



Product Information (203) 740-3471 / Emergency Assistance CHEMTREC 1-800-424-9300

# MATERIAL SAFETY DATA SHEETS

## SECTION I PRODUCT AND COMPANY IDENTIFICATION

**Product: Ammonium chloride**  
**This MSDS is valid for all grades and catalog #'s**

Synonyms: Ammonium Chloratum; Ammonium Chloridum;  
Ammonium Muriate; Sal Ammonia; Sal ammoniac; Salmiac  
Formula: NH<sub>4</sub>Cl

Manufacturer: PHARMCO-AAPER  
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Brookfield, Connecticut 06804, USA  
Phone (203) 740-3471  
Fax (203) 740-3481

1101 Isaac Shelby Drive  
Shelbyville, KY40065  
Phone (502) 633-0650  
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Emergency Contact:  
CHEMTREC 1-800-424-9300

## SECTION II COMPOSITION /INFORMATION ON INGREDIENTS

% by weight	Material	CAS #	TLV/PEL	LC50/LD 50
100	Ammonium Chloride	12125-02-9	TWA: 10 STEL: 20 (mg/m <sup>3</sup> ) from ACGIH (TLV) [United States] Inhalation TWA: 10 STEL: 20 (mg/m <sup>3</sup> ) [United Kingdom (UK)] Inhalation TWA: 10 STEL: 20 (mg/m <sup>3</sup> ) from NIOSH [United States] Inhalation TWA: 10 STEL: 20 (mg/m <sup>3</sup> ) from OSHA (PEL) [United States]	ORAL (LD50): Acute: 1650 mg/kg [Rat]. 1300 mg/kg [mouse].

## SECTION III HAZARDS IDENTIFICATION

**Potential Acute Health Effects:** Hazardous in case of eye contact (irritant). Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.

**Potential Chronic Health Effects:** Slightly hazardous in case of skin contact (sensitizer).

CARCINOGENIC EFFECTS: Not available.

MUTAGENIC EFFECTS: Not available.

TERATOGENIC EFFECTS: Not available.

DEVELOPMENTAL TOXICITY: Not available.

## SECTION IV FIRST AID

Obtain medical attention for all cases of over-exposure.

**Eye Contact:** Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.

**Skin Contact:** In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse.

Thoroughly clean shoes before reuse. Get medical attention.

**Hazardous Skin Contact:** Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

**Inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Hazardous Inhalation:** Not available.

**Ingestion:** Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

**Hazardous Ingestion:** Not available.

## SECTION V FIRE FIGHTING MEASURES

### Fire:

Flammability of the Product: Non-flammable

Auto-Ignition temperature: Not applicable

Flash point: Not applicable

Flammable limits: Not applicable

Products of Combustion: Not applicable

**Fire Hazards:** Not applicable

**Explosion Hazards:** Risks of explosion of the product in

presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

**Fire Extinguishing Media:** Not applicable.

**Special Information:** Reaction between Ammonium Chloride and Bromine pentafluoride at ambient or slightly elevated temperature is violent, and ignition often occurs. Explosive reaction between bromine trifluoride and ammonium halides.

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## SECTION VI

### SPILL/ACCIDENTAL RELEASE MEASURES

**Small Spill:** Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

**Large Spill:** Use a shovel to put the material into a convenient waste disposal container. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

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## SECTION VII

### HANDLING AND STORAGE

**Precautions:** Do not ingest. Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids, alkalis.

**Storage:** Keep container tightly closed. Keep container in a cool, well-ventilated area.

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## SECTION VIII

### EXPOSURE CONTROLS / PERSONAL PROTECTION

**Engineering Controls:** Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Personal Protection:** Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

**Personal Protection in Case of a Large Spill:** Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

**Exposure Limits:** TWA: 10 STEL: 20 (mg/m<sup>3</sup>) from ACGIH (TLV) [United States] Inhalation TWA: 10 STEL: 20 (mg/m<sup>3</sup>) [United Kingdom (UK)] Inhalation TWA: 10 STEL: 20 (mg/m<sup>3</sup>) from NIOSH [United States] TWA: 10 STEL: 20 (mg/m<sup>3</sup>) from OSHA (PEL) [United States] Consult local authorities for acceptable exposure limits.

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## SECTION IX

### PHYSICAL AND CHEMICAL PROPERTIES

**Physical State/Appearance:** Solid. (crystalline powder. Crystalline Block Granular solid.)

**Molecular Weight:** 53.49 g/mole

**Odor:** Odorless. (Slight.)

**Taste:** Cooling, Saline.

**Color:** White.

**pH (1% Solution in Water):** 5.5 [Acidic.]

**Boiling Point:** 520°C (968°F)

**Melting Point:** Decomposition temperature: 338°C (640.4°F)

**Critical Temperature:** Not available.

**Specific Gravity:** 1.53 (Water = 1)

**Vapor Pressure (mm Hg):** Not applicable.

**Vapor Density (Air=1):** Not available

**Volatility:** Not available

**Odor Threshold:** Not available

**Evaporation Rate:** Not available

**Viscosity:** Not available

**Water/Oil Dist. Coefficient:** Not available

**Ionicity (in water):** Not available

**Dispersion Properties:** See solubility in water, methanol.

**Solubility:**

Soluble in cold water, hot water, methanol.

Insoluble in diethyl ether, acetone.

Almost insoluble in ethyl acetate.

Very slightly soluble in Ethanol; Solubility in Ethanol:

0.6 g/100 ml water at 19 deg. C.

