

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**MDL INFORMATION
SYSTEMS, INC.**

**1281 Murfreesboro
Road, Suite 300
Nashville, TN 37217-2423**

1-615-366-2000

**EMERGENCY
TELEPHONE NUMBER**

**1-800-424-9300 (NORTH
AMERICA)**

**1-703-527-3887
(INTERNATIONAL)**

SUBSTANCE: AMMONIA, ANHYDROUS

TRADE NAMES/SYNONYMS:

ANHYDROUS AMMONIA; AMMONIA GAS; AMMONIA; SPIRIT OF
HARTSHORN; AMMONIA, ANHYDROUS, LIQUIFIED; UN 1005; H3N; OHS01050;
RTECS BO0875000

CHEMICAL FAMILY: inorganic, gas

CREATION DATE: Sep 11 1984

REVISION DATE: Mar 15 2007

2. COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: AMMONIA, ANHYDROUS

CAS NUMBER: 7664-41-7

EC NUMBER (EINECS): 231-635-3

EC INDEX NUMBER: 007-001-00-5

PERCENTAGE: 100.0

3. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=3 FIRE=1 REACTIVITY=0

EMERGENCY OVERVIEW:

COLOR: colorless

PHYSICAL FORM: gas, liquid

ODOR: pungent odor

MAJOR HEALTH HAZARDS: respiratory tract burns, skin burns, eye burns, mucous membrane burns

PHYSICAL HAZARDS: Containers may rupture or explode if exposed to heat.

POTENTIAL HEALTH EFFECTS:

INHALATION:

SHORT TERM EXPOSURE: burns

LONG TERM EXPOSURE: burns

SKIN CONTACT:

SHORT TERM EXPOSURE: burns

LONG TERM EXPOSURE: burns

EYE CONTACT:

SHORT TERM EXPOSURE: burns

LONG TERM EXPOSURE: burns

INGESTION:

SHORT TERM EXPOSURE: ingestion of harmful amounts is unlikely

LONG TERM EXPOSURE: ingestion of harmful amounts is unlikely

CARCINOGEN STATUS:

OSHA: No

NTP: No

IARC: No

4. FIRST AID MEASURES

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.

SKIN CONTACT: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention. Thoroughly clean and dry contaminated clothing and shoes before reuse. Destroy contaminated shoes.

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

INGESTION: DO NOT induce vomiting. Never make an unconscious person vomit or drink fluids. Give large amounts of water or milk. When vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately.

NOTE TO PHYSICIAN: For inhalation, consider oxygen. For ingestion, consider esophagoscopy. Avoid gastric lavage.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Slight fire hazard. Moderate explosion hazard. Containers may rupture or explode if exposed to heat.

EXTINGUISHING MEDIA: carbon dioxide, regular dry chemical

Large fires: Use regular foam or flood with fine water spray.

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.

LOWER FLAMMABLE LIMIT: 15%

UPPER FLAMMABLE LIMIT: 28%

AUTOIGNITION: 1204 F (651 C)

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 bag barriers. Dike for later disposal. Absorb with sand or other non-combustible

material. Add dilute acid.

WATER RELEASE:

Add dilute acid. Collect spilled material using mechanical equipment.

OCCUPATIONAL 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).

[7. HANDLING AND STORAGE](#)

STORAGE: Store and handle 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 355.30).

[8. EXPOSURE CONTROLS, PERSONAL PROTECTION](#)

EXPOSURE LIMITS:

AMMONIA, ANHYDROUS:

50 ppm (35 mg/m³) OSHA TWA

35 ppm (27 mg/m³) OSHA STEL (vacated by 58 FR 35338, June 30, 1993)

25 ppm ACGIH TWA

35 ppm ACGIH STEL

25 ppm (18 mg/m³) NIOSH recommended TWA 10 hour(s)

35 ppm (27 mg/m³) NIOSH recommended STEL

14 mg/m³ (20 ml/m³) DFG MAK (peak limitation category - I, with excursion factor of 2)
14 mg/m³ (20 ppm) EC OEL TWA (IOELV)
36 mg/m³ (50 ppm) EC OEL STEL (IOELV)
25 ppm (18 mg/m³) UK WEL TWA
35 ppm (25 mg/m³) UK WEL STEL

MEASUREMENT METHOD: NIOSH IV # 3800, 6015, 6016; OSHA ID188

VENTILATION: Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

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.

