We create chemistry

Safety data sheet

1. Identification

Product identifier

Hydrogen pure

Chemical name: hydrogen
INDEX-Number: 001-001-00-9
CAS Number: 1333-74-0

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

Relevant identified uses: Chemical
Recommended use: Chemical

Details of the supplier of the safety data sheet

Company:
BASF SE
67056 Ludwigshafen
GERMANY
Operating Division Petrochemicals

Telephone: +49 621 60-42151
E-mail address: sds-petrochemicals@basf.com

Emergency telephone number

International emergency number:
Telephone: +49 180 2273-112

2. Hazards Identification

Classification of the substance or mixture

According to UN GHS criteria

Flam. Gas 1A
Press. Gas Compressed gas

For the classifications not written out in full in this section the full text can be found in section 16.

Label elements

Globally Harmonized System (GHS)

Pictogram:

Signal Word:
Danger

Hazard Statement:

H280	Contains gas under pressure; may explode if heated.
H220	Extremely flammable gas.

Precautionary Statements (Prevention):

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Precautionary Statements (Response):

P377	Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381	In case of leakage, eliminate all ignition sources.

Precautionary Statements (Storage):

P410 + P403	Protect from sunlight. Store in a well-ventilated place.

Other hazards

According to UN GHS criteria

If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture.

3. Composition/Information on Ingredients

Substances

Chemical nature

This product contains (a) substance(s) excluded from the obligation to register under REACH regulation:
Hydrogen
CAS Number: 1333-74-0

EC-Number: 215-605-7
INDEX-Number: 001-001-00-9

For the classifications not written out in full in this section the full text can be found in section 16.

Mixtures

Not applicable

4. First-Aid Measures

Description of first aid measures

Remove contaminated clothing.

If inhaled:
Keep patient calm, remove to fresh air.

On skin contact:
Wash thoroughly with soap and water

On contact with eyes:
Wash affected eyes for at least 15 minutes under running water with eyelids held open.

On ingestion:
Rinse mouth and then drink 200-300 ml of water.

Most important symptoms and effects, both acute and delayed

Symptoms: Information, i.e. additional information on symptoms and effects may be included in the GHS labeling phrases available in Section 2 and in the Toxicological assessments available in Section 11.

(Further) symptoms and / or effects are not known so far

Hazards: (Further) symptoms and / or effects are not known so far

Indication of any immediate medical attention and special treatment needed

Treatment: Symptomatic treatment (decontamination, vital functions).

5. Fire-Fighting Measures

Extinguishing media

Suitable extinguishing media:
carbon dioxide, dry powder, water spray

Unsuitable extinguishing media for safety reasons:
foam, water jet

Additional information:
Use extinguishing measures to suit surroundings.

Special hazards arising from the substance or mixture

Highly flammable. Vapours may form explosive mixture with air.

Shut off or stop released substance/product under safe conditions. Cool endangered containers with water-spray.

Burning produces harmful and toxic fumes.

Advice for fire-fighters

Special protective equipment:
Wear a self-contained breathing apparatus. Special protective equipment for firefighters

Further information:
Do not put fire out unless flow feeding it can be safely stopped. The substance/product forms flammable mixtures with air. Evacuate area of all unnecessary personnel. Fight fire from maximum distance.

Extend fire extinguishing measures to the surroundings.

6. Accidental Release Measures

Shut off or stop source of leak. Shut off or stop released substance/product under safe conditions.

Personal precautions, protective equipment and emergency procedures

Avoid all sources of ignition: heat, sparks, open flame. Wear respiratory protection if ventilation is inadequate.

Keep people away and stay on the upwind side.

Handle in accordance with good industrial hygiene and safety practice.

Environmental precautions

Contain contaminated water/firefighting water.

Methods and material for containment and cleaning up

Ensure adequate ventilation.

Suppress gases/vapours/mists with water spray jet.

7. Handling and Storage

Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice. Ensure thorough ventilation of stores and work areas.

Protection against fire and explosion:
Avoid all sources of ignition: heat, sparks, open flame. Vapours may form explosive mixture with air.

Conditions for safe storage, including any incompatibilities

Further information on storage conditions: Keep container tightly closed in a cool, well-ventilated place. Keep away from sources of ignition - No smoking. Take precautionary measures against static discharges.

