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: Adipic acid
This MSDS is valid for all grades and catalog #'s

Synonyms: Hexanedioic acid; 1,4-Butane Dicarboxylic Acid.
Formula: HOOC(CH2)4COOH
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	Adipic Acid	124-04-9	TWA: 5 (mg/m3) from ACGIH (TLV) [United States] Inhalation	ORAL (LD50): Acute: >11000 mg/kg [Rat]. 1900 mg/kg [Mouse]. .11000 mg/kg [Rabbit]

SECTION III
HAZARDS IDENTIFICATION

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

Potential Chronic Health Effects: Slightly hazardous in case of inhalation (lung sensitizer).

CARCINOGENIC EFFECTS: Not Available
MUTAGENIC EFFECTS: Not available.
TERATOGENIC EFFECTS: Not available.
DEVELOPMENTAL TOXICITY: Not available.

The substance may be toxic to the nervous system, gastrointestinal tract. Repeated or prolonged exposure to the substance can produce target organs damage.

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: May be combustible at high temperature

Auto-Ignition temperature: 420°C (788°F)

Flash point: CLOSED CUP: 196°C (384.8°F).

Flammable limits: Not Available.

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards: Slightly flammable to flammable in presence of heat. Non-flammable in presence of shocks.

Explosion Hazards: Risks of explosion of the product in presence of mechanical impact: Not Available. Slightly explosive in presence of open flames and sparks, of heat.

Fire Extinguishing Media: Small Fire: use DRY chemical powder. Large fire: use water spray, fog or foam. Do not use water jet.

Special Information: As with most organic solids, fire is possible at elevated temperatures. Material in powder form, capable of creating a dust explosion. Dust generation can form an explosive mixture if dispersed in a sufficient quantity of air.

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.

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: TWA: 5 (mg/m3) from ACGIH (TLV) [United States] Inhalation.

SECTION IX
PHYSICAL AND CHEMICAL PROPERTIES

Physical State/Appearance: Solid. (crystalline powder)
Molecular Weight: 146.14 g/mole
Odor: Odorless.
Taste: Tart
Color: White.
pH (1% Solution in Water): Not Available.
Boiling Point: 337.5°C (639.5°F)
Melting Point: 152°C (305.6°F)
Critical Temperature: Not available.
Specific Gravity: 1.36 (Water = 1)
Vapor Pressure (mm Hg): Not applicable.
Vapor Density (Air=1): 5.04 (Air = 1)
Volatility: Not available.
Odor Threshold: Not available.
Evaporation Rate: Not available.
Viscosity: Not available.
Water/Oil Dist. Coefficient: The product is equally soluble in oil and water; log(oil/water) = 0.1
Ionicity (in water): Not available.
Dispersion Properties: See solubility in water, methanol, acetone.
Solubility: Easily soluble in methanol. Soluble in hot water, acetone. Partially soluble in cold water. Insoluble in Acetic acid, Petroleum Benzin, Benzene, Petroleum Ether. Slightly soluble in Cyclohexane. Freely soluble in Ethanol.

SECTION X
STABILITY/REACTIVITY INFORMATION

Stability: The product is stable.
Instability Temperature: Not available.
Conditions of Instability: Excess heat, excess dust generation, ignition sources, incompatible materials.
Incompatibilities: Reactive with oxidizing agents
Corrosivity: Not available
Special Information: Aqueous solutions of Adipic acid are corrosive

SECTION XI
TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation. Ingestion.
Toxicity to Animals: Acute oral toxicity (LD50): 1900 mg/kg [Mouse]
Chronic Effects on Humans: May cause damage to the following organs: the nervous system, gastrointestinal tract.
Other Toxic Effects on Humans: Hazardous in case of skin contact (irritant), of ingestion, of inhalation.
Special Information on Toxicity to Animals: Not Available
Special Information on Chronic Effects/Toxicity on Humans: Acute Potential Health Effects: May cause skin irritation. Eyes: May cause eye irritation. Inhalation: Expected to be a low hazard for usual industrial handling. May cause respiratory tract. Symptoms may include coughing, sneezing, and blood-tinged mucous. Ingestion: Expected to be a low ingestion hazard if small amounts (less than a mouthful) are ingested. Ingestion of large amounts may cause gastrointestinal tract irritation with hypermotility, and diarrhea. May also affect behavior (somnolence, convulsions), and metabolism, and may cause hemorrhaging. Chronic Potential Health Effects: Inhalation: Repeated or prolonged contact by inhalation may cause asthma.

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 State (SARA) Title III requires emergency planning based on Regulations 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: **Adipic acid**

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: **Adipic acid**

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: **Adipic acid**

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): 7The classification of this product has not been validated yet by the Service du repertoire toxicologique. However, it might be classified as: CLASS D-2B: Material causing other toxic effects (TOXIC).

DSCL (EEC): R36/38- Irritating to eyes and skin

Protective Equipment: Gloves. Lab Coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Splash Goggles.

References: Not Available

Other Special Considerations: Not Available