

Potassium Permanganate

SECTION 1 – PRODUCT AND SUPPLIER IDENTIFICATION

Product:Potassium PermanganateSupplier:SingleTrack Solutions Corp.Address:4838 Richard Road SW, Calgary, Alberta, Canada T3E 6L1Office:1-587-353-4119

Product detail Product Name: Potassium Permanganate Synonyms: Permanganate of potash / potassium salt Permanganic acid CAS No.: 7722-64-7

SECTION 2 – HAZARD(S) IDENTIFICATION

Physical Hazards Oxidizing Solid: Category 2

Health Hazards Acute Toxicity (Oral): Category 4 Skin Corrosion/Irritation: Category 1 Serious Eye Damage/Irritation: Category 1 Reproductive Toxicity: Category 2 Specific Target Organ Toxicity (Repeated Exposure): Category 2

Environmental Hazards Acute Aquatic Toxicity: Category 1 Chronic Aquatic Toxicity: Category 1

Signal Word Danger

Hazard Statements H272: May intensify fire; acts as an oxidizer. H302: Harmful if ingested. H314: Causes severe skin burns and eye damage. H361: Suspected of impairing fertility or harming the unborn child. H373: Risk of brain damage through inhalation. H410: Extremely toxic to aquatic life with prolonged effects.



Pictograms



Precautionary Statements

Prevention:

P201: Obtain special instructions before use.

P202: Do not handle until all safety precautions have been read and understood.

P210: Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking.

P220: Keep away from clothing and other combustible materials.

P260: Do not breathe dust or fumes.

P264: Thoroughly wash affected body parts after handling.

P270: Avoid eating, drinking, or smoking when using this product.

P273: Prevent release into the environment.

P280: Use appropriate personal protective equipment such as gloves, protective clothing, and eye and face protection.

Response Procedures

P301 + P312 + P330: If swallowed, rinse mouth. Do not induce vomiting. If you feel unwell, call a Poison Center or doctor.

P303 + P361 + P353 + P363: If on skin (or hair), immediately remove all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse.

P304 + P340 + P310: If inhaled, move the person to fresh air and keep comfortable for breathing. Immediately call a Poison Center or doctor.

P305 + P351 + P338: If in eyes, rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308 + P313: If exposed or if you are concerned, seek medical advice or attention.

P314: Seek medical advice or attention if you feel unwell.

P391: Collect spillage.

Storage and Disposal Guidelines

Storage:

P405: Keep securely locked up.

Disposal:

P501: Dispose of contents and container in accordance with all applicable federal, provincial, and local regulations, including the Canadian Environmental Protection Act.

Other hazards not contributing to the classification: None under normal conditions.



SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

Substance Type: Mono-constituent

Name	Product Identifier	%
Potassium Permanganate	(CAS-No.) 7722-64-7	100

GHS-US classification

Ox. Sol. 2, H272 Acute Tox. 4 (Oral), H302 Aquatic Acute 1, H400 Aquatic Chronic 1, H410

For full text of hazard classes and H-statements see section 16

SECTION 4 – FIRST-AID MEASURES

General First-Aid Measures: Monitor vital signs. If unconscious, ensure airway is open and breathing is adequate. For respiratory arrest, provide artificial respiration or administer oxygen. In cases of cardiac arrest, perform CPR. If conscious but experiencing labored breathing, position the victim half-seated. For shock, lay the victim on their back with legs slightly raised. Prevent aspiration pneumonia by managing vomiting carefully. Avoid cooling but do not warm the victim; cover to maintain body temperature. Continuously monitor the victim and provide psychological support to keep them calm and prevent physical strain. Based on the victim's condition, seek medical attention or transport to a hospital as needed.

First-Aid Measures After Inhalation: Move the victim to fresh air immediately. If the victim experiences respiratory issues, consult a doctor or medical service without delay.

First-Aid Measures After Skin Contact: Rinse the affected skin immediately with plenty of water for at least 15 minutes; use a shower if available. Avoid applying chemical neutralizing agents. Remove contaminated clothing during the rinsing process, but do not remove clothing that sticks to the skin. Cover any wounds with a sterile bandage. If the burned surface area is greater than 10%, transport the victim to a hospital. Consult a doctor or medical service.