Specific end use(s)

For the relevant identified use(s) listed in Section 1 the advice mentioned in this section 7 is to be observed.

8. Exposure Controls/Personal Protection

Control parameters

Components with occupational exposure limits

1333-74-0: Hydrogen

Exposure controls

Personal protective equipment

Respiratory protection:
Wear respiratory protection if ventilation is inadequate. Suitable respiratory protection for higher concentrations or long-term effect: Self-contained breathing apparatus.

Hand protection:
When there is a risk of frostbite from escaping gas, use thermally insulated gloves (EN 511).

Eye protection:
Safety glasses with side-shields (frame goggles) (e.g. EN 166)

Body protection:
Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

General safety and hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wearing of closed work clothing is required additionally to the stated personal protection equipment. Avoid contact with the skin, eyes and clothing. Ensure adequate ventilation. Avoid inhalation of vapour. Remove contaminated clothing immediately and dispose of safely. At the end of the shift the skin should be cleaned and skin-care agents applied.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Form:	compressed gas
Colour:	colourless
Odour:	odourless
Odour threshold:	
	not determined

pH value:		
	not applicable	
Melting point:	-259 °C (1.013 hPa) Literature data.	
Boiling point:	-252,76 °C (1.013,25 hPa) Literature data.	
Flash point:		
	not applicable	
Evaporation rate:		
	Value can be approximated from Henry's Law Constant or vapor pressure.	
Flammability:	Extremely flammable.	(Directive 92/69/EEC, A.11)
Lower explosion limit:	4 %(V) 3 g/m3 Literature data.	(air)
Upper explosion limit:	77 %(V) 65 g/m3 Literature data.	(air)
Ignition temperature:	560 °C Literature data.	
Vapour pressure:	12,8 bar (-239,9 °C) critical pressure	
Density:	0,0841 kg/m3 (15 °C, 1.013,25 hPa)	
Relative density:	0,07	
Relative vapour density (air):	0,0695 Literature data.	
Solubility in water:		
	1,62 mg/l (21 °C, 1.013 hPa)	
Partitioning coefficient n-octanol/water (log Kow):		
	not applicable	
Self ignition:	Based on its structural properties the product is not classified as self-igniting.	Test type: Spontaneous self-ignition at room-temperature.
Thermal decomposition:	not determined	
Viscosity, dynamic:		
	not applicable	
Viscosity, kinematic:		
	not applicable, the product is a gas	
Explosion hazard:	not explosive	(other)
Fire promoting properties:	not fire-propagating	(other)

Other information

Self heating ability:	It is not a substance capable of spontaneous heating.	
Radioactivity:		
		not radioactive for transport purposes

pKA:	The substance does not dissociate.
Surface tension:	Based on chemical structure, surface activity is not to be expected.
Grain size distribution:	The substance / product is marketed or used in a non solid or granular form.
Molar mass:	2,02 g/mol

10. Stability and Reactivity

Reactivity
No hazardous reactions if stored and handled as prescribed/indicated.

Corrosion to metals:	No corrosive effect on metal.	
Formation of flammable gases:	Remarks:	not applicable

Chemical stability
The product is stable if stored and handled as prescribed/indicated.

Peroxides: The product does not contain peroxides.

Possibility of hazardous reactions
No hazardous reactions if stored and handled as prescribed/indicated.

Conditions to avoid
No special precautions other than good housekeeping of chemicals.

Incompatible materials

Substances to avoid:
strong oxidizing agents

Hazardous decomposition products

:
No hazardous decomposition products if stored and handled as prescribed/indicated.

11. Toxicological Information

Information on toxicological effects

Acute toxicity

Assessment of acute toxicity:
At very high air concentrations, the gas may cause dyspnoe or asphyxia by displacing oxygen. Air concentrations below the explosive limit are not expected to pose an acute inhalation risk.

Irritation

Assessment of irritating effects:
The substance is gaseous at room temperature and pressure. Testing for this particular endpoint is technically not feasible and/or this endpoint does not represent a relevant exposure scenario.
Contact with liquid may cause frostbite.

Respiratory/Skin sensitization

Assessment of sensitization:
The chemical structure does not suggest a sensitizing effect.

