

Hydrogen Sulphide

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

1.1. Product identifier

Name of product	Hydrogen sulphide
Art-Nr(n):	0900 - 0909
Name of substance	Hydrogen sulphide
Index No	016-001-00-4
EC No	231-977-3
REACH registration number	01-2119445737-29
CAS No	7783-06-4

Manufacturer / Distributor:

Ehsan International Gases

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

info@ehsan.com.pk

www.ehsan.com.pk

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

Identified uses

! Sector of uses [SU]

- SU11 - Manufacture of rubber products
- SU15 - Manufacture of fabricated metal products, except machinery and equipment
- SU16 - Manufacture of computer, electronic and optical products, electrical equipment
- SU0 - Other: Fuel (Odorizing agent in fuels)
- SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU4
- Manufacture of food products
- SU8 - Manufacture of bulk, large scale chemicals (including petroleum products)
- SU9 - Manufacture of fine chemicals

Product categories [PC]

- PC14 - Metal surface treatment products, including galvanic and electroplating products
- PC19 - Intermediate
- PC2 - Adsorbents
- PC21 - Laboratory chemicals
- PC33 - Semiconductors

Process categories [PROC]

- PROC1 - Use in closed process, no likelihood of exposure
- PROC3 - Use in closed batch process (synthesis or formulation)
- PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
- PROC16 - Using material as fuel sources, limited exposure to unburned product to be expected
- PROC15 - Use as laboratory reagent

Hydrogen Sulphide

PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

Environmental release categories [ERC]

ERC7 - Industrial use of substances in closed systems

ERC2 - Formulation of preparations (mixtures)

ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates) ERC6b

- Industrial use of reactive processing aids

! Recommended intended purpose(s)

Basic substance.

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

F+; R12

T+; R26

N; R50 R-

phrases

12 Extremely flammable.

26 Very toxic by inhalation.

50 Very toxic to aquatic organisms.

Additional hints

Listed substance (Regulation (EC) No 1272/2008, Annex VI, part 3).

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

Hazard classes and Hazard	Hazard Statements	Classification procedure categories
Flam. Gas 1	H220	
Liquef. Gas	H280	
Acute Tox. 2	H330	
STOT SE 3	H335	
Aquatic Acute 1	H400	

Hazard statements for physical hazards

H220 Extremely flammable gas.

H280 Contains gas under pressure; may explode if heated.

Hazard statements for health hazards

H330 Fatal if inhaled.

H335 May cause respiratory irritation.

Hazard statements for environmental hazards

H400 Very toxic to aquatic life.

Additional hints

Listed substance (Regulation (EC) No 1272/2008, Annex VI, part 3).

2.2. Label elements

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

Hydrogen Sulphide



GHS02



GHS06



GHS09

Signal word

Danger

Hazard statements for physical hazards

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

Hazard statements for health hazards

H330 Fatal if inhaled.
H335 May cause respiratory irritation.

Hazard statements for environmental hazards

H400 Very toxic to aquatic life.

Precautionary Statements

Prevention

P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P273 Avoid release to the environment.

Response

P304 + P340 IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
P315 Get immediate medical advice/attention.
P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 Eliminate all ignition sources if safe to do so.

Storage

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

2.3. Other hazards

Information pertaining to special dangers for human and environment

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

SECTION 3: Composition/ information on ingredients

3.1. Substances

CAS No 7783-06-4
Hydrogen sulphide
EC No 231-977-3
Index No 016-001-00-4
REACH registration number 01-2119445737-29

3.2. Mixtures

not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

Hydrogen Sulphide

General information

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

In case of inhalation

Remove the casualty into fresh air and keep him immobile.
In case of breathing difficulties give oxygen.
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).
Seek medical treatment immediately.
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 with warm water.
In case of frostbite spray with lukewarm (not hot) water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.
Seek medical treatment immediately.

In case of eye contact

Eye rinsing with water carefully while protecting unhurt eye.
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

Unconsciousness
Shortness of breath
Headache
Dizziness

Physician's information / possible dangers

Risk of respiratory disorders
Risk of cardiac rhythm disturbances
Risk of pulmonary oedema

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

No information available.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

Dry powder
Carbon dioxide

Unsuitable extinguishing media

Full water jet

5.2. Special hazards arising from the substance or mixture

In case of fire formation of dangerous gases possible.
Formation of explosive gas mixtures in air.
In the event of fire the following can be released:
Sulphur dioxide (SO₂)

5.3. Advice for firefighters

Special protective equipment for fire-fighters

Hydrogen Sulphide

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.

Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur.

Extinguish any other fire.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

See chapter 8.