First-Aid Measures After Eye Contact: Immediately rinse eyes with plenty of water for at least 15 minutes. Do not use neutralizing agents. Take the victim to see an ophthalmologist immediately. **First-Aid Measures After Ingestion:** Rinse the mouth with water. Provide large amounts of water to drink immediately after ingestion, but do not induce vomiting. Seek immediate medical attention by consulting a doctor or medical service. Contact a Poison Information Centre. If possible, take the container or any vomit to the medical facility for analysis.

Most important symptoms and effects (acute and delayed) Symptoms and Effects of Exposure

After Inhalation: Immediate symptoms include a dry or sore throat, coughing, and irritation of the respiratory tract and nasal mucous membranes. High exposure may cause respiratory difficulties. Delayed symptoms may include a risk of lung edema.



After Skin Contact: Immediate effects are tingling, irritation, and potential staining of the skin. Continuous exposure can cause caustic burns or corrosion.

After Eye Contact: Immediate effects include corrosion and inflammation or damage to eye tissues. Continuous exposure can lead to permanent eye damage.

After Ingestion: Symptoms include nausea, vomiting, diarrhea, and irritation of the gastric and intestinal mucosa. Severe effects after absorbing large quantities may include potential esophageal perforation, shock, slowed heart action, low arterial pressure, possible laryngeal spasm or edema, and respiratory difficulties.

Chronic Symptoms: Ongoing or repeated exposure can result in respiratory issues, neurological impairment, disturbances in movement and coordination, muscle weakness, tremors, paralysis, and cramps.

Immediate medical attention and special treatment, if necessary

No additional information available

SECTION 5 – FIRE-FIGHTING MEASURES

Suitable and Unsuitable Extinguishing Media Suitable extinguishing media: Adapt extinguishing methods to the surrounding conditions. Preferably use large quantities of water.

Unsuitable extinguishing media: No known unsuitable extinguishing media.

Direct fire hazard: Non-combustible.

Indirect fire hazard: Promotes combustion.

For reactions involving a fire hazard, refer to "Reactivity Hazard".

Indirect explosion hazard: Involves reactions with explosion hazards; see "Reactivity Hazard" for details.

Reactivity: Decomposes when exposed to temperature rises, causing increased oxidation and fire hazards. Reacts with combustible materials, posing a risk of spontaneous ignition. Violent to explosive reactions with some acids, releasing toxic and corrosive gases/vapors. Reacts violently with many compounds including organic materials, strong reducers, and some metals, increasing the risk of fire or explosion.

Precautionary Measures for Fire: In the event of fire or heat exposure, stay upwind and consider evacuation if necessary.

Firefighting Instructions: Cool tanks or drums with water spray or remove them to a safe area. Avoid moving the load if it is exposed to heat.

Consider the environmental impact of firefighting water. Use water sparingly and try to collect or contain it if possible.

Protection During Firefighting: When exposed to heat or fire, use compressed air or oxygen breathing apparatus.



SECTION 6 – ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures

For Non-Emergency Personnel

Protective Equipment: Ensure wearing of gloves, a face shield, and protective clothing. For environments prone to dust cloud production, use compressed air/oxygen breathing apparatus and a dust-tight suit. For reactivity hazards, a gas-tight suit is recommended. Refer to "Material Handling" for guidelines on selecting appropriate protective clothing.

Emergency Procedures: Secure and mark the danger area. Prevent the formation of dust clouds and ensure no naked flames are present. Keep containers closed. Wash any contaminated clothing. In situations involving hazardous reactions, stay upwind. Consider evacuation if facing a reactivity hazard.

Measures in Case of Dust Release

In the event of dust production, stay upwind and advise nearby residents to close doors and windows.

For Emergency Responders

Protective Equipment: Equip cleanup crews with appropriate protective gear. Avoid inhaling dust. **Emergency Procedures:** In the event of a major spill, immediately evacuate all personnel and ventilate the area. Stop any further release and continue to ventilate the affected area.

