



**SECTION 1: CHEMICAL PRODUCT & COMPANY IDENTIFICATION**

<b>CHEMICAL NAME:</b> Anhydrous Ammonia	<b>TRADE NAMES /SYNONYMS:</b> Ammonia
<b>DISTRIBUTOR:</b> California Ammonia Company dba: CALAMCO 1776 W. March Lane, Suite 420 Stockton, California 95207	<b>EMERGENCY TELEPHONE NUMBERS:</b> Transportation (CHEMTREC): 1-800-424-9300 CALAMCO: 209-466-9957

**SECTION 2: COMPOSITION / INFORMATION ON INGREDIENTS**

CHEMICAL	FORMULA	% BY WEIGHT		CAS	OSHA PEL	NIOSH REL / ACGIH TLV		IDLH
		C-grade	P-grade					
Ammonia	NH <sub>3</sub>	99.5	99.995	7664-41-7	25 ppm (California Only)	25 ppm (TWA)	35 ppm (STEL)	300ppm
Water	H <sub>2</sub> O	0.4	33ppm	7732-18-5	50 ppm (TWA)	None	None	
Oil	-----	0.1	2ppm	-----	None	None	None	

**SECTION 3: HAZARDS IDENTIFICATION**

**EMERGENCY OVERVIEW:** 1. Colorless gas or compressed liquid with a pungent, suffocating odor. 2. Liquid ammonia reacts violently with water. Vapor cloud is produced. 3. Avoid contact with liquid and vapor. 4. Stay upwind and use water spray to absorb vapor. 5. Not flammable under conditions likely to be encountered outdoors. 6. Stop discharge if possible.

**POTENTIAL HEALTH EFFECT**

**ROUTES OF ENTRY:** Inhalation, Skin Contact, Eye Contact, Ingestion. **TARGET ORGANS:** Eyes, skin and respiratory system.  
**EYE CONTACT:** Exposure to liquid or high concentrations of vapor can cause painful, instant and possibly irreversible damage to tissue such as conjunctiva, cornea and lens. **SKIN CONTACT:** Prolonged contact with high concentrations can cause painful tissue damage, frostbite and serious chemical burns. **INHALATION:** Depending on exposure concentration duration, effects can vary from none or only mild irritation, to obstruction of breathing from laryngeal and bronchial spasm, to edema and severe damage to mucous membranes of the respiratory tract with possible fatal results. Latent edema and residual reduction in pulmonary function may occur. **INGESTION:** Tissue damage, chemical burns, nausea and vomiting can occur. Ammonia is a gas under normal atmospheric conditions and ingestion is unlikely. **CARCINOGENICITY:** NTP: No IARC: No OSHA: No

**SECTION 4: FIRST AID MEASURES**

**EYE CONTACT:** Flush with large amounts of water for at least 30 minutes then immediately seek medical aid.  
**SKIN CONTACT:** Immediately flush with large quantities of water for at least 30 minutes while removing clothing. If clothing has frozen to skin, thaw with water before removal. Seek immediate medical aid.  
**INHALATION:** Remove from exposure. If breathing has stopped or is difficult, administer artificial respiration or oxygen as needed. Seek immediate medical aid.  
**INGESTION:** Do not induce vomiting. Have victim drink large quantities of water if conscious. Immediately seek medical aid. Never give anything by mouth to an unconscious person.

**SECTION 5: FIRE FIGHTING MEASURES**

**FLASH POINT (method used):** Not Applicable **FLAMMABLE LIMITS:** 16-25% in air (for labeling purposes, not DOT flammable gas). **EXTINGUISHING MEDIA:** Stop flow of gas or liquid. Ammonia will burn in the range of 16-25% in air with a constant source of ignition. **SPECIAL FIRE FIGHTING PROCEDURES:** Move containers from fire zone if possible; if not, use water to cool fire-exposed containers. Use water spray to control vapors. Do not put water directly on liquid ammonia. Personnel must be equipped with appropriate protective clothing and respiratory protection.  
**NFPA HAZARD CLASSIFICATION:** Health: 3 Flammability: 1 Reactivity: 0 (least-0-----4highest)

**SECTION 6: ACCIDENTAL RELEASE MEASURES**

In US, federal regulations require that a release of 100 lb. Or more of ammonia must be reported immediately to the National Response Center at (800)424-8802, the SERC and LEPC. In California, ALL releases must be reported to CUPA, state and local agencies. Additional state and local regulations may apply. **SUGGESTED LOCAL ACTION:** Stop leak if feasible. Avoid breathing ammonia. Evacuate personnel not equipped with protective clothing and equipment. Use copious amounts of water spray or fog to absorb ammonia vapor. DO NOT put water on liquid ammonia. Contain run-off to prevent ammonia from entering a stream, lake, sewer, or ditch. Any release of this material, during the course of loading, transporting, unloading or temporary storage, must be reported to U.S. DOT as required by 49 CFR 171.156 and 171.16

**SECTION 7: HANDLING AND STORAGE**

Refer to the ANSI K61.1 standard from storage and handling information. Protect containers from physical damage and temperatures exceeding 120°F. Use only approved storage systems. Zinc, copper, silver, cadmium and their alloys must not be used in ammonia systems since they can be rapidly corroded by it. Avoid hydrostatic pressure, which can cause equipment rupture, by adhering to proper filling procedures and the use of hydrostatic pressure relief valves where appropriate.

**SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION**

**RESPIRATORY PROTECTION:** Respiratory protection approved by NIOSH / MSHA for ammonia must be used when exposure limits are exceeded. Whether chemical canister respirator or self-contained breathing apparatus is sufficient for effective respiratory protection depends on the type and magnitude of exposure.

**SKIN PROTECTION:** Rubber gloves and rubber or other types of approved protective clothing should be used to prevent skin contact.

**EYE PROTECTION:** Chemical splash goggles, approved for use with ammonia, must be worn to prevent contact with liquid or vapor.

**VENTILATION:** Local positive pressure and/or exhaust ventilation should be used to reduce a vapor concentrations in confined spaces. Ammonia vapor, being lighter than air, can be expected to dissipate to the upper atmosphere.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

**BOILING POINT:** -28.1°F

**SOLUBILITY IN WATER:** High

**MELTING POINT:** -107.9°F

**PERCENT VOLATILE BY VOLUME:** 100%

**VAPOR PRESSURE:** 4802.9 MM Hg @ 60°F or 107.6psia.

**SPECIFIC GRAVITY:** 0.62 @ 60°F (water=1)

**VAPOR DENSITY:** 0.60 @ 32°F (Air=1)

**pH:** Approx. 11.6 for 1 N Sol'n. in water

**APPEARANCE:** Colorless, pungent gas

**SECTION 10: STABILITY AND REACTIVITY**

**STABILITY:** Material generally considered stable. Heating above ambient temperature causes rapid increase of vapor pressure.

**INCOMPATIBILITY (Materials to avoid):** Ammonia can react violently with strong acids. Under certain conditions, ammonia reacts with bromine, chlorine, fluorine, or iodine to form compounds which explode spontaneously. Reactions of ammonia with gold, silver or mercury to form explosive fulminate-like compounds has been reported.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Hydrogen on heating to over 850°F. The decomposition temperature may be lowered to 575°F by contact with certain metals such as iron or nickel.

**HAZARDOUS POLYMERIZATION:** Will not occur      **CONDITIONS TO AVOID:** Not applicable

**SECTION 11: TOXICOLOGICAL INFORMATION**

Ammonia is a strong alkali and readily damages all body tissues. Ammonia is not a cumulative metabolic poison. Carcinogenicity, Reproductive Mutagenicity, Teratogenic Effects. No information is available and no adverse effects are anticipated. Synergeistic Materials: None known.

**SECTION 12: ECOLOGICAL INFORMATION**

**AQUATIC TOXICITY:**

2.0-2.5 ppm / 1-4 days / goldfish and yellow perch / LC

60-80 ppm / 3 days / crayfish / LC<sub>100</sub>;

8.2 ppm / 96 hr / fathead minnow / TLm

**WATERFOWL TOXICITY:** 120 ppm

**BIOCHEMICAL OXYGEN DEMAND:** Not pertinent

**FOOD CHAIN CONCENTRATIONPOTENTIAL:** None

**SECTION 13: DISPOSAL CONSIDERATIONS**

Recover ammonia if feasible. Otherwise, let ammonia evaporate if appropriate. Only personnel experienced in ammonia spills should add water to liquid ammonia. Dispose of diluted ammonia as a fertilizer or in an industrial process. For Hazardous Waste Regulations call (800)424-9346, the RCRA Hotline.

**SECTION 14: TRANSPORT INFORMATION**

**DOMESTIC SHIPMENTS**

Proper shipping name: Ammonia, Anhydrous

Shipping Class: DOT 2.2 (nonflammable gas)

Identification Number: UN1005

Packing Group: None

**SECTION 15: REGULATORY INFORMATION**

**NOTICE:** This product is subject to the reporting requirements of SARA (1986, Section 313 of Title III) and 40 CFR Part 370. Be sure to verify and comply with state and local regulations

**CERCLA/SUPERFUND, 40 CFR 117.302:** Unpermitted releases of 100 lb. Or more of ammonia in any 24 hour period must be reported immediately to the NRC at 1-800-424-8802, the SERC, and the LEPC. Written follow-up is required to SERC & LEPC.

**OSHA HAZARD COMMUNICATION RULE 29 CFR 1910.1200:** Ammonia is considered a hazardous chemical.

**TOXIC SUBSTANCE CONTROL ACT:** This material is listed in the TSCA Inventory.

**EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT (SARA, TITLE III):** Section 302 Extremely Hazardous Substance: Yes; Section 311 / 312 Hazardous Categories: Immediate (Acute) Health Hazards; Section 313 Toxic Chemical: Yes.

**WHMIS:** One percent (1%) CALIFORNIA PROPOSITION 65: Reproductive: No Carcinogen: No

**OSHA PROCESS SAFETY MANAGEMENT, 29 CFR 1910.119:** This product is subject to the Process Safety Management requirements of 29 CFR 1910.119 if maintained on-site in quantities of 10,000 lb. Or greater.

**SECTION 16: OTHER INFORMATION**

**REASON FOR REVISION:** Annual revision

**MSDS PREPARED BY:** CALAMCO

This information is taken from sources or based upon data believed to be reliable, however, CALAMCO makes no warranty as to the absolute correctness or sufficiency or any of the foregoing or that additional or other measures may not be required under particular conditions.