CLIP, Chemical Laboratory Information Profile

"Only when you know the hazards, can you take the necessary precautionary measures."

Manganese(IV) Oxide MnO_2 CAS No.: 1313-13-9

Synonyms: Manganese dioxide, Manganese black

Physical Properties

Black powder, insoluble in water.
Vapor pressure at 20 °C: negligible
Melting point: decomposes at 535 °C

Exposure Limits

OSHA PEL: 5 mg/m^3, as Mn
OSHA CEILING 5 mg/m^3, as Mn
ACGIH TLV: 5 mg/m^3, as Mn

Hazardous Characteristics

Overall toxicity	Flammability	Destructive to skin/eye	Absorbed through skin	Sensitizer?	Self-reactive?	Incompatible with:
3	0	2	0	No	No	Hydrochloric acid, finely divided metals, acetylides, azides, hydrides, sulfides, and peroxides and other oxidizing agents*

0: None (or very low); 1: Slight; 2: Moderate; 3: High; 4: Severe.

***Reactivity Hazards**

Manganese(IV) oxide is a strong oxidizing agent; it oxidizes HCl forming Cl_2; it reacts violently with flammables, combustibles, and other reducing agents; it catalytically decomposes other oxidants, e.g., potassium chlorate, usually violently or even explosively; when heated it reacts violently with finely divided metals and with charcoal.
See Bretherick's *Handbook of Reactive Chemical Hazards* for details and for other incompatibilities.

Cited as known to be or reasonably anticipated to be carcinogenic in NTP-9?	No	Identified as a reproductive toxin in Frazier and Hage, *Reproductive Hazards of the Workplace*?	No convincing evidence.

Typical symptoms of acute exposures:

Inflammation of the skin and/or eyes, coughing, abdominal pain, nausea.

Principal target organ(s) or system(s):

Skin, eyes, respiratory tract, central nervous system, brain.

Storage Requirements

In a cool, dry, well-ventilated location, away from hydrochloric acid, flammables, combustibles, and other reducing agents.

Additional Remarks

At 535 °C manganese(IV) oxide decomposes into manganese(III) oxide and oxygen; consequently when it is involved in a fire the hazard is increased.

Notes

ReadMe

This Chemical Laboratory Information Profile is ***not*** a Material Safety Data Sheet. It is a brief summary for teachers and their students that describes some of the hazards of this chemical as it is typically used in laboratories. On the basis of your knowledge of these hazards and before using or handling this chemical, *you need to select the precautions and first-aid procedures to be followed.* For that information as well as for other useful information, refer to Material Safety Data Sheets, container labels, and references in the scientific literature that pertain to this chemical.

Reproductive Toxins

Some substances that in fact are reproductive toxins are not yet recognized as such. For the best readily available and up-to-date information, refer to "DART/ETIC". See the TOXNET home page at *www.sis.nlm.nih.gov* and click on "Toxicology search". *Note that some of the data in DART/ETIC have not been peer-reviewed.* See also Linda M. Frazier and Marvin L. Hage, *Reproductive Hazards of the Workplace*; Wiley, 1998; and T. H. Shepard, *Catalog of Teratogenic Agents*, 9th ed.; Johns Hopkins University Press, 1998.

Abbreviations

ACGIH TLV—American Conference of Governmental Industrial Hygienists–Threshold Limit Value. C—Ceiling. CAS—Chemical Abstracts Service. mg/m^3—milligrams per cubic meter. NA—Not applicable. NE—Not established. NI—No information. NTP-9—National Toxicology Program, Ninth Annual Report on Carcinogens. OSHA PEL—Occupational Safety and Health Administration–Permissible Exposure Limit. ppm—parts per million. STEL/C—Short-term exposure limit and ceiling.

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