# MATERIAL SAFETY DATA SHEET

# Potassium Permanganate

## Section 01 - Chemical And Product And Company Information

**Product Identifier** ..... Potassium Permanganate, all grades

**Product Use** ..... Oxidizing & bleaching, disinifectant, deodorizer, remove iron & manganese from water, tanning, algicide, dye ingredient.

**Supplier Name**..... ClearTech Industries Inc.
2302 Hanselman Avenue
Saskatoon, SK. Canada
S7L 5Z3

**Prepared By**..... ClearTech Industries Inc. Technical Department
Phone: (306)664-2522

**Preparation Date**..... April 1, 2010

**24-Hour Emergency Phone**..... 306-664-2522

## Section 02 - Composition / Information on Ingredients

| | | |
|---|---|---|
| **Hazardous Ingredients**..... | Potassium permanganate | 97-100% |
| **CAS Number**..... | Potassium permanganate | 7722-64-7 |

**Synonym (s)**..... Permanganic acid, potassium permanganate free flow NSF, potassium permanganate BP crystals NSF, potassium permanganate BP crystals, potassium permanganate free flow, Condy's crystals, permanganate of potash.

## Section 03 - Hazard Identification

**Inhalation**..... Excessive inhalation is irritating to the nose, throat, and upper espiratory tract. It may cause central nervous system depression, spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema. Symptoms of over-exposure include burning, coughing, laryngitis, shortness of breathe, headache, nausea, and vomiting.

**Skin Contact / Absorption**..... Severe irritation or burns.

**Eye Contact**..... Severe irritation or burns. Usually where the chemical touches the eye a hardened, ulcer-like dark-brown injury develops. Swelling of the eyelid and conjunctiva as well as bleeding can occur. Permanent eye eye damage is possible.

**Ingestion**..... Ingestion causes burns to the mouth and throat and severe gastro-intestinal distress. Symptoms include nausea, vomiting, abdominal pain, a slowing of the pulse, and shock with a fall in blood pressure. Generally ingestion of concentrations up to 1% cause burning of the throat, nausea, vomiting, and abdominal pain. Ingestion of concentrations from 1% to 3% cause anemia and swelling of the throat with possible suffocation. Ingestion of concentration from 3% to 5% may cause kidney damage.

**Exposure Limits**..... OSHA/PEL= 5mg/$m^3$

## Section 04 - First Aid Measures

**Inhalation**..... Remove victim to fresh air. Give artificial respiration only if breathing has stopped. If breathing is difficult, give oxygen. Seek immediate medical attention.

**Skin Contact / Absorption**..... Remove contaminated clothing. Wash affected area with soap and water. Seek medical attention if irritation occurs or persists.

**Eye Contact**..... Flush immediately with water for at least 20 minutes. Forcibly hold eyelids apart to ensure complete irrigation of eye tissue. Seek immediate medical attention

**Ingestion**..... Call physician. If swallowed do not induce vomiting. If conscious give large amounts of water. Follow with diluted vinegar, fruit juice or whites of eggs beaten with water.

**Additional Information**..... Not available

## Section 05 - Fire Fighting

**Conditions of Flammability**……..... Non-flammable. However, the product is a strong oxidizer and will give off oxygen when heated.

**Means of Extinction**.....……..... Use water spray to blanket fire, cool fire exposed containers, and to flush nonignited spills or vapors away from fire. Suffocating type extinguishers are not as effective as water. Do not allow water runoff to enter sewers or waterways.

**Flash Point**...…….. Not applicable

**Auto-ignition Temperature**……. Not applicable

**Upper Flammable Limit** …….. Not applicable

**Lower Flammable Limit**...…….…... Not applicable

**Hazardous Combustible Products**... Thermal decomposition yields oxygen and toxic fumes of manganese oxides.

**Special Fire Fighting Procedures**..... Wear NIOSH-approved self-contained breathing apparatus and protective clothing. Potassium permanganate is a NFPA Class 2 Oxidizer, it will increase the burning rate or cause spontaneous ignition of combustible material with which in comes into contact.

