

MATERIAL SAFETY DATA SHEET**POTASSIUM PERMANGANATE SOLUTION**

PRODUCT CODE NUMBER(S): 6521-6, CAL 0482, CAL 0742, CAL 1055

PRODUCT IDENTIFICATION**Chemical Name and Synonyms:** *Potassium permanganate solution***Chemical Family:** *Inorganic salt solution***Chemical Formula:** *KMnO₄ in H₂O***Product Use:** *Laboratory reagent***Manufacturer's Name and Address:***Caledon Laboratories Ltd.
40 Armstrong Avenue
Georgetown, Ontario L7G 4R9***Telephone No:** *(905) 877-0101***Fax No:** *(905) 877-6666***Emergency Telephone No:** *CANUTEC (613) 996-6666***HAZARDOUS INGREDIENTS OF MATERIALS**

<i>Ingredients</i>	<i>%</i>	<i>TLV Units</i>	<i>CAS No.</i>
<i>Potassium permanganate</i>	<i>0.1 to 3</i>	<i>5 mg/m³ (Mn)</i>	<i>7722-64-7</i>

PHYSICAL DATA**Physical State:** *Liquid***Odour and Appearance:** *Clear purple liquid, odourless***Odour Threshold (ppm):** *Not applicable***Vapour Pressure (mm Hg):** *Similar to water***Vapour Density (Air = 1):** *Similar to water***Evaporation Rate:** *Similar to water***Boiling Point (degrees C):** *Similar to water***Freezing Point (degrees C):** *Similar to water***pH:** *~8.0***Specific Gravity:** *~1.00***Coefficient of Water/Oil distribution:** *Not available***SHIPPING DESCRIPTION****UN:** *Not regulated***T.D.G. Class:** *Not regulated***Pkg. Group:** *Not regulated***REACTIVITY DATA****Chemical Stability:** *Stable***Incompatibility with other substances:** *Potassium permanganate may react violently or explosively with strong acids, strong reducing materials, alcohols, active metals. Reactions may generate enough heat to cause fire.***Reactivity:** *Avoid excessive heat, ignition sources, generation of mist, incompatible and combustible materials.***Hazardous Decomposition Products:** *Small amounts of oxygen may be released***FIRE AND EXPLOSION DATA****Flammability:** *Not combustible but potassium permanganate is a strong oxidizer. Ignites or explodes in contact with organic or easily oxidizable substances or powdered metals, promotes combustion of inflammable materials. Solutions evaporated to dryness present a fire hazard.***Extinguishing Media:** *Use an extinguisher appropriate to the surrounding material that is burning, or use flooding amounts of water. Use water as spray or fog to minimize dust, absorb heat, cool containers, and disperse vapours. Firefighters should wear protective equipment (and clothing sufficient to prevent inhalation of mists or fumes and contact with skin and eyes.***Flash Point (Method Used):** *None***Autoignition Temperature:** *Not applicable***Upper Flammable Limit (% by volume):** *Not applicable***Lower Flammable Limit (% by volume):** *Not applicable***Hazardous Combustion Products:** *May emit oxygen, increasing combustion***Sensitivity to Impact:** *None identified***Sensitivity to Static discharge:** *None identified***TOXICOLOGICAL PROPERTIES AND HEALTH DATA****Toxicological Data:****LD₅₀:** *(oral, rat) 750 mg/kg (KMnO₄)***LC₅₀:** *Not available***LC_{Lo}:** *(human) 143 mg/kg***Effects of Acute Exposure to Product:****Inhaled:** *May be harmful. High concentrations are extremely destructive to tissue of the mucous membranes and upper respiratory tract, causing shortness of breath, laboured breathing, choking.***In contact with skin:** *Dilute aqueous solutions are mildly irritating. Concentrated solutions or the solid are highly corrosive and may cause severe burns with redness, pain, and a thick brownish-purple area of dead tissue..***In contact with eyes:** *Dilute aqueous solutions are irritating. Strong solutions and crystals can cause severe eye damage, with ulceration, swelling, lacrimation, bleeding. Damage may cause permanent clouding of the cornea.***Ingested:** *Harmful. May cause gastrointestinal irritation, nausea, vomiting, diarrhea. The fatal oral dose of potassium permanganate is estimated to be about 10 g. Non-fatal doses may cause liver or kidney damage.***Effects of Chronic Exposure to Product:***Proplonged or repeated exposure to manganese compounds can cause liver and kidney damage, harmful effects to the CNS, with difficulty walking and speaking, weakness or cramps in the legs, poor co-ordination, tremors of the limbs, trouble with memory and judgement, and unstable emotions. A higher than normal level of pneumonia has*

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been found in workers exposed to airborne manganese compounds.

Carcinogenicity: Not listed as carcinogenic by ACGIH, IARC, NTP.

