










Manganese and its compounds

including manganese(IV) oxide (dioxide) and potassium manganate(VII) (permanganate)

Substance	Hazard	Comment
Manganese (metal) <i>Solid</i>	Currently not classified as hazardous	Note that the powder would be highly flammable.
Manganese(II) carbonate <i>Solid</i>		Insoluble in water.
Manganese(II) chloride <i>Solid and concentrated solutions (if 1.5 M or more)</i>	 IRRITANT	WARNING: harmful if swallowed.
Manganese(II) chloride <i>Dilute solutions (if less than 1.5 M)</i>	Currently not classified as hazardous	–
Manganese(II) sulfate <i>Solid and concentrated solutions (if 0.7 M or more)</i>	 HEALTH HAZ.  ENVIRON. HAZ.	WARNING: may cause damage to organs though prolonged or repeated exposure. Toxic to aquatic life with long-lasting effects.
Manganese(II) sulfate <i>Dilute solutions (if less than 0.7 M)</i>	Currently not classified as hazardous	–
Manganese(IV) oxide (Manganese dioxide) <i>Solid</i>	 HARMFUL	WARNING: 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) (potassium permanganate) <i>Solid</i>	 OXIDISING  HARMFUL  HEALTH HAZ.  ENV. HAZ	DANGER: oxidiser; harmful if swallowed; suspected of damaging the unborn child; 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) [OXIDISING; IRRITANT] and oxygen gas.
Potassium manganate(VII) (potassium permanganate) <i>Solutions (if 0.1 M or more)</i>	 IRRITANT	WARNING: irritating to eyes and skin. Stains the hands and clothing.
Potassium manganate(VII) (potassium permanganate) <i>Very dilute solutions (if less than 0.1M)</i>	Currently not classified as hazardous	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 such as 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 all emergency situations, alert the responsible adult immediately. Be aware that actions may include the following:

- In the eye Irrigate the eye with gently-running tap water for at least 20 minutes. Call 999/111.
- In the mouth/swallowed Do no more than rinse and spit with drinking water. Do **not** induce vomiting. Call 999/111.
- Spilt on the skin or clothing Remove contaminated clothing. Irrigate the affected area with gently-running tap water for at least 20 minutes. Call 999/111 as appropriate. Rinse clothing. Manganate(VII) will permanently stain clothing. Stains to the skin will wear off in a few days.
- Spilt on the 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.