

**Safety Data Sheet**

**1. IDENTIFICATION**

**Product Identifier:** Ammonium Hydroxide, 29% w/w

**Product Code(s):** A1033, A1085, A1088, A1089, CF1186, CF1161, K-853, CSA1089

**Synonyms:** Ammonia Solution; Ammonia Aqueous

**Recommended Use:** For manufacturing, industrial, and laboratory use only. Use for neutralization of acidic systems, as a catalyst, as a solvent, or as a laboratory reagent.

**Uses Advised Against:** Not for food, drug, or household use.

**Supplier:** Rocky Mountain Reagents, Inc.  
4621 Technology Drive, Golden, CO 80403  
Phone: (303) 762-0800 Fax: (303) 762-1240

**Emergency Phone Number:** (800) 255-3924 (CHEM-TEL)

**2. HAZARDS IDENTIFICATION**

**Hazard Classifications:**

Acute Toxicity – Oral:	Category 4
Skin Corrosion/Irritation:	Category 1A
Eye Damage/Irritation:	Category 1
Specific Target Organ Toxicity (Single Exposure):	Category 3

**Signal Word:** DANGER

**Hazard Statements:** Harmful if swallowed.  
Causes severe skin burns and serious eye damage.  
May cause respiratory irritation.

**Pictograms:**



**Precautionary Statements:**

**Prevention:** Wash thoroughly after handling.  
Do not eat, drink, or smoke when using this product.  
Do not breathe fumes, mists, vapors, or spray.

Wear protective gloves, protective clothing, eye protection, and face protection.  
Use only outdoors or in a well-ventilated area.

**Response:** Immediately call a poison center or doctor.  
If swallowed: Rinse mouth. Do NOT induce vomiting.  
If on skin (or hair): Take off immediately all contaminated clothing. Wash contaminated clothing before reuse. Rinse skin with water.  
If inhaled: Remove person to fresh air and keep comfortable for breathing.  
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

**Storage:** Store locked up.  
Store in a well-ventilated place. Keep container tightly closed.

**Disposal:** Dispose of contents and container in accordance with local, regional, national, and international regulations.

**Hazards Not Otherwise Classified:** This product is harmful to aquatic life. Avoid release to the environment. This product will continuously release hazardous ammonia vapor. Ensure proper storage and handling (see Section 7) and personal protection measures (see Section 8).

**Toxicity Statement:** Not applicable.

### 3. COMPOSITION AND INFORMATION ON INGREDIENTS

Component	Common Name / Synonyms	CAS#	Chemical Formula	% by Weight
Water	Water	7732-18-5	H <sub>2</sub> O	70 – 72
Ammonia	Ammonium Hydroxide	1336-21-6	NH <sub>3</sub>	28 – 30

**Trade Secret Statement:** Not applicable.

### 4. FIRST AID MEASURES

#### First Aid Procedures:

**Inhalation:** Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. WARNING! It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled or ingested material is toxic, infectious, or corrosive. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician immediately.

**Ingestion:** Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, keep head low so that vomit does not enter lungs. Never give anything by mouth to an unconscious person. Rinse mouth with water. Call a physician or poison control center immediately.

**Skin Contact:** Remove contaminated clothing and shoes. Wash skin with plenty of water for at least 15 minutes. Wash clothing before reuse. Call a physician immediately.

**Eye Contact:** Check for and remove contact lenses, if present and easy to do. Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Call a physician immediately.

**General Advice:** Poison information centers in each state can provide additional assistance for scheduled poisons. Ensure that those providing first aid and medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**Symptoms and Effects:** Irritation, burning, coughing, sneezing, choking sensation, hoarseness, difficulty breathing, shock, headache, nausea, vomiting, diarrhea, collapse. May cause burns and mutagenic effects if swallowed, inhaled, or exposed to the skin or eyes.

**Immediate Medical Care/  
Special Treatment:** Immediate medical attention is required. Call a physician or poison control center immediately. Treat symptomatically.

## 5. FIREFIGHTING MEASURES

**Suitable Extinguishing Media:** Water spray, dry powder, alcohol resistant foam, carbon dioxide.

**Unsuitable Extinguishing Media:** Do not use a solid (straight) water stream, as it may scatter and spread fire.

**Hazardous Combustion  
Products:** Nitrogen oxides, ammonia.

**Specific Hazards:** Fire may produce irritating, corrosive, and/or toxic fumes.

**Special Protective Equipment/  
Precautions for Firefighters:** As in any fire, wear MSHA/NIOSH approved (or equivalent), self-contained, positive-pressure or pressure-demand breathing apparatus and full protective gear.