Solubility in Water:

29.7 g/100ml water at 0 deg. C

75.8 g/100 ml water at 100 deg. C

37.8 lbs./100 lbs. water at 70 deg. F

28.3% (w/w) in water at 25 deg. C

Soluble in liquid ammonia.

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## SECTION X

### STABILITY/REACTIVITY INFORMATION

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Incompatible materials, moisture.

**Incompatibilities:** Reactive with oxidizing agents, acids, alkalis.

**Corrosivity:** Extremely corrosive in presence of copper.

Corrosive in presence of steel, of stainless steel(304).

Slightly corrosive in presence of aluminum, of stainless steel(316).

**Special Information:** Incompatible with lead and silver salts. It can react violently with ammonium nitrate and potassium chlorate. Also incompatible with bromine trifluoride, ammonium halides, bromine pentafluoride, alkalis and their carbonates. At fire temperature, ammonium chloride may dissociate into ammonia and hydrogen chloride. Hygroscopic; keep container tightly closed.

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## SECTION XI

### TOXICOLOGICAL INFORMATION

**Routes of Entry:** Inhalation. Ingestion.

**Toxicity to Animals:** Acute oral toxicity (LD50): 1300 mg/kg [Mouse].

**Chronic Effects on Humans:** Not available.

**Other Toxic Effects on Humans:** Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.

**Special Information on Toxicity to Animals:** Lowest Published Lethal Dose: LDL [Human Infant] - Route: Oral; Dose: 2000 mg/kg

**Special Information on Chronic Effects/Toxicity on Humans:** May affect genetic material (mutagenic) Animal: passes through the placental barrier. Acute Potential Health Effects: Skin: It can cause skin irritation which is usually mild. Eyes: Causes moderate eye irritation. It may cause Salt Cataract, increased ocular pressure, and degeneration of the retina Inhalation: It can cause respiratory tract and mucous membrane irritation which is usually mild. Ingestion: May be harmful if swallowed. May cause digestive tract irritation with nausea and vomiting, and thirst. May affect behavior/central nervous system (headache, somnolence, confusion, drowsiness, tremor, convulsions, coma), eyes (Mydriasis), cardiovascular system (bradycardia), respiration (respiratory stimulation, apnea, hyperventilation, pulmonary edema). May cause serious metabolic acidosis with hypokalemia. Transient hyperglycemia and glycosuria may also occur. Chronic Potential Health Effects: Skin: Prolonged or repeated contact may cause dermatitis, an allergic reaction. Inhalation: Prolonged or repeated inhalation may affect the kidneys. Ingestion: Prolonged or repeated ingestion may affect metabolism (anorexia, metabolic acidosis) and urinary system (enlargement of kidneys). Inhalation: Prolonged or repeated inhalation may cause bronchospasm (asthma)

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## SECTION XII

### ECOLOGICAL INFORMATION

**Ecotoxicity:** Not available.

**BOD5 and COD:** Not available.

**Products of Biodegradation:** Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The products of degradation are less toxic than the product itself.

**Special Information on Products of Biodegradation:** Not available.

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## SECTION XIII

### DISPOSAL CONSIDERATIONS

**Waste Disposal:** Recycle to process, if possible. Consult your local or regional authorities.

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## SECTION XIV

### TRANSPORTATION INFORMATION

**DOT Classification:** DOT Not a DOT controlled material (United States).

**UN:** Not applicable.

**Special Provisions for Transport:** Not applicable.

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## SECTION XV

### REGULATORY INFORMATION

**Federal and State Regulations:** Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (RQs) in 40 CFR 355 (used for SARA 302, 304, 311 and 312). Components present in this product at a level which could require reporting under the statute are: **NONE**

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires submission of annual report release of toxic chemicals that appear in 40 CFR 372 (used for SARA 313). This information must be included in all MSDSs that are copied and distributed for this material. Components present in this product at a level which could require reporting under the statute are: **NONE**

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found.

California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.

**Other Classifications:**

WHMIS (Canada): Not controlled under WHMIS (Canada).

DSCL (EEC): R22- Harmful if swallowed. R36- Irritating to eyes.

**Protective Equipment:** Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Splash goggles.

**References:**

-Material safety data sheet emitted by: la Commission de la Santé et de la Sécurité du Travail du Québec.

-The Sigma-Aldrich Library of Chemical Safety Data, Edition II.

-Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987.

-Manufacturer's Material Safety Data Sheet.

Registry of Toxic Effects of Chemical Substances (RTECS)

Hazardous Substance Data Bank (HSDB)

**Other Special Considerations:** Uses: Flux coating sheet iron with zinc; tinning; dry and leclanche batteries; dyeing; printing; freezing mixtures; electroplating; to clean soldering irons; safety explosives; lustering cotton; tanning; washing powders; cement for iron pipes; snow treatment (slows melting on ski slopes); expectorant; acidifying diuretic; cotton desiccant; in salt substitutes for modify bitter aftertaste; manufacture of various ammonia compounds; pickling agent in zinc coating and tinning; resins and adhesive of urea-formaldehyde; in baking products; fertilizer.

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The information contained herein is based on data considered to be accurate based on the material as packaged. However, no warranty is expressed regarding the accuracy of these data or the results to be obtained from the use thereof. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It is the user's obligation to determine the conditions of safe use of the product. While this MSDS is based on technical data judged to be reliable, PHARMCO-AAPER assumes not responsibility for the completeness or accuracy of the information contained herein.