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AMMONIUM HYDROXIDE

MATERIAL SAFETY DATA SHEET

INTEGRA Chemical Company
710 Thomas Ave SW
Renton, WA 98055
Phone: 425-277-9244
24 Hour Emergency Response: CHEMTREC 800-424-9300 (Outside USA 703-527-3887)

MSDS Number: A645
Revision Date: 19-Sep-03
Revision #: 004

Page 1

Product Identification

Product Name: AMMONIUM HYDROXIDE
Synonyms: Ammonia, Aqua Ammonia, Strong Ammonia Solution
Chemical Formula: NH4OH
Formula Weight: 35.05
Chemical Family: Aqueous solution
Integra Product Numbers: A645.10; A645.50; A645.31

Hazard Overview

HMIS Rating: 3-1-2-H NFPA Rating: NE
Warning Label:

DANGER!

Corrosive. Causes burns to the skin, eyes and respiratory tract. Do not get in eyes, on skin or on clothing. Harmful or fatal if swallowed. Harmful if inhaled. Avoid breathing vapor. Use only with adequate ventilation.

Components

<u>Component</u>	<u>CAS #</u>	<u>%</u>
Water	07732-18-5	68-70
Ammonium hydroxide	01336-21-6	28-30

Physical Data

<u>Boiling Point:</u>	36 °C	<u>Specific Gravity:</u>	0.90 Water=1
<u>Melting Point:</u>	-77 °C	<u>Evaporation Rate</u>	NA
<u>Vapor Pressure:</u>	115 mm Hg@20°C	<u>Vapor Density:</u>	0.60 Air = 1

Solubility:

Miscible with water.

Appearance and Odor:

Clear, colorless liquid. Pungent odor of ammonia.

Fire and Explosion Data

Flash Point: NA Test Method:
Auto-ignition Temperature: NA
Flammable Limits (% by volume in air): Upper: NA Lower: NA

Fire Extinguishing Media:

Water spray.

Special Firefighting Procedures:

Use water to cool nearby containers and structures. Wear full protective equipment, including suitable respiratory protection.

Unusual Fire and Explosion Hazards:

Gives off flammable vapors which may form an explosive mixture with air. Anhydrous ammonia gas has the following flammable limits: Upper - 25%; Lower - 16%. The autoignition temperature for ammonia gas is 1204°F.

Health Hazard Information

Effects of Overexposure

Skin Contact:

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Page 2

Health Hazard Information

SKIN CONTACT:

Corrosive material. Contact may cause severe burns.

Eye Contact:

Vapors mists and liquids are corrosive to the eyes. Brief contact with vapors may be severely irritating. Brief liquid contact with the eyes may cause severe damage and prolonged contact may result in permanent eye injury.

Ingestion:

Harmful if swallowed. Liquids are extremely corrosive to the mouth and throat. Swallowing the liquid burns tissue, and can cause severe abdominal pain, nausea, vomiting, and collapse. Severe overexposure may be fatal.

Inhalation:

Harmful if inhaled. Vapors and mists are corrosive to the mucous membranes. Causes severe irritation or burns to the respiratory system, pulmonary edema and lung inflammation.

Chronic Effects of Overexposure:

Damage to mucous membranes, respiratory tract, eyes, skin.

Exposure Limits:

	<u>TWA</u>	<u>OSHA PEL</u> <u>STEL</u>	<u>Ceiling</u>
Water	NE	NE	NE
Ammonium hydroxide	(as NH3) 50 ppm	NE	NE
	<u>TWA</u>	<u>ACGIH TLV</u> <u>STEL</u>	<u>Ceiling</u>
Water	NE	NE	NE
Ammonium hydroxide	(as NH3) 25 ppm	(as NH3) 35 ppm	NE

Toxicity Data:

Water	No information available	
Ammonium hydroxide	LD50 (oral, rat)	350 mg/kg

Medical Conditions Generally Aggravated by Exposure:

Skin and respiratory conditions.

Target Organs:

None Identified

Reproductive Effects:

None Identified

Carcinogenicity:

None Identified

<u>Component</u>	<u>NTP Listing</u>	<u>IARC Listing</u>	<u>OSHA Regulated</u>
Water	No listing	No Listing	<input type="checkbox"/>
Ammonium hydroxide	No listing	No Listing	<input type="checkbox"/>

Emergency First Aid Procedures

Skin Contact:

Immediately remove contaminated clothing. Flush skin with water for at least 15 minutes. Seek immediate medical attention.

