Anhydrous Ammonia

MSDS Number

BHDRR

National Stock Number

-

Product Name

Anhydrous Ammonia

Manufacturer

Hill Brothers Chemical Co

Product Identification

Product ID:Anhydrous Ammonia
MSDS Date:12/01/85
MSDS Number: BHDRR
Kit Part:=== Responsible Party ===
Company Name:Hill Brothers Chemical Co.
Address:1675 No. Main Street
City:Orange
State:CA
ZIP:92867
Country:US
Info Phone Num:714-998-8800
Chemtrec Ind/Phone:800-424-9300

Contractor

Hill Brothers Chemical Co.

NA

ORANGE, CA 92667

US

CHEMTREC 800-424-9300

Ingredients

Ammonia

CAS: 7664-41-7

Fraction By Weight: 100%

OSHA PEL50 ppm 18 mg/m³

ACGIH TLV: 25 ppm 9 mg/m³

Hazards

Routes of Entry: Inhalation:Yes Skin:Yes Ingestion:Yes
Reports of Carcinogenicity:NTP:No IARC:No OSHA:Yes
Health Hazards Acute and Chronic: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. NFPA Rating: Health - 3; Fire - 1; Reactivity - 0
0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme
Effects of Overexposure: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., Effects of Overexposure: Can cause irritation and burns of the skin and mucous membranes. 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.
Medical Cond Aggravated by Exposure: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.

First Aid

First Aid: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.

Fire Fighting

Autoignition Temp:651° C; 1204°F
Lower Limits:16% by Volume
Upper Limits:25% by Volume
Extinguishing Media: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.
Fire Fighting Procedures: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.
Unusual Fire/Explosion Hazard: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.

Accidental Release

Spill Release Procedures:Steps To Be Taken In Case Material Is Released Or Spilled: 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. 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. Keep all sources of ignition away from spill/release. Do not apply water onto leaking tank. Stop the flow of gas or liquid. Wear full protective clothing and self-contained breathing apparatus. Use water to protect personnel effecting the shut-off. Approach from upwind. Dike liquid spills to contain liquid. 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.
Neutralizing Agent:

Handling

Handling and Storage Precautions:Contents 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. 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. Separate from other chemicals, particularly oxidizing gases, chlorine, bromine, iodine, and acids. Avoid ingestion, inhalation, and contact with skin or eyes.
Other Precautions:

Exposure Controls

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.
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.
Eye Protection:Gas-tight chemical safety goggles must be worn if there is a likelihood of exposure. Persons subject to ammonia exposure must not wear contact lenses.
Other 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. Eyewash fountain and safety shower should be available in work area. The use of long sleeved clothing closed at the neck is advised. Change if clothing becomes contaminated.
Supplemental Safety and Health

Chemical Properties

Boiling Pt:B.P. Text:-33.4° C; -28°F
Melt/Freeze Pt:M.P/F.P Text:Melting Point/Range: -77.7° C; -107.9°F
Vapor Pres:Vapor Density:0.6 (gas), Spec Gravity:0.68 @ -33.4° C; -28°F
pH:11.6 for 1.0 N@70°F

Solubility in Water:100%
Appearance and Odor:Colorless gas or liquid with extremely pungent odor
Physical State: Compressed Gas
Percent Volatiles by Volume:100%
Corrosion Rate:

Stability

Stability Indicator/Materials to Avoid:Stable
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.
Stability Condition to Avoid:Avoid all possible sources of ignition. Heat will increase pressure in the storage tank.
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.
Conditions to Avoid Polymerization:

Disposal

Waste Disposal Methods:Consult Federal, State, or Local Authorities for proper disposal procedures. If possible, allow spilled liquid ammonia to evaporate, as it is too volatile to absorb. 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.

Toxicology

Toxicological Information:Oral LD50350 mg/kgRatATSDR 199196 mg/kgMouseEPA 1989

Other Information

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Ecology

Ecological:Inhalation LC5019,770 ppmF RatEPA 198914,140 ppmM RatEPA 198917,401 ppmRatATSDR 1991

Transport

Transport Information:DOT Proper Shipping Name: Ammonia Anhydrous Liquefied DOT Hazard Class/ I.D. No.: 2.2, UN1005

Regulatory

Federal Regulatory Information:Reportable Quantity: 100 Pounds (45.4 Kilograms) (19.43 Gals) Additional Description Requirement: Inhalation Hazard According to the (UFC) Uniform Fire Code Standard 79-3 (2000), the degree of Hazard is 3-3-0 in a confined space. IDLH Value*: 300 ppm * The Immediately Dangerous to Life and Health Value
State Regulatory Information: