

# School Material Safety Data Sheet

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POTASSIUM  
PERMANGANATE  
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## SECTION 1. INTRODUCTORY INFORMATION

**MATERIAL NAME AND FORMULA:** POTASSIUM PERMANGANATE,  $\text{KMnO}_4$   
**SYNONYMS:** Chameleon Mineral; Condy's Crystals; Cairox; Permanganic Acid, Potassium Salt  
**CAS NUMBER:** 7722-64-7  
**INGREDIENTS:** Potassium Permanganate, >95%  
**DOT CLASSIFICATION:** Oxidizer



**MANUFACTURERS INCLUDE:** Always request Material Safety Data Sheets from your chemical supplier. These should indicate the manufacturer of the substance and include an emergency phone number to call. The Manufacturers section of this book contains a listing of some of the larger manufacturers and available emergency numbers.

**DESCRIPTION:** Dark purple or bronzelike crystals, odorless.

**PRELIMINARY INFORMATION:** This material is a powerful oxidizing agent. Because of its reactive nature as well as its potential for damage to body tissues, its use should be kept to a minimum in a school laboratory setting. Most common area of use would be in the chemistry lab. See sects. 2 and 5 for more details.

## SECTION 2. USE AND STORAGE INFORMATION

### -- PRELIMINARY PLANNING CONSIDERATIONS --

- Safety glasses or goggles and protective clothing (rubberized apron, etc.) should be worn for all experiments.
- Be sure eyewash station and safety shower are in good working order and readily available.
- For safety, contact lenses should not be worn in the laboratory: soft lenses may absorb and all lenses may concentrate irritants. Particles can adhere to contact lenses and cause corneal damage.
- Always provide for safe disposal of all chemical waste generated in the lab. Check applicable regulations prior to use.
- Eliminate all possible sources of ignition. Nearby electrical service and equipment should be explosion proof (no spark-generation potential).
- Whenever possible, substitute less hazardous materials.
- Can increase the flammability of combustible materials.  $\text{KMnO}_4$ -contaminated clothing can be an increased fire hazard.
- Can explode on sudden heating - wear face protection - common cause of eye accidents.
- especially in the presence of an acid. Concentrated acids liberate oxygen; with HCl, chlorine is liberated.

### -- USAGE PRECAUTIONS AND PROCEDURES --

- No smoking in storage or use area.
- READ THE LABEL and follow all precautions.
- Maintain good housekeeping practices to avoid unintentional mixing with incompatible materials.
- Avoid creating airborne dust conditions.
- After working with this material, always wash hands and face before eating, drinking, or smoking.
- Avoid breathing dust.
- Avoid all skin contact - rubber gloves and long sleeves are recommended.
- Explosive in contact with sulfuric acid or hydrogen peroxide.
- Strong skin irritant - dry crystals and concentrated solutions are highly corrosive.
- Spontaneously flammable on contact with glycerine and ethylene glycol (ref. 511).

### -- ADDITIONAL INFORMATION --

- Potassium permanganate is stable in closed containers at room temperature under normal storage and handling conditions.
- This material does not undergo hazardous polymerization.
- Incompatible under certain conditions with metallic powders, phosphorous, carbon, sulfur, hydrazine, metal hydrides, peroxides, alcohol, excessive heat, etc. Violent reactions can occur with these and other combustible materials.
- This is a powerful oxidizing agent. It is readily decomposed by many reducing substances such as ferrous salts, iodides, oxalates, etc.

### -- PREFERRED STORAGE LOCATION AND METHODS --

- Storage area should be cool and well ventilated. Containers should be tightly closed.
- Do not store chemicals alphabetically by name; store by chemical family instead to keep compatibles together.
- All chemical containers should be protected from physical damage and kept out of direct sunlight.
- Purchase only amounts equivalent to one year's needs, if at all.
- Store with compatible materials on sturdy shelving.
- Keep separate from organic, oxidizable, and reducing materials.
- Keep away from sulfuric acid and hydrogen peroxide.
- Smoking should not be permitted in areas where chemicals are stored.

