

MATERIAL SAFETY DATA SHEET (MSDS)

SECTION I IDENTIFICATION

000264

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STATE DEPT. OF EDUCATION  
NEW YORK

MANUFACTURER: Jones Chemicals, Inc.

ADDRESS: 100 Sunny Sol Blvd.  
Caledonia, NY 14423

TELEPHONE 716-538-2311

CHEMICAL NAME: Ammonium Hydroxide, Aqua Ammonia  
Chemical Abstract Services  
Registry (CAS) Number: 1336-21-6

Formula: NH<sub>4</sub>OH UN/NA Number: NA 2672

PRODUCT NAME: Sunny Sol<sup>®</sup> Aqua Ammonia; aqua ammonia

SHIPPING NAME: DOT: Ammonium Hydroxide (RQ-1000/454) LABEL: DOT Corrosive

For additional information call: Jones Chemicals, Inc. Caledonia, New York,  
Telephone (716) - 538-2311 (8 a.m. to 5 p.m. EST)

In the event of a transportation emergency, call CHEMTREC (800)-924-4300

SECTION II HAZARDOUS INGREDIENTS/MIXTURES

MATERIAL or COMPONENT	CAS No. UN/NA No.	Per Cent By Weight	HAZARD DATA
Ammonium Hydroxide	1336-21-6 NA 2672	28-30%	Warning: Corrosive liquid causes burns. Vapor extremely irritating. See Section V, Health Hazard Information

Carcinogenicity Status	NTP	IARC	OSHA
	No	No	No

SECTION III PHYSICAL DATA

Boiling Point, 760mm Hg: Ammonia vapors released on warming	Melting Point: NA
Solubility in Water: Complete	Freezing Point: -40° F
Specific Gravity (Water = 1) 0.8974 @ 60°F	Vapor Density (Air = 1): 0.6-1.2 Dry Ammonia = 0.6
Vapor Pressure (mm Hg): 420-475 mm Hg. @ 15.5° C	pH (as is): 13.5
Appearance: Colorless liquid. Ammonia vapors are colorless	Percent Volatile By Volume: 100% at 212° F
	Odor: Pungent odor

## SECTION IV FIRE AND EXPLOSION DATA

FLASH POINT (Test Method) NA	AUTO IGNITION (99% NH <sub>3</sub> ) TEMPERATURE: 1204° F	FLAMMABLE LIMITS IN AIR BY VOLUME %:	UPPER 25 } LOWER 16 } 99% NH <sub>3</sub>
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### EXTINGUISHING MEDIA:

Aqueous ammonia does not present a fire or explosion hazard itself. However, mixture of ammonia (gas) and air are combustible if the product is involved in a fire from another cause, a spray or fog type spray of water is effective in removing the generated ammonia gas from the atmosphere. Firemen, in such circumstances, must be protected from the generated ammonia gas with appropriate respiratory equipment including a self-contained air supply.

### SPECIAL FIRE FIGHTING PROCEDURES:

Not considered a primary fire hazard, but care should be taken to avoid exposure to liquid product involved in fire. Wear splash-proof, gas tight chemical goggles, respiratory protection, rubber gloves and clothing to avoid contact as needed. Cool fire-exposed container.

### UNUSUAL FIRE AND EXPLOSION HAZARD

When heated, material will give off ammonia gas, a strong irritant to eye, respiratory tract, and moist skin. Closed containers exposed to extreme heat may develop pressure. Combustion of released ammonia may form toxic nitrogen oxides.

## SECTION V HEALTH HAZARD INFORMATION

### ROUTES OF EXPOSURE

Inhalation	Dangerous. Emits irritating ammonia gas fumes. Irritating to the mucous membranes of the respiratory tract. TLV-TWA--25ppm for ammonia gas.
Skin Contact	May severely injure skin on contact.
Skin Absorption	See "Skin Contact".
Eye Contact	May severely injure eyes on contact.
Ingestion	Corrosive to the digestive tract.

### EFFECTS OF OVEREXPOSURE

#### Acute Overexposure

##### Swallowing

Corrosive to digestive tract; swallowing as little as a teaspoonful of concentrated ammonium hydroxide has caused death. Oral LD<sub>50</sub> (human) = 43 mg/kg.

##### Skin Contact

Consequences of skin contact with aqueous ammonia vary from a relatively mild irritation to severe burns, depending upon the strength of the solution, length of contact, and individual skin sensitivity.

##### Inhalation

Can result in headaches, coughing, severe lung congestion (edema and difficulty in breathing). LC<sub>50</sub> (human) = 5000 ppm.

## CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

None

## SECTION VII SPILL OR LEAK PROCEDURES

### STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Contain spill, flush with water to holding area for neutralization (do not flush directly to sewer to surface water). Recover if feasible, otherwise, absorb bulk liquid with fly ash or cement powder. Neutralize with dilute vinegar (acetic acid) or other dilute acid.

### NEUTRALIZING CHEMICALS

Dilute HCl or dilute H<sub>2</sub>SO<sub>4</sub>

### WASTE DISPOSAL

Contact Federal, State, County, or local environmental regulator for guidance. There may be regulation of pH, NH<sub>3</sub> content, and salts content for effluents.

## SECTION VIII SPECIAL PROTECTION INFORMATION

### VENTILATION REQUIREMENTS

Provide general and local exhaust ventilation as required. The Threshold Limit Value (TLV) is 25 ppm for ammonia gas.

### SPECIFIC PERSONAL PROTECTIVE EQUIPMENT

**Respiratory:** For emergency and non-routine conditions above the TLV, a chemical cartridge respirator with a full-facepiece respirator is suitable for exposures below 300 ppm; above 300 ppm or if concentration is unknown, use approved self-contained respirator with full facepiece.

**Eyes:** Use splash-proof; chemical safety goggles, and where needed, a faceshield or mask to protect against splashes and from mists and ammonia.

**Gloves:** Use a rubber suit, boots, gloves, apron, or other protective clothing as required for workplace conditions to prevent contact with ammonium hydroxide solutions.

An eyewash station and a safety shower must be immediately accessible to workers where this material is used or handled. Washing facilities and large amounts of clean water must be available for emergency use where spills may occur.

## SECTION IX SPECIAL PRECAUTIONS

### PRECAUTIONS TO BE TAKEN IN HANDLING

Ammonia containers of all types must be properly labeled and carefully stored and handled to avoid leakage, spillage, splashing, spattering, breaking of carboys, and escape of gaseous ammonia. Supervisors should assure the handling of chemicals in such a way that unsafe mixtures, such as ammonium hydroxide with a strong acid or with chlorine, bromine, or iodine, will not be created. It is desirable that ammonia containers be

## EFFECT OF OVEREXPOSURE (CONT'D)

- Eye Contact** Concentrated solutions of ammonia remaining in contact with the eye for even a short time will cause serious eye damage which may result in ulceration of the cornea, perforation of the eye, scarring or blindness.
- Chronic Overexposure** (For ammonia fumes) Chronic animal studies at exposure levels below concentrations causing acute effects showed little evidence of toxic effects. Chronic bronchitis in humans is reported to result from long-term exposures to this material.

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## EMERGENCY AND FIRST AID PROCEDURES

- Eyes** Immediately flush with lots of running water for at least 15 minutes, including under the eyelids; then contact physician immediately, preferably an ophthalmologist. Speed and thoroughness in rinsing eyes is important to avoid permanent injury.
- Skin** Immediately flush with lots of water while removing contaminated clothing and shoes. Get medical help promptly if large areas are affected or irritation persists.
- Inhalation** Remove to fresh air. Restore breathing if required and/or have trained person administer oxygen if breathing is difficult. Keep warm and at rest. Contact physician immediately.
- Ingestion** If conscious, promptly give lots of water, dilute vinegar or citrus juice to drink, followed by milk. Do not induce vomiting. Contact physician.

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## SECTION VI REACTIVITY DATA

### CONDITIONS CONTRIBUTING TO INSTABILITY

Material is stable in cool storage in closed containers. Ammonium hydroxide is strongly alkaline and is incompatible with acid material and with copper, tin, zinc, aluminum, and their alloys and with galvanized surfaces.

### INCOMPATIBILITY

Violent reactions can occur for example, with dimethyl sulfate, chlorine, bromines, or flourine. Explosive materials can result from reaction with iodine or with silver, mercury, and with several silver compounds. Adding NaOH to this material and/or heating will volatize  $NH_3$ . Dangerous reactions occur with acetaldehyde, acrolein, boron, hypochlorites, ethylene oxide, chromium trioxide, gold and other strong acids.

### HAZARDOUS DECOMPOSITION PRODUCTS

Ammonia vapor

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**PRECAUTIONS TO BE TAKEN IN HANDLING (CONT'D)**

stored in a cool, sprinklered building.

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**PROPER HANDLING AND STORAGE REQUIREMENTS**

Exposure to vapors produces an intense irritant effect. Persons exposed must quickly leave a contaminated area.

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**SPECIAL PRECAUTIONS**

See "Precautions to be taken in handling".

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**ADDITIONAL REGULATORY CONCERNS**

CPSC: Regulated under the Poison Prevention Packaging Act (16 CFR 1500)

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Prepared by: JONES CHEMICALS, INC.

Date: November 11, 1985

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Date: