



INTATRADE  
MATERIAL SAFETY DATA SHEET  
according to 1907/2006/EC, Article 31

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## 1. IDENTIFICATION OF SUBSTANCE AND OF THE COMPANY

Product name: **Manganese carbonyl**  
Product code: EO06782  
Company: INTATRADE Chemicals GmbH  
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## 2. HAZARDS IDENTIFICATION

### Emergency Overview

Appearance/Odor:

Yellow to gold to dark orange crystalline powder, odor not determined.

Classification:

ACUTE TOXICITY, ORAL - Category 3, H301

ACUTE TOXICITY, DERMAL - Category 3, H311

ACUTE TOXICITY, INHALATION - Category 3, H331

GHS label elements



Hazard pictograms

Signal word

**Danger**

Hazard Statements:

H301: Toxic if swallowed.

H311: Toxic in contact with skin.

H331: Toxic if inhaled.

Precautionary Statements

Prevention:

P261: Avoid breathing dusts/fumes/gases.

P264: Wash exposed skin thoroughly after handling.

P270: Do not eat, drink or smoke when using this product.

P271: Use only outdoors or in a well ventilated area.

P280: Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P302 + P352: IF ON SKIN: Wash with plenty of soap and water.

P304 + P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P311: Call a POISON CENTER or doctor/physician.

P330: Rinse mouth.

P361: Remove/Take off immediately all contaminated clothing.

P363: Wash contaminated clothing before reuse.

Storage:

P403 + P233: Store in a well ventilated place. Keep container tightly closed.

P405: Store locked up.

Disposal:

P501: Dispose of contents/ container to an approved wasted disposal plant.

General:

None.

OSHA/HCS Status:

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Hazards not otherwise classified (HNOC):

None known.

EO06782

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### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms:	Dimanganese decacarbonyl; decacarbonyl dimanganese; decacarbonyldimanganese.
Formula:	$C_{10}Mn_2O_{10}$
Molecular Weight:	389.98 g/mol.
CAS-No.:	10170-69-1
Manganese carbonyl	≥ 97.5

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

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### 4. FIRST AID MEASURES

#### Description of Necessary First Aid Measures

General Advice:	Move out of dangerous area. Consult a physician. Show this safety data sheet to the doctor in attendance.
Eye Contact:	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue rinsing for at least 20 minutes. Call a physician or POISON CONTROL CENTER immediately.
Skin Contact:	Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear impervious gloves. Continue to rinse for at least 20 minutes. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse. Dispose of leather shoes which have been contaminated. Call a physician or POISON CONTROL CENTER immediately.
Inhalation:	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Call a POISON CENTER or doctor/physician immediately.
Ingestion:	Call a physician or POISON CONTROL CENTER immediately. Rinse mouth. Do NOT induce vomiting. Remove dentures if any. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
Most Important Symptoms/Effects,	Acute And Delayed Potential Acute Health Effects
Eye Contact:	No specific symptoms identified.
Inhalation:	Toxic if inhaled. Symptoms may include dizziness, dull headache, weakness, blurred vision, a sense of confusion, shortness of breath, nausea or vomiting and loss of consciousness. See Section 11.
Skin Contact:	Toxic if in contact with skin. See inhalation symptoms and Section 11.
Ingestion:	Toxic if ingested. See inhalation symptoms and Section 11.
Indication of Immediate Medical Attention and Special Treatment Needed, If Necessary	
Notes to Physician:	Treat symptomatically.
Specific Treatments:	No specific treatment.
Protection of First Responders:	No action taken shall be taken involving any personal risk without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See Toxicological Information (Section 11)

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## 5. FIRE FIGHTING MEASURES

General Hazards:	None identified.
Suitable Extinguishing Media:	Use sand, water spray (fog), dry chemical or carbon dioxide (CO <sub>2</sub> ).
Unsuitable Extinguishing Media:	Do not use water jet.
Unusual Fire and In a fire or if heated	a, a pressure increase will occur and the
Explosion Hazards:	Product container may burst, with the risk of a subsequent release of product. To reduce the possibility of explosion, use a water spray or fog to cool unopened containers.
Product of Combustion:	Decomposition products may include carbon oxides (COX) and manganese oxide fumes.
Protection of Firefighters:	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Fire-fighters should wear appropriate protection equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in a positive pressure mode.

