



## MATERIAL SAFETY DATA SHEETS

31

Ammonia

### 1. CHEMICAL IDENTITY

**Chemical Name :** Ammonia

**Chemical Classification:** Toxic , Flammable      **Trade Name :** AM-FOL, Daxad-32

**Synonyms:** Ammonia Gas, Anhydrous ammonia, R 717

**Formula :** NH<sub>3</sub>

**CAS No:** 7664-41-7

**UN No:** 1005

#### Regulated Identification

**Shipping Name :** Ammonia

**Hazchem Code :** 2RE

**Codes / Label :** Class 2.3, Toxic, Flammable

**Hazardous Waste ID No :** 17

HAZARDOUS INGREDIENTS	C.A.S. No.	HAZARDOUS INGREDIENTS	C.A.S. No.
1 Ammonia	7664-41-7	3	
2		4	

### 2. PHYSICAL / CHEMICAL DATA

**Boiling Pt. °C:** -33.35

**Physical State:** Colourless gas  
[Note: Shipped as a liquefied compressed gas.]

**Appearance:** Colourless

**Melting Pt °C:** -77.7

**Vapour Pressure @ 35°C mmHg:** 7510 (25 °C)

**Odour:** Sharp, cloying, repellant odour.

**Vapour Density(Air =1):** 0.59

**Solubility in water at 30°C g/100ml:** 54

**Others:** Moderately soluble in alcohol. Soluble in chloroform and ether.

**Specific Gravity (Water =1 ):** 0.7710 g/cm<sup>3</sup>

**pH :** 1N aq.sol.11.6

### 3. FIRE / EXPLOSION HAZARD DATA

**Flammability :** Yes

**LEL:** 16

**Flash Point °C in OC:**

**TDG Flammability:**

**UEL:** 25

**Flash Point °C in CC:** 11

**Autoignition Temperature °C :** 651

**Explosion sensitivity to impact:** Stable

**Explosion sensitivity to static Electricity:** Liquid ammonia can cause ignition if sprayed in a tank containing air.

**Hazardous Combustion Products :** Emits toxic fumes of NH<sub>3</sub>,Nox

**Hazardous Polymerization :** Will not occur.

**Combustible Liquid:** Yes

**Explosive Material:** No

**Corrosive Material** Yes

**Flammable Material:** Yes

**Oxidiser :** No

**Others:**

**Pyrophoric Material:** No

**Organic Peroxide :** No

### 4. REACTIVITY DATA

**Chemical Stability :** Stable. Reactive only under extreme conditions. Reacts vigorously with oxidizing materials.

**Incompatibility with other material** : Strong oxidizers, silver and gold salts, halogens, alkali metals, nitrogen trichloride, potassium chlorate, chromyl chloride, oxygen halides, acid vapors, azides, ethylene oxide, picric acid.

**Reactivity** : Reacts with silver chloride, silver nitrate, silver azide, chlorine, bromine, iodine, heavy metals and their compounds. Incandescent reaction when heated with calcium.

**Hazardous Reaction Products** : Reactions with silver chloride, silver nitrate, silver azide and silver oxide form explosive silver nitride.

## 5. HEALTH HAZARD DATA

**Routes of entry:** Inhalation, skin, eyes and ingestion

### Effects of Exposure / Symptoms:

Inhalation: Vapors are extremely irritating and corrosive.

Skin: Concentrated ammonia may produce liquefaction necrosis and deep penetrating burns.

Eyes: A small quantity in the eye will cause permanent damage. Vapor causes a burning sensation and irritation. Cold vapor may cause frostbite

Ingestion: Nausea and vomiting occur frequently following ingestion. Swelling of the lips, mouth, and larynx, and oral or esophageal burns may occur if concentrated ammonia solutions are ingested.

### Emergency Treatment :

**Inhalation:** Remove the victim to fresh air area and provide artificial respiration or oxygen, if needed. Do not use mouth-to-mouth method if victim ingested or inhaled the substance.

**Skin:** Remove contaminated clothing and wash exposed area thoroughly with soap and water for 15 mins. Seek medical aid.