CLOTHING: Wear appropriate chemical resistant clothing.

GLOVES: Wear appropriate chemical resistant gloves.

RESPIRATOR: 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 canister providing protection against the compound of concern.

Any appropriate escape-type, self-contained breathing apparatus.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: gas

COLOR: colorless

PHYSICAL FORM: gas, liquid

ODOR: pungent odor

MOLECULAR WEIGHT: 17.03

MOLECULAR FORMULA: N-H₃

BOILING POINT: -27 F (-33 C)

FREEZING POINT: -108 F (-78 C)

VAPOR PRESSURE: 6658 mmHg @ 21 C

VAPOR DENSITY (air=1): 0.5967

SPECIFIC GRAVITY: Not applicable

DENSITY: 0.7067 g/L @ 25 C

WATER SOLUBILITY: 38% @ 20 C

PH: 11.6 (1.0 N solution)

VOLATILITY: Not applicable

ODOR THRESHOLD: 1-5 ppm

EVAPORATION RATE: Not applicable

COEFFICIENT OF WATER/OIL DISTRIBUTION: Not applicable

SOLVENT SOLUBILITY:

Soluble: methanol, ethanol, chloroform, ether, organic solvents

10. STABILITY AND REACTIVITY

REACTIVITY: Stable at normal temperatures and pressure.

CONDITIONS TO AVOID: Minimize contact with material. Avoid inhalation of material or combustion by-products. Containers may rupture or explode if exposed to heat.

INCOMPATIBILITIES: acids, combustible materials, metals, oxidizing materials, metal salts, halogens, amines, reducing agents, cyanides, bases

AMMONIA, ANHYDROUS:

ACIDS: Violent reaction.

ALDEHYDES: May undergo violent exothermic condensation.

ALKALI METALS: Forms explosive metal hydrazides.
ALKYLENE OXIDES: May undergo violent exothermic condensation.
ALUMINUM: May be corrosive.
AMIDES: Possible violent reaction.
ARSINE: Vigorous reaction with the liquid.
BORON: Incandescent reaction with release of hydrogen gas when heated.
BORON HALIDES: Violent reaction.
CALCIUM: Exothermic reaction which may become incandescent.
CARBON MONOXIDE: Forms explosive product with the liquid.
CHLORIC ACID: Formation of explosive compound.
CHLORINE AZIDE: Formation of explosive compound.
CHLORINE MONOXIDE: Explosive mixture.
CHLORITES: Forms shock-sensitive compound.
CHLOROFORMAMIDINIUM NITRATE: Violent reaction.
1-CHLORO-2,4-DINITROBENZENE: Violent reaction with possible explosion.
2-CHLORONITROBENZENE: Violent reaction.
CHLOROSILANE: May form spontaneously flammable compound.
CHROMIUM TRIOXIDE (CHROMIC ANHYDRIDE): Exothermic oxidation with possible incandescence.
CHROMYL CHLORIDE: Incandescent reaction with possible ignition.
COATINGS: Attacks.
COPPER: May be corrosive.
DIAMMINEBORONIUM HEPTAHYDROTETRABORATE: Violent decomposition.
DIBORANE: Ignition.
1,2-DICHLOROETHANE: May explode on contact with the liquified gas.
DIMETHYL SULFATE: Violent reaction.
GERMANIUM DERIVATIVES: Possible explosion.
HALOGENS: Violent reaction with possible formation of explosive compound.
HEAVY METALS AND COMPOUNDS: May form compounds which are explosive when dry.
HEXACHLOROMELAMINE: Fire and explosion hazard.
HYDRAZINE: Forms explosive metal hydrazides.
HYDROGEN BROMIDE: Vigorous reaction.
HYPOCHLOROUS ACID: Explodes on contact.
INTERHALOGENS: Violent reaction with possible formation of explosive compound.
LEAD: May be corrosive.
MAGNESIUM PERCHLORATE: Exothermic reaction followed by explosion.
NITRIC ACID: Ignition.
NITROGEN TETROXIDE: Violent or explosive reaction.
NITROGEN HALIDES: Explosive reaction.
NITRYL CHLORIDE: Violent reaction even at -75 C.
OXIDIZERS (STRONG): Fire and explosion hazard.
OXYGEN: Possible explosion.
OXYGEN DIFLUORIDE: Immediate reaction producing white fumes.
PENTABORANE: Spontaneous ignition.

