



Chlor Pars Company Producer Chlorine, Alkalis & Hydrogen peroxide

Material Safety Data Sheet- HYDROGEN

Code: QAD-MSDS-08-EN

Rev:04

Issue Date: 04/08/2019

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1. IDENTIFICATION

Trade name : Hydrogen

SDS no: AL073

Chemical description: Hydrogen

CAS No: 1333-74-0

EC no: 215-605-7

Chemical formula: H₂

Recommended use of the chemical and restrictions on use

Relevant identified uses: Industrial and professional. Perform risk assessment prior to use.

Test gas/Calibration gas.

Laboratory use.

Chemical reaction / Synthesis.

Use as a fuel.

Shield gas for welding processes.

Use for manufacture of electronic/photovoltaic components.

Laser gas.

Contact supplier for more information on uses.

Uses advised against : Do not inflate in party balloons because of the risk of explosion.

COMPANY IDENTIFICATION

Name Company: Chlor pars co

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2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

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

Physical hazards

flammable gases: category 1

H220

Gases under pressure: Compressed gas

H280



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2.2. Label elements

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

Hazard pictograms:

Signal word (CLP): Danger

Hazard statements (CLP): H220 - Extremely flammable gas.

H280 - Contains gas under pressure; may explode if heated.

Precautionary statements (CLP)

- Prevention: P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition Sources. No smoking.
- Response : P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
- P381 - In case of leakage, eliminate all ignition sources.
- Storage: P403 - Store in a well-ventilated place.

2.3. Other hazards



3. COMPOSITION/INFORMATION ON INGREDIENTS

Name	Product identifier	Compositi on [V-%]:	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Hydrogen	(CAS-No.) 1333-74-0 (EC-No.) 215-605-7 (EC Index-No.) 001-001-00-9 (Registration-No.) *1	100	Flam. Gas 1, H220 Press. Gas (Comp.), H280



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

*1: Listed in Annex IV / V REACH, exempted from registration.

*2: Registration deadline not expired.

*3: Registration not required: Substance manufactured or imported < 1t/y.

3.2. Mixtures: Not established.

4. FIRST AID MEASURES

4.1. Description of first aid measures

- Inhalation: Remove victim to uncontaminated area wearing self-contained breathing apparatus. Keep victim warm and rested. Call a doctor. Perform cardiopulmonary resuscitation if breathing stopped.
- Skin contact: Adverse effects not expected from this product.
- Eye contact: Adverse effects not expected from this product.
- Ingestion: Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms and effects, both acute and delayed: Refer to section 11.

4.3. Indication of any immediate medical attention and special treatment needed: None.

5. FIREFIGHTING MEASURES

5.1. Extinguishing media

- Suitable extinguishing media: Water spray or fog.
Dry powder.
- Unsuitable extinguishing media: Carbon dioxide.
Do not use water jet to extinguish

5.2. Special hazards arising from the substance or mixture

Specific hazards: Exposure to fire may cause containers to rupture/explode.

Hazardous combustion products: None.

5.3. Advice for firefighters

Specific methods: Use fire control measures appropriate for the surrounding fire. Exposure to fire radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.

If possible, stop flow of product.

Use water spray or fog to knock down fire fumes if possible.



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Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive resignation may occur. Extinguish any other fire.

Move containers away from the fire area if this can be done without risk

Special protective equipment for fire fighters: In confined space use self-contained breathing apparatus.

Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.

Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.

Standard EN 469 - Protective clothing for firefighters. Standard - EN 659: Protective gloves for firefighters.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedure: Try to stop release. Evacuate area.

Monitor concentration of released product.

Consider the risk of potentially explosive atmospheres.

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

Eliminate ignition sources.

Ensure adequate air ventilation.

Act in accordance with local emergency plan.

Stay upwind

6.2. Environmental precautions: Try to stop release.

6.3. Methods and material for containment and cleaning up : Ventilate area.

6.4. Reference to other sections: See also sections 8 and 13.



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7. HANDLING AND STORAGE

7.1. Precautions for safe handling

Safe use of the product: The product must be handled in accordance with good industrial hygiene and safety procedures.

Only experienced and properly instructed persons should handle gases under pressure.

Consider pressure relief device(s) in gas installations.

Ensure the complete gas system was (or is regularly) checked for leaks before use.

Do not smoke while handling product.

Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.

Avoid suck back of water, acid and alkalis.

Assess the risk of potentially explosive atmospheres and the need for explosion-proof equipment.

Purge air from system before introducing gas.

Take precautionary measures against static discharge.

Keep away from ignition sources (including static discharges).

Consider the use of only non-sparking tools.

Do not breathe gas.

Avoid release of product into atmosphere.

Ensure equipment is adequately earthed.

Safe handling of the gas receptacle : Refer to supplier's container handling instructions.

