









Manganese and its compounds

including Manganese(IV) oxide (dioxide) & Potassium manganate(VII) (permanganate)

Substance	Hazard	Comment
Manganese (metal) Solid	LOW HAZARD	Note that the powder would be highly flammable.
Manganese(II) carbonate Solid	LOW HAZARD	Insoluble in water.
Manganese(II) chloride Solid and concentrated solutions (if 1.5 M or more)	 HARMFUL	WARNING: harmful if swallowed.
Manganese(II) chloride Dilute solutions (if less than 1.5 M)	LOW HAZARD	
Manganese(II) sulfate Solid and concentrated solutions (if 0.7 M or more)	  HEALTH ENVIRONMENT	WARNING: may cause damage to organs though prolonged or repeated exposure. Toxic to aquatic life with long-lasting effects.
Manganese(II) sulfate Dilute solutions (if less than 0.7 M)	LOW HAZARD	
Manganese(IV) oxide (Manganese dioxide) Solid	 HARMFUL	It is harmful by inhalation or if swallowed. It is often used as a fine powder. Many hazardous reactions occur with reducing agents or concentrated acids. It is used in dry cells (batteries). Insoluble in water.
Potassium manganate(VII) (permanganate) Solid	   OXID. HARMFUL ENVIR.	DANGER: oxidiser; harmful if swallowed; very toxic to aquatic life with long-lasting effects. Stains the hands and clothing. Many hazardous reactions occur with concentrated acids or reducing agents. On heating, releases a fine dust of potassium manganate(VI) [OXIDISER; IRRITANT] & oxygen gas.
Potassium manganate(VII) (permanganate) Most solutions (if 0.1 M or more)	 IRRITANT	WARNING: irritating to eyes and skin. Stains the hands and clothing.
All manganates(VII) (permanganates) Very dilute solutions (if less than 0.1M)	LOW HAZARD	They stain hands and clothing.

Typical control measures to reduce risk

- Wear eye protection.
- Avoid inhaling dusts.
- Avoid skin contact, especially with manganates(VII).
- Avoid contact between manganates(VII) or manganese(IV) oxide and concentrated acids or reducing agents.

Assessing the risks

- **What are the details of the activity to be undertaken? What are the hazards?**
- **What is the chance of something going wrong?**
eg, dust is accidentally inhaled.
- **How serious would it be if something did go wrong?**
eg, are there hazardous reactions, eg, violent oxidations or decompositions?
- **How can the risk(s) be controlled for this activity?**
eg, can it be done safely? Does the procedure need to be altered? Should goggles or safety spectacles be worn?

Emergency action

- **In the eye** Flood the eye with gently-running tap water for at least 10 minutes. Consult a medic.
- **Swallowed** Do no more than wash out the mouth with water. Do **not** induce vomiting. Consult a medic.
- **Spilt on the skin or clothing** Remove contaminated clothing and rinse it. Wash off the skin with plenty of water. [Manganate(VII) will give permanent stains to clothing but stains to the skin will wear off in a few days.] If skin contamination is more than small, consult a medic.
- **Spilt on floor, bench, etc** Wear eye protection and gloves. Scoop up the solid. Rinse the area with water and wipe up, rinsing repeatedly. [Manganate(VII) will give permanent stains.] Rinse the mop or cloth thoroughly.