## 6. ACCIDENTAL RELEASE MEASURES

**Personal Precautions and  
Protective Equipment:** Ventilate area of leak or spill. Isolate hazard area and keep unnecessary and unprotected personnel away from the area of the leak or spill. Keep upwind. Wear appropriate personal protective equipment (see Section 8). Avoid contact with eyes, skin, and clothing.

**Emergency Procedures:** Evacuate immediate personnel as needed. In case of chemical emergency, or if unsure how to address an accidental release, consult a professional (see Section 1).

**Methods for Containment:** Stop the flow of material, if this is without risk. Prevent entry into waterways, sewer, basements, or confined areas. Dike the spilled material, where this is possible. Product should not be released to the environment. Contain and recover liquid when possible.

**Methods for Cleanup:** Absorb spill with an inert material (e.g. vermiculite, dry sand, earth, cloth, or fleece) and place in a non-combustible container for reclamation or disposal. Do not flush to sewer. Clean contaminated surface thoroughly. Residues from spills can be diluted with water and neutralized with a weakly acidic material. Never return spills in original containers for reuse. Clean up in accordance with all applicable regulations.

## 7. HANDLING AND STORAGE

**Handling:** Wear personal protective equipment (see Section 8). Use only in well-ventilated areas. Provide sufficient air exchange and/or exhaust in work rooms. Avoid contact with skin, eyes, and clothing. Do not breathe vapors or spray mist. Do not ingest. When using, do not eat, drink, or smoke. Keep away from incompatible materials (see Section 10). Handle in accordance with good industrial hygiene and safety practice. Wash thoroughly after handling. Use caution when opening product container, as pressure buildup may occur. Containers of this material may be hazardous when empty, as they retain product residues. Observe all warnings and precautions listed for this product. As with all bases, never add water directly to this product. Instead, add product to water to prevent violent eruption of the solution.

**Storage:** Store in a dry, ventilated area. Store at 15-25 °C and avoid direct sunlight. Store in a segregated and approved area away from heat and incompatible materials (see Section 10). Store in original container. Keep containers tightly closed and upright. Keep away from food, drink, and animal foodstuffs. Keep out of the reach of children. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal of this product.

## 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

**Exposure Limits:**

Water:	No information found.
Ammonia:	OSHA: PEL: 50 ppm 35 mg/m <sup>3</sup>
	ACGIH: TWA: 25 ppm STEL: 35 ppm

**Engineering Controls:** Ensure adequate ventilation. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

### Personal Protective Measures:

**Eye/Face Protection:** Wear safety glasses with side shields or safety goggles. Wear a face shield. Maintain approved eye wash station and accessible rinse facilities in work area.

**Skin Protection:** Wear appropriate chemical resistant clothing (with long sleeves) and appropriate chemical resistant gloves.

**Respiratory Protection:** An air-purifying, NIOSH-approved respirator with appropriate cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Use a full-face, positive-pressure, air-supplied respirator if there is any potential for an uncontrolled release, if exposure levels are unknown, or if any other circumstances exist where air-purifying respirators may not provide adequate protection.

**Specific Requirements for Personal Protective Equipment:** Ensure that glove material is compatible with this product. This information is available from glove manufacturers.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

*Unless otherwise indicated, all properties are given at 25 °C and standard pressure.*

**Appearance:** Colorless, transparent liquid.

**Odor:** Ammoniac, pungent.

**Odor Threshold:** 5-50 ppm as ammonia.

**Formula Weight:** 35.05 (as NH<sub>4</sub>OH)

**pH:** 13.8 at 25 °C

**Melting/Freezing Point:** -72 °C

**Boiling Point/Range:** 31 °C

**Decomposition Temperature:** No information found.

**Flash Point:** Not applicable.

<b>Auto-ignition Temperature:</b>	Not applicable.	
<b>Flammability:</b>	Not flammable.	
<b>Flammability/Explosive Limits:</b>	Lower Explosion Limit:	15% (as NH <sub>3</sub> )
	Upper Explosion Limit:	28% (as NH <sub>3</sub> )
<b>Solubility:</b>	Miscible with water.	
<b>Vapor Pressure:</b>	580 mmHg at 20 °C	
<b>Vapor Density (Relative):</b>	0.60 as ammonia (Air = 1)	
<b>Specific Gravity:</b>	0.9 (Water = 1)	
<b>Evaporation Rate:</b>	No information found.	
<b>Viscosity:</b>	No information found.	
<b>Partition Coefficient</b>	No information found.	

