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SAFETY DATA SHEET

Section 1. Identification

Product Name: Bromopentacarbonylmanganese(I)
Product Type: Solid
CAS Number: 14516-54-2
Product Number: MN6542
Recommended Use: Laboratory chemicals, synthesis of substances.
Product Manufacturer: Ereztech LLC
11555 Medlock Bridge Road, Suite 100
Johns Creek, GA 30097
Product Information: (888) 658-1221
In Case of an Emergency: CHEMTREC: 1-800-424-9300 (USA);
+1 703-527-3887 (International); CCN836180
*** Contact manufacturer for all non-emergency calls.

Section 2. Hazards Identification

Emergency Overview
Appearance/Odor: Orange crystalline powder, odor not determined.
Classification: ACUTE TOXICITY, ORAL - Category 4, H302
ACUTE TOXICITY, DERMAL - Category 4, H312
ACUTE TOXICITY, INHALATION - Category 4, H332

GHS Label Elements
Hazard Pictograms:

Signal Word: WARNING
Hazard Statements: H302: Harmful if swallowed.
H312: Harmful in contact with skin.
H332: Harmful if inhaled.

Precautionary Statements
Prevention: P261: Avoid breathing dusts/aerosols/fumes/gases.
P264: Wash hands and exposed skin thoroughly after handling.

Section 2. Hazards Identification

Prevention (cont.):
P270: Do not eat, drink or smoke when using this product.
P271: Use only outdoors or with adequate ventilation.
P280: Wear protective gloves/ protective clothing.

Response:
P301 + P317: IF SWALLOWED: Get medical help.
P302 + P352: IF ON SKIN: Wash with plenty of water.
P317: Get medical help.
P330: Rinse mouth.
P362 + P364: Take off contaminated clothing and wash it before reuse.

Storage: No applicable statements.

Disposal: P501: Dispose of contents/container in accordance with federal, state and local regulations.

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 identified.

Section 3. Composition/Information on Ingredients

Synonyms : Pentacarbonylbromomanganese(I); manganese pentacarbonyl bromide; carbon monoxide-bromomanganese(5:1)

Formula : BrC_5O_5Mn

Molecular Weight : 274.89 g/mol.

Ingredient Name	%	CAS Number
Bromopentacarbonylmanganese(I)	≥ 97.5	14516-54-2

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.

Section 4. First Aid Measures

Description of Necessary First Aid Measures

General Advice: Move out of dangerous area. Get medical help. 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 if present and easy to do. Continue rinsing for at least 20 minutes. Get medical help.

Section 4. First Aid Measures

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. Get medical help.

Inhalation: Remove victim to fresh air and keep 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 help 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. Get medical help.

Ingestion: 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 help immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical help.

Most Important Symptoms/Effects, Acute And Delayed Potential Acute Health Effects

Eye Contact: The acute eye effects of this product have not been determined.

Inhalation: The acute effects of inhalation of this product have not been determined.

Skin Contact: The acute effects of dermal contact of this product have not been determined.

Ingestion: The acute effects of ingestion of this product have not been determined.

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)

Section 5. Fire Fighting Measures

General Hazards: None identified.

Suitable Extinguishing Media: Use sand, water spray (fog), dry chemical or carbon dioxide (CO_2).

Unsuitable Extinguishing Media: Do not use water jet.

Section 5. Fire Fighting Measures

Unusual Fire and Explosion Hazards: If involved in a fire or if heated, a pressure increase will occur and the 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 monoxide, carbon dioxide, bromides 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. Avoid contact with skin or eyes. Avoid the formation and inhalation of dusts, aerosols, vapors and gases.

Fire-fighters should wear appropriate protection equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in a positive pressure mode.

Section 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: Stop leak/spillage and move containers from spill area if safe to do so. Avoid the formation and inhalation of dusts and aerosols. Dispose of collected spillage in accordance with federal, state and local regulations (see Section 13).

Section 6. Accidental Release Measures

General (cont.): Contaminated absorbent material may pose the same hazard as the spilled product.

Small Spill: Collect spillage with a dry binding material (e.g. sand, earth, vermiculite or diatomaceous earth) and place in dry, sealed container for disposal.

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.

Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and Storage

Precautions: Product is air/moisture/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.

Protective Measures: Put on appropriate personal protective equipment (see Section 8). 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/moisture/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.

Section 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	Bromopentacarbonylmanganese(I)	14516-54-2	TLV	0.02 mg/m^3 (Mn metal)
NIOSH	Bromopentacarbonylmanganese(I)	14516-54-2	IDLH	500 mg/m^3 (Mn metal)
			STEL	3 mg/m^3 (Mn metal)
			TWA	1 mg/m^3 (Mn metal)
OSHA	Bromopentacarbonylmanganese(I)	14516-54-2	PEL	5 mg/m^3 (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.

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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/aerosols/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 dusts, aerosols and vapors. 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.

