Safety Data Sheet

1. Product Identifier and Company Identification

Product name : **Anhydrous Ammonia**
HBCC SDS number : CA10000
Synonym : Ammonia; NH_3
Product use and Restrictions : Refer to label or call
Manufacturer Contact Address :

Corporate Headquarters
Hill Brothers Chemical Company
3000 E Birch St, Suite 108
Brea, California 92821
714-998-8800
800-821-7234

Corporate Safety & Compliance
Hill Brothers Chemical Company
21639 N 12th Ave, Suite 100
Phoenix, Arizona 88027
623-535-9955 - Office
623-535-9944 - Fax

Emergency telephone Number (Chemtrec) : 800-424-9300
Website : https://www.hillbrothers.com

2. Hazard Identification

Classification :
Flammable Gases – Category 2
Gases Under Pressure – Compressed Gas
Acute Toxicity: Inhalation – Category 3
Skin Corrosion/Irritation – Category 1B
Serious Eye Damage/Eye Irritation – Category 1
Aquatic Toxicity (Chronic) – Category 1

Signal Word : DANGER

Pictogram(s) :

Hazard Statements :
H221 Flammable Gas.
H280 Contains gas under pressure; may explode if heated.
H331 Toxic if inhaled.
H314 Causes severe skin burns and eye damage.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary Statements

Response : P304 + P340 + P311: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor.
P301 + P330 + P331+P310: IF SWALLOWED: Rinse mouth. Immediately call a POISON CENTER of physician. Do NOT induce vomiting.
P303 + P361 + P353 + P363+P310: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or doctor.
P305 + P351 + P338 + P310: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.

Prevention : P280: Wear protective gloves, protective clothing, eye protection and face protection.
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. – No Smoking.
P271: Use only outdoors or in a well-ventilated area.
P273: Avoid release to the environment.
P260: Do NOT breathe gas or vapors.
P264: Wash hands thoroughly after handling.
P391: Collect spillage.
P377: Leaking gas fire: Do not extinguish, unless can leak be stopped safely.
P381: In case of leakage, eliminate all ignition sources.

Storage : P405: Store locked up.
P410: Protect from sunlight.
P403+ P233: Store in a well-ventilated place. Keep container tightly closed.

Disposal : P501: Dispose of contents and container in accordance with all local, regional, national and international regulations.

3. Composition/Information on Ingredients

CAS Number	Ingredient Name	Weight %
7664-41-7	Anhydrous Ammonia (NH_3)	99.8 – 99.999% wt.
7732-18-5	Water	0.2% -.001% wt.

4. First Aid Measures

Ingestion : If this gas is swallowed in liquid form, keep victim warm and OBTAIN IMMEDIATE MEDICAL ATTENTION. If signs of respiratory obstruction develop, immediately transport to medical facility. Do not induce vomiting. Never give fluids or induce vomiting if patient is unconscious or having convulsions.

Inhalation	:	Remove victim to fresh air. Give oxygen if breathing is difficult. If breathing has stopped, start artificial respiration. OBTAIN IMMEDIATE MEDICAL ATTENTION.
Skin	:	Apply water immediately to exposed areas of skin and continue for at least 30 minutes. Remove contaminated clothing, shoes, and constrictive clothing while continuing to apply water, being careful not to tear the skin. If skin surface is damaged, apply a clean dressing. If skin surface is not damaged, cleanse the affected area(s) thoroughly with mild soap and water. Do not apply salves or ointments to affected areas. OBTAIN IMMEDIATE MEDICAL ATTENTION.
Eyes	:	Remove victim to fresh air. Immediately flush with plenty of water for at least 30 minutes with the eyelids held apart. OBTAIN IMMEDIATE MEDICAL ATTENTION.
Medical Conditions	:	Ammonia is a respiratory irritant. Persons with impaired pulmonary function may be at an increased risk from exposure. Also pre-existing skin disorders may be aggravated by exposure.
Effects of Overexposure	:	N/A
Summary of Acute Health Hazards	:	N/A
Ingestion	:	This material is a gas under normal atmospheric conditions and ingestion is unlikely. Ingestion of liquid ammonia may result in severe irritation or ulceration of the mouth, throat and digestive tract which may be displayed by nausea, vomiting, diarrhea and, in severe cases, collapse, shock and death.
Inhalation	:	Irritation to the mucous membranes of the nose, throat and lungs is noticeable at 100 ppm. Concentrations above 400 ppm will cause throat irritation and may destroy mucous surfaces upon prolonged contact. High concentrations can cause pulmonary edema. Breathing air containing concentrations greater than 5,000 ppm may cause sudden death from spasm or inflammation of the larynx.
Skin	:	Liquid Ammonia produces severe skin burns on contact. Ammonia gas may cause skin irritation, especially if skin is moist. The liquid can cause skin damage resulting from combined freezing and corrosive action on the skin. Atmospheric concentrations above 30,000 ppm will burn and blister skin after a few seconds of exposure.
Eyes	:	Exposure to high gas concentrations may cause temporary blindness and severe eye damage. Direct contact of the eyes with liquid ammonia will produce serious eye burns.
Note to Physicians	:	N/A
Summary of Chronic Health	:	N/A