Do not allow back feed into the container.

Protect cylinders from physical damage; do not drag, roll, slide or drop.

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.

If user experiences any difficulty operating valve discontinue use and contact supplier.

Never attempt to repair or modify container valves or safety relief devices.

Damaged valves should be reported immediately to the supplier.

Keep container valve outlets clean and free from contaminants particularly oil and water.

Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.



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Close container valve after each use and when empty, even if still connected to equipment.
Never attempt to transfer gases from one cylinder/container to another.
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 content of the container.
Suck back of water into the container must be prevented.
Open valve slowly to avoid pressure shock.

7.2. Conditions for safe storage, including any incompatibilities: Observe all regulations and local requirements regarding storage of containers.
Containers should not be stored in conditions likely to encourage corrosion.
Container valve guards or caps should be in place.
Containers should be stored in the vertical position and properly secured to prevent them from falling over.
Stored containers should be periodically checked for general condition and leakage.
Keep container below 50°C in a well ventilated place.
Store containers in location free from fire risk and away from sources of heat and ignition.
Keep away from combustible materials.
Segregate from oxidant gases and other oxidants in store.
All electrical equipment in the storage areas should be compatible with the risk of a potentially explosive atmosphere.

7.3. Specific end use(s): None



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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

OEL (Occupational Exposure Limits): No data available.

DNEL (Derived-No Effect Level) : No data available.

PNEC (Predicted No-Effect Concentration): No data available.

8.2. Exposure controls

8.2.1. Appropriate engineering controls: Provide adequate general and local exhaust ventilation.

Product to be handled in a closed system.

Systems under pressure should be regularly checked for leakages.

Gas detectors should be used when flammable gases/vapor's may be released.

Consider the use of a work permit system e.g. for maintenance activities

8.2.2. Individual protection measures, e.g. personal protective equipment : 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:

PPE compliant to the recommended EN/ISO standards should be selected

Eye/face protection : Wear safety glasses with side shields.

Standard EN 166 – Personal eye-protection - specifications.

Hand protection : Wear working gloves when handling gas containers. Standard EN 388 -Protective gloves against mechanical risk.

Other : Consider the use of flame resistant anti-static safety clothing. Standard EN ISO 14116 - Limited flame spread materials. Standard EN 1149-5 - Protective clothing: Electrostatic properties. Wear safety shoes while handling containers. Standard EN ISO 20345 - Personal protective equipment - Safety footwear.

- Respiratory protection : None necessary.
- Thermal hazards: None in addition to the above sections

8.2.3. Environmental exposure controls: Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.



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9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance

- Physical state at 20°C / 101.3kPa : Gas.

Color: Colorless.

Odor

: Odourless.

Odor threshold

: Odor the threshold is subjective and inadequate to warn of overexposure

pH value

: Not applicable for gases and gas mixtures.

Molar mass

: 2 g/mol

Melting point

: -259 °C

Boiling point

: -253 °C

Flash point

: Not applicable for gases and gas mixtures.

Critical temperature [°C]

: -240 °C

Evaporation rate (ether=1)

: Not applicable for gases and gas mixtures.

Flammability range

: 4 - 77 vol %

Vapor pressure [20°C]

: Not applicable.

Vapor pressure [50°C]

: Not applicable.

Relative density, gas (air=1)

: 0.07

Relative density, liquid (water=1)

: 0.07

Solubility in water

: 1.6 mg/l

Partition coefficient n-octanol/water [log Kow]

: Not applicable for inorganic products.

Auto-ignition temperature

: 560 °C

Decomposition point [°C]

: Not applicable.

Viscosity [20°C]

: No reliable data available.

Explosive Properties

: Not applicable.

Oxidizing Properties

: Not applicable.

9.2. Other information

Other data

: Burns with an invisible flame.



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10. STABILITY AND REACTIVITY

10.1. Reactivity: No reactivity hazard other than the effects described in sub-sections below

10.2. Chemical stability: Stable under normal conditions.

10.3. Possibility of hazardous reactions: Can form explosive mixture with air. May react violently with oxidants.

10.4. Conditions to avoid : Keep away from heat/sparks/open flames/hot surfaces. – No smoking. Avoid moisture in installation systems

10.5. Incompatible materials : Air, Oxidizers. For additional information on compatibility refer to ISO 11114.

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

11. TOXICOLOGICAL INFORMATION

Acute toxicity	: No known toxicological effects from this
Skin corrosion/irritation	product.
Serious eye	: No known effects from this product.
damage/irritation	: No known effects from this product.
Respiratory or skin	: No known effects from this product.
Germ cell mutagenicity	: No known effects from this product.
Carcinogenicity	: No known effects from this product.
Reproductive toxicity	: No known effects from this product.
STOT-single exposure	No known effects from this product.
STOT-repeated exposure	: No known effects from this product.
Aspiration hazard	: Not applicable for gases and gas mixtures



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12. ECOLOGICAL INFORMATION

12.1. Toxicity

Assessment : No ecological damage caused by this product.

