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THE POWER OF THREE³

PHARMCO-AAPER

AND COMMERCIAL ALCOHOLS

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

MATERIAL SAFETY DATA SHEETS

Manufacturer: PHARMCO-AAPER
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Methyl Formate

1. CHEMICAL PRODUCT IDENTIFICATION

Product Name: Methyl Formate
Synonym(s): formic acid methyl ester; methyl methanoate; MEFO
Molecular Formula: HCO_2CH_3
Molecular Weight: 60.05

2. COMPOSITION/INFORMATION ON INGREDIENTS

Weight % - Component - (CAS Registry Number)
97% Methyl Formate (107-31-3)

3. HAZARDS IDENTIFICATION

WARNING! EXTREMELY FLAMMABLE. CAUSES RESPIRATORY TRACT IRRITATION. MAY CAUSE SKIN IRRITATION. CAUSES EYE IRRITATION. MAY CAUSE DIGESTIVE TRACT IRRITATION. MAY CAUSE CENTRAL NERVOUS SYSTEM DEPRESSION.

NFPA Hazard Ratings: Health - 2, Flammability - 4, 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: Causes eye irritation.

Skin: May cause skin irritation.

Ingestion: May cause irritation of the digestive tract.

Inhalation: Inhalation of high concentrations may cause central nervous system effects characterized by headache, dizziness, unconsciousness and coma. Inhalation of high concentrations may cause narcotic effects. Inhalation may cause respiratory tract irritation, oppression in the chest, dyspnea, central nervous system depression, and temporary visual disturbances.

Chronic: No information found.

4. FIRST-AID MEASURES

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Get medical aid immediately.

Skin: Get medical aid. Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes.

Ingestion: If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Inhalation: Get medical aid immediately. Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Notes to Physician: Treat symptomatically.

5. FIRE FIGHTING MEASURES

Flash Point: -19 deg C (32.00 deg F)

Explosion Limits, Lower: 4.50 vol % Upper: 23.00 vol %

Autoignition Temperature: 449 deg C (840.20 deg F)

General Information: Containers can build up pressure if exposed to heat and/or fire. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. Extremely flammable liquid. Water may be ineffective. Material is lighter than water and a fire may be spread by the use of water. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. Containers may explode when heated.

Extinguishing Media: For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. Use water spray to cool fire-exposed containers. For large fires, use water spray, fog or alcohol-resistant foam. Do NOT use straight streams of water. Cool containers with flooding quantities of water until well after fire is out.

6. ACCIDENTAL RELEASE MEASURES

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Absorb spill with inert material, (e.g., dry sand or earth), then place into a chemical waste container. Remove all sources of ignition. A vapor suppressing foam may be used to reduce vapors. Water spray may reduce vapor but may not prevent ignition in closed spaces.

7. HANDLING AND STORAGE

Handling: Wash thoroughly after handling. Use with adequate ventilation. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Avoid contact with heat, sparks and flame. Avoid ingestion and inhalation. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

Storage: Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits:

ACGIH: 100 ppm ; 246 mg/m³; 150ppm STEL; 368 mg/m³ STEL

NIOSH: 100 ppm TWA; 250 mg/m³ TWA 4500 ppm IDLH

OSHA - Final PELs: 100 ppm TWA; 250 mg/m³ TWA

OSHA Vacated PELs: 100 ppm TWA; 250 mg/m³ TWA

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid

Appearance: clear, colorless

Odor: pleasant odor

pH: Not available.

Vapor Pressure: 640 mbar @ 20 C

Vapor Density: 2.1

Evaporation Rate:

Viscosity: Not available.

MSDS 823, Rev. 1.1, 07/08, MSZ

Methyl Formate/ Page 3 of 3

Boiling Point: 32 deg C
Freezing/Melting Point:-100.000.00 deg C
Decomposition Temperature:Not available.
Solubility: Soluble.
Specific Gravity/Density:.9740g/cm3

10. STABILITY AND REACTIVITY

Chemical Stability: Stable under normal temperatures and pressures.