PERCHLORATES: Violent reaction
PHOSPHINE: Produces spontaneously flammable solid.
PHOSPHORUS OXIDES: Violent reaction with possible ignition.
PICRIC ACID: Forms explosive salts.
PLASTICS: Attacks.
POTASSIUM: Vigorous reaction with the liquid.
POTASSIUM: Produces spontaneously flammable solid.
POTASSIUM: Produces explosive, reactive solid.
POTASSIUM CHLORATE: Hazardous reaction.
POTASSIUM FERRICYANIDE: Explosive reaction.
POTASSIUM MERCURICYANIDE: Explosive reaction.
POTASSIUM PERMANGANATE: Incandescent oxidation.
RUBBER: Attacks.
SODIUM: Forms explosive product with the liquid.
SODIUM NITRITE: Produces explosive, reactive solid.
STIBINE: Explosion on heating.
SULFUR + COMPOUNDS: May form explosive product.
TELLURIUM HALIDES: Forms explosive compound.
TETRAMETHYLAMMONIUM AMIDE: Explosive decomposition.
THIOCARBONYL AZIDE THIOCYANATE: Explosive reaction.
THIONYL CHLORIDE (SULFINYL CHLORIDE): Formation of explosive compound.
THIOTRITHIAZYL CHLORIDE: Explosive reaction.
TIN: May be corrosive.
TRICHLOROMELAMINE: Fire and explosion hazard.
VINYL COMPOUNDS: May initiate violent, exothermic polymerization.

HAZARDOUS DECOMPOSITION:

Thermal decomposition products: ammonia, oxides of nitrogen

POLYMERIZATION: Will not polymerize.

11. TOXICOLOGICAL INFORMATION

AMMONIA, ANHYDROUS:

TOXICITY DATA: 15 ul/kg oral-man TDLo; 20 ppm inhalation-human TCLo; 5000 ppm/5 minute(s) inhalation-human LCLo; 132 mg/kg unreported-man LDLo; 2000 ppm/4 hour(s) inhalation-rat LC50; 4230 ppm/1 hour(s) inhalation-mouse LC50; 7 gm/m³/1 hour(s) inhalation-cat LC50; 7 gm/m³/1 hour(s) inhalation-rabbit LC50; 5000 ppm/5 minute(s) inhalation-mammal LCLo; 10 mg/m³/2 hour(s) inhalation-mouse TCLo; 30 mg/m³/2 hour(s) inhalation-mouse TCLo; 350 mg/m³/4 hour(s) inhalation-rat TCLo; 350 mg/m³/4 hour(s) inhalation-guinea pig TCLo; 350 mg/m³/4 hour(s) inhalation-rabbit

TCLo; 350 mg/m³/4 hour(s) inhalation-cat TCLo; 25 mg/m³/4 hour(s) inhalation-rat TCLo; 3500 mg/m³/90 minute(s) inhalation-mammal TCLo; 4600 mg/m³/2 hour(s) inhalation-mouse LC50; 18600 mg/m³/5 minute(s) inhalation-rat LC50; 7040 mg/m³/30 minute(s) inhalation-rat LC50; 40 mg/m³ inhalation-human TCLo; 3 mg/m³/8 hour(s) inhalation-human TCLo; 1200 mg/m³ inhalation-human TCLo; 1500 mg/m³/30 minute(s) inhalation-human LCLo; 112000 mg/m³/15 minute(s) skin-rat LD50; 71900 mg/m³/30 minute(s) skin-rat LD50; 4840 mg/m³/60 minute(s) skin-rat LD50; 17401 ppm/15 minute(s) inhalation-rat LC50; 21430 ppm/30 minute(s) inhalation-mouse LC50; 30 ppm/10 minute(s) inhalation-human TCLo; 110 ppm/1 hour(s) inhalation-human TCLo; 3317 ppm/1 hour(s) inhalation-mouse LCLo; 173 mg/kg/4 week(s) continuous oral-rat TDLo; 300 ppm/6 hour(s)-5 day(s) intermittent inhalation-rat TCLo; 455 mg/m³/8 hour(s)-90 day(s) intermittent inhalation-rat TCLo; 960 mg/m³/4 hour(s)-17 week(s) intermittent inhalation-rat TCLo; 711 ppm/6 hour(s)-14 day(s) intermittent inhalation-mouse TCLo; 470 mg/m³/8 hour(s)-90 day(s) intermittent inhalation-dog TCLo; 470 mg/m³/8 hour(s)-90 day(s) intermittent inhalation-rabbit TCLo; 145 ppm/5 week(s) continuous inhalation-pig TCLo; 25 ppm/6 day(s) continuous inhalation-pig TCLo; 470 mg/m³/8 hour(s)-90 day(s) intermittent inhalation-guinea pig TCLo; 6 mg/m³/7 hour(s)-17 week(s) intermittent inhalation-human TCLo; 20 mg/m³/5 year(s) intermittent inhalation-human TCLo; 0.058 gm/m³/18 day(s) intermittent inhalation-mouse TCLo; 0.058 gm/m³/19 day(s) intermittent inhalation-rat TCLo

