AMMONIUM SULFIDE

ASF

CAUTIONARY RESPONSE INFORMATION

Common Synonyms			
Ammonium hydrogen sulfide solution Ammonium sulfhydrate solution Ammonium sulfide solution	Liquid	Colorless to yellow	Strong odor of rotten eggs and ammonia

Mixes with water. Irritating vapor is produced. Boiling point is 104°F.

Avoid contact with liquid and vapor. Keep people away.
Wear rubber overclothing (including gloves).
Avoid inhalation.
Shut off ignition sources. Call fire department.
Stop discharge if possible.
Stay upwind. Use water spray to ``knock down'' vapor.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

FLAMMABLE.
POISONOUS GASES MAY BE PRODUCED IN FIRE.
Wear goggles and self-contained breathing apparatus.
Extinguish with water, dry chemicals, or carbon dioxide.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose and throat.
If inhaled will cause dizziness, headache, coughing, or difficult breathing.
If in eyes, hold eyelids open and flush with plenty of water.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Will burn skin and eyes.
If swallowed will cause nausea.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.
IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.
DO NOT INDUCE VOMITING.

Water Pollution

Dangerous to aquatic life in high concentrations.
May be dangerous if it enters water intakes.
Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. CORRECTIVE RESPONSE ACTIONS

Do not burn

2. CHEMICAL DESIGNATIONS

2.1 CG Compatibility Group: Not listed
2.2 Formula: $(NH_4)_2S$-NH_4SH-H_2O
2.3 IMO/UN Designation: 8/2683
2.4 DOT ID No.: 2683
2.5 CAS Registry No.: 12135-76-1
2.6 NAERG Guide No.: 132
2.7 Standard Industrial Trade Classification: 51481

3. HEALTH HAZARDS

3.1 Personal Protective Equipment: Self-contained breathing apparatus; rubber or plastic gloves; splash goggles; rubber shoes
3.2 Symptoms Following Exposure: Inhalation of 500 ppm for 30 min. produces headaches, dizziness, bronchial pneumonia; 600 ppm for 30 min. can cause death. Ingestion causes severe irritation of mucous membranes and stomach. Contact with liquid causes severe burns of eyes and severe skin irritation. May be absorbed through skin and cause hydrogen sulfide poisoning.
3.3 Treatment of Exposure: Get medical attention following all overexposures to this compound. INHALATION: move victim to fresh air; give artificial respiration, oxygen; consult physician. INGESTION: give large amount of water. EYES OR SKIN: wash with large quantities of water for 15 min.; consult physician.
3.4 TLV-TWA: Not listed.
3.5 TLV-STEL: Not listed.
3.6 TLV-Ceiling: Not listed.
3.7 Toxicity by Ingestion: Currently not available
3.8 Toxicity by Inhalation: Currently not available.
3.9 Chronic Toxicity: Currently not available
3.10 Vapor (Gas) Irritant Characteristics: Currently not available
3.11 Liquid or Solid Characteristics: Currently not available
3.12 Odor Threshold: Currently not available
3.13 IDLH Value: Not listed.
3.14 OSHA PEL-TWA: Not listed.
3.15 OSHA PEL-STEL: Not listed.
3.16 OSHA PEL-Ceiling: Not listed.
3.17 EPA AEGL: Not listed

4. FIRE HAZARDS

4.1 Flash Point: 72°F C.C.
4.2 Flammable Limits in Air: 4%-46% (hydrogen sulfide)
4.3 Fire Extinguishing Agents: Water, dry chemical, alcohol foam
4.4 Fire Extinguishing Agents Not to Be Used: Carbon Dioxide (Hydrogen Sulfide gas generated)
4.5 Special Hazards of Combustion Products: Toxic hydrogen sulfide gas is released when solution is heated. If ignited, this will form irritating sulfur dioxide gas.
4.6 Behavior in Fire: Currently not available
4.7 Auto Ignition Temperature: Currently not available
4.8 Electrical Hazards: Not pertinent
4.9 Burning Rate: Not pertinent
4.10 Adiabatic Flame Temperature: Currently not available
4.11 Stoichometric Air to Fuel Ratio: Currently not available
4.12 Flame Temperature: Currently not available
4.13 Combustion Molar Ratio (Reactant to Product): Currently not available
4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed

5. CHEMICAL REACTIVITY

5.1 Reactivity with Water: No reaction
5.2 Reactivity with Common Materials: Severely corrodes copper, zinc, and their alloys
5.3 Stability During Transport: Stable, but toxic hydrogen sulfide and ammonia gases may collect in enclosed spaces.
5.4 Neutralizing Agents for Acids and Caustics: Dilute with water. Do not attempt to neutralize with acid.
5.5 Polymerization: Not pertinent
5.6 Inhibitor of Polymerization: Not pertinent

6. WATER POLLUTION

6.1 Aquatic Toxicity: 100 ppm/72 hr/goldfish/killed/fresh water
248 ppm/48 hr/mosquitofish/TL_m/fresh water
6.2 Waterfowl Toxicity: Currently not available
6.3 Biological Oxygen Demand (BOD): Currently not available
6.4 Food Chain Concentration Potential: None
6.5 GESAMP Hazard Profile:
Bioaccumulation: 0
Damage to living resources: 2
Human Oral hazard: 2
Human Contact hazard: II
Reduction of amenities: XX

7. SHIPPING INFORMATION

7.1 Grades of Purity: Technical, 45-50% in water; Reagent, 52-60% in water
7.2 Storage Temperature: Ambient
7.3 Inert Atmosphere: Ventilated (natural)
7.4 Venting: Open (flame arrester)
7.5 IMO Pollution Category: B
7.6 Ship Type: 2
7.7 Barge Hull Type: Currently not available

8. HAZARD CLASSIFICATIONS

8.1 49 CFR Category: Corrosive material
8.2 49 CFR Class: 8
8.3 49 CFR Package Group: II
8.4 Marine Pollutant: No
8.5 NFPA Hazard Classification: Not listed
8.6 EPA Reportable Quantity: 100
8.7 EPA Pollution Category: B
8.8 RCRA Waste Number: Not listed
8.9 EPA FWPCA List: Yes

9. PHYSICAL & CHEMICAL PROPERTIES

9.1 Physical State at 15° C and 1 atm: Solid or liquid
9.2 Molecular Weight: 68.14 (solute)
9.3 Boiling Point at 1 atm: 104°F = 40°C = 313°K
9.4 Freezing Point: Not pertinent
9.5 Critical Temperature: Not pertinent
9.6 Critical Pressure: Not pertinent
9.7 Specific Gravity: 0.99-1.01 at 20°C (liquid)
9.8 Liquid Surface Tension: Currently not available
9.9 Liquid Water Interfacial Tension: Not pertinent
9.10 Vapor (Gas) Specific Gravity: Not pertinent
9.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent
9.12 Latent Heat of Vaporization: Not pertinent
9.13 Heat of Combustion: Not pertinent
9.14 Heat of Decomposition: Not pertinent
9.15 Heat of Solution: 95.0 Btu/lb = 52.8 cal/g = 2.21 X 10^5 J/kg
9.16 Heat of Polymerization: Not pertinent
9.17 Heat of Fusion: Currently not available
9.18 Limiting Value: Currently not available
9.19 Reid Vapor Pressure: Currently not available

NOTES

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9.20 SATURATED LIQUID DENSITY		9.21 LIQUID HEAT CAPACITY		9.22 LIQUID THERMAL CONDUCTIVITY		9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit inch per hour-square foot-F	Temperature (degrees F)	Centipoise
68	62.420		NOT PERTINENT		NOT PERTINENT		NOT PERTINENT

9.24 SOLUBILITY IN WATER		9.25 SATURATED VAPOR PRESSURE		9.26 SATURATED VAPOR DENSITY		9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
	MISCIBLE	55	7.073	55	0.08723		NOT PERTINENT
		60	7.669	60	0.09367		
		65	8.302	65	0.10040		
		70	8.974	70	0.10750		
		75	9.687	75	0.11500		
		80	10.440	80	0.12280		
		85	11.240	85	0.13100		
		90	12.080	90	0.13950		
		95	12.970	95	0.14840		
		100	13.910	100	0.15770		
		105	14.890	105	0.16740		
		110	15.930	110	0.17750		
		115	17.010	115	0.18790		
		120	18.160	120	0.19880		