardiopulmonary arrest.

Headache

Shortness of breath.

Contact with liquid may cause cold burns/frostbite.

### Physician's information / possible dangers

Risk of pulmonary oedema

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

**Treatment (Advice to doctor)** Treat symptoms.

Continue to monitor for pneumonia and pulmonary oedema.

Monitor circulation.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

#### Suitable extinguishing media

Product does not burn, fire-extinguishing activities according to surrounding.

#### Unsuitable extinguishing media

Full water jet

### 5.2. Special hazards arising from the substance or mixture

In the event of fire the following can be released:

Hydrogen (on contact with firefighting water).

Explosion hazard.

### 5.3. Advice for firefighters

#### Special protective equipment for fire-fighters

Use breathing apparatus with independent air supply ( isolated ). Wear full protective clothing.

#### Additional information

Cool endangered containers with water spray jet.

Exposure to fire may cause containers to rupture / explode.

Fire residues and contaminated firefighting water must be disposed of in accordance with the local regulations. Collect contaminated firefighting water separately, must not be discharged into the drains.

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### SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

##### ! For non-emergency personnel

Remove persons to safety.  
Evacuate area.

##### ! For emergency responders

Personal protection by wearing close-fitting protective clothing and breathing apparatus. Keep people away and stay on the upwind side.

#### 6.2. Environmental precautions

Do not discharge into the drains or bodies of water..  
Collect contaminated water / firefighting water separately.  
If possible, stop flow of product.  
If necessary, secure leaky pressure receptacles in a salvage packaging.  
Suppress gases/vapours/mists with water spray jet Do not discharge into the subsoil/soil.

#### 6.3. Methods and material for containment and cleaning up

Ensure adequate air ventilation.  
Dilute with plenty of water.  
Disposal according to regulations.

#### Additional Information

No water on the leaks.

#### 6.4. Reference to other sections

Information for safe handling see chapter 7.  
Information for personal protective equipment see chapter 8.

### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

##### Advice on safe handling

Use only in thoroughly ventilated areas.  
Transfer and handle only in enclosed systems.  
Containers' temperature may not be increased above 50 °C.  
Do not heat with open flames.  
The working pressure in the receptacle must not exceed the saturation vapour pressure of the pure product resulting at a temperature of 50 °C.  
Provide good room ventilation even at ground level (vapours are heavier than air).  
Prevent cylinders from falling over.  
Ensure valve outlet cap nut or plug is correctly fitted.  
Ensure valve protection device is correctly fitted.  
Open valve slowly to avoid pressure shock.  
Use only properly specified equipment which is suitable for this product, its supply pressure and temperature.  
Do not allow backfeed into the container.  
Suck back of water into the container must be prevented.  
No water to valves, flanges and other fittings.  
Purging of pipes and valves with inert gases - to avoid: water, solvents.

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**! General protective measures**

Do not inhale gases.

**Hygiene measures**

At work do not eat, drink, smoke or take drugs.

Wash hands before breaks and after work.

Use barrier skin cream.

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## Advice on protection against fire and explosion

The product is not combustible.

Pay attention to general rules of internal fire prevention.

## 7.2. Conditions for safe storage, including any incompatibilities

**Requirements for storage rooms and vessels** Ventilate store-rooms thoroughly.

Use transportable pressure equipment.

Valve: Suitable materials: Carbon steels, stainless steel.

Unsuitable materials: Aluminium alloys, brass, copper alloys.

## Advice on storage compatibility

Do not store with spontaneously flammable materials.

Do not store together with combustible liquids or combustible solids.

Do not store together with animal feedstuffs.

Do not store together with explosives.

Do not store together with infectious substances.

Do not store together with radioactive material.

Do not store together with toxic liquids or toxic solids.

Do not store together with food.

Do not store together with oxidizing liquids or oxidizing solids.

## Further information on storage conditions

Ensure valve protection device is correctly fitted.

Store closed container at cool and aired place.

Store only in original container at temperature of 50°C maximum (=122°F).

Prevent cylinders from falling over.

Protect from heat/overheating.

## 7.3. Specific end use(s)

### Recommendation(s) for intended use

See exposure scenario(s).

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### ! Ingredients with occupational exposure limits to be monitored

CAS No	Name	Code	[mg/m <sup>3</sup> ]	[ppm]	Remark
7647-01-0	Hydrogen chloride	WEL, 8 hours	2	1	EH40, UK
		Short-term	8	5	

#### Indicative occupational exposure limit values (91/322/EEC, 2000/39/EC, 2006/15/EC or 2009/161/EU)

CAS No	Name	Code	[mg/m <sup>3</sup> ]	[ppm]	Remark
7647-01-0	hydrogen chloride	8 hours	8	5	
		Short-term	15	10	

### Additional advice

DNEL (workers, inhalation, short-term, local effects): 15,0 mg/m<sup>3</sup>

DNEL (workers, inhalation, long-term, local effects): 8 mg/m<sup>3</sup>

### 8.2. Exposure controls

#### Respiratory protection

Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.

