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THE POWER OF THREE<sup>3</sup>

**PHARMCO-AAPER**

AND COMMERCIAL ALCOHOLS

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

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**MATERIAL SAFETY DATA SHEETS**

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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

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**Methyl Isoamyl Ketone**

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**1. CHEMICAL PRODUCT IDENTIFICATION**

Product Name: Methyl Isoamyl Ketone  
Synonym(s): MIAK; 5-Methyl -2-hexanone; Isoamylmethyl Ketone ; isopentyl methyl ketone; 2-methyl-5-hexanone;  
Molecular Formula:  $(\text{CH}_3)_2\text{CHCH}_2\text{CH}_2\text{COCH}_3$   
Molecular Weight: 114.19

**2. COMPOSITION/INFORMATION ON INGREDIENTS**

Weight % - Component - (CAS Registry Number)  
100 Methyl Isoamyl Ketone (110-12-3)

**3. HAZARDS IDENTIFICATION**

WARNING! FLAMMABLE LIQUID.MAY CAUSE EYE AND SKIN IRRITATION. MAY CAUSE  
RESPIRATORY ANDDIGESTIVE TRACT IRRITATION.

NFPA Hazard Ratings: Health - 1, Flammability - 2, Reactivity - 0

NOTE: NFPA ratings involve data and interpretations that may vary from company to company. They are intended only for rapid, general identification of the magnitude of the specific hazard. To deal adequately with the safe handling of this material, all the information contained in this MSDS must be considered.

Potential Health Effects

Eye: May cause eye irritation.

Skin: May cause skin irritation.

Ingestion: May cause irritation of the digestive tract. May cause liver damage.

Inhalation: May cause respiratory tract irritation. Vapors may cause dizziness or suffocation.

Chronic: Prolonged or repeated skin contact may cause dermatitis. Repeated exposure may cause sensitization dermatitis.

Target Organs: Liver.

#### **4. FIRST-AID MEASURES**

Inhalation: Move to fresh air. Treat symptomatically. Get medical attention if symptoms persist.

Eyes: In case of irritation from airborne exposure, move to fresh air. If easy to do, remove contact lenses. Get medical attention if symptoms persist.

Skin: Wash with soap and water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Ingestion: Seek medical advice.

#### **5. FIRE FIGHTING MEASURES**

Fire:

Flash Point (Tag closed cup): 36°C (96°F)

Lower Flammable Limit at 93°C (200°F): 1.05 volume %

Upper Flammable Limit at 93°C (200°F): 8.2 volume %

Autoignition Temperature (ASTM D 2155): 425°C (725°F)

Extinguishing Media: water spray, dry chemical, carbon dioxide (CO<sub>2</sub>), foam

Special Fire-Fighting Procedures: Wear self-contained breathing apparatus and protective clothing. Use water spray to keep fire-exposed containers cool. Water may be ineffective in fighting the fire.

Hazardous Combustion Products: carbon dioxide, carbon monoxide

Unusual Fire and Explosion Hazards: Vapors may cause a flash fire or ignite explosively. Vapors may travel considerable distance to a source of ignition and flash back. Prevent buildup of vapors or gases to explosive concentrations. Forms peroxides of unknown stability.

#### **6. ACCIDENTAL RELEASE MEASURES**

Eliminate all ignition sources. Absorb spill with vermiculite or other inert material, then place in a container for chemical waste.

For Large Spills: Use water spray to disperse vapors and flush spill area. Prevent runoff from entering drains, sewers, or streams.

#### **7. HANDLING AND STORAGE**

Personal Precautionary Measures: Avoid breathing high vapor concentrations. Avoid prolonged or repeated contact with skin. Use only with adequate ventilation. Wash thoroughly after handling.

Prevention of Fire and Explosion: Keep away from heat, sparks, and flame. Keep from contact with oxidizing materials. Use only with adequate ventilation. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal of flammable liquids. Minimize exposure to air. After opening, purge container with nitrogen before reclosing. If peroxide formation is suspected, do not open or move container. Do not allow to evaporate to near dryness. Distill with caution. Addition of water or appropriate reducing materials will lessen peroxide formation.

