Safety Data Sheet

Material Name: Potassium Permanganate
ID: C1-134

*** Section 1 - Chemical Product and Company Identification ***

Chemical Name: Potassium Permanganate
Product Use: For Commercial Use

RESTRICTIONS on USE

NOT TO BE USED AS A PESTICIDE. THIS PRODUCT IS NOT TO BE USED IN VIOLATION OF ANY PATENTS. CHEM ONE LTD. DISCLAIMS ANY AND ALL WARRANTIES, EITHER EXPRESSED OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR APPLICATION. IN NO EVENT SHALL CHEM ONE LTD. OR ITS SUPPLIERS BE LIABLE FOR ANY DAMAGES WHATSOEVER INCLUDING DIRECT, INDIRECT, INCIDENTAL, CONSEQUENTIAL, LOSS OF BUSINESS PROFITS OR SPECIAL DAMAGES, EVEN IF CHEM ONE LTD. OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. SOME STATES DO NOT ALLOW THE EXCLUSION OF LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES SO THE FOREGOING LIMITATION MAY NOT APPLY.

Supplier Information
Chem One Ltd.
14140 Westfair East Drive
Houston, Texas 77041-1104
Phone: (713) 896-9966
Fax: (713) 896-7540
Emergency # (800) 424-9300 or +1 (703) 527-3887

NOTE: Emergency telephone numbers are to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure, or accident involving chemicals. All non-emergency questions should be directed to customer service.

*** Section 2 - Composition / Information on Ingredients ***

Hazard Classes

Oxidizing solids
Acute toxicity, Oral
Acute aquatic toxicity
Chronic aquatic toxicity

Hazard Categories

Category 2
Category 4
Category 1
Category 1

Signal Word: Danger

Pictograms:

Hazard Statements

PHYSICAL HAZARDS: H272 May intensify fire; oxidiser
HEALTH HAZARDS: H301 Toxic if swallowed
ENVIRONMENTAL HAZARDS: H400 Harmful to aquatic life
H410 Very toxic to aquatic life with long lasting effects
Safety Data Sheet

Material Name: Potassium Permanganate

PRECAUTIONARY STATEMENTS:

P102: Keep out of reach of children
P202: Do not handle until all safety precautions have been read and understood
P261: Avoid breathing dust
P273: Avoid release to the environment
P280: Wear protective gloves, clothing and eye protection

RESPONSE STATEMENTS:

P301 +310 + P331: IF SWALLOWED: USA Immediately call the National POISON CENTER at 800-222-1222. DO NOT induce vomiting
P303+P361+353: IF ON SKIN Take off immediately all contaminated clothing. Rinse skin with water
P304+340: IF INHALED, Remove to fresh air and keep comfortable for breathing
P305+P351: IF IN EYES rinse cautiously with water for at least 15 minutes
P306+P361: IF ON CLOTHING, Take off contaminated clothing
P370: In case of fire use foam, carbon dioxide, dry chemical to extinguish fire
P376: Stop a spill if safe to do so. See section 6 for proper clean up

STORAGE STATEMENTS:

P403: Keep Cool Store in a well-ventilated place

DISPOSAL STATEMENTS:

P501: Dispose of content and/or container in accordance with local, regional, national or international regulations

*** Section 3 - Hazards Identification ***

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Component</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>7722-64-7</td>
<td>Potassium Permanganate</td>
<td>97-99.5%</td>
</tr>
</tbody>
</table>

Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Manganese (7439-64-7), Manganese, elemental & inorganic Compounds, as Mn, and Manganese fume, Mn.

Synonyms: Chameleon Mineral; Condy’s Crystals; Permanganate de Potassium; Permanganic Acid, Potassium Salt; Purple Salt

*** Section 4 - First Aid Measures ***

Emergency Overview

This product is a dark purple/bronze solid, in crystalline or free-flowing powder form. Potentially fatal if swallowed. Highly corrosive to the skin. Can cause permanent damage to the eyes. Known irritant of the respiratory system. Strong oxidizer. Contact with other combustible material may cause fire. Firefighters should use full protective equipment and clothing.

Hazard Statements

STRONG OXIDIZER. Contact with combustible materials such as wood, paper, oil, etc., may cause fire. MAY BE FATAL IF SWALLOWED OR INHALED. Can cause burns of eyes and skin. May cause respiratory tract irritation. Avoid contact with eyes and skin. Avoid breathing dusts. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. Keep from contact with clothing and other combustible materials.