## SECTION 3. SPILLS & DISPOSAL PROCEDURES

### IF MATERIAL IS SPILLED:

- Eliminate all possible sources of ignition. Adjacent electrical service and equipment should be explosion proof (no spark-generation potential).
- Scoop up large spills for recovery or disposal. Avoid creating airborne dust conditions.
- Cover small spills or residue with a reducer (hypo, a bisulfate, or a ferrous salt; but not carbon, sulfur, or strong reducing agent). Mix well and spray with water. To promote rapid reduction, add 3M -  $\text{H}_2\text{SO}_4$  with reducer above. Scoop into a container of water and neutralize with soda ash. Wash residue with soap solution containing some reducer.

### DISPOSAL OF SMALL QUANTITIES:

- Follow Federal, state, and local regulations.
- Add material to a 50% hypo. solution. Add 3M -  $\text{H}_2\text{SO}_4$  to acidify. Allow time (several hours) for reduction to occur. Neutralize with  $\text{NaHCO}_3$  or dilute HCl. Dispose of solution down drain with large excess of water if regulations permit.

**DISPOSAL OF LARGER AMOUNTS OF UNWANTED CHEMICALS:** Contact a licensed disposal company.

\*\*\* FOLLOW ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS FOR ALL WASTE DISPOSAL \*\*\*

## SECTION 4: HEALTH HAZARDS

- No TLV established (TLV for Mn: 5 mg/m<sup>3</sup> ceiling level).
  - Woman, Oral, TDLo: 2.4 mg/kg/day. TFX: GI Tract
  - Rat, Oral, LD<sub>50</sub>: 1090 mg/kg
  - Rabbit, Oral, LDLo: 700 mg/kg
  - Inhalation of dust may cause irritation to the nasal and respiratory passages.
  - Eye contact with dust may cause irritation, redness, tearing, or blurred vision.
  - Prolonged or repeated skin contact can cause irritation, defatting, and dermatitis.
  - Dilute solutions are mildly irritating; dry crystals and concentrated solutions are highly corrosive.
  - Ingestion can cause brown discoloration and burns of the mouth with edema of the glottis, GI irritation, nausea, vomiting, and diarrhea.
  - Some studies indicate possible mutagenic properties.
- Potassium permanganate has not been identified as a known or suspected carcinogen by the NPT, IARC, or OSHA.

## SECTION 5: FIRST AID PROCEDURES

## Eye contact:

- Flush eyes promptly with plenty of running water for at least 15 minutes, including under the eyelids.
- Get prompt medical attention.\*

## Skin contact:

- Wash exposed areas of skin with soap and water.
- Remove contaminated clothing promptly.
- Get medical help when area of skin exposure is large or if irritation persists.\*

## Inhalation:

- Remove victim to fresh air; restore and/or support breathing as necessary.
- Get medical help for coughing or breathing difficulty.\*

## Ingestion:

- Get prompt medical attention.\*
- Give three glasses of milk or water to drink.
- If physician is not immediately available, induce vomiting -- but ONLY if victim is conscious and alert. Gastric lavage may be necessary.
- Never give anything by mouth to a person who is unconscious or convulsing.

\* Get medical help (in school, paramedic, or community) for treatment, observation, and support after first aid.

## SECTION 6: FIRE PROCEDURES AND DATA

- Extinguishing media: Water spray or water. Suffocating types of extinguishers may not be as effective as water because decomposition of KMnO<sub>4</sub> can release oxygen, which supports combustion.
- Can be a fire hazard when brought into contact with organic or readily oxidizable material, either liquid or solid.
- For fires involving a number of chemicals, fire fighters should wear appropriate protective clothing and use respiratory protection. Self-contained breathing apparatus is recommended.
- A water spray may be used to cool fire-exposed containers and disperse vapors.

FLASH POINT AND METHOD(S) (CC): ... Not Applicable

AUTOIGNITION TEMPERATURE: ... Not Applicable

FLAMMABILITY LIMITS IN AIR (vol. %):

Lower ... Not Applicable Upper ... Not Applicable

## SECTION 7: PHYSICAL DATA

SOLUBILITY IN WATER: (@ 68°F) ... 65 g/l

SPECIFIC GRAVITY: ... 2.703

MELTING POINT: ... dec. @ <240°C

MOLECULAR WEIGHT ... 158.04

DATA SOURCES: Genium's Industrial MSDS #95 (10/81) and references 1, 4-11, 25, 34, 37, 39, 503, 507, 509, 510, 511, 512, 518.  
(see glossary for titles)

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