



**CAIROX® Potassium Permanganate**  
**EC- SAFETY DATA SHEET** according to EC directive 2001/58/EC  
**Material Safety Data Sheet**

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## Section 1 Chemical Product and Company Identification

|  |  |
|--|--|
| <b>PRODUCT NAME:</b> CAIROX® Potassium permanganate, KMnO <sub>4</sub>   | <b>Revision Date:</b> June 2007  |
| <b>TRADE NAME:</b> CAIROX® Potassium permanganate  |  |
| <b>SYNONYMS:</b><br>Permanganic acid potassium salt<br>Potassium permanganate<br>Chameleon mineral<br>Condy's crystals<br>Permanganate of potash |  |
| <b>USES OF SUBSTANCE:</b> Potassium permanganate is an oxidant recommended for applications that require a strong oxidant.                       |  |
| <b>COMPANY NAME (US):</b><br>CARUS CORPORATION   | <b>COMPANY ADDRESS:</b> 315 Fifth Street<br>Peru, IL 61354, USA<br><b>INFORMATION:</b><br>(815) 223-1500<br>(815) 224-6816 (FAX)<br><a href="http://www.caruscorporation.com">www.caruscorporation.com</a> (Web)<br><a href="mailto:salesmkt@caruscorporation.com">salesmkt@caruscorporation.com</a> (Email)<br><b>EMERGENCY TELEPHONE:</b> (800) 435-6856 (USA)<br>(815) 223-1500 (Other countries)<br>(800) 424-9300 (Chemtrec, USA)<br>(703) 527-3887 (Chemtrec, Other countries) |

## Section 2 Hazardous Ingredients

| <b>MATERIAL OR COMPONENT</b>  | <b>CAS NO.</b>   | <b>EINECS</b> | <b>%</b> | <b>HAZARD DATA</b>   |
|---|--|---------------|----------|--|
| Potassium Permanganate air  | 7722-64-7  | 231-760-3     | >97.5%   | PEL/C 5 mg Mn per cubic meter of air<br>TLV-TWA 0.2 mg Mn per cubic meter of air |
| <b>HAZARD SYMBOLS:</b>  |  |               |          |  |
| <br><br> |  |               |          |  |
| <b>RISK PHRASES:</b>  |  |               |          |  |
| 8   | Contact with combustibles may cause fire.  |               |          |  |
| 22  | Harmful if swallowed.  |               |          |  |
| 50/53   | Very toxic to aquatic organisms, may cause long-term effects in the aquatic environment. |               |          |  |
| <b>SAFETY PHRASES:</b>  |  |               |          |  |
| 60  | This material and its container must be disposed of as hazardous waste.                  |               |          |  |
| 61  | Avoid releases to the environment. Refer to special instructions / Safety data sheet.    |               |          |  |



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### Section 3 Hazards Identification

**1. EYE CONTACT**

Potassium Permanganate is damaging to eye tissue on contact. It may cause severe burns that result in damage to the eye.

**2. 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.

**3. 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 the respiratory tract.

**4. INGESTION**

Potassium permanganate, if swallowed, may cause severe burns to mucous membranes of the mouth, throat, esophagus, and stomach.

### Section 4 First Aid Measures

**1. EYES**

Immediately flush eyes with large amounts of water for at least 15 minutes holding lids apart to ensure flushing of 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.

**2. SKIN**

Immediately wash contaminated areas with water. Remove contaminated clothing and footwear. Wash clothing and decontaminate footwear before reuse. Seek medical attention immediately if irritation is severe or persistent.

**3. INHALATION**

Remove person from contaminated area to fresh air. If breathing has stopped, resuscitate and administer oxygen if readily available. Seek medical attention immediately.

**4. INGESTION**

Never give anything by mouth to an unconscious or convulsing person. If person is conscious, give large quantities of water. Seek medical attention immediately.



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## Section 5 Fire Fighting Measures

### NFPA\* HAZARD SIGNS

|                     |    |   |  |
|---------------------|----|---|--|
| Health Hazard       | 1  | = | Materials which under fire conditions would give off irritating combustion products. (less than 1 hour exposure)<br>Materials that 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 (USA)

#### **FIRST RESPONDERS:**

Wear protective gloves, boots, goggles, and respirator. In case of fire, wear positive pressure breathing apparatus. Approach incident with caution.

