


## SAFETY DATA SHEET

SECTION 1	PRODUCT AND COMPANY IDENTIFICATION
Trade Name:	Anhydrous Ammonia
Chemical Name:	Anhydrous Ammonia
CAS Number:	7664-41-7
Chemical Family:	Inorganic Nitrogen Compound
Synonyms:	Liquid Ammonia Ammonia Refrigerated Liquid Ammonia
Primary Use:	Used in the Manufacture of Crop Nutrients
Company Information:	Tampa Port Services, LLC 3033 Campus Drive Plymouth, MN 55441 800-918-8270 or 763-577-2700 8 AM to 5 PM Central Time US
Emergency Telephone:	<b>EMERGENCY OVERVIEW</b> <b>24 Hour Emergency Telephone Number:</b> <b><u>For Chemical Emergencies:</u></b> <b>Spill, Leak, Fire or Accident</b> <b>Call CHEMTREC</b> <b>North America: (800) 424-9300 (reference CCN201871)</b> <b>Others: (703) 527-3887 (collect)</b>

SECTION 2	HAZARD IDENTIFICATION	
GHS Classification:	Flam Gas 2 Liquefied gas Acute Tox 3 (Inhalation:gas) Skin Corr. 1B Eye Dam. 1 STOT SE 3 Aquatic Acute 1 Aquatic Chronic 2	Hazard Statement H221 Hazard Statement H280 Hazard Statement H331 Hazard Statement H314 Hazard Statement H318 Hazard Statement H335 Hazard Statement H400 Hazard Statement H411
	<p><b>Signal Word: DANGER</b></p> <p><b>Hazard Statement(s)</b></p> <p>H221 Flammable gas.</p> <p>H280 Contains gas under pressure; may explode if heated.</p> <p>H314 Causes severe skin burns and eye damage.</p> <p>H318 Causes serious eye damage.</p> <p>H331 Toxic if inhaled.</p> <p>H335 May cause respiratory irritation.</p> <p>H400 Very toxic to aquatic life.</p> <p>H411 Toxic to aquatic life with long lasting effects.</p>	
Label Elements:		

Prevention:	P210 Keep away from heat, hot surfaces, open flames, sparks. - No smoking. P260 Do not breathe mist, spray, vapors, gas. P261 Avoid breathing vapors, mist, or spray. P264 Wash hands, forearms, and exposed areas thoroughly after handling. P271 Use only outdoors or in a well-ventilated area. P273 Avoid release to the environment. P280 Wear eye protection, protective clothing, protective gloves.	
Response:	P301+P330+P331	If swallowed: rinse mouth. Do NOT induce vomiting.
	P303+P361+P353	If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
	P304+P340	If inhaled: Remove person to fresh air and keep at rest in a position comfortable for breathing.
	P305+P351+P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
	P312	Call a poison center or doctor if you feel unwell.
	P321	Specific treatment (see Section 4 on this SDS).
	P363	Wash contaminated clothing before reuse.
	P377	Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
	P381	Eliminate all ignition sources if safe to do so.
	P391	Collect Spillage.
Storage:	P403+ P233 P405 P410+P403	Store in a well-ventilated place. Keep container tightly closed. Store locked up. Protect from sunlight. Store in a well-ventilated place.
Disposal:	P501	Disposal of content/containers to be in accordance with local/regional/national regulations.

SECTION 3	COMPOSITION INFORMATION ON INGREDIENTS			
Formula:	NH <sub>3</sub>			
Composition:	Ammonia	CAS 7664-41-7	>99.7	Flam Gas 2 Liquefied gas Acute Tox 3 (Inhalation:gas) Skin Corr. 1B Eye Dam. 1 STOT SE 3 Aquatic Acute 1 Aquatic Chronic 2

SECTION 4	FIRST AID MEASURES	
First Aid Procedures:	Eyes:	Using proper respiratory protection, immediately move victim away from exposure and into fresh air. Flush eyes with clean water holding eyelids apart and flush the affected eye(s) with clean water for at least 15 minutes. See medical attention immediately if exposure is severe. Obtain medical attention if irritation develops or persists.

	Skin:	Using proper respiratory protection, immediately flush affected area(s) with large amounts of water for at least 20 minutes while removing contaminated shoes, clothing and jewelry. If skin surface is damaged, apply a clean dressing and seek immediate medical attention. If skin surface is not damaged, cleanse the affected area(s) thoroughly by washing with mild soap and water, seek medical attention. If irritation or redness develops, seek immediate medical attention.
	Inhaled:	Prompt medical attention is mandatory in all cases of over exposure. Rescue personnel should be equipped with positive pressure self-contained breathing apparatus. Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Unconscious persons should be move to an uncontaminated area and provided appropriate medical treatment. Monitor breathing and pulse continuously.
	Ingestion:	This material is a gas under normal atmospheric conditions and ingestion is unlikely. If ingested give large amounts of water and see medical attention.
Note to Physician:	Delayed pulmonary edema may occur following inhalation. Keep patient under medical observation for at least 24 hours.	

