



Material Safety Data Sheet

1. Product and Company Identification

Product name : **Ammonia, Anhydrous**

Chemical formula : NH₃

Synonyms : Ammonia gas; Spirit of Hartshorn; Anhydrous ammonia; Ammonia; Ammonia, Anhydrous, liquefied; UN 1005

Company : Med-Tech Gases, Inc.
20 Hall Street
Medford, MA 02155

Telephone : 800-FINE-GAS

Emergency : 800-424-9300

2. Composition/Information on Ingredients

Components	CAS Number	% Volume
Ammonia, Anhydrous	7664-41-7	100%

3. Hazards Identification

Emergency Overview

Containers may rupture or explode if exposed to heat.
May cause respiratory tract burns, skin burns, eye burns, mucous membrane burns.

Potential Health Effects

Inhalation : Burns.
Eye contact : Burns.
Skin contact : Burns.
Ingestion : Burns.
Chronic Health Hazard : Not available.

4. First Aid Measures

Eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes. Then get immediate medical attention.

Skin contact : 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 before reuse. Destroy contaminated shoes.

Ingestion : Rinse mouth out with water. DO NOT induce vomiting. Get medical attention immediately.

Inhalation : 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.

Note to physicians : For inhalation, consider oxygen.

5. Fire-Fighting Measures

- Suitable extinguishing media : Regular dry chemical, carbon dioxide.
Large fires: Use regular foam or flood with fine water spray.
- Specific hazards : Moderate explosion hazard. Containers may rupture or explode if exposed to heat.
- Fire fighting : Do not get water inside container. Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. Keep unnecessary people away, isolate hazard area and deny entry. Stop flow of gas. Do not attempt to extinguish fire unless flow of material can be stopped first.
- Protective Equipment and Precautions for Firefighters : Wear full protective fire fighting gear including self-contained breathing apparatus (SCBA) for protection against possible exposure.

6. Accidental Release Measures

- Air release : Reduce vapors with water spray. Collect runoff for disposal as potential hazardous waste.
- Soil release : Trap spilled material at bottom in deep water pockets, excavated holding areas or within sand barriers. Dike for later disposal. Add dilute acid. Absorb with sand or other non-combustible material.
- Water release : Collect spilled material using mechanical equipment.
- Occupational spill/release : Stop leak if possible without personal risk. Reduce vapors with water spray. Do not get water directly on material. Do not get water inside container. Keep unnecessary people away, isolate hazard area and deny entry. Small spills: Flood with water. Large spills: Dike for later disposal. Stay upwind and keep out of low areas. Ventilate closed spaces before entering. Evacuation radius: 150 feet. 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).
- Additional advice : None.

7. Handling and Storage

Handling

Keep away from heat, sparks and flame. When using, do not eat, drink or smoke. Do not breathe gas, fumes, vapor or spray. Do not get in eyes, on skin, or on clothing. Use only with adequate ventilation.

Storage

Store in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.111. Protect from physical damage. Store outside or in a detached building. Inside storage: Store in a cool, dry place. Store in a well-ventilated area. Avoid heat, flames, sparks and other sources of ignition. Keep separated from incompatible substances. 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 Part B). Protect from sunlight.

8. Exposure Controls / Personal Protection

Exposure limits

- ACGIH : 25 ppm TWA
35 ppm STEL
- OSHA (final) : 50 ppm TWA; 35 mg/m³ TWA

OSHA (vacated) : 35 ppm STEL; 27 mg/m³ STEL
NIOSH : 35 ppm STEL; 27 mg/m³ STEL
25 ppm TWA; 18 mg/m³ TWA

IDLH

300 ppm

Engineering measures/Ventilation

Ensure compliance with applicable exposure limits. Provide local exhaust or process enclosure ventilation system. Ventilation equipment should be explosion-resistant if explosive concentrations of material are present.

Personal protective equipment

Respiratory protection : The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.
250 ppm – Any air-purifying half-mask respirator equipped with cartridge(s) providing protection against the compound of concern.
Any supplied-air respirator.
300 ppm – Any supplied-air respirator operated in a continuous-flow mode.
Any powered, air-purifying respirator with cartridge(s) providing protection against this substance.
Any air-purifying full-facepiece respirator equipped with cartridge(s) providing protection against the compound of concern.
Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted canister providing protection against the compound of concern.
Any self-contained breathing apparatus with a full facepiece.
Any supplied-air respirator with a full facepiece.
Emergency or planned entry into unknown concentrations or IDLH conditions –
Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.
Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.
Escape – Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted organic vapor canister.
Any appropriate escape-type, self-contained breathing apparatus.