**Eyes:** In case of contact with liquefied gas, thaw frosted parts with lukewarm water. Immediately flush skin with running water for at least 20 minutes.

**Ingestion:** Can be diluted with milk or water. Seek medical assistance.

<b>LD50 (oral-rat) mg/kg:</b>	350 mg/kg	<b>STEL:</b>	35 ppm (27 mg/m <sup>3</sup> )
<b>LC50 (rat) mg/kg:</b>	7,600 mg/m <sup>3</sup> /2 hr	<b>Odour Threshold:</b>	0.0266 mg/m <sup>3</sup>
<b>Permissible Exposure Limit:</b>	50 ppm (35 mg/m <sup>3</sup> )	<b>TLV (ACGIH) :</b>	25 ppm (18 mg/m <sup>3</sup> )

NFPA Hazard	Health	Flammability	Reactivity	Special
Signals	3	1	0	

## 6. PREVENTIVE MEASURES

**Personal Protective Equipment** : Provide rubber boots, safety goggles, self-contained breathing apparatus, gas mask and protective clothing in case of liquid ammonia.

**Handling** : Use in closed pressurised systems fitted with temperature and pressure safety relief valves which are vented to allow safe dispersal. Handling should occur in a chemical fume hood. Do not transfer gas from one cylinder to another.

**Storage** : Avoid storing along with oxidizing materials and all possible sources of ignition. Store in well ventilated flame resistant locations.

**Precautions** : Avoid contact with liquid or vapours.

## 7. EMERGENCY / FIRST AID MEASURES

### FIRE:

**Fire Extinguishing Media** : Stop flow of gas. Use water spray or fog.

**Special Procedure** : Keep the containers cool by spraying water if exposed to heat or flame.

**Unusual Hazards** : Gas is suffocating.

**EXPOSURE: First Aid Measures:**

**Inhalation:** Remove the victim to fresh air area and provide artificial respiration or oxygen, if needed. Do not use mouth-to-mouth method if victim ingested or inhaled the substance.

**Skin:** Remove contaminated clothing and wash exposed area thoroughly with soap and water for 15 mins. Seek medical aid.

**Eyes:** In case of contact with liquefied gas, thaw frosted parts with lukewarm water. Immediately flush skin with running water for at least 20 minutes.

**Ingestion:** Can be diluted with milk or water. Seek medical assistance.

**Antidotes / Dosages:**

**SPILLS :**

**Steps To Be Taken** : Contain leaking liquid on sand or earth, allow to evaporate. Dilute the vapours with plenty of water. Keep material out of water sources. See 'Additional Information'.

**Waste Disposal Method:** Seal all waste in vapour tight plastic bags for eventual disposal.

**8. ADDITIONAL INFORMATION / REFERENCES**

U.N. No.: 1005 (anhydrous, liquified >50% solution); 2672 (10-35% solution); 2073 (35-50% solution)

NH3 and air in a fire, can detonate. Potentially violent or explosive reactions on contact with interhalogens. Forms sensitive explosive mixture with air and hydrocarbons. Those affected with eye and pulmonary diseases should avoid exposure to ammonia.

Spillage treatment: Use water spray to knock-down vapors. Vapor knockdown water is corrosive or toxic and should be diked for containment. Land spill: Dig a pit, pond, lagoon, holding area to contain liquid or solid material. Dike surface flow using soil, sand bags, foamed polyurethane, or foamed concrete. Absorb bulk liquid with fly ash or cement powder. Neutralize with vinegar or other dilute acid. Water spill: Neutralize with dilute acid. Use mechanical dredges or lifts to remove immobilized masses of pollutants and precipitates.

**9. MANUFACTURERS / SUPPLIERS DATA**

**NAME OF FIRM :**

**Contact person**

**MAILING ADDRESS :**

**in Emergency :**

**TELEPHONE / TELEX NOS :**

**Local Bodies involved :**

**TELEGRAPHIC ADDRESS :**

**Standard Packing :**

**OTHERS :**

**Trem Card Details / Ref :**

**10. DISCLAIMER**

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