Storage: Store away from heat and light. Keep container closed.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits:

ACGIH Threshold Limit Value (TLV): Methyl Isoamyl Ketone: 50 ppm TWA

OSHA (USA) Permissible Exposure Limit (PEL, 1989 Table Z-1-A values or section-specific standards): Methyl Isoamyl Ketone: 50 ppm TWA

Ventilation: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. Use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits.

Respiratory Protection: If engineering controls do not maintain airborne concentrations below recommended exposure limits, an approved respirator must be worn.

Respirator type: organic vapor. If respirators are used, a program should be instituted to assure compliance with OSHA Standard 63 FR 1152, January 8, 1998.

Eye Protection: It is a good industrial hygiene practice to minimize eye contact.

Skin Protection: For operations where prolonged or repeated skin contact may occur, chemical-resistant gloves should be worn. Contact glove manufacturer for specific information.

Recommended Decontamination Facilities: eye bath, washing facilities

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical Form: liquid

Color: colorless

Odor: ketone

Odor Threshold: 0.012 ppm

Specific Gravity at 20°C (68°F) (water = 1): 0.814

Vapor Pressure at 20°C (68°F): 6.0 mbar (4.5 mm Hg)

Vapor Density (Air = 1): 3.9

Evaporation Rate (n-butyl acetate = 1): 0.46

Boiling Point: 144°C (291°F)

Melting Point: -74°C (-101°F)

Viscosity at 25°C (77°F): 0.73 mPa.s or cP

Solubility in Water at 20°C (68°F): slight

pH: not available

Octanol/Water Partition Coefficient:  $\log P = 1.79$ ,  $P = 62$

## 10. STABILITY AND REACTIVITY

Stability: Stable; however, forms peroxides of unknown stability.

Incompatibility: Material can react violently with strong oxidizing agents.

Hazardous Polymerization: will not occur

## 11. TOXICOLOGICAL INFORMATION

Effects of Exposure:

General: Based on animal data and structure-activity relationships, this product is NOT expected to cause nervous system damage.

Inhalation: High vapor concentrations may cause drowsiness and irritation.

Eyes: High vapor concentrations may cause irritation.

Skin: Prolonged or repeated contact may cause drying, cracking, or irritation.

Ingestion: Expected to be a low ingestion hazard.

Acute Toxicity Data:

Oral LD-50 (rat): 5700 mg/kg

Inhalation LC-50 (rat): 3813 ppm/6 hour(s)

Dermal LD-50 (guinea pig): >20 ml/kg

Dermal LD-50 (rabbit): 10 ml/kg

Skin irritation (rabbit): slight

Repeated skin application (guinea pig): slight to moderate irritation

Skin sensitization (guinea pig): very slight

Eye irritation (rabbit): slight

Definitions for the following section(s): LOEL = lowest-observed-effect level, NOAEL = no observed-adverse-effect level, NOEL = no-observed-effect level.

Subchronic Toxicity Data:

Inhalation study (96 days, rat): LOEL = 1000 ppm (minor target organ effects: liver), (minor target organ effects: kidney); NOEL = 200 ppm

Oral study (13 weeks, rat): LOEL = 2000 mg/kg/day (target organ effects: liver), (target organ effects: kidney); NOEL = not established

Dermal absorption rate (dog, in vivo): 2.5 mg/cm<sup>2</sup>/hour

## 12. ECOLOGICAL INFORMATION

MSDS 824, Rev. 1.1, 07/08, MSZ

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Introduction: This environmental effects summary is written to assist in addressing emergencies created by an accidental spill which might occur during the shipment of this material, and, in general, it is not meant to address discharges to sanitary sewers or publicly owned treatment works.

Data for this material have been used to estimate its environmental impact. It has the following properties: a high biochemical oxygen demand and a potential to cause oxygen depletion in aqueous systems, a low potential to affect aquatic organisms, a moderate potential to affect secondary waste treatment microbial metabolism, a low potential to affect the germination and/or early growth of some plants, a low potential to bioconcentrate. When diluted with a large amount of water, this material released directly or indirectly into the environment is not expected to have a significant impact.