**Explosion Hazards**……..... Strong oxidants may explode when shocked, or if exposed to heat, flame, or friction. Also may act as initiation source for dust or vapor explosions. Contact with oxidizable substances may cause extremely violent combustion. Sealed containers may rupture when heated. Sensitive to mechanical impact.

## Section 06 - Accidental Release Measures

**Leak / Spill**.....……..... Wear appropriate personal protective equipment. Ventilate area. Stop or reduce leak if safe to do so. Prevent material from entering sewers. Soak up spill with absorbent material which does not react with spilled chemical. Put material in suitable, covered, labelled containers. Flush area with water. Shovel spilled solid into clean, dry, labelled containers and cover. Flush area with water.

**Deactivating Materials**...…….. Neutralize with dilute solutions of sodium sulphite, sodium metabisulphite, sodium bisulphite, or sodium thiosulphate.

## Section 07 - Handling and Storage

**Handling Procedures**..... Use proper equipment for lifting and transporting all containers. Use sensible industrial hygiene and housekeeping practices. Wash thoroughly after handling. Avoid all situations that could lead to harmful exposure.

**Storage Requirements**..... Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage and moisture. Isolate from any source of heat or ignition. Avoid storage on wood floors. Separate from incompatibles, combustibles, organic or other readily oxidizable materials. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

## Section 08 - Personal Protection and Exposure Controls

### Protective Equipment

**Eyes**..... Chemical goggles, full-face shield, or a full-face respirator is to be worn at all times when product is handled. Contact lenses should not be worn; they may contribute to severe eye injury.

**Respiratory**..... None required where adequate ventilation exists. If airborne concentration exceeds the TLV by up to 10 times a half face particulate respirator is required. For airborne concentrations up to 50 times the TLV, a full face NIOSH approved dust/mist respirator is required. For higher levels or where the concentration is unknown a self contained breathing apparatus is recommended.

**Gloves**..... Impervious gloves of chemically resistant material (rubber or PVC) should be worn at all times. Wash contaminated clothing and dry thoroughly before reuse.

**Clothing**..... Body suits, aprons, and/or coveralls of chemical resistant material should be worn at all times. Wash contaminated clothing and dry thoroughly before reuse.

**Footwear**..... Impervious boots of chemically resistant material should be worn.

### Engineering Controls

**Ventilation Requirements**..... Mechanical ventilation (dilution or local exhaust), process or personnel enclosure and control of process conditions should be provided. Supply sufficient replacement air to make up for air removed by exhaust systems.

**Other**..... Emergency shower and eyewash should be in close proximity.

## Section 09 - Physical and Chemical Properties

**Physical State**..... Solid

**Odor and Appearance**..... Odourless dark purple to bronze crystals

**Odor Threshold**..... Not applicable

**Specific Gravity (Water=1)**..... 2.70

**Vapor Pressure (mm Hg, 20C)**..... Not available

**Vapor Density (Air=1)**..... Not available

**Evaporation Rate**..... Not available

**Boiling Point**..... Not available

**Freeze/Melting Point**..... Decomposes at approximately 240°C

**pH**..... Not available

**Water/Oil Distribution Coefficient**.... Not available

**Bulk Density**..... 166.8 lb/ft$^3$

**% Volatiles by Volume**..... 0% at 21°C

**Solubility in Water**..... 65g/L @ 20°C

**Molecular Formula**..... $KMnO_4$

**Molecular Weight**..... 158.04

## Section 10 - Stability and Reactivity

**Stability**..... Stable under ordinary conditions of use and storage.

**Incompatibility**..... Organic materials, combustible materials, reducing agents, strong acids, peroxides, alcohols, ammonium nitrate, ammonium perchlorate, dichloromethylsilane, antimony, arsenic, phosphorous, sulphur, titanium, carbon, iron salts, mercury salts, hypophosphites, hyposulphites, sulphites, oxalates, halides, hydrides, arsenites, and heat.

**Hazardous Products of Decomposition**.. Contact with hydrochloric acid liberates chlorine. Explodes when in contact with sulphuric acid, peroxides, nitric acid, alcohols, arsenic, phosphorous, sulphur, titanium, and anhydrides. Contact with other incompatibles results in ignition and rapid burning.

