

# **Material Safety Data Sheet**

1 PPM - 5000 PPM HYDROGEN SULFIDE IN NITROGEN

### **Section 1: Product and Company Identification**

**SpecAir Specialty Gases** 

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Product Code: 1 PPM - 5000 PPM HYDROGEN SULFIDE IN NITROGEN

Gas Name	Concentration	
Hydrogen Sulfide	1 - 5000 PPM	
Nitrogen	99.5 to 99.9999%	

	Chemical Substance	Chemical Family	Trade Names
Hydrogen	HYDROGEN	inorganic,	HYDROGEN SULFIDE (H2S); DIHYDROGEN MONOSULFIDE; DIHYDROGEN SULFIDE; HYDROSULFURIC ACID; SULFUR DIHYDRIDE; SULFURETED HYDROGEN; SULFUR HYDRIDE; STINK DAMP; SEWER GAS; RCRA U135; UN 1053; H2S
Sulfide	SULFIDE	gas	
Nitrogen	NITROGEN,	inorganic,	DIATOMIC NITROGEN; DINITROGEN; NITROGEN; NITROGEN-14; NITROGEN GAS;
	COMPRESSED GAS	gas	UN 1066; N2

### **Section 2: Hazards Identification**

	Description	Main Health Hazard
Hydrogen Sulfide	Colorless, rotten egg odor Flammable gas. May cause flash fire. Flash back hazard. Electrostatic charges may be generated by flow, agitation, etc.	Harmful if inhaled, respiratory tract irritation, skin irritation, eye irritation, blood damage
Nitrogen	Colorless, odorless Containers may rupture or explode if exposed to heat.	Difficulty breathing

**Likely Routes of Exposure:** 

	Inhalation	Ingestion	Eye	Skin	Health Effects	Target Organs	Medical Condition Aggravated by
Hydrogen Sulfide	Irritation, lack of sense of smell, sensitivity to light, nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, disorientation, tremors, visual disturbances, suffocation, lung congestion, internal bleeding, heart damage, nerve damage, brain damage, coma, death	Ingestion of harmful amounts is unlikely	Irritation, sensitivity to light, visual disturbances	Irritation liquid: frostbite	Harmful if inhaled, respiratory tract irritation, skin irritation, eye irritation, blood damage	Blood	Eye disorders, respiratory disorders, nervous system disorders

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	Inhalation	Ingestion	Eye	Skin	Health Effects	Target Organs	Medical Condition Aggravated by
Nitrogen	Nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, tingling sensation, loss of coordination, convulsions, coma	Ingestion of a gas is unlikely	Contact with rapidly expanding gas may cause burns or frostbite	No information on significant adverse effects	Difficulty breathing	Respiratory system	Pre-existing conditions of respiratory system.

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

## **Section 3: Composition/Information on Ingredients**

	CAS#	% by Weight
Hydrogen Sulfide	7783-06-4	1 - 5000 PPM
Nitrogen	7727-37-9	99.5 to 99.999%

## **Section 4: First Aid Measures**

	Skin Contact	Eye Contact	Ingestion	Inhalation	Note to Physicians
Hydrogen Sulfide	Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.	Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.	If a large amount is swallowed, get medical attention.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen.
Nitrogen	Wash exposed skin with soap and water.	Flush eyes with plenty of water.	If a large amount is swallowed, get medical attention.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen.

## **Section 5: Fire Fighting Measures**

	Suitable Extinguishing Media	Products of Combustion	Protection of Firefighters
Hydrogen Sulfide	Let burn unless leak can be stopped immediately. Large fires: Use regular foam or flood with fine water spray.	Sulfur oxides	<ul> <li>Any self-contained breathing apparatus with a full facepiece.</li> <li>Protective material types: butyl rubber, polyvinyl chloride (PVC), neoprene</li> </ul>
Nitrogen	Non-flammable. Use suitable extinguishing media for surrounding fire. Cylinders may rupture or explode if exposed to heat.	Non-flammable	<ul> <li>Respiratory protection may be needed for frequent or heavy exposure.</li> </ul>

## **Section 6: Accidental Release Measures**

	Personal Precautions	Environmental Precautions	Methods for Containment
Hydrogen Sulfide	Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas. Ventilate closed spaces before entering. Evacuation radius: 150 feet. For tank, rail car or tank truck: 800 meters (1/2 mile). Do not touch spilled material.	Avoid heat, flames, sparks and other sources of ignition.	Stop leak if possible without personal risk. Remove sources of ignition. Reduce vapors with water spray. Do not get water directly on material.

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	Personal Precautions	Environmental Precautions	Methods for Containment
Nitrogen	Keep unnecessary people away, isolate hazard area and deny	No significant effects	Stop leak if possible without personal
	entry. Stay upwind and keep out of low areas.	from contamination	risk.
		expected.	