Potential Health Effects: Eyes

Can cause severe eye injury. Contact can produce hardened, ulcer-like injury on eye. Conjunctivitis and bleeding may occur. In extreme cases, cloudiness or discoloration of the cornea may occur.
### Potential Health Effects: Skin
Product acts as a highly corrosive agent to the skin. Contact may produce burns and/or tissue necrosis. Contact will also stain skin brown.

### Potential Health Effects: Ingestion
May irritate and cause burns of the mouth and throat. Symptoms may include brown discoloration and edema of mucous membranes of mouth, glottis and pharynx, cough, laryngeal edema, nausea, vomiting, gastric lesions, stridor (high-pitched, noisy breathing), laryngeal edema, necrosis of oral and pharyngeal mucosa, slow pulse, cardiovascular collapse, profound hypotension and decreased blood pressure. Fatal oral dose is estimated at 10 grams (0.35 oz). Death may occur up to one month from the time of poisoning. If death is not immediate, jaundice and oliguria or anuria may appear. Ingestion of solutions of Potassium Permanganate has caused mild Parkinsonian syndrome, and distally accentuated polyneuropathies. These symptoms normally occur long after the incident of ingestion exposure, sometimes years later.

### Potential Health Effects: Inhalation
May irritate the nose, throat and respiratory tract. In severe cases, pulmonary edema may occur that could potentially lead to death. Symptoms of pulmonary edema may be delayed. Other symptoms could include sore throat, coughing, shortness of breath, and breathing. Workers chronically exposed by inhalation to Potassium Permanganate have showed a 35% increase in the incidence of pneumonia.

### First Aid: Eyes
In case of contact with eyes, rinse immediately with plenty of water for at least 15 minutes. Seek immediate medical attention if any adverse effect occurs.

### First Aid: Skin
Remove all contaminated clothing. For skin contact, wash extremely thoroughly with soap and water. Seek immediate medical attention if irritation develops or persists.

### First Aid: Ingestion
**DO NOT INDUCE VOMITING,** unless directly by physician or other medical personnel. Have victim rinse mouth thoroughly with water, if conscious. Never give anything by mouth to a victim who is unconscious or having convulsions. Contact a physician or poison control center immediately.

### First Aid: Inhalation
Remove source of contamination or move victim to fresh air. Apply artificial respiration if victim is not breathing. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Administer oxygen if breathing is difficult. Get immediate medical attention. Get immediate medical attention.

### First Aid: Notes to Physician
Provide general supportive measures and treat symptomatically. The following treatment is recommended for overexposure to manganese compounds:

**Basic Treatment:** Establish a patent airway. Suction if necessary. Watch for signs of respiratory insufficiency and assist ventilations if necessary. Administer oxygen by non-rebreather mask at 10 to 15 L/minutes. Monitor for pulmonary edema and treat if necessary. Monitor for shock and treat if necessary. For eye contamination, flush eyes immediately with water. Irrigate each eye continuously with normal saline during transport. Do not use emetics. For ingestion, rinse mouth and administer 5 mL/kg up to 200 mL of water for dilution if the patient can swallow, has a strong gag reflex, and does not drool. Advanced Treatment: Consider orotracheal or nasotracheal intubation for airway control in the patient who is unconscious or in severe respiratory distress. Monitor cardiac rhythm and treat arrhythmias if necessary. Start an IV with D5W /SRP: "To keep open", minimal flow rate. Use lactated Ringer's if signs of hypovolemia are present. Consider drug therapy for pulmonary edema. For hypotension with signs of hypovolemia, administer fluid cautiously. Consider vasopressors for hypotension with a normal fluid volume. Watch for signs of fluid overload. Use proparacaine hydrochloride to assist eye irrigation.
### Section 5 - Fire Fighting Measures

#### General Fire Hazards
Potassium Permanganate is an NFPA Class 2 Oxidizer. This is an oxidizing material that will increase the burning rate or cause a spontaneous ignition with a combustible material. Containers may explode in fire. Contact with paper, wood or other combustible materials may result in fire. If combustible material is in finely divided dust form, an explosion may result. Contact with liquid combustible materials may cause spontaneous combustion and fire.

#### Hazardous Combustion Products
Upon heating, oxygen will be released.

#### Extinguishing Media
Do not use dry chemical, carbon dioxide, foam or halon extinguishing materials; use flooding quantities of water only if involved in a fire.

#### Fire Fighting Equipment/Instructions
Firefighters should wear full protective clothing including self contained breathing apparatus. Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution. Prevent the spread of any released product to combustible objects.