Environmental Precautions

Take measures to prevent soil and water pollution. Avoid spreading contaminants in sewers.

Methods and Material for Containment and Cleaning Up

For Containment: Contain the released substance and pump it into suitable containers. Refer to "Material Handling" for guidance on selecting appropriate container materials. Seal any leaks and shut off the supply to prevent further release. For solid spills, dam up the area. Use water spray to knock down or dilute dust clouds. If there is a reaction, use water spray to dilute any toxic gases or vapors. Be mindful of toxic or corrosive precipitation from the used water.

Methods for Cleaning Up: Address dust clouds by covering them with sand or earth. Scoop up solid spills into sealable containers. Collect all residues carefully; spilled materials should not be returned to their original containers. Clean contaminated surfaces thoroughly using an excess of water. After handling, ensure that all clothing and equipment are washed.

Reference to other sections

No additional information available



SECTION 7 – HANDLING AND STORAGE

Precautions for Safe Handling: Comply with all legal requirements related to the handling of the substance. Immediately remove any contaminated clothing and ensure it is cleaned before reuse. Maintain the purity of the substance; avoid contamination. Utilize corrosion-proof equipment to prevent any damage or reactions. Thoroughly clean and dry all installations before use to ensure safety and functionality. Do not dispose of waste materials into the drainage system. Minimize the production of dust during handling. Keep the substance away from naked flames and sources of heat to prevent any risk of ignition. Adhere to stringent hygiene practices to avoid any direct contact with the substance. Keep all containers tightly sealed to prevent leaks and contamination. Regularly monitor the concentration of the substance in the air to ensure it does not exceed safe levels. Conduct operations in well-ventilated areas or outdoors when possible. If ventilation is insufficient, use appropriate respiratory protection to safeguard against inhalation risks.

Conditions for Safe Storage, Including Any Incompatibilities

Heat and Ignition: Keep the substance away from all heat sources to prevent accidental ignition.

Prohibitions on Mixed Storage: Do not store this substance with incompatible materials such as:

- Combustible materials
- Reducing agents
- Strong acids
- Metal powders
- Cellulosic materials
- Organic materials
- Alcohols
- Peroxides

Storage Area Requirements: Store at ambient temperatures and keep out of direct sunlight. Ensure the area is dry. Utilize a fireproof storeroom to mitigate risk of fire. Access to the storage area should be restricted to authorized personnel only. Keep substances only in their original containers and limit the quantity stored. Comply with all applicable legal requirements for storage.

Special Rules on Packaging: Ensure packaging is closed, clean, correctly labeled, and meets legal requirements. Place fragile packaging within solid containers to prevent damage and leakage.

Packaging Materials

Suitable Materials: Use durable and non-reactive materials like steel, aluminum, glass, or stoneware/porcelain.

Materials to Avoid: Do not use wood, cellulosic materials, or any other materials that may react with the substance or degrade over time.



SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Potassium Permanganate (7722-64-7)			
ACGIH	ACGIH TWA (mg/m ³)	0.1 mg/m3 (Manganese, inorganic compounds, as Mn; USA; Time-weighted average exposure limit 8 h ; TLV -Adopted Value; Inhalable fraction)	
OSHA	OSHA PEL (Ceiling) (mg/m ³)	5 mg/m ³ as Mn	
IDLH	US IDLH (mg/m ³)	500 mg/m ³ as Mn	
NIOSH	NIOSH REL (TWA) (mg/m ³)	1 mg/m ³ as Mn	
NIOSH	NIOSH REL (ceiling) (mg/m ³)	3 mg/m ³ as Mn	

Appropriate engineering controls: Emergency eye wash fountains should be available in the immediate vicinity of any potential exposure.

Individual protection measures/personal protective equipment

Gloves, Safety glasses, Dust protection



Materials for protective clothing

Excellent Resistance: Polyethylene offers excellent resistance and is highly recommended. **Good Resistance:** Butyl rubber, PVC, and polyethylene/ethylene vinyl alcohol also provide good resistance and are suitable choices for handling.

Hand Protection: Wear gloves made from materials that resist chemical penetration and provide durability during handling.