<b>SECTION 5</b>	<b>FIRE FIGHTING MEASURES</b>
Extinguishing Media:	Dry chemical, carbon dioxides, or water spray is acceptable. Do not direct water streams directly on liquid ammonia pool. Carbon Dioxide can displace oxygen. Use caution when using carbon dioxide in confined spaces. Protect storm drains or bodies of water from receiving run off.
Protection of Firefighters:	Gas flow should be stopped. Do not enter fire area without proper protective equipment, including respiratory protection. Firefighters must use full bunker gear including NIOSH-approved positive-pressure self-contained breathing apparatus to protect against potential hazardous combustion and decomposition products and oxygen deficiencies. Containers can build pressure if exposed to radiant heat; cool adjacent containers with flooding quantities of water until well after the fire is out. Withdraw immediately from the area if there is a rising sound from venting safety device or discoloration of vessels, tanks, or pipelines. Be aware that burning liquid will float on water. Notify appropriate authorities if liquid enter sewers or waterways.

<b>SECTION 6</b>	<b>ACCIDENTAL RELEASE MEASURES</b>
Personal Precautions, PPE and Emergency Procedures:	Cleanup workers should stay upwind and keep out of low areas where ammonia vapors can accumulate. Keep away from open flames, hot surfaces and sources of ignition. Use special care to avoid static electric charges. No smoking. Do not get in eyes, on skin, or on clothing. Do not breathe gas. If small spill, allow it to vaporize or absorb vapor in water.
Environmental Precautions:	Prevent spilled material from entering sewers, storm drains or other unauthorized confined treatment drainage systems.  If spill could potentially enter any waterway, including intermittent dry creeks, contact the local authorities. If in the U.S., contact the US Coast Guard national response center toll free number 800-424-8802.

Methods and Materials for Containment and Cleaning up:	Stop the flow of material, if this is without risk. Ventilate area. Clean up spills immediately and dispose of waste safely. Allow to vaporize or absorb the vapor in water. Use only non-sparking tools.
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<b>SECTION 7</b>	<b>HANDLING AND STORAGE</b>	
Handling:	Do NOT enter (storage areas, confined spaces) unless adequately ventilated. Emits ammonia vapors. Flammable gas. Keep away from sources of ignition. Ammonium hydroxide reacts with many heavy metals and their salts forming explosive compounds. It attacks many metals forming flammable/explosive gas. The solution in water is a strong base, it reacts violently with acids.	
Storage:	Store in a dry, cool and well-ventilated place. Keep in fireproof place. Store locked up. Storage containers should have safety relief valves. Note that many materials, particularly plastics, become brittle upon contact with liquid ammonia.	
<b>SECTION 8</b>	<b>EXPOSURE CONTROLS / PERSONAL PROTECTION</b>	
Engineering Controls:	Gas detectors should be used when flammable gases/vapors may be released. Gas detectors should be used when toxic gases may be released. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Use explosion-proof equipment. Ensure all national/local regulations are observed.	
Personal Protective Equipment (PPE):	Eye/Face:	Chemical safety goggles.
	Skin:	Wear suitable protective clothing. Wear cold insulating gloves.
	Respiratory:	A NIOSH approved air purifying respirator with a type acid gas filter may be used under conditions where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited (see manufacturer's respirator selection guide). Use a positive pressure air supplied respirator if there is potential for uncontrolled release, exposure levels are not known or any other circumstances where air purifying respirators may not provide adequate protection. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed if workplace conditions warrant a respirator.
	Other:	When using, do not eat, drink or smoke.
General Hygiene Considerations:	Protective goggles. Gloves. Protective clothing. Insufficient ventilation: wear respiratory protection. Face shield.	
Exposure Guidelines:	OSHA Permissible Exposure Limits (PEL):	TWA 50 ppm
	ACGIH Threshold Limit Value (TLV):	TWA 25 ppm STEL 35 ppm