Section 8. Exposure Controls/Personal Protection

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.

Other Skin Protection:

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.

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).

Section 9. Physical and Chemical Properties

Physical State: Crystalline powder.

Color: Orange.

Odor: No data available.

Odor Threshold: No data available.

pH: No data available.

Section 9. Physical and Chemical Properties

Melting Point:	No data available.
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:	No data available.

Section 10. Stability and Reactivity

Reactivity:	Product is air/moisture/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.
Conditions to Avoid:	Exposure to air, moisture and extremes of temperature.
Incompatible Materials:	Air, moisture, compounds containing active hydrogen (alcohols, acids) and strong oxidizing agents.
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 monoxide, carbon dioxide, bromides 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.

Section 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.

Section 11. Toxicological Information

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 available.
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.

Section 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.

Section 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, aerosols, vapors and gases) and can be dangerous. Dispose of as unused product.

Section 14. Transport Information

	DOT	IMDG	IATA
UN Number	Not regulated	Not regulated	Not regulated
UN Proper Shipping Name	-	-	-
Transport Hazard Classes	-	-	-
Packing Group	-	-	-
Environmental Hazards	-	-	-
Additional Information	-	-	-

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.

Section 15. Regulatory Information

TSCA (Toxic Substance Control Act):
This product is not listed on the U.S. Toxic Substances Control Act Chemical Inventory (TSCA Inventory). Use of this product is restricted to research and development only. This product must be used under the supervision of a technically qualified individual as defined by the TSCA. This product must not be used for commercial purposes or in formulations for commercial purposes.

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)

Massachusetts Right to Know Components
No components are subject to the Massachusetts Right to Know Act.

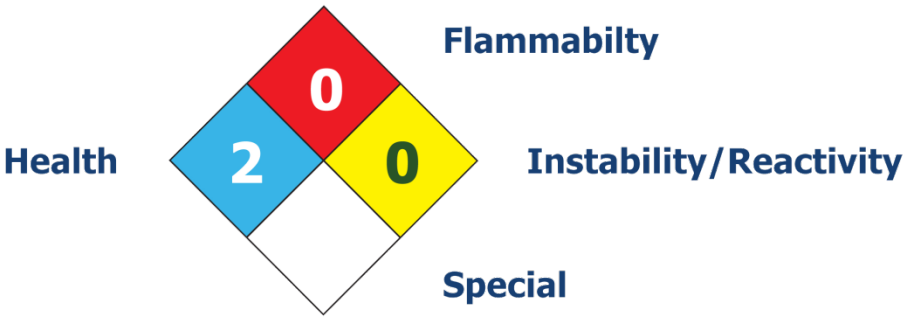
Pennsylvania Right to Know Components
No components are subject to the Pennsylvania Right to Know Act.

New Jersey Right to Know Components
No components are subject to the New Jersey Right to Know Act.

California Proposition 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

Section 16. Other Information

National Fire Protection Association (U.S.A.)



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Section 16. Other Information

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

HMIS Rating

HEALTH	2
FLAMMABILITY	0
PHYSICAL HAZARD	0

History

Date of Issue/Date of Revision : 11/14/2023

Date of Previous Issue : 6/10/2020.

References : None available.

Abbreviations and Acronyms

ACGIH: American Conference of Governmental Industrial Hygienists.
ATE: Acute Toxicity Estimate
CAS: Chemical Abstracts Service (division of the American Chemical Society).
CLP: Classification, Labeling and Packaging (European Union (EU)).
DOT: US Department of Transportation.
GHS: Globally Harmonized System of Classification and Labeling of Chemicals.
HMIS: Hazardous Materials Identification System.
HNOC: Hazards Not Otherwise Classified.
IARC: International Agency for Research on Cancer.
IATA: International Air Transport Association.
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA).
IDLH: Immediately Dangerous to Life or Health (US National Institute for Occupation Health and Safety (NIOSH)).
IMDG: International Maritime Code for Dangerous Goods.
NFPA: National Fire Protection Association.
NIOSH: National Institute of Occupational Safety and Health.
NTP: National Toxicology Program.
OECD: Organization for Economic Co-Operation and Development.
OEL: Occupational Exposure Limit.
OSHA: Occupational Safety and Health Administration.
PEL: Permissible Exposure Limits.
REL: Recommended Exposure Limits.
SARA: Superfund Amendments and Reauthorization Act.
STEL (ST): Short Term Exposure Limit (ACGIH/NIOSH)
STOT: Specific Target Organ Toxicity.
TLV: Threshold Limit Values (ACGIH).

Section 16. Other Information

Abbreviations and Acronyms (cont.)

TWA: Time Weighted Average.
VOC: Volatile Organic Compound.

Disclaimer

The information herein is believed to be accurate and is presented in good faith; however, no warranties or representations are made by Ereztech LLC regarding the accuracy or completeness of the information. Ereztech LLC shall not be liable for any damages resulting from the handling, or from the contact with the above product.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

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