**NFPA Ratings:**
- **Health:** 3
- **Fire:** 0
- **Reactivity:** 0
- **Other:** Oxidizer

**Hazard Scale:**
0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

### Section 6 - Accidental Release Measures

#### Containment Procedures
Stop the flow of material, if this can be done without risk. Contain the discharged material. If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with product, (see Section 10 for incompatibility information). (DO NOT USE SAWDUST, ACTIVATED CARBON OR OTHER COMBUSTIBLE MATERIAL).

#### Clean-Up Procedures
For small releases, clean-up spilled liquid wearing gloves, goggles, faceshield, and suitable body protection. Sweep-up or vacuum spilled solid. Decontaminate the area thoroughly. Test area with litmus paper to ensure neutralization. Place all spill residues in a suitable container. Thoroughly wash the area after clean-up. Prevent spill rinsate from contamination of storm drains, sewers, soil or groundwater. Spill rinsate should be neutralized by adding dilute caustic soda (NaOH) or sodium bisulfite (NAHSO3). Spill rinsate may be an oxidizing liquid and so should be prevented to have contact with any combustible materials.

#### Evacuation Procedures
Evacuate the area promptly and keep upwind of the spilled material. Isolate the spill area to prevent people from entering. Keep materials which can burn away from spilled material. In case of large spills, follow all facility emergency response procedures.

#### Special Procedures
Remove soiled clothing and launder before reuse. Avoid all skin contact with the spilled material. Have emergency equipment readily available.

### Section 7 - Handling and Storage

#### Handling Procedures
All employees who handle this material should be trained to handle it safely. Do not breathe dust. Avoid all contact with skin and eyes. Use this product only with adequate ventilation. Wash thoroughly after handling.

#### Storage Procedures
Keep container tightly closed when not in use. If this product is transferred into another container, only use portable containers and tools approved for oxidizing solids. Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Material should be stored in secondary containers or in a diked area, as appropriate. Store containers away from incompatible chemicals (see Section 10, Stability and Reactivity). Store containers away from wood, cardboard boxes, and other combustible materials. Storage areas should be made of corrosion- and fire-resistant materials. Post warning and “NO SMOKING” signs in storage and use areas, as appropriate. Use corrosion-resistant structural materials, lighting, and ventilation systems in the storage area. Floors should be sealed to prevent absorption of this material. Inspect all incoming containers before...
*** Section 7 - Handling and Storage Continued ***

storage, to ensure containers are properly labeled and not damaged. Have appropriate extinguishing equipment in the storage area (i.e., sprinkler system, portable fire extinguishers). Refer to NFPA 43A, Liquid, Solid Oxidizers, for additional information on storage.

Empty containers may contain residual particulates; therefore, empty containers should be handled with care. Never store food, feed, or drinking water in containers which held this product. Keep this material away from food, drink and animal feed. Do not store this material in open or unlabeled containers. Limit quantity of material stored.

*** Section 8 - Exposure Controls / Personal Protection ***

Exposure Guidelines

A: General Product Information
Follow the applicable exposure limits.

B: Component Exposure Limits

The exposure limits given are for Manganese, elemental & inorganic Compounds, as Mn (7439-96-5) or Manganese fume, as Mn.

- ACGIH: 0.2 mg/m$^3$ TWA (Notice of Intended Change = 0.03 [respirable fraction])
- OSHA: 5 mg/m$^3$ STEL, Ceiling
- NIOSH: 1 mg/m$^3$ TWA
  - 3 mg/m$^3$ STEL
- DFG MAKs: 0.5 mg/m$^3$ TWA, (inhalable fraction), Peak, 30 minutes, average value

Engineering Controls

Use mechanical ventilation such as dilution and local exhaust. Use a corrosion-resistant ventilation system and exhaust directly to the outside. Supply ample air replacement. Provide dust collectors with explosion vents.

PERSONAL PROTECTIVE EQUIPMENT

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132) or equivalent Standards of Canada. Please reference applicable regulations and standards for relevant details.

Personal Protective Equipment: Eyes/Face

Wear safety glasses with side shields (or goggles) and a face shield, if this material is made into solution. If necessary, refer to U.S. OSHA 29 CFR 1910.133.

Personal Protective Equipment: Skin

Wear impervious gloves, boots and coveralls to avoid skin contact. If necessary, refer to U.S. OSHA 29 CFR 1910.138.

Personal Protective Equipment: Respiratory

If respiratory protection is needed, use only protection authorized in the U.S. Federal OSHA Standard (29 CFR 1910.134), applicable U.S. State regulations. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA’s Respiratory Protection Standard (1910.134-1998). If airborne concentrations are above the applicable exposure limits, use NIOSH-approved respiratory protection. The following NIOSH Guidelines for Manganese and Compounds (as Mn) are presented for further information.

