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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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Methylcyclohexane

1. CHEMICAL PRODUCT IDENTIFICATION

Product Name: Methylcyclohexane
Synonym(s): Cyclohexane, methyl; Cyclohexylmethane; Hexahydrotoluene; Heptanaphthene
Molecular Formula: C₆H₁₁CH₃
Molecular Weight: 98.19

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient(s)	CAS Number	% (by weight)
Methylcyclohexane	108-87-2	90 - 100%

3. HAZARDS IDENTIFICATION

DANGER! FLAMMABLE LIQUID AND VAPOR. HARMFUL OR FATAL IF SWALLOWED.
HARMFUL IF INHALED. CAUSES IRRITATION TO SKIN, EYES, DIGESTIVE TRACT AND
RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM. IRRITATION.MAY
CAUSE LIVER AND KIDNEY DAMAGE. MAY CAUSE DERMATITIS.

NFPA Hazard Ratings: Health - 1, Flammability - 3, 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.

Effects of Exposure:

Eyes: Causes irritation, redness, and pain.

Skin: Causes skin irritation. Symptoms include redness, itching, and pain. Prolonged and/or repeated contact may cause defatting of the skin and dermatitis. Skin contact may cause thickening of the skin and ulceration.

Inhalation: Inhalation of vapors irritates the mucous membranes and upper respiratory tract. May cause lightheadedness, dizziness, drowsiness and nausea. High vapor concentrations may cause unconsciousness and death.

Ingestion: May cause central nervous system depression, kidney damage, and liver damage. May cause gastrointestinal irritation with nausea, vomiting and diarrhea. Aspiration into lungs can produce severe lung damage and is a medical emergency.

Chronic Exposure: Prolonged or repeated skin contact may cause defatting and dermatitis.

4. FIRST-AID MEASURES

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention.

Skin Contact: Immediately flush skin with plenty of soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

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

Ingestion: Aspiration hazard. If swallowed, vomiting may occur spontaneously, but **DO NOT INDUCE**. If vomiting occurs, keep head below hips to prevent aspiration into lungs. Never give anything by mouth to an unconscious person. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Call a physician immediately.

Notes to Physician: No specific antidote exists. Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

Flash point: -3.9C (25F)

Autoignition temperature: 250C (482F)

Flammable limits in air % by volume: lel: 1.2; uel: 6.7

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors can travel to a source of ignition and flash back.

Flammable Liquid. Can release vapors that form explosive mixtures at temperatures above the flashpoint.

Special Fire-Fighting Procedures: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.

Fire Extinguishing Media: Dry chemical, foam or carbon dioxide. Water may be ineffective. Water spray may be used to keep fire exposed containers cool, dilute spills to nonflammable mixtures, protect personnel attempting to stop leak and disperse vapors.

Explosion: Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Contact with strong oxidizers may cause fire. Sealed containers may rupture when heated. Vapors can flow along surfaces to distant ignition source and flash back. Sensitive to static discharge.

6. ACCIDENTAL RELEASE MEASURES

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! If a leak or spill has not ignited, use water spray to disperse the vapors, to protect personnel attempting to stop leak, and to flush spills away from exposures.

7. HANDLING AND STORAGE

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Ground and bond containers when transferring material. Avoid contact with skin and eyes. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. 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: Protect against physical damage. Keep away from heat, sparks, and flame. Keep from contact with oxidizing materials. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits

-ACGIH: 400 ppm ; 1610 mg/m³
-NIOSH: 400 ppm TWA; 1600 mg/m³ TWA 1200 ppm IDLH (lower explosive limit)
-OSHA - Final PELs: 500 ppm TWA; 2000 mg/m³ TWA
-OSHA Vacated PELs: Methylcyclohexane: 400 ppm TWA; 1600 mg/m³ TWA
(Permissible Exposure Limit, 1989 Table Z-1-A values or section-specific standards)

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

Ventilation: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Respiratory Protection: If the exposure limit is exceeded and engineering controls are not feasible, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus. Breathing air quality must meet the requirements of the OSHA respiratory protection standard (29CFR1910.134) or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Eye Protection: Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area. Follow OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin Protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear, colorless liquid.
Odor: Faint benzene-like odor.
Solubility: Insoluble in water.
Specific Gravity: 0.77 @ 20C/4C
pH: No information found.
% Volatiles by volume @ 21C (70F): 100
Boiling Point: 101C (214F)
Freezing/Melting Point: -126.3C (-195F)
Vapor Density (Air=1): 3.4
Vapor Pressure (mm Hg): 37 @ 20C (68F)
Evaporation Rate (BuAc=1): No information found.