	Methods for Cleanup	Other Information
Hydrogen Sulfide	Collect runoff for disposal as potential hazardous waste. Dike for later disposal. Absorb with sand or other non-combustible material. Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash).	Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424- 8802 (USA) or (202)426-2675 (USA).
Nitrogen	N/A	N/A

## **Section 7: Handling and Storage**

	Handling	Storage
Hydrogen Sulfide	Store and handle in accordance with all current regulations and standards. Protect from physical damage. Store outside or in a detached building. Store in a cool, dry place. Store in a well-ventilated area. Avoid contact with light. Grounding and bonding required. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Notify State Emergency Response Commission for storage or use at amounts greater than or equal to the TPQ (U.S. EPA SARA Section 302). SARA Section 303 requires facilities storing a material with a TPQ to participate in local emergency response planning (U.S. EPA 40 CFR 355.30). Keep separated from incompatible substances.	Subject to handling regulations: U.S. OSHA 29 CFR 1910.119.
Nitrogen	Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101.	Keep seperated from incompatible substances.

# Section 8: Exposure Controls/Personal Protection

	Exposure Guidelines
Hydrogen	HYDROGEN SULFIDE: 20 ppm OSHA ceiling 50 ppm OSHA peak 10 minute(s) (once if no other measurable exposure occurs) 10
Sulfide	ppm (14 mg/m3) OSHA TWA (vacated by 58 FR 35338, June 30, 1993) 15 ppm (21 mg/m3) OSHA STEL (vacated by 58 FR
	35338, June 30, 1993) 10 ppm ACGIH TWA 15 ppm ACGIH STEL 10 ppm (15 mg/m3) NIOSH recommended ceiling 10 minute(s)
	TLV-TWA: 1ppm Upper respiratory irriation (ACGIH)
Nitrogen	NITROGEN, COMPRESSED GAS: NITROGEN: ACGIH (simple asphyxiant)

#### **Engineering Controls**

Handle only in fully enclosed systems.

	Eye Protection	Skin Protection	Respiratory Protection
Hydrogen Sulfide	Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.	Wear appropriate chemical resistant clothing.	Any self-contained breathing apparatus with a full facepiece.
Nitrogen	Eye protection not required, but recommened.	Protective clothing is not required.	Respiratory protection may be needed for frequent or heavy exposure.

#### **General Hygiene considerations**

- Avoid breathing vapor or mist
- Avoid contact with eyes and skin
- Wash thoroughly after handling and before eating or drinking

## **Section 9: Physical and Chemical Properties**

	Physical State	Appearance	Color	Change in Appearance	Physical Form	Odor	Taste
Hydrogen Sulfide	Gas	Colorless	Colorless	N/A	Gas	Rotten egg odor	N/A
Nitrogen	Gas	Clear	Colorless	N/A	Gas	Odorless	Tasteless

Flash Point	Flammability	Partition	Autoignition	Upper Explosive	Lower Explosive
		Coefficient	Temperature	Limits	Limits

	Flash Point	Flammability	Partition Coefficient	Autoignition Temperature	Upper Explosive Limits	Lower Explosive Limits
Hydrogen Sulfide	Flammable	Not available	Not available	500 F (260 C)	44-46%	4.0-4.3%
Nitrogen	Not flammable	Not available	Not available	Nonflammable	Nonflammable	Nonflammable

	Boiling Point	Freezing Point	Vapor Pressure	Vapor Density	Specific Gravity	Water Solubility	рН	Odor Threshold	Evaporation Rate	Viscosity
Hydrogen Sulfide	-78 to - 77 F (- 61 to - 60.3 C)	-123 F (- 86 C)	15200 mmHg @ 25 C	1.2	1.192	2.58-2.9% @ 20 C	4.5-<7 (saturated solution)	0.13 ppm	Not applicable	0.0128 cP @ 25 C
Nitrogen	-321 F (-196 C)	-346 F (- 210 C)	760 mmHg @ -196 C	0.967	Not applicable	1.6% @ 20 C	Not applicable	Not available	Not applicable	0.01787 cP @ 27 C

	Molecular Weight	Molecular Formula	Density	Weight per Gallon	Volatility by Volume	Volatility	Solvent Solubility
Hydrogen Sulfide	34.08	H2-S	1.539 g/L @ 0 C	Not available	Not available	Not applicable	Soluble: Carbon disulfide, alcohol, ether, glycerol, gasolines, kerosene, crude oil, alkali solutions
Nitrogen	28.0134	N2	1.2506 g/L	Not available	100%	1	Soluble: Liquid ammonia

# Section 10: Stability and Reactivity

	Stabilty	Conditions to Avoid	Incompatible Materials
Hydrogen Sulfide	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Combustible materials, metals, oxidizing materials, halogens, metal oxides, metal salts, bases, rust, oxidants, oxygen, copper powder, acetaldehyde, silver fulminate
Nitrogen	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Metals, oxidizing materials

	Hazardous Decomposition Products	Possibility of Hazardous Reactions
Hydrogen Sulfide	Oxides of sulfur	Will not polymerize.
Nitrogen	Oxides of nitrogen	Will not polymerize.