- Up to 10 mg/m$^3$: Dust and mist respirator except single-use and quarter-mask respirator or SAR.
- Up to 25 mg/m$^3$: SAR operated in a continuous in a continuous-flow mode, or powered air-purifying respirator with dust and mist filters.
- Up to 50 mg/m$^3$: Full-facepiece respirator with high-efficiency particulate filter(s), or SAR with a tight-fitting facepiece operated in a continuous-flow mode, or powered air-purifying respirator with tight-fitting facepiece and high-efficiency particulate filter, or full-facepiece SCBA, or full-facepiece SAR.
- Up to 500 mg/m$^3$: Positive pressure SAR.

Emergency or Planned Entry into Unknown Concentrations or IDLH Conditions: Positive pressure, full-facepiece SCBA, or positive pressure, full-facepiece SAR with an auxiliary positive pressure SCBA.

Escape: Full-facepiece respirator with high-efficiency particulate filter(s), or escape-type SCBA.

NOTE: The IDLH concentration for Manganese Compounds and fume (as Mn) is 500 mg/m$^3$. 

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Section 8 - Exposure Controls / Personal Protection Continued

Personal Protective Equipment: General

Have an eyewash fountain and safety shower available in the work area.

Protective Clothing Pictograms

- Splash Goggles
- Gloves
- Protective Apron
- Dust Respirator

Section 9 - Physical & Chemical Properties

The data provided in this section are to be used for product safety handling purposes. Please refer to Product Data Sheets, Certificates of Conformity or Certificates of Analysis for chemical and physical data for determinations of quality and for formulation purposes.

- Appearance: Dark purple/bronze crystals
- Odor: Odorless
- Physical State: Solid
- pH: Not applicable for solid
- Vapor Pressure: Practically zero
- Vapor Density: Not applicable
- Freezing/Melting Point: Decomposes 240 deg C (464 deg F)
- Specific Gravity: 2.70 @ 15 deg C (H2O = 1)
- Particle Size: Not available
- Molecular Weight: 158.04
- Bulk Density: Not applicable
- Chemical Formula: KMnO4
- Method Used: Not applicable
- Flash Point: Not combustible
- Upper Flammable Limit (UEL): Not applicable
- Lower Flammable Limit (LEL): Not applicable
- Auto Ignition: Not applicable
- Rate of Burning: Not applicable

Section 10 - Chemical Stability & Reactivity Information

Chemical Stability

Solid is stable in air and light. Solutions of Potassium Permanganate are unstable.

Chemical Stability: Conditions to Avoid

Avoid high temperatures and ignition sources. Keep away from materials which can burn.

Incompatibility

An attempt to prepare permanganyl chloride, MnO3Cl, by adding cautiously, concentrated sulfuric acid to an intimate mixture of Potassium Permanganate and potassium chloride kept at 0 deg C in clean all-glass apparatus resulted in a violent explosion. When Potassium Permanganate is dissolved in 95% sulfuric acid, a green solution of permanganyl sulfate is formed. This solution will oxidize most organic compounds and, if the solution is strongly concentrated, explosion may accompany the oxidation. An explosion occurred when concentrated sulfuric acid was mixed with crystalline Potassium Permanganate in a vessel containing moisture. Manganese heptoxide was formed, which is explosive at 70 deg C. Potassium Permanganate being conveyed through polypropylene tube may ignite the tube. When solid hydroxyamine is brought into contact with solid Potassium Permanganate, a white flame is produced immediately. Potassium Permanganate decomposes hydrogen trisulfide so rapidly that sufficient heat is liberated to ignite the trisulfide. When antimony or arsenic and solid Potassium Permanganate are ground together, the metals ignite. Potassium Permanganate can react violently with most metal powders, ammonia and ammonium salts, phosphorus, many finely divided organic compounds, flammable liquids, acids, and sulfur. Permanganates are explosive when treated with sulfuric acid. When both compounds are used in an absorption train, an empty trap should be placed between them.
Hazardous Decomposition

Upon heating, oxygen is released, which increases potential of fire.

Hazardous Polymerization

Will not occur.

** Section 10 - Chemical Stability & Reactivity Information Continued **

** Section 11 - Toxicological Information **

**Acute and Chronic Toxicity**

**A: General Product Information**

Acute toxicity is primarily due to its strong oxidizing activity, and to some extent, its caustic (alkaline) properties. Product is an eye and skin irritant, and may cause burns. Product is a respiratory tract irritant, and inhalation may cause nose irritation, sore throat, coughing, and chest tightness and possibly, burns to the respiratory system. Inhalation exposure to high levels could cause pulmonary edema (buildup of fluid in the lungs) which could result in death. Ingestion can result in shock, pulmonary edema, and jaundice.