Teratogenicity: No human information available. Tests on laboratory animals were not teratogenic and were embryotoxic only at doses toxic to the mother.

Reproductive Effects: No specific information available. Male miners with chronic manganese poisoning have reported impotence and decreased sexual desire.

Mutagenicity: No human information available. Mutation data cited in tests involving bacteria and mouse cells.

Synergistic Products: None known

PREVENTIVE MEASURES

Engineering Controls: Local exhaust recommended

Respiratory Protection: Use in a fumehood. Up to 10 mg/m³: NIOSH/OSHA approved dust and mist respirator (not single-use or quarter mask; up to 25 mg/m³: powered air-purifying respirator with dust and mist filters or continuous-flow supplied-air respirator; up to 50 mg/m³: full face-piece respirator with high-efficiency particulate filters, or continuous-flow supplied-air respirator with tight-fitting facepiece, or self-contained breathing apparatus or supplied-air respirator; up to 500 mg/m³: positive pressure supplied-air respirator; higher or unknown concentrations, or fire or spill conditions - self-contained breathing apparatus with a full facepiece operated in positive pressure mode.

Eye Protection: Chemical safety goggles and face shield.

Skin Protection: Polyethylene, Responder™ gloves; other impervious protective clothing, apron, sleeves, coveralls, boots, as required to prevent contact.

Other Personal Protective Equipment: Safety shower and eye-wash fountain in work area.

Leak and Spill Procedure: Restrict access to spill area. Ventilate area. Eliminate all ignition sources and isolate from combustible materials. Cleanup personnel must be thoroughly trained in the handling of hazardous products and in the hazards of this particular product, and must wear protective equipment and clothing sufficient to prevent inhalation of dust or fumes, and contact with skin and eyes. Do not touch spilled material. Keep combustible and organic materials (wood, paper, oil, etc.) away from spilled material. Mix with wet sand and collect in a manner that does not raise dust, for re-use or disposal. Prevent from entering sewers or waterways. Contaminated absorbent may pose the same hazards as the spilled product; treat with caution. Wash area of spillage and contaminated equipment and clothing thoroughly with copious amounts of water.

Waste Disposal: Follow all federal, provincial and local regulations.

Handling Procedures and Equipment: OXIDIZER, TOXIC. Workers using this chemical must be thoroughly trained in its hazards and its safe use and must wear appropriate protective equipment and clothing. Keep away from combustible or organic materials, and all sources of ignition. Avoid generation of mist. Avoid inhalation and contact with skin and eyes. Use the smallest possible amount for the purpose, in designated areas with adequate ventilation. Keep work area clean and free of extraneous, particularly combustible, materials. Keep containers closed when not in use and when empty. Empty containers may contain hazardous residues; treat with caution.

Storage Requirements: Store in suitable, labelled containers, a cool, dry, well-ventilated area, out of direct sunlight and away from food and water, heat, and incompatible materials. Keep containers tightly closed when not in use and when empty.

Protect from damage, and inspect frequently for signs of leaking. Store away from ignition sources and incompatible materials. Storage facilities should be constructed of non-combustible materials. Have appropriate fire extinguishers in and near storage area.

FIRST AID MEASURES

Specific Measures:

Eyes: Flush eyes with warm running water for at least fifteen (15) minutes, or until no evidence of chemical remains, holding eyelids open while flushing. Take care not to flush contaminated water into non-affected eye. Wear protective gloves to avoid contact during first aid procedures. Obtain medical attention immediately.

Skin: Remove contaminated clothing (including shoes, watches, belts, and rings). Flush exposed area with large amounts of warm running water for at least fifteen (15) minutes, or until no evidence of chemical remains. Get medical attention. Decontaminate clothing before reuse, or discard; contaminated clothing can become dangerously combustible.

Inhalation: Remove to fresh air. Give oxygen and get medical attention immediately for any breathing difficulty, or for any indication of cyanosis (blueness in skin). Effects of pulmonary edema may be delayed for up to 72 hours; if exposure was severe, continue to monitor for at least that long.

Ingestion: DO NOT INDUCE VOMITING. If the casualty is alert and not convulsing, give 2 to 4 glasses of water or milk to dilute the material. If spontaneous vomiting occurs, have casualty lean forward to avoid breathing in of emesis. Rinse mouth and administer more water.

REFERENCES USED

CCINFO disc: Cheminfo

Royal Society of Chemistry: Chemical Safety Data Sheets, Vol 3., 1990

Sax, Lewis: Hawley's Condensed Chemical Dictionary, 11th ed., 1987

Suppliers' Material Safety Data Sheets

ADDITIONAL INFORMATION

Date Issued: July 15, 1991

Revision: October 2011

MSDS: 6521-6, CAL 0482, CAL 0742, CAL 1055

Proposed WHMIS Designation: C; E; Insufficient data for toxicological classification

Prepared by: Caledon Laboratories Ltd. (905) 877-0101
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