Remove persons to safety.

Keep away sources of ignition.

6.2. Environmental precautions

Collect contaminated water / firefighting water separately.

If possible, stop flow of product.

Eliminate ignition sources.

Do not discharge into the drains/surface waters/groundwater.

Prevent spread (e.g. by saving 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.

Additional Information

No water on the leaks.

6.4. Reference to other sections

Disposal: see section 13

Informations for safe handling see chapter 7.

Informations 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.

Barrels and installations thoroughly earthing (grounding).

Use antistatic tools.

Treatment only in suitable rooms and systems.

Provide good room ventilation even at ground level (vapours are heavier than air).

Prevent cylinders from falling over.

Ensure valve protection device is correctly fitted.

Ensure valve outlet cap nut or plug (where provided) is correctly fitted.

Open valve slowly to avoid pressure shock.

Do not allow backfeed into the container.

General protective measures

Hydrogen Sulphide

Do not inhale gases/vapours/aerosols.

Hygiene measures

At work do not eat, drink and smoke.

Wash hands before breaks and after work.

Advice on protection against fire and explosion

The product is combustible.

Because of risk of explosion avoid vapours getting into cellar, sewage system and holes. Take precautionary measures against static discharges.

Formation of explosive gas mixtures in air.

Use explosion-proof equipment / fittings and non-sparking tools.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Keep in closed original container.

Ventilate store-rooms thoroughly.

Use transportable pressure equipment.

Risk of hydrogen embrittlement.

Suitable materials: Normalised steel and carbon steel, tempered steel, aluminium alloys, stainless steel. Valve:

Suitable materials: Brass, copper alloys, carbon steels, aluminium alloys, stainless steel.

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.

Keep container tightly closed and store at cool and aired place.

Prevent cylinders from falling over.

Protect of heat.

Storage temperature may not exceed 50°C (=122°F).

Information on storage stability

At appropriate storage unlimited stability.

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/m3]	[ppm]	Remark
7783-06-4	Hydrogen sulphide	WEL, 8 hours	7	5	EH/40, United Kingdom
		Short-term	14	10	

Hydrogen Sulphide

Ingredients with occupational exposure limits to health

CAS No	Name	Code	[mg/m ³]	[ppm]	Remark
7783-06-4	Hydrogen sulphide	8 hours	7	5	2009/161/EU
		Short-term	14	10	
7783-06-4	Hydrogen sulphide	REL, 8 hours	15	10	USA (NIOSH)
		Short-term			
7783-06-4	Hydrogen sulphide	PEL, 8 hours		4	USA (OSHA)
		Short-term			

! Additional advice

DNEL (workers, inhalation, long-term, systemic effects): 7 mg/m³ (5 ppm).

DNEL (workers, inhalation, short-term, systemic effects): 14 mg/m³ (10 ppm).

DNEL (workers, inhalation, long-term, local effects): 7 mg/m³ (5 ppm).

DNEL (workers, inhalation, short-term, local effects): 14 mg/m³ (10 ppm).

8.2. Exposure controls

Respiratory protection

Keep self contained breathing apparatus readily available for emergency use.

Short term: filter apparatus, Filter B

Hand protection

Leather gloves

Neoprene gloves

Eye protection

Safety goggles, in case of increased risk add protective face shield

! Skin protection

Safety shoes with steel toe.

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

Limitation and surveillance of the environment

PNEC (sewage treatment plant): 1,3 mg/l

PNEC (freshwater): 0,03 µg/l

PNEC (marine water): 0,003 µg/l

PNEC (water): 0,19 mg/l (intermittent emission).

See chapter 7.

Additional advice on system design

Transfer and handle only in enclosed systems.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Form	Colour	Odour
Gaseous / liquefied under pressure.	colourless	of rotten eggs

Important health, safety and environmental information

	Value	Temperature	at	Method	Remark
pH value in delivery state	4	20 °C	1,7 g/l		aqueous solution
boiling point	-60,2 °C		1013 hPa		
melting point	-85,7 °C				1 atm

Hydrogen Sulphide

	Value	Temperature	at	Method	Remark
Flash point	not determined				
Flammability (gas)					Flammable.
Ignition temperature	270 °C			DIN 51794	1 atm
Lower explosion limit	4,3 Vol-%				
Upper explosion limit	45,5 Vol-%				
Vapour pressure	18100 hPa	20 °C			
Relative density	0,915 g/cm ³	-60,2 °C			liquid phase
Vapour density	1,19				air = 1
Solubility in water	4 g/l	20 °C			pH 4,5
Partition coefficient (log p_{OW})	0,45	25 °C		OECD 107	pH 7
Viscosity dynamic	0,126 mPa*s	20 °C			liquid phase

! Oxidising properties

no

9.2. Other information

Vapours are heavier than air.