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Page 3

Emergency First Aid Procedures

Eye Contact:

Immediately flush eyes with large amounts of water, holding lids apart to ensure rinsing of entire surface. Washing eyes within several seconds of contact is essential to achieve maximum effectiveness. Get immediate medical attention.

Inhalation:

Remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult administer oxygen. Seek medical attention.

Ingestion:

Do not induce vomiting. If victim is conscious, give water. Never give anything by mouth to an unconscious person. Seek immediate medical attention.

Additional First aid and Treatment Notes:

No information available

Reactivity Data

Stability: Stable

Hazardous Polymerization: Will Not Occur

Incompatibles:

Incompatible with strong acids and strong oxidizers. Hypochlorite, bromine, chlorine, aluminum, copper, brass and bronze.

Decomposition Products:

Oxides of nitrogen. Ammonia fumes.

Conditions to Avoid:

Excessive heat and exposure to light.

Spill and Disposal Procedures

Spill and Leak Procedures:

Prevent spread of spill. Absorb with sand or inert material. Sweep or scoop into a disposal container. Wear full protective equipment, including a complete protective suit and an appropriate respirator depending upon the size of the spill. Carefully neutralize residue with a dilute, inorganic acid solution. Flush spill area with water.

Disposal Procedures:

Dispose in accordance with all Local, State and Federal regulations. EPA Hazardous waste number: D002, D003 (Corrosive, Reactive Waste)

Protective Equipment

Ventilation:

Use general or local exhaust ventilation to meet TLV and PEL requirements.

Respiratory Protection:

If ventilation controls do not limit airborne concentrations below PEL or TLV values, an approved respirator must be worn. Use a chemical cartridge respirator with an ammonia/amine cartridge. At concentrations over 300ppm the use of a self-contained breathing apparatus is advised.

Skin and Eye Protective Equipment:

Safety goggles, face shield, chemical-resistant gloves and protective clothing appropriate for the risk of exposure. Maintain an eyewash station and safety shower nearby.

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Storage and Handling Precautions

Storage Area: CORROSIVE, BASE

Store in a cool (<25°C), corrosive materials storage area or cabinet out of direct sunlight. Do not store near incompatible materials - especially acids. Protect containers from physical damage.

Transportation Information

Regulated Material domestic ground transportation
 (reference: CFR Title 49, Transportation)

Proper Shipping Name: Ammonia solution
 UN or NA Identification number: UN2672 Hazard Class and Label: 8 Corrosive
 Packing Group: III Subsidiary Risk and Label:

Regulated Material via Air Transportation
 (reference: ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air)

Proper Shipping Name: Ammonia solution
 UN Identification Number: UN2672 Hazard Class and Label: 8 Corrosive
 Packing Group: III Subsidiary Risk and Label:

	<u>Packing Instruction</u>	<u>Max net qty per package</u>
Passenger Aircraft:	819/Y819	5/1 L
Cargo Aircraft:	813	60 L

Regulatory Information

<u>Component</u>	<u>TSCA</u>	<u>CERCLA</u>	<u>SARA EHS</u>	<u>SARA 313 Toxic Release</u>	
	<u>Inventory</u>	<u>RQ</u>	<u>TPQ</u>	<u>de minimus</u>	
Water	<input type="checkbox"/>	lbs	<input type="checkbox"/>	lbs	<input type="checkbox"/>
Ammonium hydroxide	<input checked="" type="checkbox"/>	1000 lbs	<input type="checkbox"/>	lbs	<input type="checkbox"/>
<u>SARA Hazard Categories:</u>	<u>Acute</u>	<u>Chronic</u>	<u>Flammability</u>	<u>Pressure</u>	<u>Reactivity</u>
Water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ammonium hydroxide	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>Clean Air Act Categories:</u>	<u>SOCMI</u>	<u>HAP</u>	<u>Volatile HAP</u>	<u>Organic HAP</u>	<u>Ozone Depleting</u>
Water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ammonium hydroxide	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

MSDS Revision History:

- 002 - Changed header phone number
- 003 - Added product number; reviewed all sections; updated exposure information, physical properties, health hazards
- 004 - Format revisions; updated header phone number

NE = Not established, NA = Not applicable or Not available

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***** END OF MSDS *****