(n-octanol/water):

## 10. STABILITY AND REACTIVITY

<b>Reactivity Data:</b>	No information found.
<b>Chemical Stability:</b>	Product may release ammonia vapor over time or in elevated thermal conditions.
<b>Conditions to Avoid:</b>	Heat, direct sunlight, incompatible materials.
<b>Incompatible Materials:</b>	Strong acids, oxidizers, metals, halogens.
<b>Hazardous Decomposition Products:</b>	Ammonia, nitrogen oxides.
<b>Possibility of Hazardous Reactions:</b>	May react vigorously, violently, or explosively with the incompatible materials listed above. Excessive thermal conditions may yield pressurized ammonia vapor. Combustion of ammonia vapor will yield nitrogen oxides.
<b>Hazardous Polymerization:</b>	Will not occur.

## 11. TOXICOLOGICAL INFORMATION

<b>Routes of Exposure:</b>	Inhalation, ingestion, skin contact, eye contact.	
<b>Acute Effects:</b>	Harmful if swallowed, inhaled, or exposed to the skin or eyes. Causes burns to the eyes, skin, respiratory tract, and gastrointestinal tract. May enter lungs if swallowed or vomited. Liquid and vapors are corrosive. May cause tissue damage.	
<b>Chronic Effects:</b>	Prolonged or repeated exposure may cause tissue damage, inflammation, and mutagenic effects.	
<b>Toxicological Data:</b>	Water:	Not applicable.
	Ammonia:	LD <sub>50</sub> Oral, Rat: 350 mg/kg Corrosive to skin and eyes based on animal data. May be mutagenic based on animal data.
<b>Symptoms of Exposure:</b>	Irritation, burning, coughing, sneezing, choking sensation, hoarseness, difficulty breathing, shock, headache, nausea, vomiting, diarrhea, collapse.	

**Carcinogenic Effects:** This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

## 12. ECOLOGICAL INFORMATION

**Ecotoxicological Data:** Water: Not applicable.

Ammonia: LC<sub>50</sub>, Water Flea (*Daphnia magna*): 0.66 mg/L 48 h

**Persistence and Degradability:** Expected to be readily biodegradable.

**Environmental Effects:** Very toxic to aquatic life. May adversely affect pH of aquatic ecosystems. Avoid exposure to the environment.

## 13. DISPOSAL INFORMATION

**Disposal Instructions:** All wastes must be handled in accordance with local, state, and federal regulations. Minimize exposure to product waste (see Section 8). Do not dispose unused waste down drains or into sewers.

**Contaminated Packaging:** Because emptied containers retain product residue, follow label warnings even after container is emptied. Offer rinsed packaging material to local recycling facilities.

**Waste Codes:** D002: Waste Corrosive Material (pH ≤ 2 or pH ≥ 12.5 or corrosive to steel)

## 14. TRANSPORT INFORMATION

**DOT:**

**UN Number:** UN2672

**Proper Shipping Name:** Ammonia solutions

**Hazard Class:** 8

**Packing Group:** III

**ERG Number:** 154

**Environmental Hazard Regulations:** No information found.

**Other Transport Precautions:** No information found.

## 15. REGULATORY INFORMATION

**U.S. Federal Regulations:**

**OSHA:** This product is considered a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**TSCA Inventory:** All components of this product are on the U.S. TSCA Inventory.

**U.S. EPCRA (SARA Title III):**

**Section 302:** Ammonia

**Sections 311/312:**

Hazard Category	List (Yes/No)
Section 311 – Hazardous Chemical	Yes
Immediate Hazard	Yes
Delayed Hazard	No
Fire Hazard	No
Pressure Hazard	No
Reactivity Hazard	No

**Section 313:** Ammonium Hydroxide**CERCLA Reportable Quantities:** Ammonium Hydroxide: 1000 lb**International Inventories:**

Country or Region	Inventory Name	On Inventory (Yes/No)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes

\*A "Yes" indicates that the listed components of this product comply with the inventory requirements administered by the governing country or region.

**16. OTHER INFORMATION****Disclaimer:**

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**Issue Date:**

October 15, 2020

**Reason for Revision:**

Update of product codes in Section 1. Supersedes 12/17/2019 version.