#### **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<sub>2</sub> Halon® or foams.

#### **SPECIAL FIREFIGHTING PROCEDURES**

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.

#### **UNUSUAL FIRE AND EXPLOSION**

Powerful oxidizing material. May decompose spontaneously if exposed to heat (150°C / 302°F). May be explosive in contact with certain other chemicals (Section 10). May react violently with finely divided and readily oxidizable substances. Increases burning rate of combustible material.

## Section 6 Accidental Release Measures

#### **PERSONAL PRECAUTIONS:**

Ensure adequate ventilation. Avoid dust formation. Avoid inhalation and contact with eyes and skin. Personnel should wear protective clothing suitable for the task. Remove all ignition sources and incompatible materials before attempting clean up.

#### **ENVIRONMENTAL PRECAUTIONS:**

Do not flush into sanitary sewer system or surface water. If accidental release into the environment occurs, inform the responsible authorities. Keep the product away from drains, sewers, surface and ground water and soil.

#### **STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:**

Clean up spills immediately by sweeping or shoveling up the material. Do not return spilled material to the original container – transfer to a clean metal drum. To clean contaminated surfaces or floors, flush with abundant quantities of water into sewer, if permitted by federal, state, and local regulations - if not, collect water and treat chemically (Section 13).



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## Section 7 Handling and Storage

### WORK/HYGIENIC PRACTICES

Wash hands thoroughly with soap and water after handling potassium permanganate. Do not eat, drink or smoke when working with potassium permanganate. Wear proper protective equipment. Remove clothing, if it becomes contaminated.

### VENTILATION REQUIREMENTS

Provide sufficient mechanical and/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 and Personal Protection

### RESPIRATORY PROTECTION

In cases where overexposure to dust may occur, 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

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

### GLOVES

Rubber or plastic gloves should be worn.

### OTHER PROTECTIVE EQUIPMENT

Normal work clothing covering arms and legs, and rubber, or plastic apron should be worn.

## Section 9 Physical and Chemical Properties

### **APPEARANCE AND ODOR**

Dark purple solid with metallic luster, odorless

### **BOILING POINT, 760 mm Hg**

Not applicable

### **VAPOR PRESSURE (mm Hg)**

Not applicable

### **SOLUBILITY IN WATER % BY SOLUTION**

6% at 20°C (68°F) and 20% at 65°C (149°F)

### **PERCENT VOLATILE BY VOLUME**

Not volatile

### **EVAPORATION RATE**

Not applicable

### **MELTING POINT**

Starts to decompose with evolution of oxygen (O<sub>2</sub>) at temperatures above 150°C (302°F). Once initiated, the decomposition is exothermic and self sustaining.

### **SPECIFIC GRAVITY**

2.7 at 20°C (68°F)

### **BULK DENSITY**

Approximately 1.45 - 1.6 kg / l

### **VAPOR DENSITY (AIR=1)**

Not applicable

### **OXIDIZING PROPERTIES**

Strong oxidizer



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## Section 10 Stability and Reactivity

|  |   |
|--|---|
| <b>STABILITY</b>   | Under normal conditions, the material is stable.  |
| <b>CONDITIONS TO AVOID</b>                                 | Contact with incompatible materials or heat (150°C / 302°F) could result in violent exothermic chemical reaction.   |
| <b>INCOMPATIBLE MATERIALS</b>                              | Acids, peroxides, formaldehyde, anti-freeze, hydraulic fluids and all combustible organic or readily oxidizable inorganic materials including metal powders. With hydrochloric acid, chlorine gas is liberated. |
| <b>HAZARDOUS DECOMPOSITION PRODUCTS</b>                    | When involved in a fire, potassium permanganate may liberate corrosive fumes.   |
| <b>CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION</b> | Material is not known to polymerize.  |

## Section 11 Toxicological Information

### 1. ACUTE TOXICITY

#### INGESTION:

LD 50 oral rat: 780 mg/kg male (14 days); 525 mg/kg female (14 days).  
Harmful if swallowed. ALD: 10g. Ingestion may cause nausea, vomiting, sore throat, stomach-ache and eventually lead to a perforation of the intestine. Liver and kidney injuries may occur.