<b>SECTION 9</b>		<b>PHYSICAL AND CHEMICAL PROPERTIES</b>	
Note: Unless otherwise stated, values in this section are determined at 20°C (68°F) and 760 mm Hg (1 atm).			
Appearance:	Colorless liquid or gas	Vapor Pressure (mm Hg):	8.5 atm at 68°F (20°C)
Odor:	Pungent odor considered suffocating	Vapor Density (air=1):	0.597 (at 32°F and 760 mmHg) (lighter than air)
Odor Threshold:	1 – 50 ppm in humans	Specific Gravity or Relative Density:	0.62 at 60°F (16°C)
Physical state:	Gas	Bulk Density:	No data available
pH:	10.6 - 11.6 (0.02-1.7% aqueous ammonia solution)	Solubility in Water:	Water: 51 g at 68°F (20°C)
Melting Point/ Freezing Point:	-108°F (- 77°C)/No data available	Partition coefficient:	- 1.14 at 68°F (25°C)
Boiling Point:	-28.1°F (- 33.4°C)	Auto-Ignition Temperature:	1,204°F (651°C)
Flash Point:	No data available	Decomposition Temperature:	No data available
Evaporation Rate:	No data available	Viscosity:	0.475 cP at -92°F (-69°C)
Flammability:	No data available	Volatility:	No data available
Upper/lower Flammability or explosive limits	25% / 16%		

<b>SECTION 10</b>		<b>STABILITY AND REACTIVITY</b>	
Chemical Stability:	Flammable gas. Contains gas under pressure; may explode if heated. Can form explosive mixture with air.		
Conditions to Avoid:	Extremely high or low temperatures. Open flame. Overheating. Heat. Sparks.		
Incompatible Materials:	Strong acids. Strong bases. Strong oxidizers. Metals. Organic materials. Hypochlorites. Metal salts.		
Hazardous Decomposition Products:	Nitrogen oxides.		
Corrosiveness:	Corrosive to copper and aluminum, including their alloys, and galvanized surfaces.		
Hazardous Polymerization:	Will not occur.		

<b>SECTION 11</b>		<b>TOXICOLOGICAL INFORMATION</b>	
Substance:	Anhydrous Ammonia		
Acute Oral Toxicity:	LD <sub>50</sub> (Rats, oral) – 350 mg/kg		
Acute Inhalation Toxicity:	LC <sub>50</sub> (Rats, Inhalation 1-hour) – 5.1 mg/l LC <sub>50</sub> (Rats, Inhalation 4-hour) – 2,000 ppm		
Acute Dermal Toxicity:	No data available		
Mutagenesis:	Not classified		
Target Organ	Eyes, skin, respiratory system		
Developmental Toxicity:	No data available		

Carcinogenicity	Not classified
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<b>SECTION 12</b>	<b>ECOLOGICAL INFORMATION</b>	
Ecotoxicology:	Acute Toxicity to Fish:	96-h: LC <sub>50</sub> = 0.09 – 3.51 mg un-ionized NH <sub>3</sub> /L
	Chronic Toxicity to Fish:	Various 12 d-5 yrs: NOEC=0.025-1.2 mg un-ionized NH <sub>3</sub> /L.
	Acute Toxicity to Aquatic Invertebrates:	( <i>Daphnia magna</i> ) 48 h LC <sub>50</sub> = 2.94 mg un-ionized NH <sub>3</sub> -N/L.
	Chronic Toxicity to Aquatic Invertebrates:	( <i>Daphnia magna</i> & others) 21 d-76 weeks: NOEC = 0.163-0.42 mg un-ionized NH <sub>3</sub> /L.
	Acute Toxicity to Aquatic Plants:	(Benthic diatoms) Up to 25 days: LOEC = 0.5-1.0 mg N/L ( <i>Chlorella vulgaris</i> ) 21 days: LOEC = 500 mg N/L. Slightly toxic to aquatic organisms as defined by USEPA.
	Toxicity to Soil Dwelling Organisms:	No data available.
	Toxicity to Terrestrial Plants:	No data available.
Environmental Fate:	Stability in Water:	Ke=25.6-47.3 cm/h at 15.2-15.0 oC. Removed from aquatic systems.
	Stability in Soil:	Mean sorptions; sand: 19% loam: 28% clay, clay loam, and silt loam: 38%. Monitoring Data: levels of ammonia in urban areas are on average about 20 Φg/m <sup>3</sup> . Non-urban sites have average levels of 4-5 Φg/m <sup>3</sup> . Areas close to point sources (e.g., large animal feedlots or industrial sites) may have local atmospheric concentrations exceeding 200 Φg/m <sup>3</sup> .
	Transport and Distribution:	<b>Transport:</b> the primary methods of transport in the atmosphere are via verticle and horizontal diffusion. <b>Distribution:</b> 99.98% to air, <0.1% each to water, soil, biota, and sediment
Toxicity:	No known toxicity	
Degradation Products:	Biodegradation:	Inorganic. Undergoes photolytic degradation.
	Photodegradation:	Aerobic. BOD created within days. Rapidly biodegraded. Bioaccumulation: Rapidly assimilated by animals and plants.






<b>SECTION 13</b>	<b>DISPOSAL CONSIDERATIONS</b>
	Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations. Handle empty containers with care because residual vapors are flammable. This material is hazardous to the aquatic environment. Keep out of sewers and waterways.

