CAIROX®
potassium permanganate

MATERIAL SAFETY DATA SHEET

Section 1 Chemical Product and Company Identification

PRODUCT NAME: CAIROX® potassium permanganate, $KMnO_4$	
TRADE NAME: CAIROX® potassium permanganate	
SYNONYMS: Permanganic acid potassium salt Chameleon mineral Condy's crystals Permanganate of potash	
MANUFACTURER'S NAME: CARUS CHEMICAL COMPANY	**TELEPHONE NUMBER FOR INFORMATION:** (815) 223-1500
MANUFACTURING FACILITY: Carus Chemical Company 1500 Eighth Street P. O. Box 1500 LaSalle, IL 61301	**CHEMTREC TELEPHONE NO.** (800) 424-9300 **EMERGENCY TELEPHONE NO.** (800) 435-6856

Section 2 Composition/Information on Ingredients

Material or Component	CAS No.	%	Hazard Data
Potassium Permanganate	7722-64-7	97% min. $KMnO_4$	PEL-C 5mg Mn per cubic meter of air TLV-TWA 0.2 mg Mn per cubic meter of air

Section 3 Hazards Identification

Eye Contact: Potassium permanganate is damaging to eye tissue on contact. It may cause severe burns that result in damage to the eye.
Inhalation: Acute inhalation toxicity data are not available. However, airborne concentrations of potassium permanganate in the form of dust or mist may cause damage to respiratory tract.
Skin Contact: Contact of solutions at room temperature may be irritating to the skin, leaving brown stains. Concentrated solutions at elevated temperature and crystals are damaging to the skin.
Ingestions: Potassium Permanganate, if swallowed, may cause severe burns to mucous membranes of the mouth, throat, esophagus and stomach.

Section 4 First Aid Measures

Eyes: Immediately flush eyes with large amounts of water for at least 15 minutes holding lids apart to ensure flushing the entire surface. Do not attempt to neutralize chemically. Seek medical attention immediately. Note to physician: Soluble decomposition products are alkaline. Insoluble decomposition product is brown manganese dioxide.
Skin: Immediately wash contaminated areas with large amounts of water. Remove contaminated clothing and footwear. Wash clothing and decontaminate footwear before reuse. Seek medical attention immediately if irritation is severe or persistent.
Inhalation: Remove person from contaminated area to fresh air. If breathing has stopped, resuscitate and administer oxygen if readily available. Seek medical attention immediately.
Ingestion: Never give anything by mouth to an unconscious or convuls ing person. If person is conscious, give large quantities of water. Seek medical attention immediately.

Section 5 Fire Fighting Measures

NFPA*HAZARD SIGNAL

Health Hazard	1 = Materials which under fire conditions would give off irritating combustion products.
(less than 1 hour exposure)	Materials, which on the skin could cause irritation.
Flammability Hazard	0 = Materials that will not burn.
Reactivity Hazard	0 = Materials which in themselves are normally stable, even under fire exposure conditions, and which are not reactive with water.
Special Hazard	OX = Oxidizer

***National Fire Protection Association 704**

FIRST RESPONDERS:

Wear protective gloves, boots, goggles, and respirator. In case of fire, wear positive pressure breathing apparatus. Approach site of incident with caution. Use Emergency Response Guide NAERG 96 (RSPA P5800.7). Guide No. 140.

FLASHPOINT None

FLAMMABLE OR EXPLOSIVE LIMITS Lower: Nonflammable Upper: Nonflammable

EXTINGUISHING MEDIA Use large quantities of water. Water will turn pink to purple if in contact with potassium permanganate. Dike to contain. Do not use dry chemicals, CO_2, Halon® or foams.

Section 5 Firefighting Measures (cont.)

SPECIAL FIREFIGHTING PROCEDUREDS If material is involved in fire, flood with water. Cool all affected containers with large quantities of water. Apply water from as far a distance as possible. Wear self-contained breathing apparatus and full protective clothing.

Section 6 Accidental Release Measures

STEPS TO BE TAKNE IF MATERIAL IS RELEASED OR SPILLED

Clean up spills immediately by sweeping or shoveling up the material. Do not retum spilled material to the original container. Transfer to a clean metal drum. These wastes must be deactivated by reduction. To clean floor, flush with abundant quantities of water into sewer, if permitted by Federal, State and Local regulations. If not permitted, collect water and treat chemically (Section 13).

PERSONAL PRECAUTIONS

Personnel should wear protective clothing suitable for the task. Remove all ignition sources and incompatible materials before attempting clean up.

Section 7 Handling and Storage

WORK/HYGENIC PRACTICES

Wash hands thoroughly with soap and water after handling potassium permanganate, and before eating or smoking. Wear proper protective equipment. Remove contaminated clothing.

VENTILATION REQUIREMENTS

Provide sufficient area or local exhaust to maintain exposure below the TLV-TWA.

CONDITIONS FOR SAFE STORAGE

Store in accordance with NFPA 430 requirements for Class II oxidizers. Protect containers from physical damage. Store in a cool, dry area in closed containers. Segregate from acids, peroxides, formaldehyde and all combustible, organic or easily oxidizable materials including antifreeze and hydraulic fluid.

Section 8 Exposure Controls/Personal Protection

Respiratory Protection:
In the case where overexposure may exist, the use of an approved NIOSH/MSHA dust respirator or an air-supplied respirator is advised. Engineering or administrative controls should be implemented to control dust.

Eye Protection:
Faceshield, goggles, or safety glasses with side shields should be worn. Provide eyewash in working area.

Protective Gloves:
Rubber or plastic gloves should be worn.

Other Protective Clothing or Equipment:
Regular work clothing covering arms and legs and a rubber or plastic apron should be worn.

