An ISO 9001:2000 Certified Company

THE POWER OF THREE[3]
PHARMCO-AAPER
AND COMMERCIAL ALCOHOLS

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

MATERIAL SAFETY DATA SHEETS

SECTION I
PRODUCT AND COMPANY IDENTIFICATION

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

Synonyms: Sulfluric Acid, Diammonium Salt
Formula: (NH4)2SO4
Manufacturer: PHARMCO-AAPER
58 Vale Road
Brookfield, Connecticut 06804, USA
Phone (203) 740-3471
Fax (203) 740-3481

1101 Isaac Shelby Drive
Shelbyville, KY 40065
Phone (502) 633-0650
Fax (502) 633-0685

Emergency Contact:
CHEMTREC 1-800-424-9300

SECTION II
COMPOSITION /INFORMATION ON INGREDIENTS

% by weight	Material	CAS #	TLV/PEL	LC50/LD50
100	Ammonium sulfate	7783-20-2	Not available.	ORAL (LD50): Acute: 2840 mg/kg [Rat]. 640 mg/kg [Mouse].

SECTION III
HAZARDS IDENTIFICATION

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

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Not available.
MUTAGENIC EFFECTS: Not available.
TERATOGENIC EFFECTS: Not available.
DEVELOPMENTAL TOXICITY: Not available.
Repeated or prolonged exposure is not known to aggravate medical condition.

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 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. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.
Hazardous Ingestion: Not available.

SECTION V
FIRE FIGHTING MEASURES

Fire:
Flammability of the Product: Non-flammable.
Auto-Ignition temperature: Not Available.
Flash point: Not applicable
Flammable limits: Not available
Products of Combustion: Not available
Fire Hazards: of oxidizing materials
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. Explosive in presence of oxidizing materials
Fire Extinguishing Media: SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.
Special Information: A mixture of ammonium sulfate and potassium chlorate decomposes with incandescence when heated. When a little ammonium sulfate is added to fused potassium nitrite, a vigorous reaction occurs attended by flame. Non combustible. This substance itself does not burn,

but may decompose upon heating to produce corrosive and/or toxic fumes. If accidently mixed with oxidizers like potassium chlorate, potassium nitrate or potassium nitrite, there is an explosion hazard during fire. A mixture of ammonium sulfate and ammonium nitrate can easily be exploded by potassium or sodium-potassium alloy.

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. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

SECTION VII
HANDLING AND STORAGE

Precautions: Keep away from heat. Keep away from sources of ignition. 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.
Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

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: Not available.

SECTION IX
PHYSICAL AND CHEMICAL PROPERTIES

Physical State/Appearance: Solid. (Crystals solid.)
Molecular Weight: 132.14 g/mole
Odor: Odorless.
Taste: Not available.
Color: brownish gray to white
pH (1% Solution in Water): Not available.
Boiling Point: Not available.
Melting Point: 280°C (536°F)
Critical Temperature: Not available.
Specific Gravity: 1.77 (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.
Solubility: Soluble in cold water. Insoluble in acetone.

SECTION X
STABILITY/REACTIVITY INFORMATION

Stability: The product is stable.
Instability Temperature: Not available.
Conditions of Instability: Excess heat, incompatible materials
Incompatibilities: Highly reactive with oxidizing agents. Reactive with metals, alkalis.
Corrosivity: Non-corrosive in presence of glass.
Special Information: Incompatible with the following: Potassium + ammonium nitrate, potassium chlorate, potassium nitrate, potassium nitrite, sodium hypochlorite, sodium/potassium alloy + ammonium nitrate. Substance should not contact either zinc or copper bearing materials. Reacts with alkali to release ammonia. Incompatible with lead and silver salts and alkalies and their carbonates reacts violently with Bromide pentafluoride, ammonium compounds, nitrates, and Iodine heptafluoride. Many metals such as iron and zinc, are attacked by Ammonium sulfate in the presence of moisture.

SECTION XI
TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation. Ingestion.
Toxicity to Animals: Acute oral toxicity (LD50): 640 mg/kg [Mouse].
Chronic Effects on Humans: Not available.
Other Toxic Effects on Humans: Hazardous in case of eye contact (irritation). Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.
Special Information on Toxicity to Animals: Lowest Published Lethal Dose/Conc: LDL [Domestic animal - Goat, Sheep) - Route: Oral; Dose: 3500 mg/kg
Special Information on Chronic Effects/Toxicity on Humans: It may be a possible mutagen. It has been tested for mutagenicity, but so far tests have been inconclusive test information has not been made available. Acute Potential Health Effects: Skin: Causes skin irritation. Eyes: Causes eye irritation. Inhalation: May cause respiratory tract irritation. Ingestion: When ingested, its osmolarity can draw water from the body into the bowel, acting as a laxative. However, if enough is absorbed systemically it may produce Ammonia poisoning. Symptoms may include gastrointestinal (digestive) tract irritation with nausea, vomiting, hyper motility, diarrhea. May also affect eyes (Mydriasis), behavior/central nervous system (somnolence,

tremor, convulsions, muscle contraction or spasticity), and respiratory system (respiratory stimulation, dyspnea). Also, with ingestion of large doses of Ammonium Sulfate arises the possibility of sufficient absorption to produce diuresis, an excessive discharge of urine, and kidney damage (renal tubulardisorder, abnormal renal function). Chronic Potential Health Effects: One Russian occupational standard study discussed chronic exposure effects which may include cardiac contraction, neurotoxicity, and hypertension. This has not been confirmed in other ammonium sulfate exposed workers.

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 product itself and its products of degradation are not toxic.
Special Information on Products of Biodegradation: Not available.

SECTION XIII
DISPOSAL CONSIDERATIONS

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

SECTION XIV
TRANSPORTATION INFORMATION

DOT Classification: DOT Not a DOT controlled material (United States).
UN: Not applicable.
Special Provisions for Transport: Not applicable.

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**
Pennsylvania Right-To-Know, Hazardous substance List, Hazardous Substances and Special hazardous Substances on the list must be identified when present in products. Components present in this product at a level which could require reporting under the statute are: **NONE**
Massachusetts Right-To-Know, Substance List (MSL) Hazardous Substances and Extraordinarily Hazardous Substances on the MSL must be identified when present in products. Components present in this product at a level which could require reporting under the statute are: **NONE**
Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of Hazardous Substances equal or greater than the reportable quantities (RQs) in 40 CFR 302.4. 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): R36/37/38- Irritating to eyes, respiratory system and skin.
Protective Equipment: Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator of equivalent. Splash goggles
References: Not available.
Other Special Considerations: Not available.