



Section 1. Product and Company Identification

**Product Name** Manganese Citrate 28%  
**CAS Number** 10024-66-5

**Parchem - fine & specialty chemicals**

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EMERGENCY RESPONSE NUMBER  
CHEMTEL

Toll Free US & Canada: 1 (800) 255-3924

All other Origins: 1 (813) 248-0585

Collect Calls Accepted

Section 2. Hazards Identification

**GHS Label Elements**

**Pictograms:**



**Signal word:** WARNING

**Hazard and precautionary statements**

May cause an allergic reaction. Harmful in contact with skin. Cause skin irritation

**Potential Acute Health Effects:** Very Hazardous in case of ingestion. Hazardous in case of skin contact (irritant), eye contact (irritant), or inhalation. Slightly hazardous in case of skin contact (permeator).

**Potential Chronic Health Effects:** Chronic exposure to excessive manganese levels can lead to a variety of psychiatric and motor disturbances, termed manganism. In Initial stages of manganism, neurological symptoms consist of reduced response speed, irritability, mood changes, and compulsive behaviors. Symptoms include apathy, bradykinesia, gait disorder with postural instability, and spastic-hypokinetic dysarthria. Upon protracted exposure, symptoms are more prominent and resemble those of idiopathic Parkinson's disease. Symptoms are also similar to Lou Gehrig's disease and multiple sclerosis.

**Carcinogenic Effects:** Not available

**Mutagenic Effects:** Not available

**Teratogenic Effects:** Pregnant animals repeatedly receiving high doses of manganese bore malformed offspring significantly more often compared to controls.

**Developmental Toxicity:** Not available



Section 3. Composition / Information on Ingredients

**Common Name** Manganese Citrate 28%  
**Synonym(s)** Mixed Citric Acid Salts/Chelates of Manganese Carbonate  
**Formula**  $Mn_3(C_6H_5O_7)_2 \times 2H_2O, MnCO_3$   
**CAS Number** 10024-66-5

COMPONENT	CAS NUMBER	CONCENTRATION
Manganese Citrate	10024-66-5	80 – 100% wt.
Manganese Carbonate	598-62-9	0 – 20% wt.
Residual Water	7732-18-5	0 – 1% wt.

Section 4. First Aid Measures

**Eye Contact:** Check for and remove any contact lenses. Do not use an eye ointment. Seek medical attention.

**Skin Contact:** After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases, and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

**Serious Skin Contact:** Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

**Inhalation:** Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

**Serious Inhalation:** Not available.

**Ingestion:** Do not induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

**Serious Ingestion:** Not available.

Section 5. Firefighting Measures

**Flammability of the Product:** May be combustible at high temperature.

**Auto-Ignition Temperature:** Not available.

**Flash Points:** Not available.

**Flammable Limits:** Not available.

**Products of Combustion:** Some metallic oxides.

**Fire Hazards in Presence of Various Substances:** Not available.

**Explosion Hazards in Presence of Various Substances**

**Risks of explosion of the product in presence of mechanical impact:** Not available.

**Risks of explosion of the product in presence of static discharge:** Not available.



### Fire Fighting Media and Instructions

**Small Fire:** Use DRY chemical powder.

**Large Fire:** Use water spray, fog, or foam. Do not use water jet.

**Special Remarks on Fire Hazards:** Not available.

**Special Remarks on Explosion Hazards:** Not available.

### Section 6. Accidental Release Measures

**Small Spill:** Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

**Large Spill:** Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

### Section 7. Handling and Storage

**Precautions:** Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If you feel unwell, seek medical attention and show the label when possible. Avoid contact with skin and eyes.

**Storage:** Keep container dry. Keep in a cool place. Ground all equipment containing material. Keep container tightly closed. Keep in a cool, well-ventilated place. Combustible materials should be stored away from extreme heat and away from strong oxidizing agents.

### Section 8. Exposure Controls / Personal Protection

**Engineering Controls:** Use process enclosures. Local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist. Use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Personal Protection:** Splash goggles. Appropriate air supply/ventilation as deemed necessary by organization's employee air quality monitoring program. Gloves. Lab coat.