#### SKIN CONTACT:

LD 50 dermal no data available.

The product may be absorbed into the body through the skin. Major effects of exposure: severe irritation, brown staining of skin.

#### INHALATION:

LC 50 inhalation: No data available.

The product may be absorbed into the body by inhalation. Major effects of exposure: respiratory disorder, cough.

### 2. CHRONIC TOXICITY

No known cases of chronic poisoning due to permanganates 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.

### 3. CARCINOGENICITY

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

### 4. MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

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



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## Section 12 Ecological Information

### ENTRY TO THE ENVIRONMENT

Permanganate has a low estimated lifetime in the environment, being readily converted by oxidizable materials to insoluble MnO<sub>2</sub>.

### BIOCONCENTRATION POTENTIAL

In non-reducing and non-acidic environments, MnO<sub>2</sub> is insoluble and has a very low bioaccumulative potential.

### AQUATIC TOXICITY

The toxicity data for potassium permanganate is given below:

|   |          |
|---|----------|
| Rainbow trout, 96 hour LC <sub>50</sub> :             | 1.8 mg/L |
| Bluegill sunfish, 96 hour LC <sub>50</sub> :          | 2.3 mg/L |
| Milk fish (Chanos Chanos)/ 96 hour LC <sub>50</sub> : | >1.4mg/L |

## Section 13 Disposal Considerations

Offer surplus and non-recyclable product or solutions to a licensed disposal company.

Reduce potassium permanganate in aqueous solutions with sodium thiosulfate, a bisulfite or ferrous salt solution. The bisulfite or ferrous salt may require some dilute sulfuric acid (10% w/w) to promote reduction. Neutralize with sodium carbonate to neutral pH, if acid was used. Decant or filter and deposit sludge in approved landfill. Where permitted, the sludge may be drained into sewer with large quantities of water. Contact Carus Chemical Company for additional recommendations.

Packaging materials must be triple rinsed to remove all potassium permanganate prior to re-cycling or disposal.

## Section 14 Transport Information

|  |  |
|--|--|
| <b>USA (land, D.O.T.)</b>  | <b>Proper Shipping Name:</b> 49 CFR172.101....Potassium Permanganate<br><b>Hazard Class:</b> 49 CFR172.101....Oxidizer<br><b>ID Number:</b> 49 CFR172.101....UN 1490<br><b>Packing Group:</b> 49 CFR172.101....II<br><b>Division:</b> 49 CFR172.101....5.1 |
| <b>European Labeling in accordance Road/Rail Transport (ADR/RID)</b>     | <b>ID Number:</b> UN 1490<br><b>ADR/RID Class</b> 5.1<br><b>Description of Goods:</b> Potassium Permanganate<br><b>Hazard Identification No.</b> 50  |
| <b>European Labeling in accordance with EC directive (Water, I.M.O.)</b> | <b>Proper Shipping Name:</b> Potassium Permanganate<br><b>Hazard Class:</b> Oxidizer<br><b>ID Number:</b> UN 1490<br><b>Packing Group:</b> II<br><b>Division:</b> 5.1<br><b>Marine Pollutant:</b> No   |



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**Section 14 Transport Information (contd.)**

|  |   |
|--|---|
| <b>European Labeling in accordance with EC directive (Air, I.C.A.O.)</b> | <b>Proper Shipping Name:</b> Potassium Permanganate<br><b>Hazard Class:</b> Oxidizer<br><b>ID Number:</b> UN 1490<br><b>Packing Group:</b> II<br><b>Division:</b> 5.1 |
|--|---|

**Section 15 Regulatory Information**

**EUROPEAN AND INTERNATIONAL REGULATIONS:**

**MARKINGS ACCORDING TO EU GUIDELINES:**

The product has been classified and marked in accordance with EU directives/ordinances on hazardous materials.