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## 6. ACCIDENTAL RELEASE MEASURES

### Personal Precautions, Protective Equipment and Emergency Procedures

For Non-Emergency Personnel:	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid the formation and inhalation of dusts, aerosols, vapors and gases. Provide adequate ventilation. Wear respiratory protection. Put on appropriate personal protective equipment.
For Emergency Responders:	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For Non-Emergency Personnel".
Environmental Precautions:	Do not allow dispersal of spilled material and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
Methods for Containment	
General:	Move containers from spill area if safe to do so. Avoid the formation and inhalation of dusts and aerosols.
Small Spill:	Contain and collect spillage with a dry binding material (e.g. sand, earth, vermiculite or diatomaceous earth) and place in dry, sealed container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor.
Large Spill:	Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with a dry binding material (e.g. sand, earth, vermiculite or diatomaceous earth) and place in dry, sealed container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

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## 7. HANDLING AND STORAGE

Precautions:	Product is air/light/heat sensitive; handle under a dry, inert gas. Nitrogen with less than 5 ppm each of moisture and oxygen is recommended. Avoid formation and inhalation of dusts and aerosols. Keep container tightly sealed. Avoid contact with skin, eyes and clothing. Do not ingest. Avoid prolonged exposure. Ensure adequate ventilation.
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Protective Measures:	Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing dusts, vapors or gases. Keep in the original container kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
General Occupational Hygiene:	Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
Safe Storage Conditions:	Product is air/light/heat sensitive; store under an inert gas. Nitrogen with less than 5 ppm each of moisture and oxygen is recommended. Store refrigerated at 2 – 8 °C. Store in original container protected from direct sunlight in a dry and well-ventilated area, away from incompatible materials and food and drink. Keep container tightly closed and sealed until ready for use. Store locked up.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Introductory Remarks:	These recommendations provide general guidance for handling this product. Because work environments and material handling practices vary, safety procedures should be developed for each intended application. While developing safe handling procedures, do not overlook the need to clean equipment and conduct regular repairs. Waste from these procedures should be handled in accordance with Section 13.			
Occupational Exposure Limits:				
List	Components	CAS-No.	Type	Value
ACGIH	Decacarbonyldimanganese	10170-69-1	TLV	0.02 mg/m <sup>3</sup> (Mn metal)
NIOSH	Decacarbonyldimanganese	10170-69-1	IDLH	500 mg/m <sup>3</sup> (Mn metal)
			STEL	3 mg/m <sup>3</sup> (Mn metal)
			TWA	1 mg/m <sup>3</sup> (Mn metal)
OSHA	Decacarbonyldimanganese	10170-69-1	PEL	5 mg/m <sup>3</sup> (Mn metal) Ceiling
Engineering Controls:	Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute. Provide an eyewash/shower station.			
Environmental Exposure Controls:	Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.			
Individual Protection Measures				
Hygiene Measures:	Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Remove all soiled and contaminated clothing immediately. Contaminated clothing should not be allowed out of the workplace. Do not inhale dusts/fumes/gases. Avoid contact with eyes and skin. Ensure that eyewash stations and safety showers are close to the workstation location.			
Eye/Face Protection:	Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles, faceshield (8-inch minimum). Refer to 29 CFR 1910.133, ANSI Z87.1, or European Standard EN166.			
Skin Protection				
Hand Protection:	Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be			

different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: Chemical-resistant gloves.

Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. For full contact, wear Neoprene or nitrile rubber gloves. Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other Skin Protection:

Respiratory Protection:

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multipurpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Crystalline powder.
Color:	Yellow to gold to dark orange.
Odor:	No data available.
Odor Threshold:	No data available.
pH:	No data available.
Melting Point:	154 °C (309.2 °F) -decomposes.
Boiling Point:	No data available.
Flash Point:	No data available.
Auto-ignition temperature:	No data available.
Specific Gravity:	No data available.
Vapor Pressure:	No data available.
Vapor Density:	No data available.
Water Solubility:	Insoluble @ 20 °C (68 °F).