Eye Protection: Use a face shield for general protection.

In environments where dust is produced, wear protective goggles to prevent eye exposure.

Skin and Body Protection: Protective clothing is essential to shield the skin from potential hazards. In scenarios involving dust production, additional head and neck protection is advised. Employ dustproof clothing to protect against fine particulates that may be present in the environment.

Respiratory Protection

For Dust Production: Use a dust mask equipped with a P3 filter, which is designed to filter out fine particulate matter, providing effective protection against dust exposure.

For High Dust Production: Employ a self-contained breathing apparatus (SCBA) to ensure complete respiratory protection in environments with high levels of airborne particles, offering a secure and isolated air supply.



SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Physical Properties	
Physical State:	Solid
Appearance:	Crystalline solid or crystalline powder.
Color:	Dark violet brown.
Odor:	Odorless.
Chemical Properties	
Odor Threshold:	Data not available.
pH:	Ranges from 7.0 to 8.5 in a 1.6% solution.
pH Solution Concentration:	1.6%.
Melting Point:	Greater than 240°C.
Freezing Point:	Data not available.
Boiling Point:	Not applicable.
Flash Point:	Not applicable.
Relative Evaporation Rate:	No data available.
Flammability (Solid, Gas):	No data available.
Vapor Pressure:	Less than 0.1 hPa at 20°C.
Vapor Density	
(Relative to Air at 20°C):	No data available.
Relative Density:	2.7.
Specific Gravity/Density:	2700 kg/m³.
Molecular Mass:	158.03 g/mol.
Solubility and Stability	
Solubility:	Moderately soluble in water (6.4 g/100ml), soluble in ethanol, methanol,
	acetone, acetic acid, sulfuric acid, and pyridine.
Log Pow	
(Partition Coefficient):	-1.73 (estimated value).
Auto-Ignition Temperature:	Not applicable.
Decomposition	
Temperature:	Greater than 240°C.
Viscosity	
(Kinematic and Dynamic):	No data available.
Explosion Limits:	No data available.
Explosive Properties:	No data available.
Oxidizing Properties:	May intensify fire; acts as an oxidizer.
Minimum Ignition Energy:	Not applicable.
Stable At Normal Ambient	
Temperature and Pressure (SADT):	Not applicable.
Volatile Organic Compound	
(VOC) Content:	Not applicable.

Disclaimer: This Data Sheet provides information without warranty or guarantee. "Physical Properties" are representative values, not specifications. Users must assess product suitability for their applications. For more products visit us at:



Additional Characteristics Opacity: Reactivity:

Opaque. Substance exhibits basic reactions.

SECTION 10 – STABILITY AND REACTIVITY

Reactivity: Decomposes upon exposure to increased temperatures, leading to oxidation that heightens the fire hazard. Reacts with combustible materials, posing a risk of spontaneous ignition. Can undergo violent to explosive reactions with some acids, resulting in the release of toxic and corrosive gases/vapors. Reacts violently with many compounds, including organic materials, strong reducers, and some metals, potentially increasing the risk of fire or explosion.

Chemical Stability: Generally stable under normal conditions.

Possibility of Hazardous Reactions: Reacts exothermically with combustible materials, heightening the risk of fire.

Conditions to Avoid: Exposure to incompatible materials, which can trigger hazardous reactions.

Incompatible Materials: Strong reducing agents, organic compounds, combustible materials, and metals are particularly incompatible and should be avoided.

Hazardous Decomposition Products: Decomposition can produce hazardous by-products, including manganese.

SECTION 11 – TOXICOLOGICAL INFORMATION

Information on toxicological effects Likely routes of exposure: Skin and eye contact; inhalation

Acute toxicity : Oral : harmful if swallowed

Potassium Permanganate (7722-64-7)	
LD50 oral rat	1090 mg/kg (rat)
ATE US (oral)	1090 mg/kg body weight

Safety Classification and Toxicological Information

Skin Corrosion/Irritation: Not classified.

pH: Ranges from 7.0 to 8.5 at a 1.6% concentration.

Serious Eye Damage/Irritation: Not classified.

pH: Ranges from 7.0 to 8.5 at a 1.6% concentration.