Hand protection : Wear appropriate chemical resistant gloves.

Eye protection : Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Skin and body protection : Wear appropriate chemical resistant clothing.

9. Physical and Chemical Properties

Form : Liquefied gas.
Color : Colorless.
Odor : Pungent odor.
Molecular weight : 17.03
Vapor pressure : 6658 mmHg @ 21°C
Vapor density : 0.5967 (air = 1)
Boiling point : -33°C
Melting point : -78°C
Water solubility : 38% @ 20°C

Solvent solubility : Soluble: Methanol, ethanol, chloroform, ether, organic solvents.

10. Stability and Reactivity

Stability : Stable under normal conditions.
Conditions to avoid : Minimize contact with material. Containers may explode or rupture if exposed to heat. Avoid heat, flames, sparks and other sources of ignition. Avoid inhalation of material or combustion by-products.
Materials to avoid : Acids, combustible materials, metals, oxidizing materials, metal salts, halo carbons, halogens, amines, reducing agents, cyanides, bases.
Hazardous decomposition products : Thermal decomposition products: ammonia, oxides of nitrogen.

11. Toxicological Information

The components of this material have been reviewed in various sources and the following endpoints are published:

AMMONIA, : Inhalation LC50 Rat: 5.1 mg/L/1H; Inhalation LC50 Rat: 2000 ppm/4H; Oral
ANHYDROUS (7664- LD50 Rat: 350 mg/kg.
41-7)

Acute Toxicity Level

AMMONIA, : Toxic: Inhalation.
ANHYDROUS (7664-
41-7)

Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, NTP, OSHA or DFG.

Irritation

From human experience the gas is recognized as a skin and eye irritant.

Local Effects

AMMONIA, : Corrosive: Inhalation, skin, eye, ingestion.
ANHYDROUS (7664-
41-7)

Medical Conditions Aggravated by Exposure

AMMONIA, : Eye disorders, respiratory disorders, skin disorders and allergies.
ANHYDROUS (7664-
41-7)

12. Ecological Information

Aquatic Toxicity

AMMONIA, : Fish: 96 Hr LC50 Cyprinus carpio: 0.44 mg/L; 96 Hr LC50 Lepomis
ANHYDROUS (7664- macrochirus: 0.26 – 4.6 mg/L; 96 Hr LC50 Lepomis macrochirus: 1.17 mg/L
41-7) [flow-through]; 96 Hr LC50 Pimephales promelas: 0.73 – 2.35 mg/L; 96 Hr
LC50 Pimephales promelas: 5.9 mg/L [static]; 96 Hr LC50 Poecilia reticulata:
> 1.5 mg/L; 96 Hr LC50 Poecilia reticulata: 1.19 mg/L [static]
Invertebrate: 48 Hr EC50 Daphnia magna: 25.4 mg/L.

13. Disposal Considerations

Waste from residues : Dispose in accordance with all applicable regulations.

/ unused products
Contaminated : Return cylinder to supplier.
packaging

14. Transport Information

DOT (US only)

Proper shipping name : Ammonia, Anhydrous
Class : 2.2
UN/ID No. : UN1005
Labeling : Non-Flammable Gas, Poison, Corrosive
Additional Info : Toxic-Inhalation Hazard Zone D

15. Regulatory Information

U.S. Federal Regulations

This material contains one or more of the following chemicals required under SARA Section 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

AMMONIA, : SARA 302: 500 lb TPQ
ANHYDROUS (7664-41-7) : SARA 304: 100 lb EPCRA RQ
SARA 313: 1.0% de minimis concentration (includes anhydrous ammonia and aqueous ammonia from water dissociable ammonium salts and other sources, 10% of total aqueous ammonia is reportable under this listing)
CERCLA: 100 lb final RQ; 45.4 kg final RQ
OSHA (safety): 10000 lb TQ (anhydrous); 15000 lb TQ (solution, > 44% Ammonia by weight)

SARA 311/312

Acute: Yes
Chronic: No
Fire: No
Reactive: No
Pressure: Yes

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
AMMONIA, ANHYDROUS	7664-41-7	Yes	Yes	Yes	Yes	Yes	Yes

Not regulated under California Proposition 65