Germ cell mutagenicity

Assessment of mutagenicity:
No data available concerning mutagenic effects. The chemical structure does not suggest a specific alert for such an effect.

Carcinogenicity

Assessment of carcinogenicity:
No data available concerning carcinogenic effects. The chemical structure does not suggest a specific alert for such an effect.

Reproductive toxicity

Assessment of reproduction toxicity:
No data available. The chemical structure does not suggest a specific alert for such an effect.

Developmental toxicity

Assessment of teratogenicity:
No data available. The chemical structure does not suggest a specific alert for such an effect.

Experiences in humans

Experimental/calculated data:

Product is not toxic, but will cause suffocation in concentrations that decrease the oxygen content in the air.

Specific target organ toxicity (single exposure)

Assessment of STOT single:
The available information is not sufficient for the evaluation of specific target organ toxicity.

Repeated dose toxicity and Specific target organ toxicity (repeated exposure)

Assessment of repeated dose toxicity:
Repeated exposure to the substance by inhalative administration leads to effects similar to those found after single exposure. Study scientifically not justified.

Aspiration hazard

Study scientifically not justified.

12. Ecological Information

Toxicity

Assessment of aquatic toxicity:
At the present state of knowledge, no negative ecological effects are expected.

Persistence and degradability

Assessment biodegradation and elimination (H2O):
The product is highly volatile and can be eliminated from water by stripping.

Bioaccumulative potential

Assessment bioaccumulation potential:
Accumulation in organisms is not to be expected.

Mobility in soil

Assessment transport between environmental compartments:
Adsorption in soil: Adsorption to solid soil phase is not expected.

Results of PBT and vPvB assessment

Not applicable for inorganic substances.

Other adverse effects

The substance is not listed in Regulation (EC) 1005/2009 on substances that deplete the ozone layer.

Additional information

Other ecotoxicological advice:
The material has no harmful effect on the environment.

13. Disposal Considerations

Waste treatment methods

Dispose of in accordance with national, state and local regulations.

Contaminated packaging:
Disposal must be made according to official regulations.

14. Transport Information

Land transport

ADR

UN number or ID number:	UN1049
UN proper shipping name:	HYDROGEN, COMPRESSED
Transport hazard class(es):	2.1
Packing group:	Not applicable
Environmental hazards:	no
Special precautions for user:	Tunnel code: B/D

RID

UN number or ID number:	UN1049
UN proper shipping name:	HYDROGEN, COMPRESSED
Transport hazard class(es):	2.1, 13
Packing group:	Not applicable
Environmental hazards:	no
Special precautions for user:	Shunting label: 13

Inland waterway transport

ADN

UN number or ID number:	UN1049
UN proper shipping name:	HYDROGEN, COMPRESSED
Transport hazard class(es):	2.1
Packing group:	Not applicable
Environmental hazards:	no
Special precautions for user:	None known

Transport in inland waterway vessel
Not evaluated

Sea transport

IMDG

UN number or ID number:	UN 1049
UN proper shipping name:	HYDROGEN, COMPRESSED
Transport hazard class(es):	2.1
Packing group:	Not applicable
Environmental hazards:	no
	Marine pollutant: NO

Special precautions for user:	EmS: F-D; S-U

Air transport

IATA/ICAO

UN number or ID number:	UN 1049
UN proper shipping name:	HYDROGEN, COMPRESSED
Transport hazard class(es):	2.1
Packing group:	Not applicable
Environmental hazards:	No Mark as dangerous for the environment is needed
Special precautions for user:	None known

Maritime transport in bulk according to IMO instruments

Maritime transport in bulk is not intended.

15. Regulatory Information

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

Not applicable

16. Other Information

Full text of classifications, hazard symbols and hazard statements, if mentioned in section 2 or 3:

Flam. Gas	Flammable gases
Press. Gas	Gases under pressure

The data contained in this safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. This safety data sheet is neither a Certificate of Analysis (CoA) nor technical data sheet and shall not be mistaken for a specification agreement. Identified uses in this safety data sheet do neither represent an agreement on the corresponding contractual quality of the substance/mixture nor a contractually designated use. It is the responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.

Vertical lines in the left hand margin indicate an amendment from the previous version.