Chronic: Long term manganese overexposure (usually in the form of manganese oxides) may lead to an increased incidence of upper respiratory infections, lung irritation, and possible central nervous system disorders, with symptoms simulating Parkinson's disease (difficulty walking, weakness or cramps in the legs, tremors of arms and legs, memory loss, poor coordination, difficulty in peaking clearly). If high exposure continues, the respiratory system may be affected.

**B: Component Analysis - LD₅₀/LC₅₀**

Potassium Permanganate (7722-64-7)
- Oral-rat LD₅₀: 1090 mg/kg; Oral-mouse LD₅₀: 2157 mg/kg; Subcutaneous-Mouse LD₅₀: 500 mg/kg; Oral-guinea pig LD₅₀: 1151 mg/kg; Behavioral: somnolence (general depressed activity)

Manganese (7439-96-5):
- Oral-rat LD₅₀: 9 g/kg

**B: Component Analysis - TDLo/LDLo**

Potassium Permanganate (7722-64-7)
- Oral-Woman TDLo: 2400 mg/kg/day: Gastrointestinal tract effects; Oral-woman LDLo: 100 mg/kg: Vascular: BP lowering not characterized in autonomic section; Liver: hepatitis (hepatocellular necrosis), diffuse; Kidney, Urethra, Bladder: changes in tubules (including acute renal failure, acute tubular necrosis); Oral-Human LDLo: 143 mg/kg: Pulmonary system effects, Gastrointestinal tract effects; Oral-rat TDLo: 7851 mg/kg/39 weeks-intermittent; Behavioral: alteration of classical conditioning; Blood: changes in serum composition (e.g. TP, bilirubin, cholesterol); Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: true cholinesterase; Oral-mouse TDLo: 513 mg/kg: male 5 day(s) pre-mating: Reproductive: Paternal Effects: spermatogenesis (incl genetic material, sperm morphology, motility, and count); Intratesticular-Rat TDLo: 400 mg/kg (1 day male): Reproductive effects; Oral-rabbit LDLo: 600 mg/kg; Intratesticular-gerbil TDLo: 25 mg/kg: male 1 day(s) pre-mating: Reproductive: Fertility: male fertility index (e.g. # males impregnating females per # males exposed to fertile non-pregnant females); Oral-Dog, adult LDLo: 400 mg/kg; Intravenous-Rabbit, adult LDLo: 70 mg/kg

**Carcinogenicity**
*** Section 11 - Toxicological Information Continued ***

A: General Product Information
No information available.

B: Component Carcinogenicity
Potassium Permanganate (7722-64-7)
Potassium Permanganate is not listed by any agency as to carcinogenicity
Manganese & inorganic Compounds as Mn and Manganese fume, as Mn (7439-96-5)
EPA EPA-D (Not Classifiable as to Human Carcinogenicity - inadequate human and animal evidence of carcinogenicity or no data available)

Epidemiology
No information available.

Neurotoxicity
Combination of ingestion and inhalation can incur harmful effects on the central nervous system. Symptoms may include leg cramps, tremors, difficult walking, poor coordination, memory loss, questionable judgment and unstable emotions.

Mutagenicity
Potassium Permanganate has caused mutations in short-term tests of bacteria and mouse cells.

Teratogenicity
In animal studies manganese compounds were not teratogenic. Victims of manganese poisoning have reported impotence and decreased sexual desire.

Reproductive Data:
Potassium Permanganate (7722-64-7)
Oral-mouse Micronucleus test: 205 mg/kg/24 hours-continuous; Oral-mouse Sperm Morphology: 513 mg/kg/5 days-continuous;
Subcutaneous-Mouse LD50: 500 mg/kg; Mutation in microorganisms-Bacteria - Salmonella typhimurium: 10 µL/tube; DNA Damage-
Escherichia coli 200 mmol/L; DNA Repair-Bacillus subtilis 17 mg/L; Mutation in Microorganisms-other microorganisms 10 ppm;
DNA repair-Bacteria - Escherichia coli: 625 µg/well; Phage inhibition capacity: Bacteria - Escherichia coli: 200 µmol/L

Other Toxicological Information
Workers exposed to airborne manganese have had a higher incidence of pneumonia.

