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1. CHEMICAL PRODUCT

PRODUCT NAME: HYDROGEN SULFIDE

SYNONYMS: Dihydrogen sulfide, hydrosulfuric acid, sulfuretted hydrogen

2. COMPOSITION, INFORMATION ON INGREDIENTS

Ingredient Name	Formula	CAS #	Concentration	Exposure Limits (PPM)			
				ACGIH TLV	OSHA PEL	MAC	Other STEL
HYDROGEN SULFIDE	H ₂ S	7783-06-4	99+%	10	20 (c)	10	15

(c) = ceiling

Note: NE = NONE ESTABLISHED

S/A = SIMPLE ASPHYXIANT

3. HAZARD IDENTIFICATION

* * * EMERGENCY OVERVIEW * * *

Poisonous, flammable liquid and gas under pressure.

May be fatal if inhaled.

Can form explosive mixtures with air.

May cause respiratory tract and central nervous system damage.

Can cause eye irritation.

Gas deadens sense of smell.

Symptoms of exposure may be delayed.

POTENTIAL HEALTH EFFECTS

ROUTES OF ENTRY: Inhalation

ACUTE EFFECTS: Irritation to the eyes, mucous membranes, and upper respiratory tract. May cause pulmonary edema, headache, dizziness, bronchitis, and respiratory paralysis. High concentrations may cause collapse and death.

CHRONIC EFFECTS: May cause conjunctivitis, photophobic, corneal bullae, tearing, pain, and blurred vision.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: Persons with impaired pulmonary function or pre-existing eye problems may be at increased risk from exposure.

OTHER EFFECTS OF OVEREXPOSURE: None

CARCINOGENICITY (US ONLY):

NTP - No

IARC MONOGRAPHS - No

OSHA REGULATED - No

4. FIRST AID MEASURES

INHALATION: Immediately remove victim to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.

EYE CONTACT: Immediately flush with copious amounts of water for at least 15 minutes.

SKIN CONTACT: Immediately flush with copious amounts of water for at least 15 minutes while removing contaminated clothing.

INGESTION: None

IN EVENT OF EXPOSURE, CONSULT A PHYSICIAN

NOTE TO PHYSICIAN: None

5. FIRE FIGHTING MEASURES

FLASH POINT: -60 deg.C

AUTOIGNITION TEMPERATURE: 260 deg.C

FLAMMABLE LIMITS: Vol.%

LOWER: 4.3

UPPER: 46

EXTINGUISHING MEDIA: Dry chemical or carbon dioxide. The only safe way to extinguish a **H2S** fire is to stop the flow of gas.

SPECIAL FIRE FIGHTING INSTRUCTION AND EQUIPMENT: Wear self-contained breathing apparatus and full protective clothing. Keep fire exposed cylinders cool with water spray.

HAZARDOUS COMBUSTION PRODUCTS: Toxic carbon monoxide and sulfur dioxide may be given off during combustion.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Cylinder rupture may occur under fire conditions. Vapors may travel a considerable distance to the source of ignition and flash back. Emits toxic fumes under fire conditions. Fight fire from maximum possible distance.

6. ACCIDENTAL RELEASE MEASURES

CLEAN UP PROCEDURES: Evacuate and ventilate area. Remove leaking cylinder to exhaust hood or safe outdoor area. Shut off source if possible and remove source of heat.

SPECIALIZED EQUIPMENT: None

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING: Secure cylinder when using to protect from falling. Use suitable hand truck to move cylinders.

PRECAUTIONS TO BE TAKEN IN STORAGE: Store in well ventilated areas. Keep valve protection cap on cylinders when not in use. Store away from heat, flame, and sparks.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide adequate general and local exhaust ventilation to maintain concentrations below exposure and flammable limits.

EYE / FACE PROTECTION: Safety glasses

SKIN PROTECTION: None

RESPIRATORY PROTECTION: In case of leakage, use self-contained breathing apparatus.

OTHER PROTECTIVE EQUIPMENT: Safety shoes when handling cylinders.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Colorless

ODOR: Rotten egg smell.

PHYSICAL PRESSURE: Gas

VAPOR PRESSURE: @20 deg.C: 18.5 atm

VAPOR DENSITY (AIR=1): 1.175

BOILING POINT (C): -60

SOLUBILITY IN WATER: Soluble

SPECIFIC GRAVITY (H2O=1): Gas

EVAPORATION RATE: Gas

ODOR THRESHOLD: 0.06 to 1.0 ppm

10. STABILITY AND REACTIVITY

STABILITY: Stable under normal storage conditions.

CONDITIONS TO AVOID: Storage in poorly ventilated areas. Storage near a heat source.

MATERIALS TO AVOID: Oxidizing materials, rubber, lead, silver, alkali metals, mercury, brass and copper.

HAZARDOUS POLYMERIZATION: Will not occur.

HAZARDOUS DECOMPOSITION: Sulfur oxides.

11. TOXICOLOGICAL INFORMATION

LETHAL CONCENTRATION (LC50): 712 ppm, rat 1 hour.

LETHAL DOSE 50 (LD50): N/Ap

TERATOGENICITY: N/Ap

REPRODUCTIVE EFFECTS: N/Ap

MUTAGENICITY: N/Ap

12. ECOLOGICAL INFORMATION

No adverse ecological effects are expected.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Dispose of non-refillable cylinders in accordance with federal, state and local regulations. Allow gas to vent slowly to atmosphere in an unconfined area or exhaust hood. If the cylinders are the refillable type, return cylinders to supplier with any valve outlet plugs or caps secured and valve protection caps in place.

14. TRANSPORT INFORMATION

CONCENTRATION: 99+%

DOT DESCRIPTION (US ONLY):

PROPER SHIPPING NAME: Hydrogen sulfide

HAZARD CLASS: 2.3 (poison), Hazard Zone B

IDENTIFICATION NUMBER: UN1053

REPORTABLE QUANTITIES: 100 lb.

LABELING: POISON GAS, FLAMMABLE GAS

ADR / RID (EU Only): Class 2,2TF

SPECIAL PRECAUTIONS: Cylinders should be transported in a secure upright position in a well ventilated truck.

15. REGULATORY INFORMATION

OSHA: Process Safety Management: Material is listed in appendix A of 29 CFR 1910.119 as highly hazardous chemical.

TSCA: Material is listed in TSCA inventory.

SARA: The threshold planning quantity for this material is 500 lb.

EU NUMBER: 231-977-3

NUMBER IN ANNEX 1 OF DIR 67/548: Material is listed in annex 1.

EU CLASSIFICATION: N/Av

R: 13-26

S: 7/9-16-45

16. OTHER INFORMATION

OTHER PRECAUTIONS: Protect containers from physical damage. Do not deface cylinders or labels. Cylinders should be refilled by qualified producers of compressed gas. Shipment of a compressed gas cylinder which has not been filled by the owner or with his written consent is a violation of federal law (49 CFR).

ABBREVIATIONS: N/Ap - Not Applicable, N/Av - Not Available, NE - None Established

Use proper connections; do not use adapters. Do not force fit!!

DISCLAIMER

The information and recommendations in this Material Safety Data Sheet relate only to the specific material mentioned herein and do not relate to use otherwise ie.in combination with any other material or in any process.

The information and recommendations herein are taken from our extensive experiences and the data contained in recognized references and believed by us to be true. Refrigeration group of companies make no warranties either expressed or implied with respect there to and assume no liability in connection with the use of such information and recommendation.