LOCAL EFFECTS:

Corrosive: inhalation, skin, eye, ingestion

ACUTE TOXICITY LEVEL:

Toxic: inhalation

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: eye disorders, respiratory disorders, skin disorders and allergies

TUMORIGENIC DATA: 1680 mg/kg oral-rat TDLo/24 week(s) continuous

MUTAGENIC DATA: mutation in microorganisms - Escherichia coli 1500 ppm (-S9) 3 hour(s); cytogenetic analysis - rat inhalation 19800 ug/m³ 16 week(s)

HEALTH EFFECTS:

INHALATION:

ACUTE EXPOSURE:

AMMONIA, ANHYDROUS: Concentrations of 5 ppm may cause minimal irritation; 9-50 ppm may cause nasal dryness, olfactory fatigue, and moderate irritation; 125-137 ppm may cause definite nose, throat, and chest irritation; and 150 ppm may cause laryngeal spasm. Exposure to 500 ppm for 30 minutes may cause cyclic hyperpnea, increased blood pressure and pulse rate, and upper respiratory tract irritation, sometimes persisting for 24 hours; 700 ppm may cause immediate irritation; 1500-10,000 ppm may cause dyspnea, convulsive coughing, chest pain, respiratory spasm, pink frothy sputum, rapid asphyxia, and delayed pulmonary edema which may be fatal. Other effects may include runny nose, swelling of the lips, restlessness, headache, salivation, nausea, vomiting, glottal edema, pharyngitis, tracheitis, and difficulty in speaking. Death may result from bronchopneumonia or asphyxiation due to spasms, inflammation, or edema of the larynx. Residual effects may include hoarseness, productive cough, decreased respiratory function, chronic airway dysfunction, alveolar disease, bronchiolitis, bronchiectasis,

emphysema, and anxiety neuroses.

CHRONIC EXPOSURE:

AMMONIA, ANHYDROUS: Depending on the concentration and duration of exposure, repeated or prolonged exposure may cause inflammatory and ulcerative changes in the mouth, possible bronchial and gastrointestinal disturbances, and effects similar to acute exposure. Tolerance to usually irritating concentrations may be acquired by adaptation. In animals, continuous or repeated exposure to sublethal concentrations have produced adverse effects on the respiratory tract, liver, kidneys and spleen.

SKIN CONTACT:

ACUTE EXPOSURE:

AMMONIA, ANHYDROUS: Exposure to 10,000 ppm may cause mild irritation to moist skin. Direct contact with solutions or high vapor concentrations (>30,000 ppm) may cause severe pain, a stinging sensation, severe burns and vesiculation, and possibly brownish stains. The corroded areas are soft, gelatinous, and necrotic, and the tissue destruction may be deep. If burns are extensive, death may occur. Rarely, vapor exposure may result in urticaria. Due to rapid evaporation, the liquid may cause frostbite with redness, tingling, and pain, or numbness. In more severe cases, the skin may become hard and white and blisters may develop.