10. STABILITY AND REACTIVITY

Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
Conditions to Avoid: Incompatible materials, ignition sources, strong oxidants.
Incompatibilities with Other Materials: Oxidizing agents.
Hazardous Decomposition Products: Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.
Hazardous Polymerization: Has not been reported.

11. TOXICOLOGICAL INFORMATION

RTECS#:
CAS# 108-87-2: GV6125000
LD50/LC50:
CAS# 108-87-2:
Inhalation, mouse: LC50 =41500 mg/m³/2H;
Inhalation, rabbit: LC50 =15227 ppm/1H;
Oral, mouse: LD50 = 2250 mg/kg;<BR.

Carcinogenicity:
CAS# 108-87-2: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Epidemiology: No information available.
Teratogenicity: No information available.
Reproductive Effects: No information available.
Neurotoxicity: No information available.
Mutagenicity: Please refer to RTECS# GV6125000 for specific information.
Other Studies: None.

12. ECOLOGICAL INFORMATION

Environmental Fate: No information found.
Environmental Toxicity: The LC50/96-hour values for fish are between 10 and 100 mg/l.

13. DISPOSAL CONSIDERATIONS

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA

approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. TRANSPORT INFORMATION

Domestic (Land, D.O.T.)
 Proper Shipping Name: METHYLCYCLOHEXANE
 Hazard Class: 3
 UN/NA: UN2296
 Packing Group: II

International (Water, I.M.O.)
 Proper Shipping Name: METHYLCYCLOHEXANE
 Hazard Class: 3.2
 UN/NA: UN2296
 Packing Group: II

International (Air, I.C.A.O.)
 Proper Shipping Name: METHYLCYCLOHEXANE
 Hazard Class: 3
 UN/NA: UN2296
 Packing Group: II

15. REGULATORY INFORMATION

-----\Chemical Inventory Status - Part 1\-----

Ingredient	TSCA	EC	Japan	Australia
Methylcyclohexane (108-87-2)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----

Ingredient	-----Canada-----			
	Korea	DSL	NDSL	Phil.
Methylcyclohexane (108-87-2)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----

Ingredient	---SARA 302---		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Methylcyclohexane (108-87-2)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----

Ingredient	-RCRA-	-TSCA-	8(d)
	CERCLA	261.33	
Methylcyclohexane (108-87-2)	No	No	Yes

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
 SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No
 Reactivity: No (Pure / Liquid)

Australian Hazchem Code: 3[Y]E
 Poison Schedule: None allocated.

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.

US FEDERAL

Clean Air Act:

This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depletors. This material does not contain any Class 2 Ozone depletors.

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.

STATE

CAS# 108-87-2 can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.

European Labeling in Accordance with EC Directives

Hazard Symbols: F

Risk Phrases: R 11 Highly 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# 108-87-2:

Canada

CAS# 108-87-2 is listed on Canada's DSL/NDSL List.

This product has a WHMIS classification of B2, D2B.

CAS# 108-87-2 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits

CAS# 108-87-2: OEL-AUSTRALIA:TWA 400 ppm (1600 mg/m³) OEL-BELGIUM: TWA 400 ppm (1610 mg/m³)

OEL-DENMARK: TWA 400 ppm (1600 mg/m³) OEL-FIN LAND: TWA 400 ppm (1600 mg/m³);STEL 500 ppm

(2000 mg/m³) OEL-FRANCE:TWA 400 ppm (1600 mg/m³) OEL-GERMANY: TWA 500 ppm (2000 mg/m³)

OEL-JAPAN: TWA 400 ppm (1600 mg/m³) OEL-THE NETHERLANDS: TWA 400 ppm (1600 mg/m³)

3) JAN9 OEL-THE PHILIPPINES: TWA 500 ppm (2000 mg/m³) JAN9 OEL-POLAND: TWA 500 mg/m³ OEL-

RUSSIA: TWA 400 ppm;STEL 50 mg/m³ OEL-SWITZERLAND: TWA 400 ppm (1600 mg/m³);STEL 800 ppm

OEL-TURKEY: TWA 500 ppm (2000 mg/m³) OEL-UNITED KINGDOM: TWA 400 ppm (1600 mg/m³); STEL

500 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.