EC50 48h - Daphnia magna [mg/l] : No data available.

EC50 72h - Algae [mg/l] : No data available.

LC50 96 h - Fish [mg/l] : No data available.

12.2. Persistence and degradability

12.3. Bioaccumulative potential

Assessment : No data available.

12.4. Mobility in soil

Assessment : Because of its high volatility, the product is unlikely to cause ground or water pollution.

Partition into soil is unlikely.

12.5. Results of PBT and vPvB assessment

Assessment : No data available

12.6. Other adverse effects

Other adverse effects : No known effects from this product

Effect on the ozone layer : None

Global warming potential [CO₂=1] : 6

Effect on global warming : Contains greenhouse gas(es).

When discharged in large quantities may contribute to the greenhouse effect

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods Contact supplier if guidance is required.

Do not discharge into areas where there is a risk of forming an explosive mixture with air.

Waste gas should be flared through a suitable burner with flash back arrestor.

Do not discharge into any place where its accumulation could be dangerous.

Ensure that the emission levels from local regulations or operating permits are not exceeded.

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.

Return unused product in original container to supplier.

List of hazardous waste codes (from Commission Decision 2000/532/EC as amended) : 16 05 04 *: Gases in pressure containers (including halons) containing hazardous substances.

13.2. Additional information : External treatment and disposal of waste should comply with applicable local and/or national regulations



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14. TRANSPORT INFORMATION

14.1. UN number

UN-No. :1954

14.2. UN proper shipping name

Transport by road/rail (ADG)

: COMPRESSED GAS, FLAMMABLE, N.O.S. (Hydrogen)

Transport by air (ICAO-TI / IATA-DGR)

: Compressed gas, flammable, n.o.s. (Hydrogen)

Transport by sea (IMDG)

: COMPRESSED GAS, FLAMMABLE, N.O.S. (Hydrogen)

14.3. Transport hazard class(es)

Labelling



Transport by road/rail (ADG)

Class : 2

Hazchem code : 1F.

Hazard identification number : 23

Tunnel Restriction : B/D - Tank carriage : Passage forbidden through tunnels of category B, C, D and E. Other carriage : Passage forbidden through tunnels of category D and E



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Transport by air (ICAO-TI / IATA-DGR)

Class / Div. (Sub. risk(s)) :2.

Transport by sea (IMDG)

Class / Div. (Sub. risk(s)) :1F

Emergency Schedule (EmS) - Fire :23.

Emergency Schedule (EmS) - Spillage : B/D - Tank carriage : Passage forbidden through tunnels of category B, C, D and E. Other

carriage: Passage forbidden through tunnels of category D and E.

14.4. Packing group

Transport by road/rail (ADR/RID) : Not established.

Transport by air (ICAO-TI / IATA-DGR) : Not established.

Transport by sea (IMDG) : Not established.

14.5. Environmental hazards

Transport by road/rail (ADR/RID) :None

Transport by air (ICAO-TI / IATA-DGR) :None

Transport by sea (IMDG) :None

14.6. Special precautions for user

Packing Instruction(s)

Transport by road/rail (ADR/RID) :P200

Transport by air (ICAO-TI / IATA-DGR)

Passenger and Cargo Aircraft

Cargo Aircraft only : 200

Transport by sea (IMDG) :P200

Special transport precautions: 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 there is adequate ventilation.
- Ensure that containers are firmly secured.



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- Ensure valve is closed and not leaking.
 - Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
 - Ensure valve protection device (where provided) is correctly fitted.
- 14.7. Transport in bulk according to Annex II of Marpol and the IBC Code: Not applicable.

15. REGULATORY INFORMATION

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

EU-Regulations

Restrictions on use: None

Seveso Directive: 2012/18/EU (Seveso III) : Listed.

National regulations: Ensure all national/local regulations are observed.

National legislation

15.2. Chemical safety assessment

A CSA does not need to be carried out for this product.

16. OTHER INFORMATION

Indication of changes: Revised safety data sheet in accordance with commission regulation (EU) No453/2010.

Training advice: Ensure operators understand the flammability hazard. The hazard of asphyxiation is often overlooked and must be stressed during operator training

Full text of H-statements

Flam. Gas 1	Flammable gases, Category 1
Press. Gas (Comp.)	Gases under pressure : Compressed gas
H220	Extremely flammable gas
H280	Contains gas under pressure; may explode if heated
R12	Extremely flammable
F+	Extremely flammable

DISCLAIMER OF LIABILITY: Before using this product in any new process or experiment, a thorough material compatibility

And safety study should be carried out.

Details given in this document are believed to be correct at the time of going to press.

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.