CHRONIC EXPOSURE:

AMMONIA, ANHYDROUS: Effects depend on the concentration and duration of exposure. Repeated or prolonged contact may cause dermatitis or effects similar to acute exposure.

EYE CONTACT:

ACUTE EXPOSURE:

AMMONIA, ANHYDROUS: Exposure to 140 ppm caused slight irritation to human eyes; 700 ppm caused immediate irritation. Direct contact with solutions or high vapor concentrations (>2500 ppm) may cause severe irritation, swelling of the eyelids, lacrimation, blepharospasm, palpebral edema, increased intraocular pressure, oval semidilated fixed pupils, corneal ulceration, possibly severe, and temporary blindness. The degree of injury depends on the concentration and duration of contact. There may be destruction of epithelium, corneal and lenticular opacification, and iritis, accompanied by hypopyon or hemorrhages and possibly extensive loss of pigment from the posterior pigment layer of the iris. When damage is less than excessive, these symptoms tend to ameliorate. In severe burns, the extent of the injury may not be immediately apparent. Late complications may include persistent edema, vascularization and scarring of the cornea, permanent opacity, acute-angle glaucoma, staphyloma, cataract, atrophy of the retina and iris, and symblepharon. Due to rapid evaporation, the liquid may cause frostbite with pain, redness, and blurred vision.

CHRONIC EXPOSURE:

AMMONIA, ANHYDROUS: Effects depend on concentration and duration of exposure. Repeated or prolonged contact may result in conjunctivitis or effects as in acute exposure.

Exposure for several weeks to 675 ppm caused irritation of the eyes of dogs and rabbits and opacity over one-fourth to one-half of the cornea in rabbits.

INGESTION:

ACUTE EXPOSURE:

AMMONIA, ANHYDROUS: Ingestion of solutions may cause immediate pain and circumoral burns and corrosion of the mucous membranes which at first turn white and soapy and then become brown, edematous, and ulcerated. There may be profuse salivation. Swallowing and speech may be difficult at first and then almost impossible. Even when there is no evidence of oral burns, the esophagus and stomach may be involved with burning pain, vomiting, and diarrhea. The vomitus may be thick and slimy with mucous, and later contain blood and shreds of mucous membrane. Epiglottal edema may result in respiratory distress and possibly asphyxia. Shock with marked hypotension, weak and rapid pulse, shallow respiration, and clammy skin may occur. Circulatory collapse may ensue, and if uncorrected, lead to renal failure. In severe cases, esophageal or gastric perforation are possible and may be accompanied by mediastinitis, substernal pain, peritonitis, abdominal rigidity, and fever. Esophageal, and possibly gastric or pyloric stricture may occur within a few weeks, but may be delayed for months or even years. Death may result within a short time from asphyxia, circulatory collapse, or aspiration of even minute amounts. Later, death may be due to the complications of perforation, pneumonia, or the effects of stricture formation. Ingestion of a gas is unlikely. If liquid is swallowed, frostbite damage to the lips, mouth and mucous membranes may occur.

CHRONIC EXPOSURE:

AMMONIA, ANHYDROUS: Depending on the concentration, repeated ingestion may result in inflammatory and ulcerative effects on the oral mucous membranes and other effects as with acute ingestion. Ingestion of 80-130 mg/L for 17 months resulted in chronic acidosis and tissue changes in rabbits.

[12. ECOLOGICAL INFORMATION](#)

ECOTOXICITY DATA:

FISH TOXICITY: 1600 ug/L 96 hour(s) LC50 (Mortality) Common jollytail (*Galaxias maculatus*)

INVERTEBRATE TOXICITY: 7700 ug/L 96 hour(s) LC50 (Immobilization) Ark shell (*Anadara granosa*)

ALGAL TOXICITY: 2100-2300 ug/L NR hour(s) (Abundance)
Algae, phytoplankton, algal mat (Algae)

PHYTOTOXICITY: 16500 ug/L 30 hour(s) (Abundance) Common water-nymph (Najas guadalupensis)

OTHER TOXICITY: 27200 ug/L 30 hour(s) LETH (Mortality) Frog (Rana sp)

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations.

