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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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Ethyl Acetoacetate

1. CHEMICAL PRODUCT IDENTIFICATION

Product Name: Ethyl Acetoacetate
Synonym(s): Acetoacetic Ester; 3-Oxobutanoic Acid Ethyl Ester; diacetic ether; Butanoic acid; Ethyl ester;
Molecular Formula: $\text{CH}_3\text{COCH}_2\text{CO}_2\text{C}_2\text{H}_5$
Molecular Weight: 130.14

2. COMPOSITION/INFORMATION ON INGREDIENTS

Weight % - Component - (CAS Registry Number)
100 Ethyl Acetoacetate (141-97-9)

3. HAZARDS IDENTIFICATION

WARNING! FLAMMABLE LIQUID. CAUSES RESPIRATORY TRACT IRRITATION. CAUSES SKIN IRRITATION. CAUSES EYE IRRITATION. CAUSES DIGESTIVE TRACT IRRITATION.

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

Skin: Causes moderate skin irritation.

Ingestion: Causes gastrointestinal irritation with nausea, vomiting and diarrhea.

Inhalation: Causes respiratory tract irritation.

Chronic: No information found.

4. FIRST-AID MEASURES

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

Skin: Immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists.

Ingestion: Do NOT induce vomiting. 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.

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

Notes to Physician: Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

Flash Point (Setaflash closed cup): 68°C (157°F)

Lower Flammable Limit at 93°C (199°F): 1.4 volume %

Upper Flammable Limit at 176°C (349°F): 9.5 volume %

Autoignition Temperature: not available

Extinguishing Media: water spray, dry chemical, carbon dioxide (CO₂), alcohol foam

Special Fire-Fighting Procedures: Wear self-contained breathing apparatus and protective clothing. Use water spray to keep fire-exposed containers cool.

Hazardous Combustion Products: carbon dioxide, carbon monoxide

Unusual Fire and Explosion Hazards: Classified as combustible.

6. ACCIDENTAL RELEASE MEASURES

Use personal protective equipment. (See EXPOSURE CONTROLS/PERSONAL PROTECTION.) Absorb spill with vermiculite or other inert material, then place in a container for chemical waste.

For Large Spills: Eliminate all ignition sources. Flush spill area with water spray. Prevent runoff from entering drains, sewers, or streams.

7. HANDLING AND STORAGE

Handling: Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with skin and eyes. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. 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 and flame. Keep away from sources of ignition. Store in a cool, dry, well-ventilated area away from incompatible substances.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits:

ACGIH Threshold Limit Value (TLV): not established

OSHA (USA) Permissible Exposure Limit (PEL, 1989 Table Z-1-A values or section-specific standards): not established

Ventilation: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. Supplementary local exhaust ventilation, closed systems, or respiratory protection may be needed in special circumstances such as poorly ventilated spaces, evaporation from large surfaces, spraying, heating, etc.

Respiratory Protection: If engineering controls do not maintain airborne concentrations to an acceptable level, 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: Wear safety glasses with side shields (or goggles).

Skin Protection: It is a good industrial hygiene practice to minimize skin contact.

Recommended Decontamination Facilities: eye bath, washing facilities, safety shower

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical Form: liquid

Color: colorless

Odor: ester

Odor Threshold: not available

Specific Gravity at 20°C (68°F) (water = 1): 1.03

Vapor Pressure at 14°C (57°F): 1.3 mbar (1.0 mm Hg)

Vapor Density (Air = 1): 4.5

Evaporation Rate (n-butyl acetate = 1): 0.1

Boiling Point: 170°C (338°F)
Melting Point: -45°C (-49°F)
Viscosity at Ambient Temperature: not available
Solubility in Water at Ambient Temperature: appreciable
pH: not available

10. STABILITY AND REACTIVITY

Stability: stable

Incompatibility: Material can react with strong oxidizing agents.

Hazardous Polymerization: will not occur

11. TOXICOLOGICAL INFORMATION

Effects of Exposure:

Inhalation: Low hazard for usual industrial handling or commercial handling by trained personnel.

Eyes: Causes irritation. However, immediate flushing of the eyes with water will minimize any irritative effect.

Skin: Low hazard for usual industrial handling or commercial handling by trained personnel.

Ingestion: Expected to be a low ingestion hazard.

Acute Toxicity Data:

Oral LD-50 (rat): >6400 mg/kg
Oral LD-50 (mouse): 3200-6400 mg/kg
Inhalation LC-50 (rat): >1129 ppm /6 hour(s)
Dermal LD-50 (guinea pig): >20 mL/kg
Skin irritation (guinea pig): slight
Repeated skin application (guinea pig): slight irritation
Skin sensitization (guinea pig): none
Eye irritation (rabbit, unwashed eyes): moderate
Eye irritation (rabbit, washed eyes): 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:

Oral study (16 days, rat): NOEL = 1000 mg/kg/day (highest dose tested)

Oral study (28 days, rat): NOEL = 1000 mg/kg/day (highest dose tested)

12. ECOLOGICAL INFORMATION

Introduction: This environmental effects summary is written to assist in addressing emergencies created by 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 moderate biochemical oxygen demand and may cause oxygen depletion in aqueous systems, a low potential to affect aquatic organisms, a low 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: 1.71 g oxygen/g
BOD-5: 0.60 g oxygen/g

Acute Aquatic Effects Data:

96-h LC-50 (fathead minnow): >100 mg/L
48-h LC-50 (golden orfe): 275-515 mg/L
96-h LC-50 (daphnid): >100 mg/L
24-h LC-50 (daphnid): 790 mg/L
24-h EC-50 (daphnid): 800 mg/L

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

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

Ryegrass: 100 mg/L
Radish: 100 mg/L
Lettuce: 100 mg/L

13. DISPOSAL CONSIDERATIONS

Discharge, treatment, or disposal may be subject to national, state, or local laws. Incinerate.

Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. TRANSPORT INFORMATION

Not regulated.

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 Classification: hazardous
- This document has been prepared in accordance with the MSDS requirements of the WHMIS Controlled Products Regulation.
- WHMIS (Canada) Status: controlled
- WHMIS (Canada) Hazard Classification: B/3, D/2/B
- 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. Any impurities present in this product are exempt from listing.

- European Inventory of Existing Commercial Chemical Substances (EINECS): This product is listed on EINECS. EINECS Number: 2055161

- 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.

- Korean Toxic Substances Control Act: This product is listed on the Korean inventory or otherwise complies with the Korean Toxic Substances Control Act.

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**

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.