5. Fire Fighting Measures

Extinguishing : Use Water Spray or Water Fog, Carbon Dioxide, Polar or Alcohol Foam, Dry Chemical. Halon may decompose into toxic materials. Carbon dioxide can displace oxygen. Use caution when applying halon or carbon dioxide in confined spaces.

Special Exposure Hazards : Gas may ignite at vapor concentrations between 16% and 25% in air. However, ammonia-air mixtures are difficult to ignite and burn with little vigor. In the absence of oxygen enrichment, the risk of initiating an accidental fire or explosion is low. Do not allow ammonia vapors to accumulate in confined areas where ignition may occur. Intense heating particularly in contact with hot metallic surfaces may cause decomposition of ammonia generating hydrogen, a flammable gas.

Special Protective Equipment for Firefighters : Stop flow of gas. Use water fog to keep fire-exposed containers cool and to protect personnel effecting the shut-off. Wear self-contained breathing apparatus (SCBA) and encapsulating chemical protective clothing. Approach fire upwind and evacuate area downwind. Emergency responders in the danger area should wear bunker gear and self-contained breathing apparatus for fires beyond the incipient stage (29CFR 1910.156). In addition, wear other appropriate protective equipment as conditions warrant (See Section VIII). Isolate damage area, keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. If this cannot be done, allow fire to burn. Move undamaged containers from danger area if it can be done with minimal risk. Stay away from ends of container. Water spray may be useful in minimizing or dispersing vapors. Cool equipment exposed to fire with water, if it can be done with minimal risk.

Fire Fighting Procedures : Dry Chemical or carbon dioxide are recommended extinguishing media. Stop flow of gas before extinguishing fire. Use water spray to keep fire exposed containers cool. Extinguish fire using agent suitable for surrounding fire.
Combustible. Wear goggles, self-contained breathing apparatus, and rubber over clothing (including gloves). Stop flow of gas, or liquid if possible. Let fire burn.
If material involved in fire: Cool all affected containers with flooding quantities of water. Apply water from as far distance as possible. Use water spray to knock-down vapors. Solid streams of water may spread fire. Don not use water on material itself. Do not apply water to point of leak in tank car or container.

NFPA Rating : Health - 3
Flammability - 1
Instability - 0

0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

Uniform Fire Code Rating : According to the (UFC) Uniform Fire Code Standard 79-3 (2000), the degree of Hazard is 3-3-0 in a confined space.

Additional Description Requirement : Inhalation Hazard

6. Accidental Release Measures

Personal Precautions : Note that although ammonia gas is lighter than air, sudden release may generate an aerosol of liquefied ammonia which may cling to the ground for long distances. May ignite in the presence of open flames and sparks. Narrow lower to upper combustion range (16-25%) makes ignition difficult. Keep all sources of ignition away from spill/release. Do not apply water onto leaking tank. Stop the flow of gas or liquid. Use water to protect personnel effecting the shut-off. Approach from upwind. Evacuate the area immediately. Eliminate all open flames in vicinity of indoor spills or released vapor. Water fog can be used to cleanse atmosphere of ammonia vapor. Downwind areas can be protected by water fog nozzles positioned downwind.