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## 10. STABILITY AND REACTIVITY

Reactivity:	Product is air/light/heat sensitive.
Chemical Stability:	This product is stable when stored under a dry, inert atmosphere and away from heat. Nitrogen containing less than 5 ppm each moisture and air and a temperature range of 2 – 8 °C is recommended. This product is not sensitive to impact.
Conditions to Avoid:	Exposure to air, extremes of temperature and direct sunlight.
Incompatible Materials:	Strong oxidizing agents, air.
Hazardous Decomposition Products:	Under normal conditions of storage and use, hazardous decomposition products should not be produced. Hazardous decomposition products formed under fire conditions: carbon oxides (COX) and manganese oxides. Irritating fumes and organic acid vapors may be generated during exposure to elevated temperatures or open flame. In the event of a fire: see section 5.
Possibility of Hazardous Reactions:	Under normal conditions of storage and use, hazardous reactions will not occur. Hazardous reactions or instability may occur under certain conditions of storage or use.

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## 11. TOXICOLOGICAL INFORMATION

Information on Toxicological Effects

Acute Toxicity:	No specific data available.
Irritation/Corrosion:	No specific data available.
Sensitization:	No specific data available.
Germ Cell Mutagenicity:	No effects known.



Carcinogenity IARC:	No component of this product present at levels greater than 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH:	No component of this product present at levels greater than 0.1% is identified as probable, possible or confirmed human carcinogen by ACGIH.
NTP:	No component of this product present at levels greater than 0.1% is identified as probable, possible or confirmed human carcinogen by NTP.
OSHA:	No component of this product present at levels greater than 0.1% is identified as probable, possible or confirmed human carcinogen by OSHA.
Reproductive Toxicity:	No specific data.
Teratogenicity:	No specific data available.
Specific Target Organ Toxicity: (Single Exposure)	Respiratory tract irritation.
Specific Target Organ Toxicity: (Repeated Exposure)	Chronic exposure may result in Central Nervous System disorders.
Aspiration Hazard:	No specific data available.
Information on the Likely Routes of Exposure:	Common routes of exposure: inhalation (failure to prevent dust formation), dermal (failure to use skin protection), eye (failure to use safety eyewear). Less common: ingestion (failure to employ recommended hygiene measures (e.g. smoking after handling product without washing hands or using hand protection)).
Additional Information:	Men exposed to manganese dust show a decrease in fertility. A high incidence of pneumonia has been observed in workers exposed to the dust or fumes of some manganese compounds. Chronic manganese poisoning primarily affects the Central Nervous System (CNS). Early symptoms include languor, sleepiness and a weakness in the legs. A stolid, mask-like appearance of the face, emotional disturbances such as uncontrollable laughter and a spastic gait with a tendency to fall in walking have been observed in more advanced cases. To the best of our knowledge, the chemical, physical, toxicological and ecological properties of this product have not been thoroughly investigated.

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## 12. ECOLOGICAL INFORMATION

Numerical Measures of Toxicity	
Toxicity to Fish:	No specific data available.
Toxicity to Daphnia and other aquatic Invertebrates:	No specific data available.
Toxicity to Algae:	No specific data available.
Persistence and Degradability	
Biodegradability:	No specific data available.
Bioaccumulative Potential:	No specific data available.
Mobility in Soil:	No specific data available.
Other Adverse Effects:	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

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## 13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods	
Product:	Dispose of in accordance with local, state, and federal regulations. Refer to 40 CFR 260-299 for complete waste disposal regulations. Consult your local, state, or federal agency before disposing of any chemicals.
Contaminated Packaging:	Empty containers retain product residue (dust, vapors and gases) and can be dangerous. Dispose of as unused product.

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## 14. TRANSPORT INFORMATION

UN Number	DOT UN3467	IMDG UN3467	IATA UN3467
UN Proper Shipping Name	Organometallic compound, solid, toxic, n.o.s. (Dimanganese decacarbonyl)		
Transport Hazard Classes	6.1	6.1	6.1
Packing Group	II	II	II
Environmental Hazards	-	-	-
Additional Information	EMS No: F-A, S-A		
Special Precautions for User:	Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.		
Transporting in Bulk According to Annex II of MARPOL 73/78 and the IBC Code:	Not applicable.		

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## 15. REGULATORY INFORMATION

TSCA (Toxic Substance Control Act):	This product is listed on the U.S. Toxic Substances Control Act Chemical Inventory (TSCA Inventory).
SARA 302 Components	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components	This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
SARA 311/312 Hazards	Acute Health Hazard (Acute Toxicity: Oral, Dermal, Inhalation)

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## 16. OTHER INFORMATION

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. Intatrade Chemicals GmbH shall not be held liable for any damage resulting from handling or from contact with the above product.