Respiratory or Skin Sensitization: Not classified.

Disclaimer: This Data Sheet provides information without warranty or guarantee. "Physical Properties" are representative values, not specifications. Users must assess product suitability for their applications.



Germ Cell Mutagenicity: Not classified. Carcinogenicity: Not classified. Reproductive Toxicity: Not classified. **Specific Target Organ Toxicity** Single Exposure: Not classified. Specific Target Organ Toxicity Repeated Exposure: Not classified.

Aspiration Hazard: Not classified.

Symptoms and Effects by Exposure Type

After Inhalation: Immediate effects include a dry or sore throat, coughing, and irritation of the respiratory tract and nasal mucous membranes. High concentration exposure can lead to respiratory difficulties. Delayed symptoms may include a risk of lung edema.

After Skin Contact: Symptoms include tingling and irritation of the skin, which may also stain. Continuous exposure/contact can result in caustic burns or skin corrosion.

After Eye Contact: Causes corrosion and inflammation or damage to eye tissues. Continuous exposure/contact may cause permanent eye damage.

After Ingestion: Initial symptoms include nausea, vomiting, and diarrhea, along with irritation of the gastric and intestinal mucosa. Severe effects after absorbing large quantities may include possible esophageal perforation, shock, slowed heart action, low arterial pressure, potential laryngeal spasm or edema, and respiratory difficulties.

Chronic Symptoms: Continuous or repeated exposure/contact can lead to respiratory difficulties, impairment of the nervous system, and disturbances in movement and coordination. Additional chronic effects include muscle weakness (myasthenia), tremors, paralysis, cramps or uncontrolled muscular contractions, memory impairment, and emotional instability.

SINGLETRACK



SECTION 12 – ECOLOGICAL INFORMATION

Ecological Toxicity

General: Classified as dangerous for the environment, indicating significant potential ecological harm. **Air:** Not classified as dangerous for the ozone layer according to Regulation (EC) No 1005/2009. Classified under TA-Luft Klasse 5.2.2/III, indicating its impact category based on German air quality standards. **Water:** Identified as a severe pollutant to surface waters and as a groundwater pollutant.

Toxic to aquatic life, specifically harmful to fish populations.

Highly toxic to aquatic invertebrates, including Daphnia (water fleas), indicating significant ecological impact on aquatic ecosystems.

Potassium Permanganate (7722-64-7) EC50 Daphnia 1 LC50 fish 2 Threshold limit algae 1	0.235 mg/l (EC50; 24 h) 1.22 mg/l (LC50; 96 h) 10 mg/l (EC50; 4 h)
Potassium Permanganate (7722-64-7) Persistence and degradability Biochemical oxygen demand (BOD)	Biodegradability: not applicable Not applicable
Potassium Permanganate (7722-64-7) Chemical oxygen demand (COD) ThOD	Not applicable Not applicable
Potassium Permanganate (7722-64-7) Log Pow Bioaccumulative potential	-1.73 (estimated value) Bioaccumulation: not applicable.

Mobility in soil: No additional information available

Other adverse effects: No additional information available

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Disposal Recommendations

General Guidelines: Dispose of waste in compliance with local and national regulations. Hazardous waste should not be mixed with non-hazardous waste. Different types of hazardous waste should not be combined if there is a risk of pollution or if it complicates further waste management processes. Handle hazardous waste responsibly to ensure it does not pose risks to the environment or health of people and animals.



Specific Measures: Consider recycling or reusing materials where possible. Immobilize toxic or harmful components to mitigate their environmental impact. Dispose of waste at an authorized Class I landfill or waste management facility.

Regulatory Information: In the Netherlands, classified as KGA (Klein Gevaarlijk Afval - Small Hazardous Waste) category 06 under the LWCA (Landelijk Waste Classification Agency). Recognized as hazardous waste according to the European Directive 2008/98/EC, which sets the framework for waste management standards in the EU.

These recommendations ensure the safe and environmentally responsible disposal of hazardous materials, aligning with both local and international waste management standards.