# **Section 11: Toxicology Information**

#### **Acute Effects**

	Oral LD50	Dermal LD50	Inhalation
Hydrogen Sulfide	444 ppm inhalation-rat LC50	Irritation 0.000125 ppm/5 hour(s) eyes-human	Irritation, lack of sense of smell, sensitivity to light, nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, disorientation, tremors, visual disturbances, suffocation, lung congestion, internal bleeding, heart damage, nerve damage, brain damage, coma, death
Nitrogen	Not available	Not available	Nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, tingling sensation, loss of coordination, convulsions, coma

	Eye Irritation	Skin Irritation	Sensitization
Hydrogen Sulfide	Irritation, sensitivity to light, visual disturbances	Irritation liquid: frostbite	Harmful if inhaled, respiratory tract irritation, skin irritation, eye irritation, blood damage
Nitrogen	Contact with rapidly expanding gas may cause burns or frostbite	No information on significant adverse effects	Difficulty breathing

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#### **Chronic Effects**

	Carcinogenicity	Mutagenicity	Reproductive Effects	Developmental Effects
Hydrogen Sulfide	Not available	Not available	Available.	No data
Nitrogen	Not hazardous	Not available	Not available	No data

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### **Section 12: Ecological Information**

**Fate and Transport** 

	Ecotoxicity	Persistence / Degradability	Bioaccumulation / Accumulation	Mobility in Environment
Hydrogen Sulfide	Fish toxicity: Acute LC50 7 ug/L Fresh water Fish - Fathead minnow - Pimephales promelas - FRY 96 hours; 14.9 ug/L 96 hour(s) LC50 (Mortality) Fathead minnow (Pimeph Invertibrate toxicity: 9730 ug/L 1.5 hour(s) (Mortality) Mediterranean mussel (Mytilus galloprovincialis) Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Highly toxic to aquatic life.	Not available	Not available
Nitrogen	Fish toxicity: Not available Invertibrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Not available	Not available	Not available

## **Section 13: Disposal Considerations**

Hydrogen Sulfide	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): U135.
Nitrogen	Dispose in accordance with all applicable regulations.

## **Section 14: Transportation Information**

#### U.S. DOT 49 CFR 172.101

Proper Shipping Name	ID Number	Hazard Class or Division	Packing Group	Labeling Requirements	Additional Shipping Description
Compressed Gas N.O.S. (Hydrogen Sulfide, Nitrogen)	UN1956	2.2	Not applicable	NON FLAMMABLE	Not available

**Canadian Transportation of Dangerous Goods** 

Shipping Name	UN Number	Class	Labeling Requirements	Packing Group / Risk Group
Compressed Gas N.O.S.	UN1956	2.2	NON FLAMMABLE	Not applicable
(Hydrogen Sulfide, Nitrogen)				

### **Section 15: Regulatory Information**

#### **U.S. Regulations**

	CERCLA Sections	SARA 355.30	SARA 355.40
Hydrogen Sulfide	100 LBS RQ	500 LBS TPQ	100 LBS RQ
Nitrogen	Not regulated.	Not regulated.	Not regulated.

#### **SARA 370.21**

	Acute	Chronic	Fire	Reactive	Sudden Release
Hydrogen Sulfide	Yes	No	Yes	No	Yes
Nitrogen	Yes	No	No	No	Yes

#### **SARA 372.65**

Hydrogen Sulfide	HYDROGEN SULFIDE: Administrative stay issued Aug. 22, 1994
Nitrogen	Not regulated.

#### **OSHA Process Safety**

Hydrogen Sulfide | 1500 LBS TQ

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Nitrogen	Not regulated.
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#### **State Regulations**

	CA Proposition 65
Hydrogen Sulfide	Not regulated.
Nitrogen	Not regulated.

#### **Canadian Regulations**

	WHMIS Classification
Hydrogen Sulfide	A, B1, D1A, D2B.
Nitrogen	Α

#### **National Inventory Status**

	US Inventory (TSCA)	TSCA 12b Export Notification	Canada Inventory (DSL/NDSL)
Hydrogen Sulfide	Listed on inventory.	Not listed.	Listed on inventory.
Nitrogen	Listed on inventory.	Not listed.	Listed on inventory.

## **Section 16: Other Information**

	NFPA Rating
Hydrogen Sulfide	HEALTH=4 FIRE=4 REACTIVITY=0
Nitrogen	HEALTH=1 FIRE=0 REACTIVITY=0

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

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