Conditions to Avoid: Incompatible materials, ignition sources, strong oxidants.

Incompatibilities with Other Materials: Oxidizing materials, methanol and sodium methoxide, can react with water to form methanol and formic acid.

Hazardous Decomposition Products: Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.

Hazardous Polymerization: Has not been reported.

11. TOXICOLOGICAL INFORMATION

RTECS#: CAS# 107-31-3: LQ8925000

LD50/LC50: CAS# 107-31-3: Oral, rabbit: LD50 = 1622 mg/kg;

Carcinogenicity: CAS# 107-31-3: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

12. ECOLOGICAL INFORMATION

Ecotoxicity: Not available.

13. DISPOSAL CONSIDERATIONS

Dispose of in a manner consistent with federal, state, and local regulations.

RCRA D-Series Maximum Concentration of Contaminants: None listed.

RCRA D-Series Chronic Toxicity Reference Levels: None listed.

RCRA F-Series: None listed.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

14. TRANSPORT INFORMATION

Domestic (Land, D.O.T.)

Proper Shipping Name: Methyl Formate

Hazard Class: 3

UN/NA: UN1243

Packing Group: I

International (Water, I.M.O.)
Proper Shipping Name: Methyl Formate
Hazard Class: 3.1
UN/NA: UN1243
Packing Group: I

15. REGULATORY INFORMATION

US FEDERAL

TSCA: CAS# 107-31-3 is listed on the TSCA inventory.
Health & Safety Reporting List: None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules: None of the chemicals in this product are under a Chemical Test Rule.
Section 12b: None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule: None of the chemicals in this material have a SNUR under TSCA.

SARA

Section 302 (RQ): None of the chemicals in this material have an RQ.
Section 302 (TPQ): None of the chemicals in this product have a TPQ.
SARA Codes: CAS # 107-31-3: acute, flammable.
Section 313: No chemicals are reportable under Section 313.

Clean Air Act: This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depleters. This material does not contain any Class 2 Ozone depleters.

Clean Water Act: None of the chemicals in this product are listed as Hazardous Substances under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA: None of the chemicals in this product are considered highly hazardous by OSHA.

STATE: CAS# 107-31-3 can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations: European Labeling in Accordance with EC Directives

Hazard Symbols: F+

Risk Phrases: R 12 Extremely flammable.

Safety Phrases: S 16 Keep away from sources of ignition - No smoking. S 33 Take precautionary measures against static discharges. S 9 Keep container in a well-ventilated place.

WGK (Water Danger/Protection): CAS# 107-31-3: 1

Canada: CAS# 107-31-3 is listed on Canada's DSL/NDSL List.

This product does not have a WHMIS classification.

CAS# 107-31-3 is not listed on Canada's Ingredient Disclosure List.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA): No chemicals in this material with known CAS numbers are subject to the reporting requirements of CERCLA.

Exposure Limits

CAS# 107-31-3: OEL-AUSTRALIA: TWA 100 ppm (250 mg/m³); STEL 150 ppm (375 mg/m³) OEL-AUSTRIA: TWA 100 ppm (250 mg/m³) OEL-BELGIUM: TWA 100 ppm (246 mg/m³); STEL 150 ppm (369 mg/m³) OEL-

DENMARK: TWA 100 ppm (250 mg/m³) OEL-FINLAND: TWA 100 ppm (250 mg/m³); STEL 150 ppm (375 mg/m³) OEL-FRANCE: TWA 100 ppm (250 mg/m³) OEL-GERMANY: TWA 100 ppm (250 mg/m³) OEL-THE NETHERLANDS: TWA 100 ppm (250 mg/m³); STEL 200 ppm OEL-THE PHILIPPINES: TWA 100 ppm (250 mg/m³) OEL-SWITZERLAND: TWA 100 ppm (250 mg/m³); STEL 200 ppm (500 mg/m³) OEL-TURKEY: TWA 100 ppm (250 mg/m³) OEL-UNITED KINGDOM: TWA 100 ppm (250 mg/m³); STEL 150 ppm OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

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.