*** Section 12 - Ecological Information ***

Ecotoxicity
A. General Product information
Harmful to aquatic life in very low concentrations

B: Aquatic Toxicity
Potassium Permanganate (7722-64-7)
LC50 (96 hr) Carassius auratus- gold fish: 3.6 mg/L. Conditions of bioassay not specified; LC50 (96 hr) Ictalurus punctatus-
channel catfish: 0.75 mg/L Conditions of bioassay not specified; LC50 (96 hr) Leopomis macrochirus-bluegill sunfish: 2.7-3.6 mg/L Conditions of bioassay not specified. LC50 (24 hours) Mesocyclops leuckarit 2.45 mg/L (static bioassay @ 25°C); LC50 (24 hours) Chanos chanos milkfish 1.4886 mg/L (static bioassay @ 25°C, 30% salinity, seawater).
**Section 13 - Disposal Considerations**

U.S. PA Water Number & Descriptions

A: General Product Information
As shipped, this product is considered an ignitable waste, D001, under RCRA.

B. Component Waste Numbers
No EPA Waste Numbers are applicable for this product.

**Disposal Instructions**

All wastes must be handled in accordance with local, State and Federal regulations. This material can be converted to a less hazardous material by weak reducing agents, followed by neutralization.

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**Section 14 – Transportation Information Ground**

NOTE: The shipping classification information in this section (Section 14) is meant as a guide to the overall classification of the product. However, transportation classifications may be subject to change with changes in package size. Consult shipper requirements under 49 CFR, IATA and IMDG to assure regulatory compliance.

US DOT 49 CFR 100-185 Revised July 24, 2009 Information

UN/NA #: UN 1490
Shipping Name: Potassium permanganate
Hazard Class: 5.1
Packing Group: II
Required Label(s): 5.1
Special Provision: IB8, IP2, IP4
Packaging: 173.152, 173.212, 173.240
RQ Quantity: For a single package less than the RQ of 100lb (45.4 kg), the RQ designation should not be used.

Marine Pollutant: Additional marking in a single package \( \geq \) 400kg (882lb)
Limited Quantity Shipments: Shipments, except for air, need not be marked with the Proper Shipping Name and UN # of the contents, but shall be marked with a diamond. The top and bottom portions of the square-on-point must be black and the center white or of a suitable contrasting background. The mark must be at least 2 mm. Each side must have a minimum dimension of 100 mm. Small packages which cannot reasonably accommodate a 100 mm square-on-point mark may be marked with a square-on-point mark with a minimum side dimension of 50 mm. The total weight of each outer packaging cannot exceed 30 kg (66 pounds).

Small Quantities for Highway and Rail: The maximum quantity of this material per inner receptacle is limited to 30 g (1 ounce) per receptacle. The inner receptacles must be securely packed in an inside packaging with cushioning material to prevent movement of the inner receptacles and packed in a strong outer box with a gross mass not to exceed 29kg (64 pounds). The completed package must meet the drop test requirements of 173.4(6) (i). The outside of the package must be marked with the statement “This package conforms to 49 CFR 173.4 for domestic highway or rail transport only.”

Excepted Quantities: The maximum quantity of this material per inner receptacle is limited to 30 g (1 ounce) per receptacle and the aggregate quantity of this material per completed package does not exceed 1000 g (2.2 pounds). The inner receptacles must be securely packed in an inside packaging with cushioning material to prevent movement in the inner receptacles and packed in a strong outer box with a gross mass not to exceed 29kg (64 pounds). The completed package must meet a drop test. The requirements are found in 173.4(6) (i). The package must not be opened or otherwise altered until it is no longer in commerce. For highway or rail transportation no shipping paper is required. The package must be legibly marked with the following marking:

NOTE: The “*” must be replaced 173.4(6) (i). The package must not be opened or otherwise altered until it is no longer in commerce. For highway or rail transportation no shipping paper is required. The package must be legibly marked with the following marking:

NOTE: The “**” must be replaced by the name of the shipper or consignee if not shown elsewhere on the package. The symbol shall be not less than 100 mm (3.9 inches) x 100 mm (3.9 inches), and must be durable and clearly visible.

De minimis Exceptions: The maximum quantity of this material per inner receptacle is limited to 1g (0.04 ounce) per receptacle and the aggregate quantity of this material per completed package does not exceed 100 g (0.22 pounds). The inner receptacles must be securely packed in an inside packaging with cushioning material to prevent movement in the inner receptacles and packed in a strong outer box with a gross mass not to exceed 29kg (64 pounds). The completed package must meet the drop test. The requirements are found in 173.4(6) (i). The package must not be opened or otherwise altered until it is no longer in commerce and may be transported by aircraft. If all of the above requirements are met, then this material is not regulated.
56th Edition International Air Transport Association (IATA):
For Shipments by Air transport: This information applies to air shipments both within the U.S. and for shipments originating in the U.S., but being shipped to a different country.

