



Material Safety Data Sheet

CARULITE® 500 Ethylene Oxide Oxidation Catalyst

Section 1 Chemical Product and Company Identification

MANUFACTURER'S NAME: CARUS CHEMICAL COMPANY	TELEPHONE NUMBER: (815) 223-1500 Fax: (815) 224-6816 Web: www.caruschem.com E-mail: catalyst@caruschem.com
MANUFACTURING FACILITY: Carus Chemical Company 1500 Eighth Street P. O. Box 1500 LaSalle, IL 61301	EMERGENCY TELEPHONE NO. (800) 435 - 6856 (USA) (815) 223 -1500 (other countries) CHEMTREC® TELEPHONE NO. (800) 424-9300 (USA)

Section 2 Composition and Information on Ingredients

SYNONYMS: None		
CLASS: Inorganic Oxides		
HAZARDOUS MATERIALS IDENTIFICATION SYSTEM ((HMIS):		
Health Hazard	1	
Flammability Hazard	0	
Reactivity Hazard	0	
Personal Protection Index	E	
<u>Hazardous Ingredients</u>		
<u>Material</u>	<u>CAS No.*</u>	<u>Hazard Data</u>
Manganese Dioxide air	1313-13-9	PEL** C**** 5 mg Mn per cubic meter of air TLV-TWA*** 0.2 mg Mn per cubic meter of air
Copper Oxide	1317-38-0	PEL** 1 mg Cu per cubic meter of air TLV-TWA*** 1mg Cu per cubic meter of air
* Chemical Abstract Service Number		
** OSHA Permissible Exposure Limit, manganese compounds (as Mn), copper dusts and mists (as Cu), 29 CFR 1910.1000 Table Z-1.		
*** American Conference of Governmental Hygienists, 1999. TLV-TWA = the time weighted average concentration for a normal 8-hour workday and a 40-hour work week, to which nearly all workers may be repeatedly exposed, day after day, without adverse effect.		
**** Ceiling Exposure Limit or maximum exposure concentration not to be exceeded under any circumstances.		



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Section 3 Hazards Identification

EFFECTS OF ACUTE EXPOSURE
1. Eye Contact: May cause eye irritation. 2. Skin Contact: May cause irritation or dehydrating of skin. 3. Inhalation: May cause nose, throat and lung irritation. 4. Ingestion: Irritating to mouth, throat and stomach.
EFFECTS OF CHRONIC EXPOSURE
Prolonged inhalation of manganese compounds above the ceiling exposure limit may cause lung irritation and central nervous system disorders. The symptoms simulate Parkinson's disease.
CARCINOGENICITY
NTP: not listed. IARC Monographs: not listed. OSHA Regulated: not listed.
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE
Dust or fine powder may further irritate mucous membranes or open wounds.

Section 4 First Aid Measures

EMERGENCY AND FIRST AID PROCEDURES
1. Eyes Immediately flush eyes with large amounts of water for at least 15 minutes holding lids apart to ensure flushing of the entire surface. Seek medical attention if irritation persists.
2. Skin Flush contaminated areas with large amounts of water. Remove contaminated clothing. Wash clothing before reuse.
3. Inhalation Remove person to fresh air. If breathing is difficult, administer oxygen. Seek medical attention.
4. Ingestion Never give anything by mouth to an unconscious or convulsing person. If conscious, give large quantities of water. Do not induce vomiting. Seek medical attention.

Section 5 Fire Fighting Measures

The material itself is noncombustible but may accelerate the burning of combustible material.
FLASHPOINT None
FLAMMABLE OR EXPLOSIVE LIMITS Lower: Nonflammable. Upper: Nonflammable.
EXTINGUISHING MEDIA Use extinguishing medium appropriate for surrounding materials.
SPECIAL FIREFIGHTING PROCEDURES None
UNUSUAL FIRE AND EXPLOSION HAZARDS Should not be heated or rubbed in contact with organic matter or other oxidizable substances. Keep away from heat and flammable materials. Potentially an oxidizer under certain conditions.