SECTION 10: Stability and reactivity

10.1. Reactivity

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.

Reactions with acids.

Reactions with numerous chemical compounds.

10.4. Conditions to avoid Formation of explosive gas/air mixtures.

Humidity.

Sources of ignition.

Hydrogen Sulphide

10.5. Incompatible materials

Materials to avoid Acids.

Oxidants.

Amine.

Ammonia.

10.6. Hazardous decomposition products

Hydrogen

Thermal decomposition

Remark No decomposition if used as directed.

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
LD50 acute oral	not applicable			Study technically not feasible.
LD50 acute dermal	not applicable			Study technically not feasible.
LC50 acute inhalation	444 ppm (4 h)	rat (male / female)	OECD 403	
Irritability skin	not applicable			Study technically not feasible.
Irritability eye	irritant	Rat	Exfoliative cytological examination of the eyes.	
Skin sensitization	not applicable			Study technically not feasible.
Sensitization respiratory system	not determined			

Subacute Toxicity - Carcinogenicity

	Value	Species	Method	Validation
Subchronic Toxicity	NOAEL 42 mg/m ³ (90 d) Inhalation 6 h/d, 5 d/w	Rat (male / female)	OECD 413	Systemic toxicity

Hydrogen Sulphide

Mutagenicity	Inhalation 306 mg/m ³ (7 d) 3 h/d	Rat	OECD 478	No experimental information on genotoxicity in vivo available.
Reproduction-Toxicity	NOAEC 111 mg/m ³ 6 h/d, 7 d/w	Rat (male / female)	OECD 421	No indication of teratogenic effects.
Carcinogenicity				No data available

Hydrogen Sulphide

! Specific target organ toxicity (single exposure)

May cause respiratory irritation.

! Toxicity test (Additional information)

No experimental indication of genotoxicity in vitro (Ames-test negative).

No indication of cancerogenic effects at humans available.

Experiences made from practice

Causes disorders of the central nervous system and can cause headache, respiratory difficulties or unconsciousness.

SECTION 12: Ecological information

12.1. Toxicity

Ecotoxicological effects

	Value	Species	Method	Validation
Fish	LC50 0,0144 - 0,0316 mg/l (66 - 96 h)	Lepomis macrochirus		
Daphnia	EC50 0,12 mg/l (48 h)	Daphnia magna	OECD 202	
Algae	EC50 1,87 mg/l (24 h)	Scenedesmus sp.		
Bacteria	NOEC 13,3 mg/l	activated sludge	ISO 8192	

12.2. Persistence and degradability

Physico-chemical degradability	50 % (80,2 h)		indirect photolysis	
Biological Degradability	76 % (2 d) degradability	No data available	position experiment	readily degradable
Degradability	not determined			
Biological eliminability	not determined			

12.3. Bioaccumulative potential

Does not bioaccumulate.

12.4. Mobility in soil

Adsorption in the soil is not likely.

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.

General regulation

Do not allow uncontrolled leakage of product into the 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.	Name of waste

Hydrogen Sulphide

16 05 04*

gases in pressure containers (including halons) containing dangerous substances

Wastes marked with an asterisk are considered to be hazardous waste pursuant to Directive 91/689/EEC 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.

SECTION 14: Transport information

Land and inland navigation transport ADR/RID

UN 1053 HYDROGEN SULPHIDE, 2.3 (2.1), (B/D), ENVIRONMENTALLY HAZARDOUS, Classification code: 2TF

Marine transport IMDG

UN 1053 HYDROGEN SULPHIDE, 2.3 (2.1)

MARINE POLLUTANT: Yes

Ems: F-D, S-U

Air transport ICAO/IATA-DGR

UN 1053 Hydrogen sulphide, 2.3 (2.1)

ENVIRONMENTALLY HAZARDOUS: Yes

FORBIDDEN

Special precautions for user

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

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

not applicable

No transport as bulk according IBC - Code.

SECTION 15: Regulatory information

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

Other regulations (EU) Please note:

Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), Annex XVII No 40.

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/pdf_e/es0900.001e.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.

Wording of the R/H-phrases specified in chapter 3 (not the classification of the mixture!)

Hydrogen Sulphide

R 12 Extremely flammable.

R 26 Very toxic by inhalation.

R 50 Very toxic to aquatic organisms.

H220 Extremely flammable gas.

H280 Contains gas under pressure; may explode if heated.

H330 Fatal if inhaled.

H400 Very toxic to aquatic life.