Emergency Procedures : Do not enter a visible cloud of ammonia. Isolate and evacuate the leak or spill area immediately for at least 150 feet in all directions. For larger spills, isolate at least 300 feet in all directions and then evacuate area downwind at least 0.4 miles in width and at least 0.8 miles in length. Keep area isolated until gas has dispersed.

Methods of Containment And Clean-Up : Dike liquid spills to contain liquid.

7. Handling and Storage

Safe Handling : Contents are under pressure. The use of explosion-proof equipment is recommended and may be required (see appropriate fire codes). Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276. Protect against physical damage.

Storage : Outside shaded area or detached storage is preferred. Inside storage should be in a cool, dry, well ventilated, noncombustible location, away from all possible sources of ignition.

Work/Hygienic Practices : Avoid contact with skin and avoid breathing vapors. Do not eat, drink, or smoke in work area. Wash hands before eating, drinking, or using restroom. Do NOT place food, coffee or other drinks in the area where dusting or splashing of solutions is possible.

Ventilation : Local exhaust is essential. Spark-proof fans desirable with mechanical ventilation. Ducts should be located at ceiling level and lead upwards to the outside. Eyewash and safety shower should be available in work area.

8. Exposure Controls/Personal Protection

Occupational Exposure Limits : CAL-OSHA: 25 ppm, 18 mg/m^3 Oregon-OSHA: 25 ppm, 18 mg/m^3; STEL: 35 ppm, 27 mg/m^3

Chemical Name: Anhydrous Ammonia				
Exposure Limits (TWAs) in Air				
CAS Number	**IDLH**	**ACGIH TLV**	**OSHA PEL**	**STEL**
7664-41-7	300 ppm	25 ppm, 18 mg/m^3	50 ppm, 35 mg/m^3	35 ppm, 27 mg/m^3

Protective Equipment : Rubber or synthetic chemical gloves and boots should be worn as well as cotton clothing and underwear. Rubber or synthetic chemical coats or aprons should be available, an encapsulating chemical protective clothing garment is desirable for heavy exposures. The use of long sleeved clothing closed at the neck is advised. Change if clothing becomes contaminated.

Eye Protection : Chemical splash goggles should be worn when handling Anhydrous Ammonia to protect from liquids or mists. A face shield can be worn over chemical splash goggles as additional protection. Do not wear contact lenses when handling Anhydrous Ammonia. A full-face air-purifying respirator (APR) or supplied-air respirator (SAR) should be worn to protect from chemical vapors.

Respiratory Protection : Unless ventilation is adequate to keep concentration below permissible exposure limit (PEL), wear NIOSH approved ammonia chemical cartridge or canister full facepiece chin-style respirators with an air-purification factor (APF=50). In emergency or planned entry into unknown concentrations, use self-contained breathing apparatus (SCBA) or any supplied-air full facepiece chin-style respirators.

9. Physical and Chemical Properties

Appearance: Compressed Liquid Gas, clear, colorless	**Odor:** Sharp, penetrating
Odor Threshold: 5 ppm	**pH:** 11.6 for 1% NH3 solution
Melting Point/Freezing Point: -107.9°F; -77.7°C	**Initial Boiling Point/Range:** -28°F; -33.4°C
Flash Point: N/A	**Evaporation Rate (BuAc=1):** N/A
Flammability: 16 – 25% in air	**Lower/Upper Explosive Limit:** 25% by Volume/16% by Volume
Vapor Pressure (mmHg): 110 PSIG at 68°F (20°C)	**Vapor Density (Air=1):** 0.0549 lb./ft3 at -28°F at 1 atm
Relative Density: 42.57 lbs./cu.ft @ -28°F and 1 atm	**Solubility in Water:** 33.10%
Partition Coefficient: N/A	**Autoignition Temperature:** 650°C; 1204°F
Decomposition Temperature: N/A	**Viscosity:** N/A
% Volatiles: 100%	**Specific Gravity (Water=1):** 0.6189 of liquid at -28°F and 1 atm
Molecular Weight: 17.032	**VOC:** N/A

10. Stability and Reactivity

Reactivity : Reacts violently and explosively with oxidizing gases such as chlorine, bromine, and other halogens. Reacts explosively with hypochlorites such as bleach. Reacts vigorously with acids. Highly reactive with reducing agents. Hazardous polymerization will not occur.