Section 9 Physical/Chemical Characteristics

Appearance and Odor: Dark purple solid with a metallic luster, odorless

Boiling Point, 760 mm Hg: N/A

Vapor Pressure (mm Hg): N/A

Solubility in % By Solution: 6% at 20º/c *68ºF), and 20% at 65ºC (149ºF)

Percent Volatile by Volume: Not volatile

Evaporation Rate (Butyl Acetate = 1): N/A

Melting Point: Starts to decompose with evolution of oxygen (O_2) at temperatures above 150ºC (302ºF). Once initiated, the decomposition is exothermic and self-sustaining.

Oxidizing Properties: Strong oxidizer

Specific Gravity: 2.7 @ 20ºC (68ºF)

Vapor Density (AIR=1) N/A

Section 10 Stability and Reactivity

Solubility: Under normal conditions, the material is stable.

Conditions to avoid: Contact with incompatible materials or heat (>150ºC/302ºF).

Incompatible Materials: Acids, peroxides, formaldehyde, anti-freeze, hydraulic fluids, and all combustible organic or readily oxidizable inorganic materials including metal powders. With hydrochloric acid, toxic chlorine gas is liberated.

Hazardous Decomposition Products: When involved in fire, potassium permanganate may liberate corrosive fumes.

Conditions Contributing to Hazardous Polymerization: Material is not known to polymerize.

Section 11 Toxicological Information

Potassium permanganate: Acute oral LD_{50}(rat) = 780 mg/kg Male (14 days); 525 mg/kg Female (14 days)
The fatal adult human dose by ingestion is estimated to be 10 grams. (Ref. Handbook Of Poisoning: Prevention, Diagnosis & Treatment, Twelfth Edition)

EFFECTS OF OVEREXPOSURE

Acute Overexposure

Irritating to body tissue with which it comes into contact.

Chronic Overexposure

No known cases of chronic poisoning due to potassium permanganate have been reported. Prolonged exposure, usually over many years, to heavy concentrations of manganese oxides in the form of dust and fumes, may lead to chronic manganese poisoning, chiefly involving the central nervous system.

Carcinogenicity

Potassium permanganate has not been classified as a carcinogen by OSHA, NTP, IARC.

Medical Conditions Generally Aggravated by Exposure

Potassium permanganate will cause further irritation of tissue, open wounds, burns or mucous membranes.

Registry of Toxic Effects of Chemical Substances
RTECS #SD6476000

Section 12 Ecological Information

Entry to the Environment
Potassium permanganate has a low estimated lifetime in the environment, being readily converted by oxidizable materials to insoluble MANGANESE DIOXIDE (MnO_2).

Bioconcentration Potential
In non-reducing and non-acidic environments MnO_2 is insoluble and has a very low bioaccumulative potential.

Aquatic Toxicity
Rainbow trout, 96 hour LC_{50}: 1.80 mg/L
Bluegill sunfish, 96 hour LC_{50}: 2.3 mg/L

Section 13 Disposal Considerations

Deactivation of D001 Ignitable Waste Oxidizers by Chemical Reduction

Reduce potassium permanganate in aqueous solutions with sodium thiosulfate (Hypo), or sodium bisulfite or ferrous salt solution. The bisulfite or ferrous salt may require some dilute sulfuric acid to promote rapid reduction. If acid was used, neutralize with sodium bicarbonate to neutral pH. Decant or filter, and mix the sludge with sodium carbonate and deposit in an approved landfill. Where permitted, the sludge can be drained into sewer with large quantities of water. Use caution when reacting chemicals. Contact Carus Chemical Company for additional recommendations.

Section 14 Transport Information

U.S. Department of Transportation Information:

Proper Shipping Name: 49 CFR 172.101……..Potassium Permanganate
ID Number: 49 CFR 172.101……..UN 1490
Hazard Class: 49 CFR 172.101……..Oxidizer
Division: 49 CFR 172.101……..5.1
Packaging Group: 49 CFR 172.101……...II

Section 15 Regulatory Information

TSCA Listed in the TSCA Chemical Substance Inventory

CERCLA **Hazardous Substance**
Reportable Quantity: RQ – 100 lb……..40 CFR116.4; 40 CFR302.4

RCRA Oxidizers such as potassium permanganate meet the criteria of ignitable waste. 40 CFR 261.21

SARA Title III Information

Section 302 Extremely hazardous substance: Not listed
Section 311/312 Hazard categories: Fire, acute and chronic toxicity
Section 313 CAIROX® potassium permanganate contains 97% manganese compounds as part of the chemical structure (manganese compounds CAS Reg. No. N/A) and is subject to the reporting requirements of Section 313 of Title III, Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372.

State Lists	Michigan Critical Materials Register:	Not listed
	California Proposition 65:	Not listed
	Massachusetts Substance List:	5 F8
	Pennsylvania Hazard Substance List:	E
Foreign Lists	Canadian Domestic Substances List (DSL)	Listed
	Canadian Ingredient Disclosure List	Listed
	European Inventory of Existing Chemical Substances (EINECS)	2317603

Section 16 Other Information

NIOSH	National Institute for Occupational Safety and Health
MSHA	Mine Safety and Health Administration
OSHA	Occupational Safety and Health Administration
NTP	National Toxicology Program
IARC	International Agency for Research on Cancer
TSCA	Toxic Substances Control Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act of 1986
PEL-C	OSHA Permissible Exposure Limit-OSHA Ceiling Exposure Limit
TLV-TWA	Threshold Limit Value – Time Weighted Average (American Conference of Governmental Industrial Hygienists)

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Chithambarathanu Pillai (S.O.F.)
May 2000

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