UN/NA #: UN 1490

- **Proper Shipping Name**: Potassium permanganate
- **Hazard Class**: 5.1
- **Packaging Group**: II
- **Passenger & Cargo Aircraft Packing Instruction**: 558
- **Passenger & Cargo Aircraft Maximum Net Quantity**: 5 kg
- **Limited Quantity Packing Instruction (Passenger & Cargo Aircraft)**: Y544
- **Limited Quantity Maximum Net Quantity (Passenger & Cargo Aircraft)**: 2.5 kg
- **Cargo Aircraft Only Packing Instruction**: 562
- **Cargo Aircraft Only Maximum Net Quantity**: 25 kg
- **Excepted Quantities**: E2
- **Special Provisions**: None
- **ERG Code**: 5L

**Limited Quantity Shipments**: Shipments for air must be marked with the Proper Shipping Name and UN # shall on the package. The top and bottom portions of the square-on-point must be black and the center white or of a suitable contrasting background and the symbol “Y” must be black and located in the center of the square-on-point. The mark must be at least 2 mm. Each side must have a minimum dimension of 100 mm. Small packages which cannot reasonably accommodate a 100 mm square-on-point mark may be marked with a square-on-point mark with a minimum side dimension of 50 mm. The total weight of each outer packaging cannot exceed 30 kg.

**Excepted Quantities**: The maximum quantity of this material per inner receptacle is limited to 30 g per receptacle and the aggregate quantity of this material per completed package does not exceed 1 kg. The inner receptacles must be securely packed in an intermediate packaging with cushioning material to prevent movement in the inner receptacles and packed in a strong outer box with a gross mass not to exceed 29 kg. The completed package must meet a drop test. The requirements are found in 2.7.6.1. The package must not be opened or otherwise altered until it is no longer in commerce. For air transportation no shipping paper is required. The package must be legibly marked with the following marking:

**NOTE**: The "*" must be replaced by the primary hazard class, or when assigned, the division of each of the hazardous materials contained in the package. The "**" must be replaced by the name of the shipper or consignee if not shown elsewhere on the package. The symbol shall be not less than 100 mm x 100 mm and must be durable and clearly visible.
Amendment 37-14 International Maritime Dangerous Goods (IMDG) Code
For shipments via marine vessel transport, the following classification information applies.

UN/NA #: UN 1490
Proper Shipping Name: POTASSIUM PERMANGANATE
Hazard Class: Class 5.1
Packing Group: II
Special Provisions:
Limited Quantities 1kg
Excepted Quantities: E2
Packing Instructions: P002
Provisions: None
IBC Instructions IBC08
IBC Provisions: B2, B4
EmS: F-H, S-Q
Stowage and Handling: Category D.
Segregation: SG38, SG49, SG60
RQ Quantity: For a single package less than the RQ of 100lb (45.4 kg), the RQ designation should be not be used.

Limited Quantity Shipments: Shipments need not be marked with the Proper Shipping Name of the contents, but shall be marked with a diamond. The top and bottom portions of the square-on-point must be black and the center white or of a suitable contrasting background. The mark must be at least 2 mm. Each side must have a minimum dimension of 100 mm. Small packages which cannot reasonably accommodate a 100 mm square-on-point mark may be marked with a square-on-point mark with a minimum side dimension of 50 mm. The total weight of each outer packaging cannot exceed 30 kg (66 pounds).
An IMDG Dangerous Cargo Declaration as follows: UN 1500, SODIUM NITRITE, 5.1(6.1), II EmS F-A, S-Q, LTD.QTY.

Excepted Quantities: The maximum quantity of this material per inner receptacle is limited to 30 g per receptacle and the aggregate quantity of this material per completed package does not exceed 1000g. The inner receptacles must be securely packed in an intermediate packaging with cushioning material to prevent movement in the inner receptacles and packed in a strong outer box with a gross mass not to exceed 29kg. The completed package must meet a drop test. The requirements are found in 3.5.3.1. The package must not be opened or otherwise altered until it is no longer in commerce. For air transportation no shipping paper is required. The package must be legibly marked with the following marking:

NOTE: The *** must be replaced by the primary hazard class, or when assigned, the division of each of the hazardous materials contained in the package. The **** must be replaced by the name of the shipper or consignee if not shown elsewhere on the package. The symbol shall be not less than 100 mm x 100 mm and must be durable and clearly visible.
**US Federal Regulations**

A: General Product Information
No additional information.