Chemical Stability : Stable

Possibility of Hazardous Reactions or Polymerizations : Avoid contact with oxidizing gases, chlorine, bromine, mineral hypochlorite, iodine, halogens, calcium, and strong acids. Avoid contact with copper, silver, zinc, and alloys of same. Mercury, silver oxide can form explosive compounds.

Conditions to Avoid : Avoid all possible sources of ignition. Heat will increase pressure in the storage tank.

Incompatible Materials : Avoid contact with strong acids, use of metals containing copper or zinc.

Hazardous Decomposition Products : Combustion will generate oxides of nitrogen. Intense heating of the gas, particularly in contact with hot metallic surfaces, may cause decomposition of ammonia to hydrogen and nitrogen.

11. Toxicological Information

Acute and Chronic Effects : Can cause irritation and burns of the skin and mucous membranes, and headache, salivation, nausea, and vomiting. Difficult or labored breathing

and cough with bloody mucous discharge. Can cause bronchitis, laryngitis, hemoptysis, and pulmonary edema or pneumonitis. Death may result. Can cause ulceration of the conjunctiva and cornea, and corneal and lenticular opacities. Damage to the eyes may be permanent.

Routes of Exposure

Ingestion : Yes
Inhalation : Yes
Skin : Yes
Eyes : Yes

Symptoms related to Physical, Chemical & Toxicological Characteristics : Can cause burning of the eyes, conjunctivitis, skin irritation, swelling of the eyelids and lips, dry red mouth and tongue, burning in the throat, and coughing, and in more severe cases of exposure, difficulty in breathing, signs and symptoms of lung congestion, and, ultimately, death from respiratory failure due to pulmonary edema may occur.

Numerical Measures of Toxicity :

Oral LD50	350 mg/kg	Rat	ATSDR 1991
	96 mg/kg	Mouse	EPA 1989

Inhalation LC50	19,770 ppm	F Rat	EPA 1989
	14,140 ppm	M Rat	EPA 1989
	17,401 ppm	Rat	ATSDR 1991

Chronic Toxicity : N/A

Carcinogenicity :

Product Name: Anhydrous Ammonia					
ACGIH	**IARC**	**EPA**	**NIOSH**	**NTP**	**OSHA**
No	No	No	No	No	No

TARGET ORGANS : N/A

12. Ecological Information

Ecotoxicity : Even at extremely low concentrations aquatic life will be harmed by liquid ammonia.

Persistence and Degradability : N/A

Bioaccumulative Potential :

Product/Ingredient	Log $_{Pow}$	BCF	Potential
-	-	-	-

Mobility in Soil : When anhydrous ammonia is applied in the soil, ammonia reacts with organic matter, and it dissolves in water. Anhydrous Ammonia reacts with water to form ammonium. The initial reactions with water, organic matter and clays limit the mobility of ammonia.

13. Disposal Considerations

Disposal of Container : Because of the toxicity of ammonia to aquatic organisms, NEVER dispose of or allow any ammonia or ammonia contaminated water to flow into any surface water bodies. Surface water bodies include drainage ditches, storm water and sanitary sewers, wetlands, ponds, lakes and streams. Diking will contain the liquid and allow it to stabilize. Keep unprotected personnel away from area until it is free of ammonia. Do not apply water directly to ammonia liquid as this will cause boiling and splattering. Soil contaminated with ammonia or aqua ammonia may need to be excavated and properly disposed of according to local and state regulations. Consult Federal, State, or Local Authorities for additional proper disposal procedures.