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Section 6 Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED

Clean up spills immediately by scooping CARULITE[®] Catalyst into a metal drum. Deactivate by soaking with water. Cover loosely. Flush contaminated floors with abundant quantities of water into sewer, if permitted by federal, state, or local regulations.

Section 7 Handling and Storage

Store in a cool, dry area in closed container. Segregate from easily oxidizable materials, peroxides, chlorates, and acids. Protect containers against physical damage.

Section 8 Protective Equipment To Be Used

VENTILATION REQUIREMENTS

Provide sufficient mechanical and/or local exhaust to maintain exposure levels below TLV-TWA limit for manganese.

RESPIRATORY PROTECTION

In cases where high dust exposure may exist, the use of NIOSH-MSHA dust respirator or an air-supplied respirator is advised. Engineering or administrative controls should be implemented to control dust.

EYE PROTECTION

Primary eye protection (safety glasses or goggles).

GLOVES

Rubber or plastic gloves should be worn.

OTHER PROTECTIVE EQUIPMENT

Normal work clothing is sufficient.

Section 9 Physical and Chemical Properties

BOILING POINT, 760 mm Hg Not applicable	VAPOR PRESSURE (mm Hg) Not applicable
SOLUBILITY IN WATER % BY SOLUTION	Insoluble
BULK DENSITY Approximately 0.8-0.9 g/cc	PERCENT VOLATILE BY VOLUME Not volatile
MELTING POINT Starts to decompose with evolution of oxygen at 454°C (850°F)	
APPEARANCE AND ODOR Black extruded, granulated, or powdered solid; odorless.	



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Section 10 Stability and Reactivity

STABILITY Stable under normal conditions. Moisture may reduce catalytic activity.
CONDITIONS TO AVOID Contact with incompatible materials or heat (454°C/850°F).
INCOMPATIBLE MATERIALS Contact with peroxides and chlorates may cause violent reaction under certain conditions, such as elevated temperature or friction. May ignite organic material, especially organic solvents. May initiate polymerization of monomers. May form unstable acetylides in contact with acetylene.
HAZARDOUS DECOMPOSITION PRODUCTS None
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION Not known to polymerize.

Section 11 Toxicological Information

Most diagnosed cases of manganese toxicity in humans have been reported following exposures to airborne concentrations of manganese above the TLV-TWA. The usual form of chronic manganese toxicity involves the central nervous system. Reports of adverse effects in humans from ingestion of manganese are rare.
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Section 12 Ecological Information

Inorganic manganese compounds have negligible vapor pressures but exist in air as suspended particulate matter, which settle under the influence of gravity. The transport of manganese in water is influenced by the solubility of the form present. Insoluble forms, such as manganese dioxide, are transported as sediments. The bioaccumulation of manganese in the food chain does not appear to be significant.

Section 13 Disposal Considerations

CARULITE® 500 is not considered a hazardous waste under 40 CFR 261. Dispose of deactivated CARULITE® in a landfill approved to accept chemical waste, after verifying that it is not contaminated with hazardous substances through usage.
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Section 14 Transport Information

Proper Shipping Name:	Manganese dioxide compound
ID Number:	Not regulated by DOT
Product R.Q. (lb.)	None



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Section 15 Regulatory Information

CARULITE® 500 ethylene oxide oxidation catalyst contains manganese compounds (CAS Reg. No. N/A) and copper compounds (CAS Reg. No. N/A) as part of the mixture and is subject to the reporting requirements of Section 313 of Title III Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. Components of this product are listed on the TSCA Inventory. Components of the product are listed on the Canadian Domestic Substances List.

Section 16 Other Information

MSDS Status: Revised December 2007

Supersedes Date: January 2005

Revised By: Chithambarathanu Pillai (S.O.F.)

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