**Personal Protection in Case of a Large Spill:** Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

**Exposure Limits:** 5 micrograms Mn/m<sup>3</sup>.

Section 9. Physical and Chemical Properties

**Physical state and appearance:** Solid.

**Odor:** Not available.

**Taste:** Not available.

**Molecular Weight:** N/A mixture

**Color:** Not available.

**pH (1% Solution/Water):** Not available.

**Boiling Point:** Not available.

**Melting Point:** Decomposes.

**Critical Temperature:** Not available.

**Specific Gravity:** Not available.

**Vapor Pressure:** Not applicable.

**Vapor Density:** Not available.

**Volatility:** Not available.

**Odor Threshold:** Not available.

**Water/Oil Dist. Coefficient:** Not available.

**Ionicity (in Water):** Not available.

**Dispersion Properties:** Not available.

**Solubility:** Not available.

Section 10. Stability and Reactivity

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Not available.

**Incompatibility with various substances:** Not available.

**Corrosivity:** Non-corrosive in presence of glass.

**Special Remarks on Reactivity:** Not available.

**Special Remarks on Corrosivity:** Not available.

**Polymerization:** No.

Section 11. Toxicological Information

**Routes of Entry:** Eye contact. Inhalation. Ingestion.

**Toxicity to Animals**

**LD50:** Not available.

**LC50:** Not available.

**Chronic Effects on Humans:** Chronic exposure to excessive manganese levels can lead to a variety of psychiatric and motor disturbances, termed manganism. Generally, exposure to ambient manganese air concentrations in excess of 5 micrograms Mn/m<sup>3</sup> can lead to Mn-induced symptoms. In initial stages of manganism, neurological symptoms consist of reduced response speed, irritability,



mood changes, and compulsive behaviors.

**Other Toxic Effects on Humans:** Very hazardous in case of ingestion. Hazardous in case of skin contact (irritant), of inhalation. Slightly hazardous in case of skin contact (permeator).

**Special Remarks on Toxicity to Animals:** Not available.

**Special Remarks on Chronic Effects on Humans:** Symptoms include apathy, bradykinesia, gait disorder with postural instability, and spastic-hypokinetic dysarthria. Upon protracted exposure symptoms are more prominent and resemble those of idiopathic Parkinson's disease. Symptoms are also similar to Lou Gehrig's disease and multiple sclerosis. Pregnant animals repeatedly receiving high doses of manganese bore malformed offspring significantly more often compared to controls. Manganese may affect liver function, but the threshold of acute toxicity is very high. On the other hand, more than 95% of manganese is eliminated by biliary excretion. Any existing liver damage may slow this process, increasing its concentration in blood plasma. The exact neurotoxic mechanism of manganese is uncertain but there are clues pointing at the interaction of manganese with iron, zinc, aluminum, and copper. Based on a number of studies, disturbed iron metabolism could underlie the neurotoxic action of manganese.

**Special Remarks on other Toxic Effects on Humans:** Not available.

#### Section 12. Ecological Information

**Ecotoxicity:** Not available.

**BODS and COD:** Not available.

**Products of Biodegradation:** Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The products of degradation are more toxic.

**Special Remarks on the Products of Biodegradation:** Not available.

#### Section 13. Disposal Considerations

**Waste Treatment Methods:** Dispose of product and contaminated packaging in accordance with all local, state, and federal environmental control regulations.

#### Section 14. Transport Information

**DOT Classification:** Not a DOT controlled material (United States).

**Identification:** Not applicable.

**Special Provisions for Transport:** Not applicable.

#### Section 15. Regulatory Information

**Federal and State Regulations:** TSCA 8(b) inventory: Manganese carbonate SARA 313 toxic chemical notification and release reporting: Manganese and Manganese compounds, citric acid.



**Other Regulations:** OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

**WHMIS (Canada):** CLASS D-28: Material causing other toxic effects (TOXIC).

**DSCL (EEC):** R36/38- Irritating to eyes and skin.

This product is not classified according to the EU regulations. S22- Do not breathe dust. S24/25- Avoid contact with skin and eyes.

**HMIS Rating**

**Health:** 2

**Flammability:** 1

**Reactivity:** 0

**Personal Protection:** E

**NFPA Rating**

**Health:** 2

**Flammability:** 1

**Reactivity:** 0

**Protective Equipment:** Splash goggles. Appropriate air supply / ventilation as deemed necessary by organization's employee air quality monitoring program. Gloves. Lab coat.

Section 16. Other Information

**Disclaimer:** The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product.

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