Oxygen Demand Data:

COD: 2.10 g oxygen/g

Acute Aquatic Effects Data:

24-h EC-50 (daphnid): 560 mg/L  
96-h LC-50 (daphnid): >100 microliter(s)/l  
96-h LC-50 (fathead minnow): 100 microliter(s)/l  
48-h LC-50 (golden orfe): 164-193 mg/L

Secondary Waste Water Treatment Effects: 5-hour IC-50: 500-5000 mg/L

7-Day Plant Germination Effects - No-adverse-effect concentration:

Ryegrass: >100 microliter(s)/l  
Radish: >100 microliter(s)/l  
Lettuce: >100 microliter(s)/l

### 13. DISPOSAL CONSIDERATIONS

Discharge, treatment, or disposal may be subject to national, state, or local laws. Mix with compatible chemical which is less flammable and incinerate.

Since emptied containers retain product residue, follow label warnings even after container is emptied. Residual vapors may explode on ignition; do not cut, drill, grind, or weld on or near this container.

### 14. TRANSPORT INFORMATION

Domestic (Land, D.O.T.)  
Proper Shipping Name: 2-Methylhexan-2-one  
Hazard Class: 3  
UN/NA: UN2302  
Packing Group: III

International (Water, I.M.O.)  
Proper Shipping Name: 2-Methylhexan-2-one  
Hazard Class: 3.3

UN/NA: UN2302  
Packing Group: III

International (Air, I.C.A.O.)  
Proper Shipping Name: 2-Methylhexan-2-one  
Hazard Class: 3  
UN/NA: UN2302  
Packing Group: III

## 15. REGULATORY INFORMATION

- This document has been prepared in accordance with the MSDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.
- OSHA hazardous chemical(s): methyl isoamyl ketone
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA):** No chemicals on this material with known CAS numbers are subject to the reporting requirements of CERCLA.
- Massachusetts Substance List: methyl isoamyl ketone
- New Jersey Workplace Hazardous Substance List: methyl isoamyl ketone
- Pennsylvania Hazardous Substance List: methyl isoamyl ketone
- This document has been prepared in accordance with the MSDS requirements of the WHMIS Controlled Products Regulation.
- WHMIS (Canada) Ingredient Disclosure List: methyl isoamyl ketone
- WHMIS (Canada) Status: controlled
- WHMIS (Canada) controlled material(s): methyl isoamyl ketone
- WHMIS (Canada) Hazard Classification: B/2
- Carcinogenicity Classification (components present at 0.1% or more):
- International Agency for Research on Cancer (IARC): not listed
- American Conference of Governmental Industrial Hygienists (ACGIH): not listed
- National Toxicology Program (NTP): not listed
- Occupational Safety and Health Administration (OSHA): not listed
- Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372: none
- SARA (U.S.A.) Sections 311 and 312 hazard classification(s): fire hazard, immediate (acute) health hazard
- US Toxic Substances Control Act (TSCA): This product is listed on the TSCA inventory. Any impurities present in this product are exempt from listing.
- Canadian Environmental Protection Act (CEPA) and Domestic Substances List (DSL): This product is listed on the DSL or otherwise complies with CEPA new substance notification requirements.
- European Inventory of Existing Commercial Chemical Substances (EINECS): This product is listed on EINECS. EINECS Number: 2037378
- Australian Inventory of Chemical Substances (AICS) and National Industrial Chemicals Notification and Assessment Scheme (NICNAS): This product is listed on AICS or otherwise complies with NICNAS.
- Japanese Handbook of Existing and New Chemical Substances: This product is listed in the Handbook or has been approved in Japan by new substance notification. MITI Number: 2-542

## 16. OTHER INFORMATION

The information contained herein is based on current knowledge and experience; no responsibility is accepted that the information is sufficient or correct in all cases. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers and the protection of the environment.