<b>SECTION 14</b>	<b>TRANSPORT INFO</b>			
Regulatory Status:	US DOT	Canada TDG	IATA	IMO/IMDG
Identification Number:	UN1005	UN1005	UN1005	UN1005
Hazard Class:	Class 2.2 Domestic	2.3, 8 International	2.3 (8)	2.3 (8)
Proper Shipping Name:	Anhydrous Ammonia	Anhydrous Ammonia	Anhydrous Ammonia	Anhydrous Ammonia
Packing Group:	None		None. Forbidden for transportation	None
Emergency Guide No.:	125	125	F-C, S-U	2CP
Special Provisions:	13, T50		A2	23
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not listed				
USDOT:	Poison Inhalation Hazard: No	Marine Pollutant: No	Reportable Quantity: 100 lb.	
MARPOL Annex V: NO				

<b>SECTION 15</b>	<b>REGULATORY INFORMATION</b>				
CERCLA:	Designated as a hazardous substance (EHS) (40 CFR 302). Reportable Quantity (RQ) is 100 lb. Persons in charge of vessels or facilities are required to notify the National Response Center (NRC) immediately when there is a release in an amount equal to or greater than the RQ. Toll free (800) 424-8802.				
RCRA 261.33:	Not Listed				
SARA TITLE III: (Exemptions at 40 CFR, Part 370 may apply for agricultural use, or for quantities of less than 10,000 pounds on-site.)	Section 302/304: Listed	RQ: 100 lbs		TPQ: 500 lbs	
	Section 311/312:				
	Acute: Yes	Chronic: Yes	Fire: Yes	Pressure: Yes	Reactivity: No
	Section 313: Listed				
NTP, IARC, OSHA:	None of the components present in this material at concentrations equal to or greater than 0.1% by weight are listed as a carcinogen.				
Canada DSL and NDSL:	DSL: Yes NDSL: Not listed				
TSCA:	Listed on the TSCA Inventory				
CA Proposition 65: (Health & Safety Code Section 25249.5)	Not applicable.				
WHMIS:	<p><b>WHMIS 2015</b> This SDS has been prepared according to the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all of the information required by the HPR.</p> <p><b>WHMIS 1988 (Repealed)</b> Classifications and/or symbols from the Controlled Products Regulations (CPR) are included in the Other Hazardous Classifications in Section 16 for reference.</p>				

SECTION 16	OTHER INFORMATION
Disclaimer:	<p>The information in this document is believed to be correct as of the date issued. <b>HOWEVER, MOSAIC MAKES NO GUARANTEE, REPRESENTATION, OR WARRANTY, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE REGARDING THE ACCURACY OR COMPLETENESS OF THIS INFORMATION, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO THE USE OF THIS PRODUCT.</b></p> <p>User is responsible for determining whether this product is fit for a particular purpose and suitable for user's method of use or application and assumes the risk of use thereof. The conditions and use of this product are beyond the control of Mosaic, and Mosaic disclaims any liability for loss or damage incurred in connection with the use or misuse of this product. Each user should review the recommended industrial hygiene and safe handling procedures in the specific context of the intended use and determine whether they are appropriate.</p>
Preparation:	The preparation of this SDS was in accordance with ANSI Z400.1-2010.
Revision Date:	January 1, 2016
Sections Revised:	All
SDS Number:	MOS 200006
References:	Globally Harmonized System of Classification and Labelling of Chemicals (GHS) – 4 <sup>th</sup> Edition 2011 OSHA Hazard Communication Standard, 2012 MARPOL Annex V; The Fertilizer Institute (TFI), 2003; TOXNET



Other Hazard Classifications:	<b>NFPA HAZARD CLASS</b>		<b>HMIS HAZARD CLASS</b>		<b>WHMIS 1988 (CPR) HAZARD CLASS</b>		
	Health:	<b>3</b>	Health:	<b>3</b>	Symbol		
	Flammability:	<b>1</b>	Flammability:	<b>1</b>			
	Instability:	<b>0</b>	Physical Hazard:	<b>0</b>			
	Special Hazard:	Corrosive	PPE:	Section 8			
						Classification	E, F, A
						Sub Class	D- subdiv A
	<b>WHMIS 2015 (HPR) HAZARD CLASS</b>						
	Signal Word	Danger					
	Symbol						
Classification	Flam Gas 2 Liquefied gas Acute Tox 3 (inhalation:gas) Skin Corr. 1B Eye Dam. 1 STOT SE 3 Aquatic Acute 1 Aquatic Chronic 2						
Hazard Statements	H221 Flammable gas. H280 Contains gas under pressure; may explode if heated. H314 Causes severe skin burns and eye damage. H318 Causes serious eye damage. H331 Toxic if inhaled. H335 May cause respiratory irritation. H400 Very toxic to aquatic life. H411 Toxic to aquatic life with long lasting effects.						