**CHEMICAL NAME**

Potassium Permanganate

**CAS NO.**

7722-64-7

**EINECS**

231-760-3

**UN NUMBER**

UN 1490

**CODE LETTER AND HAZARD DESIGNATION OF THE PRODUCT:**



Oxidizer



Harmful



Dangerous to the Environment

**RISK PHRASES:**

- 8 Contact with combustibles may cause fire.
- 22 Harmful if swallowed.
- 50/53 Very toxic to aquatic organisms, may cause long-term effects in the aquatic environment.

**SAFETY PHRASES:**

- 60 This material and its container must be disposed of as hazardous waste.
- 61 Avoid releases to the environment. Refer to special instructions / Safety data sheet.



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**Section 15 Regulatory Information (contd.)**

**US FEDERAL REGULATIONS:**

**CHEMICAL INVENTORY STATUS – PART 1**

| <u>Ingredient</u>      | <u>CAS. NO.</u> | <u>TSCA</u> | <u>EC</u> | <u>Japan</u> | <u>Australia</u> |
|------------------------|-----------------|-------------|-----------|--------------|------------------|
| Potassium Permanganate | 7722-64-7       | Yes         | Yes       |              |                  |

**CHEMICAL INVENTORY STATUS – PART 2 --- CANADA---**

| <u>Ingredient</u>      | <u>CAS. NO.</u> | <u>Korea</u> | <u>DSL</u> | <u>NDSL</u> | <u>PHIL</u> |
|------------------------|-----------------|--------------|------------|-------------|-------------|
| Potassium Permanganate | 7722-64-7       | No           | Yes        |             |             |

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulation (CPR, Canada) and the MSDS contains all of the information required by the CPR.

**FEDERAL, STATE & INTERNATIONAL REGULATIONS – PART 1**

| <u>Ingredient</u>      | <u>CAS. NO.</u> | <u>SARA 302</u> |            | <u>SARA 313</u> |                              |
|------------------------|-----------------|-----------------|------------|-----------------|------------------------------|
|                        |                 | <u>RQ</u>       | <u>TPQ</u> | <u>List</u>     | <u>Chemical Catg.</u>        |
| Potassium Permanganate | 7722-64-7       | N/A             | N/A        | Yes             | Yes<br>(Manganese compounds) |

**FEDERAL, STATE & INTERNATIONAL REGULATIONS – PART 2**

| <u>Ingredient</u>      | <u>CAS. NO.</u> | <u>CERCLA</u>                  |                   | <u>RCRA</u>            | <u>TSCA 8(d)</u>   |
|------------------------|-----------------|--------------------------------|-------------------|------------------------|--------------------|
| Potassium Permanganate | 7722-64-7       | Yes                            | (RQ =100 lbs)     | D001                   | No                 |
| <u>Ingredient</u>      | <u>CAS. NO.</u> | <u>CWC</u>                     | <u>TSCA 12(b)</u> | <u>CDTA</u>            | <u>SARA</u>        |
| Potassium Permanganate | 7722-64-7       | No                             | No                |                        | 311/312<br>4545 Kg |
| <u>Ingredient</u>      | <u>CAS. NO.</u> | <u>Acute</u>                   | <u>Chronic</u>    | <u>Fire</u>            | <u>Pressure</u>    |
| Potassium Permanganate | 7722-64-7       | Yes                            | Yes               | Yes                    | No                 |
| <u>Ingredient</u>      | <u>CAS. NO.</u> | <u>Australian Hazchem Code</u> |                   | <u>Poison Schedule</u> | <u>WHMIS</u>       |
| Potassium Permanganate | 7722-64-7       |                                |                   |                        | C, D2B             |



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**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           |
| PEL     | Permissible Exposure Limit                            |
| C       | Ceiling Exposure Limit                                |
| TLV-TWA | Threshold Limit Value-Time Weighted Average           |
| CAS     | Chemical Abstract Service                             |
| EINECS  | Inventory of Existing Chemical Substances (European)  |

Chithambarathanu Pillai (S.O.F.)  
June 2007

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