**Polymerization**..... Will not occur.

## Section 11 - Toxicological Information

**Irritancy**..... Strong irritant or corrosive

**Sensitization**..... Repeated contact may cause sensitization in some individuals.

**Chronic/Acute Effects**..... Repeated intake of manganese compounds by ingestion & inhalation can result in chronic manganese poisoning characterized by impairment of the central nervous system. Early symptoms include sluggishness, sleepiness, and weakness of the legs. Advances cases show uncontrollable laughter, spastic gait, emotional disturbances, fixed facial expressions, and falling down while walking. A higher incidence of pneumonia has been found in workers exposed to some airborne managanese compounds. Men exposed to manganese dusts showed a decrease in fertility. Target organs: respiratory system, central nervous system, blood, and kidneys.

**Synergistic Materials**..... Not available

**Animal Toxicity Data**..... $LD_{50}$(oral,rat): 1090mg/kg

**Carcinogenicity**..... Not considered to be carcinogenic by IARC or ACGIH

**Reproductive Toxicity**..... May have adverse reproductive effects.

**Teratogenicity**..... Not considered a teratogen in "Dangerous Properties of Industrial Materials" 7th edition.

**Mutagenicity**..... Potassium permanganate caused mutations in several short-term tests involving bacteria and mouse cells.

## Section 12 - Ecological Information

**Fish Toxicity**..... Not available

**Biodegradability**..... Not available

**Environmental Effects**..... Not available

## Section 13 - Disposal Consideration

**Waste Disposal**.....Dispose in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.

## Section 14 - Transportation Information

**TDG Classification**

**Class**..... 5.1

**Group**..... II

**PIN Number**..... UN 1490

**Other**..... Secure containers (full and/or empty) with suitable hold down devises during shipment.

## Section 15 - Regulatory Information

**WHMIS Classification**.....C, E

**NOTE: THE PRODUCT LISTED ON THIS MSDS HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CANADIAN CONTROLLED PRODUCTS REGULATIONS. THIS MSDS CONTAINS ALL INFORMATION REQUIRED BY THOSE REGULATIONS.**

**NSF Certification**.....Product is certified under NSF/ANSI Standard 60 for disinfection and oxidation at a maximum dosage of 50mg/L (note: only free flow and BP crystals that are labeled as NSF are certified).

## Section 16 - Other Information

**Note:** The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations.

**Attention: Receiver of the chemical goods / MSDS coordinator**

As part of our commitment to the Canadian Association of Chemical Distributors (CACD) Responsible Distribution® initiative, ClearTech Industries Inc. and its associated companies require, as a condition of sale, that you forward the attached Material Safety Data Sheet(s) to all affected employees, customers, and end-users. ClearTech will send any available supplementary handling, health, and safety information to you at your request.

If you have any questions or concerns please call our customer service or technical service department.

# ClearTech Industries Inc. - Locations

**Corporate Head Office: 2302 Hanselman Avenue, Saskatoon, SK, S7L 5Z3**
**Phone: 306-664-2522**
**Fax: 306-665-6216**

**www.ClearTech.ca**

| Location | Address | Postal Code | Phone Number | Fax Number |
|---|---|---|---|---|
| Richmond, B.C. | 12431 Horseshoe Way | V7A 4X6 | 604-272-4000 | 604-272-4596 |
| Calgary, AB. | 5516E - 40th St. S.E. | T2C 2A1 | 403-279-1096 | 403-236-0989 |
| Edmonton, AB. | 11750 - 180th Street | T5S 1N7 | 780-452-6000 | 780-452-4600 |
| Saskatoon, SK. | 2302 Hanselman Avenue | S7L 5Z3 | 306-933-0177 | 306-933-3282 |
| Regina, SK. | 555 Henderson Drive | S42 5X2 | 306-721-7737 | 306-721-8611 |
| Winnipeg, MB. | 340 Saulteaux Crescent | R3J 3T2 | 204-987-9777 | 204-987-9770 |
| Mississauga, ON. | 7480 Bath Road | L4T 1L2 | 905-612-0566 | 905-612-0575 |

## 24 Hour Emergency Number - All Locations - 306-664-2522