Short term: filter apparatus, filter E

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Breathing apparatus in the event of high concentrations.  
Keep self contained breathing apparatus readily available for emergency use.

### Hand protection

Leather gloves

Protective gloves complying with EN 374.

Glove material specification [make/type, thickness, permeation time/life, wetting resistance]: NBR; 0,4 mm; >= 480 min / CR; 0,5 mm; >= 480 min / PVC; 0,7 mm; >= 480 min

### Eye protection

safety goggles, in case of increased risk add protective face shield Safety goggles with side protection complying with EN 166.

### Other protection measures

Safety shoes with steel toe.

Body covering work clothing, or chemical resistant suit at increased risk.

### Limitation and surveillance of the environment

PNEC (freshwater): 0,036 mg/l

PNEC (marine water): 0,036 mg/l

PNEC (water): 0,045 mg/l (intermittent release).

PNEC (freshwater sediment): Exposure of the sediment is not expected

PNEC (marine sediment): Exposure of the sediment is not expected

PNEC (soil): Exposure of the soil is not expected

PNEC (sewage treatment plant): 0,036 mg/l

### Appropriate engineering controls

Transfer and handle only in enclosed systems.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

#### Appearance

compressed liquified gas

#### Colour

colourless

#### Odour

pungent

#### Odour threshold

0,3 ppm

#### Important health, safety and environmental information

	Value	Temperature	at	Method	Remark
<b>pH value</b>	1	20 °C	3,6 g/l		aqueous solution
<b>Acid number</b>	not applicable				
<b>boiling point</b>	-85,05 °C		1013 hPa		
<b>melting point</b>	-114,22 °C				
<b>Flash point</b>	no				
<b>Vapourisation rate</b>	No information available.				
<b>Flammable (solid)</b>	not applicable				
<b>Flammability (gas)</b>	no				



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	Value	Temperature	at	Method	Remark
<b>Ignition temperature</b>	no				
<b>Self ignition temperature</b>	no				
<b>Lower explosion limit</b>	no				
<b>Upper explosion limit</b>	no				
<b>Vapour pressure</b>	42600 hPa	20 °C			
<b>Relative density</b>	831 kg/m <sup>3</sup>	20 °C	42,13 bar		information concerns to liquid phase
<b>Bulk density</b>	not applicable				
<b>Vapour density</b>	1,27				air = 1
<b>Solubility in water</b>	725 g/l	20 °C			
<b>Solubility/other</b>	No information available.				
<b>Partition coefficient noctanol/water (log P O/W)</b>	0,25				
<b>Decomposition temperature</b>	No information available.				
<b>Viscosity dynamic</b>	0,407 mPa*s	188,05 K			
<b>Viscosity dynamic</b>	0,077 mPa*s	290 K			
<b>Solvent concentration</b>	not applicable				
<b>Oxidising properties</b>	no				
<b>Explosive properties</b>	no				
<b>9.2. Other information</b>	Vapours are heavier than air.				

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

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See section "Possibility of hazardous reactions".

**10.2. Chemical stability** Stable under normal conditions.

**10.3. Possibility of hazardous reactions**

May react violently with oxidants.

Exothermic reaction.

Reactions with numerous chemical compounds.

Reactions with alkalis.

Risk of explosion when product reacts with metals and forms hydrogen.

**10.4. Conditions to avoid**

Heat sources / heat - risk of bursting.

Humidity.

**10.5. Incompatible materials**

**Materials to avoid**

Copper, brass and other copper alloys.

Strong oxidizing agents.

Water / moisture.

Alkalis.

Alkali metals.

Aluminium / Aluminium alloys.

**10.6. Hazardous decomposition products**

Hydrogen

**Additional information**

Risk of hydrogen embrittlement.

### SECTION 11: Toxicological information

**11.1. Information on toxicological effects**

**Acute toxicity/Irritability/Sensitization**

	Value/Validation	Species	Method	Remark
<b>LD50 acute oral</b>				Study scientifically not justified.
<b>LD50 acute dermal</b>				Study scientifically not justified.
<b>LC50 acute inhalation</b>	2810 ppm (1 h)	rat		
<b>Irritability skin</b>	corrosive	rabbit	OECD 404	Aqueous solution.
<b>Irritability eye</b>	risk of strong eye injuries	rabbit eye	OECD 405	
<b>Skin sensitization</b>	non-sensitizing	Laboratory animals		Aqueous solution.
<b>Sensitization</b>	non-sensitizing	Laboratory animals		

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	Value	Species	Method	Validation
<b>Subacute Toxicity</b>	NOAEL 0,05 mg/l Sub-acute inhalation toxicity 6 h/d, 5 d/w	Guinea pig		
<b>Subchronic Toxicity</b>	NOAEL 20 ppm (4 - 90 d)  Inhalation 6 h/d, 5 d/w	Rat (male / female)	OECD 413	Also in case of a repeated intake the main effect is the corrosive effect.
<b>Mutagenicity</b>				Information on genotoxicity in vitro available.
<b>Reproduction- Toxicity</b>	not determined			
<b>Carcinogenicity</b>	NOAEL <= 10 ppm (2, 5 a)  Inhalation 6 h/d, 5 d/w	Rat		No indications of carcinogenic effects are available from long-term trials.