14. Transport Information

UN# : UN1005
Proper Shipping Name : Anhydrous Ammonia
Hazard Class/Division : 2.2 [Domestic]; 2.3, (8) [International]
Packing Group : N/A
Marine Pollutant : Yes
Special Provisions : 13, T50
Emergency Response Guidebook : 2012 ERG, Guide 125, pages 188-189
Placard Advisory :

15. Regulatory Information

SARA 302 Extremely Hazardous Substances (EHS) : This product contains the following Extremely Hazardous Substance(s) (EHS) under Section 302 of EPCRA, subject to the reporting requirements of Sections 311 and 312 (Tier I/Tier II reporting) at quantities greater than or equal to 500 pounds or in excess of the substance's EHS Threshold Planning Quantity (TPQ), whichever is lower. A Safety Data Sheet (SDS) must be provided to the SERC, LEPC, and local fire department.
Ammonia, CAS #7664-41-7 Sec. 302 EHS TPQ = 500 lbs. (226.8 kg.)

SARA 304 Extremely Hazardous Substances (EHS) Release Notification : EPCRA Section 304 requires a facility to notify the SERC and LEPC in the event of a release an EHS at or exceeding the substance's RQ under Section 302 of EPCRA, or its CERCLA RQ, if applicable, whichever is lower. This product contains the following Extremely Hazardous Substance(s) (EHS)

subject to the reporting requirements of Section 304.
Ammonia, CAS #7664-41-7 Sec. 304 RQ = 100 lbs. (45.4 kg.)

SARA 311/312 Hazards :

SARA 311/312 Hazards				
Acute	**Chronic**	**Flammability**	**Pressure**	**Reactivity**
Yes	No	Yes	Yes	No

SARA 313 Reportable Chemicals : This product contains the following chemical(s) subject to annual emissions, transfers, and/or waste management reporting under the Community-Right-to-Know provisions of EPCRA Section 313, also known as the Toxic Release Inventory (TRI) Report or Form R: Ammonia, CAS #7664-41-7

CERCLA Hazardous Substances : This product contains the following CERCLA hazardous substance(s) subject to the National Response Center (NRC) reporting requirements if released to the environment in quantities greater than or equal to the substance's CERCLA Reportable Quantity (RQ).
Ammonia, CAS #7664-41-7 CERCLA RQ = 100 lbs. (45.4 kg.)

Clean Air Act (CAA) Section 112(r) Air Pollutants : This product contains the following air pollutant(s) under the U.S. Clean Air Act (CAA), Section 112(r) [40 CFR 61], which, if accidentally released to the atmosphere in quantities at or above the CAA 112(r) Threshold Quantity (TQ), is reportable.
Ammonia, CAS #7664-41-7 CAA 112(r) TQ = 10,000 lbs. (4436 kg.)

California Prop 65 Chemicals : This product does not contain any chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.

Hazard Label Warning : This product requires the following hazard label warning:
Domestic: Non-Flammable Gas (Class 2.2)
International: Poisonous Gas Inhalation (Class 2.3); Corrosive (Class 8)

ACRONYMS:

CAS # – Chemical Abstract Services Registry Number
CFR – Code of Federal Regulations
CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act
EPCRA – Emergency Planning and Community Right-to-Know Act
LEPC – Local Emergency Planning Committee
SERC – State Emergency Response Commission

Maximum use level for Anhydrous Ammonia under NSF/ANSI Standard 60
Maximum Use 5 mg/l

16. Other Information

Revision date : 03/05/2026
Supersedes : 02/05/2026
First Issue : 12/01/1985

Chemical Family/Type : Hydride, (Alkaline Gas), Inorganic Base

Section(s) changed since last revision :

IMPORTANT! Read this SDS before use or disposal of this product. Pass along the information to employees and any other persons who could be exposed to the product to be sure that they are aware of the information before use or other exposure. This SDS has been prepared in accordance with the Globally Harmonized System of Chemical and Labeling of Chemicals (GHS) Fifth Edition and the OSHA Hazard Communication Standard [29 CFR 1910.1200]. The SDS information is based on sources believed to be reliable. Available data, safety standards, and government regulations are subject to change and the conditions of handling and use, or misuse are beyond our control; **Hill Brothers Chemical Company** makes no warranty, either expressed or implied, with respect to the completeness or continuing accuracy of the information contained herein and disclaims all liability for reliance thereon. Additional information may be necessary or helpful for specific conditions and circumstances of use. It is the user's responsibility to determine the suitability of this product and to evaluate risks and exercise appropriate precautions for protection of employees and others prior to use.