SECTION 14 – TRANSPORATION INFORMATION

Transportation Guidelines for Potassium Permanganate According to DOT UN Number (DOT): UN1490 Proper Shipping Name (DOT): Potassium Permanganate Transport Hazard Class(es) (DOT): 5.1 (Oxidizer) Packing Group (DOT): II - Medium Danger Hazard Labels (DOT): Oxidizer



Dangerous for the Environment: Yes **Marine Pollutant:** Yes



DOT Packaging Requirements: Non-Bulk (49 CFR 173.xxx): 212

Bulk (49 CFR 173.xxx): 240

DOT Special Provisions (49 CFR 172.102):

IB8: Authorized Intermediate Bulk Containers (IBCs) include: Metal: Types 1A, II B, II N, 21A, 21B, 21N, 31A, 31B, and 31N Rigid plastics: Types II H1, II H2, 21H1, 21H2, 31H1, and 31H2 Composite: Types II HZ1, II HZ2, 21HZ1, 21HZ2, 31HZ1, and 31HZ2 Fiberboard: Type II G Wooden: Types II C, II D, and II F Flexible: Types 13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1, or 13M2



IP2: Non-metal or non-rigid plastics IBCs must be transported in a closed freight container or transport vehicle.

IP4: Flexible, fiberboard, or wooden IBCs must be sift-proof and water-resistant, or fitted with a siftproof and water-resistant liner.

T3: Standard portable tank requirements per 49 CFR § 78.274(d)(2) and § 78.275(d)(2).

TP33: Portable tank instructions for substances like potassium permanganate when transported as granular, powdered solids or as solids which are filled and discharged at temperatures above their melting point and then cooled and transported as a solid mass. Applicable portable tank instruction is T4 for solid substances of packing group III or T7 for solid substances of packing group II, unless more stringent requirements apply.

These specifications ensure safe and compliant transport of potassium permanganate, accounting for its hazardous nature and potential environmental impacts.

DOT Transportation Guidelines for Potassium Permanganate (Continued)

Special Provision TP3

Solids defined as elevated temperature materials must be transported in compliance with applicable requirements detailed in this subchapter.

DOT Packaging Exceptions (49 CFR 173.xxx):

Exception number: 152

DOT quantity Limitations:

Passenger Aircraft/Rail (49 CFR 173.27): Maximum allowable quantity is 5 kg. Cargo Aircraft Only (49 CFR 175.75): Maximum allowable quantity is 25 kg.

DOT Vessel Stowage Location:

Location: Category D - The material must be stowed 'on deck only' on both cargo and passenger vessels. For passenger vessels, the number of passengers must not exceed the greater of 25 passengers or one passenger for every 3 meters of overall vessel length. The use of this material is prohibited on passenger vessels where the limiting number of passengers is exceeded.

DOT Vessel Stowage Other Requirements:

Stowage Code 56: Must be stowed 'separated from' ammonium compounds. Stowage Code 58: Must be stowed 'separated from' cyanides.

Additional Information: No supplementary information is available regarding further specifics of transport or handling. These regulations ensure that potassium permanganate is transported safely and in accordance with federal regulations, minimizing risks to both the environment and public health.



SECTION 15 – REGULATORY INFORMATION

Canadian Regulations:

International Inventories

This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.

	Country(s) or region	Inventory name	On inventory (yes/no) *	
	Canada	Domestic Substances List (DSL)	Yes	
	Canada	Non-Domestic Substances List (NDSL)	No	
	United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes	

*A "Yes" indicates that all components of this product are listed on the inventory administered by the governing country(s) or are exempt. A "No" indicates that one or more components of the product are not listed on the inventory administered by the governing country(s)

SECTION 16 – OTHER INFORMATION

These SDS summaries at the date of issue our best knowledge of the health and safety hazard information of the product, and how to safely handle and use the product in the workplace. Since SingleTrack Solutions cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, review this SDS in the context of how the user intends to handle and use the product in the workplace.

If clarification or further information is needed to ensure that an appropriate assessment can be made, the user should contact this company. Our responsibility for product as sold is subject to our standard term and conditions, a copy of which is sent to our customers and is also available upon request.

Last Revision Date: 9/14/2023