14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:

PROPER SHIPPING NAME: Ammonia, anhydrous

ID NUMBER: UN1005

HAZARD CLASS OR DIVISION: 2.2

LABELING REQUIREMENTS: 2.2

QUANTITY LIMITATIONS:

PASSENGER AIRCRAFT OR RAILCAR: Forbidden

CARGO AIRCRAFT ONLY: Forbidden

INTERNATIONAL U.S. DOT 49 CFR 172.101:

PROPER SHIPPING NAME: Ammonia, anhydrous

ID NUMBER: UN1005

HAZARD CLASS OR DIVISION: 2.3

LABELING REQUIREMENTS: 2.3; 8

QUANTITY LIMITATIONS:

PASSENGER AIRCRAFT OR RAILCAR: Forbidden

CARGO AIRCRAFT ONLY: Forbidden

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:

SHIPPING NAME: Anhydrous ammonia

UN NUMBER: UN1005

CLASS: 2.2; 8

LAND TRANSPORT ADR:

PROPER SHIPPING NAME: Ammonia, anhydrous

UN NUMBER: UN1005

CLASS: 2
CLASSIFICATION CODE: 2TC
LABELS: 2.3(+8)

LAND TRANSPORT RID:
PROPER SHIPPING NAME: Ammonia, anhydrous
UN NUMBER: UN1005
CLASS: 2
CLASSIFICATION CODE: 2TC
LABELS: 2.3; 8; (+13)

AIR TRANSPORT IATA:
PROPER SHIPPING NAME: Ammonia, anhydrous
UN/ID NUMBER: UN1005
CLASS OR DIVISION: 2.3
SUBSIDIARY RISK: 8

AIR TRANSPORT ICAO:
PROPER SHIPPING NAME: Ammonia, anhydrous
UN NUMBER: UN1005
CLASS OR DIVISION: 2.3
SUBSIDIARY RISK: 8

MARITIME TRANSPORT IMDG:
PROPER SHIPPING NAME: Ammonia, anhydrous
UN NUMBER: UN1005
CLASS OR DIVISION: 2.3
SUBSIDIARY RISK(S): 8

[15. REGULATORY INFORMATION](#)

U.S. REGULATIONS:

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):
AMMONIA, ANHYDROUS: 100 LBS RQ

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30):
AMMONIA, ANHYDROUS: 500 LBS TPQ

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.40):
AMMONIA, ANHYDROUS: 100 LBS RQ

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):

ACUTE: Yes

CHRONIC: No

FIRE: No

REACTIVE: No

SUDDEN RELEASE: Yes

**SARA TITLE III SECTION 313 (40 CFR 372.65):
AMMONIA, ANHYDROUS**

**OSHA PROCESS SAFETY (29CFR1910.119):
AMMONIA, ANHYDROUS: 10000 LBS TQ**

STATE REGULATIONS:

California Proposition 65: Not regulated.

CANADIAN REGULATIONS:

WHMIS CLASSIFICATION: Not determined.

EUROPEAN REGULATIONS:

EC CLASSIFICATION (ASSIGNED):

	Flammable
T	Toxic
C	Corrosive
N	Dangerous for the Environment

EC Classification may be inconsistent with independently-researched data.

DANGER/HAZARD SYMBOL:

EC RISK AND SAFETY PHRASES:

R 10	Flammable.
R 23	Toxic by inhalation.
R 34	Causes burns.
R 50	Very toxic to aquatic organisms.
S 1/2	Keep locked-up and out of the reach of children.

S 9	Keep container in a well-ventilated place.
S 16	Keep away from sources of ignition - No smoking.
S 26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 36/37/39	Wear suitable protective clothing, gloves and eye/face protection.
S 45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 61	Avoid release to the environment. Refer to special instructions/Safety data sheets.

CONCENTRATION LIMITS:

C \geq 25% T; N R 23-34-50

5% \leq C<25% T R 23-34

0.5% \leq C<5% Xn R 20-36/37/38

GERMAN REGULATIONS:

WATER HAZARD CLASS (WGK):

STATE OF CLASSIFICATION: VwVwS

CLASSIFICATION UNDER HAZARD TO WATER: 2

NATIONAL INVENTORY STATUS:

U.S. INVENTORY (TSCA): Listed on inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

[16. OTHER INFORMATION](#)

MSDS SUMMARY OF CHANGES

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

14. TRANSPORT INFORMATION

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