B: Component Analysis
This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4):

**Potassium Permanganate (7722-64-7)**
SARA 302 There are no specific Threshold Planning Quantities for Potassium permanganate. The default Federal MSDS (EHS TPQ) submission and inventory requirement filing threshold of 10,000 lbs (4,540 kg) therefore applies, per 40 CFR 370.20.  
CERCLA: final RQ = 100 pounds (45.4 kg)

C: Sara 311/312 Tier II Hazard Ratings:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>Fire Hazard</th>
<th>Reactivity Hazard</th>
<th>Pressure Hazard</th>
<th>Immediate Health Hazard</th>
<th>Chronic Health Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium Permanganate</td>
<td>7722-64-7</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

A: General Product Information

California Proposition 65
Potassium Permanganate is not on the California Proposition 65 chemical lists.

B: Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>CA</th>
<th>FL</th>
<th>MA</th>
<th>MN</th>
<th>NJ</th>
<th>PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium Permanganate</td>
<td>7722-64-7</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Other Regulations

A: General Product Information
The U.S. Drug Enforcement Agency requires reporting on the sale of Potassium Permanganate and an export license.  
Potassium Permanganate is a List II Chemical (formerly titled:essential chemicals”). If you import, export or distribute Potassium Permanganate in the U.S., you are responsible for the record keeping and reporting requirements set forth in the Chemical Diversion and Trafficking Act of 1988.

B: Component Analysis - Inventory

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>TSCA</th>
<th>DSL</th>
<th>EINECS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium Permanganate</td>
<td>7722-64-7</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Other Regulations (continued)

C: Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>Minimum Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium Permanganate</td>
<td>7722-64-7</td>
<td>1%</td>
</tr>
</tbody>
</table>

ANSI LABELING (Z129.1): DANGER! STRONG OXIDIZER. CONTACT WITH COMBUSTIBLE MATERIALS MAY CAUSE FIRE. MAY BE FATAL IF SWALLOWED. CAUSES SKIN, EYE AND RESPIRATORY TRACT IRRITATION OR BURNS. HARMFUL IF INHALED. Keep from contact with clothing and other combustible materials. Do not taste or swallow. Do not get on skin or in eyes. Avoid breathing vapors or mist. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Wear gloves, goggles, face shields, suitable body protection, and NIOSH/MSHA-approved respiratory protection, as appropriate. **FIRST-AID:** In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. If inhaled, remove to fresh air. If ingested, do not induce vomiting. Get medical attention. **IN CASE OF FIRE:** Use water fog, dry chemical, CO₂, or “alcohol” foam. **IN CASE OF SPILL:** Absorb spill with inert material. Place residue in suitable container. Consult Material Safety Data Sheet for additional information.
Other Information

Chem One Corp. ("Chem One") shall not be responsible for the use of any information, product, method, or apparatus herein presented ("Information"), and you must make your own determination as to its suitability and completeness for your own use, for the protection of the environment, and for health and safety purposes. You assume the entire risk of relying on this Information. In no event shall Chem One be responsible for damages of any nature whatsoever resulting from the use of this product or products, or reliance upon this Information. By providing this Information, Chem One neither can nor intends to control the method or manner by which you use, handle, store, or transport Chem One products. If any materials are mentioned that are not Chem One products, appropriate industrial hygiene and other safety precautions recommended by their manufacturers should be observed. Chem One makes no representations or warranties, either express or implied of merchantability, fitness for a particular purpose or of any other nature regarding this information, and nothing herein waives any of Chem One’s conditions of sale. This information could include technical inaccuracies or typographical errors. Chem One may make improvements and/or changes in the product(s) and/or the program(s) described in this information at any time. If you have any questions, please contact us at Tel. 713-896-9966 or E-mail us at Safety@chemone.com

Key/Legend
EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration

Contact: Sue Palmer-Koleman, PhD
Contact Phone: (713) 896-9966

Revision Log
08/23/00 4:45 PM SEP Changed company name, Sect 1 and 16, from Corporation to Ltd.
05/31/01 9:31 AM HDF Checked exposure limits; made changes to Sect 9; overall review, add SARA 311/312 Haz Ratings.
08/20/01 2:25 PM CLJ Changed contact to Sue, non-800 Chemtrec Num.
02/18/02 10:50 AM HDF: Up-date of SARA Hazard Ratings.
07/31/03 7:00 PM HDF: Up-date of entire MSDS.
06/22/05 9:40 AM SEP Update IATA Section 14
09/05/06 3:16 PM SEP Updated DOT & IMO Section 14
10/15/08 9:09 AM DLY Changed Chem One Physical Address, Section 1
09/18/09 MMK Updated Section 14 limited & excepted quantities and exceptions
02/02/2015 GHS Revision all sections
This is the end of MSDS # C1-134

Revised By:
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