! **Specific target organ toxicity (single exposure)** May  
cause respiratory irritation.

! **Specific target organ toxicity (repeated exposure)**  
Corrosive to the respiratory tract.

! **Experiences made from practice**  
Risk of strong health injuries in case of long-term exposition.  
Inhalation can cause damage to the respiratory tract or lungs.  
Pulmonary damage is possible.  
Irritates mucous membranes.

## SECTION 12: Ecological information

### 12.1. Toxicity

#### Ecotoxicological effects

	Value	Species	Method	Validation
<b>Fish</b>	LC50 24,6 - 30,9 mg/l (96 h)	Lepomis macrochirus		pH = 3,25 - 3,6
<b>Daphnia</b>	EC50	Daphnia magna	OECD 202	pH = 4,92
<b>Algae</b>	EC50	Chlorella vulgaris	OECD 201	pH = 4,7
<b>Bacteria</b>	EC50 5 - 30 mg/l (3 h)	activated sludge (kom.)	OECD 209	pH = 5,0 - 5,5
<b>degradability</b>				

## 12.2. Persistence and degradability

### Physico-chemical

not determined

Elimination rate	Method of analysis	Method	Validation
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### Biological degradability

Inorganic product, cannot be eliminated from the water by biological purification processes.

### Biological eliminability

Inorganic product, cannot be eliminated from the water by biological purification processes.

## 12.3. Bioaccumulative potential

No high bioaccumulation potential.  
Study scientifically not justified.

## 12.4. Mobility in soil

Study scientifically not justified.

## 12.5. Results of PBT and vPvB assessment

This substance does not meet the PBT/vPvB criteria of REACH, annex XIII.

## 12.6. Other adverse effects

Not known.

## Additional ecological information

	Value	Method	Remark
AOX			Product has halogenating effect, can contribute to the absorbable organic halogen value.

### General regulation

Do not allow uncontrolled leakage of product into the environment.  
Product is not allowed to be discharged into the ground water or aquatic environment.  
Product is not allowed to be discharged into aquatic environment, drains or sewage treatment plants.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

#### Waste code No.

16 05 04\*

#### Name of waste

gases in pressure containers (including halons) containing dangerous substances

Wastes marked with an asterisk are considered to be hazardous waste pursuant to Directive 2008/98/EC on hazardous waste.

#### Recommendations for the product

Dispose of as hazardous waste.

#### Recommendations for packaging

Transportable pressure equipment (empty, residual pressure): Return to supplier / manufacturer.

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### SECTION 14: Transport information

	ADR/RID	IMDG	IATA-DGR
<b>14.1. UN number</b>	1050	1050	1050
<b>14.2. UN proper shipping name</b>	HYDROGEN CHLORIDE, ANHYDROUS	HYDROGEN CHLORIDE, ANHYDROUS <b>IMDG</b>	Hydrogen chloride, anhydrous <b>IATA-DGR</b> <b>14.6. Special</b>
<b>14.3. Transport hazard class(es)</b>	<b>ADR/RID</b> 2	2.3 (8)	2.3 (8)
<b>14.4. Packing group</b>	-	-	-
<b>14.5. Environmental hazards precautions for user</b>	No	No	No

The protective measures listed in Sections 6, 7 and 8 of the Safety Data Sheet have to be considered.

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

not applicable

No transport as bulk according IBC - Code.

#### Land and inland navigation transport ADR/RID

Hazard label(s) 2.3+8 tunnel restriction code C/D

Classification code 2TC

### SECTION 15: Regulatory information

#### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture Other regulations (EU)

Directive 96/82/EC on the control of major-accident hazards involving dangerous substances.

#### 15.2. Chemical Safety Assessment

For this substance a chemical safety assessment has been carried out.

Exposure scenarios (ESs) see <http://www.ghc.de/media/en/downloads/expo/0400.pdf>.

### SECTION 16: Other information

#### Recommended uses and restrictions

National and local regulations concerning chemicals shall be observed.

#### Further information

All declarations of safety-data-sheet refer to pure substance.

The information contained herein is based on the state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

Indication of changes: "!" = Data changed compared with the previous version. Previous version: 12.7