



SAFETY DATA SHEET

1. Identification

Product identifier	CARULITE® 200 CATALYST
Other means of identification	
SDS number	-
Recommended use	Air purification media for the destruction of ozone and odors.
Recommended restrictions	Use in accordance with supplier's recommendations.
Manufacturer/Importer/Supplier/Distributor information	
Manufacturer/Supplier	
Company name	CARUS LLC
Address	315 Fifth Street, Peru, IL 61354, USA
Telephone	+1 815 223-1500 - All other non-emergency inquiries about the product should be directed to the company
E-mail	salesmkt@carusllc.com
Website	www.carusllc.com
Contact person	Shelley Corban
Emergency telephone number	For Hazardous Materials [or Dangerous Goods] Incidents ONLY (spill, leak, fire, exposure or accident), call CHEMTREC at CHEMTREC®, USA: 001 (800) 424-9300 CHEMTREC®, Mexico (Toll-Free - must be dialed from within country): 01-800-681-9531 CHEMTREC®, Other countries: 001 (703) 527-3887

2. Hazard identification

Physical hazards	Not classified.	
Health hazards	Acute toxicity, oral	Category 4
	Acute toxicity, inhalation	Category 4
	Specific target organ toxicity following repeated exposure (inhalation)	Category 2 (Brain)
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 2

Label elements



Signal word	Warning
Hazard statement	Harmful if swallowed or if inhaled. May cause damage to organs (Brain) through prolonged or repeated exposure by inhalation. Toxic to aquatic life.
Precautionary statement	
Prevention	Do not breathe dust/fume/gas/mist/vapours/spray. Use only outdoors or in a well ventilated area. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Avoid release to the environment.
Response	IF SWALLOWED: Call a POISON CENTRE/doctor if you feel unwell. Rinse mouth. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Get medical advice/attention if you feel unwell.
Storage	Store away from incompatible materials.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Supplemental information	None.

Other hazards

This product is a metal mixture and based on 28-day Transformation/Dissolution testing, does not meet the definition of environmentally hazardous.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Manganese dioxide		1313-13-9	40 - 70
Copper oxide		1317-38-0	15 - 40

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume. The exact concentrations of the above listed chemicals are being withheld as a trade secret.

4. First-aid measures

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a physician if symptoms develop or persist.

Skin contact Remove contaminated clothing. Wash off with soap and water. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops or persists.

Ingestion Rinse mouth. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical advice/attention if you feel unwell. Never give anything by mouth to a victim who is unconscious or is having convulsions.

Most important symptoms/effects, acute and delayed Dusts may irritate the respiratory tract, skin and eyes. Prolonged exposure may cause chronic effects.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General information If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable extinguishing media None.

Specific hazards arising from the chemical During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Carbon oxides (COx). Metal oxides.

Special protective equipment and precautions for firefighters Firefighters should wear full protective clothing including self contained breathing apparatus. Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace.

Fire fighting equipment/instructions Use water spray to cool unopened containers. Cool containers exposed to flames with water until well after the fire is out. Move container from fire area if it can be done without risk. In case of fire and/or explosion do not breathe fumes.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards Not itself combustible but assists fire in burning materials.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Keep unnecessary personnel away. Wear appropriate protective equipment and clothing during clean-up. Local authorities should be advised if significant spillages cannot be contained. Do not breathe dust.

Methods and materials for containment and cleaning up Stop the flow of material, if this is without risk. Dike far ahead of spill for later disposal. Following product recovery, flush area with water. For waste disposal, see Section 13 of the SDS.

Environmental precautions Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Minimise dust generation and accumulation. Provide adequate ventilation. Handle and open container with care. Do not breathe dust/fume/gas/mist/vapours/spray. Do not taste or swallow. Do not eat, drink or smoke when using the product. Avoid prolonged exposure. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Wash contaminated clothing before reuse. Avoid release to the environment. Observe good industrial hygiene practices. Avoid contact with eye, skin and clothing.

Conditions for safe storage, including any incompatibilities

Store locked up. Store in original tightly closed container. Store in a cool, dry place out of direct sunlight. Keep out of reach of children. Use care in handling/storage. Store away from incompatible materials (See Section 10).

8. Exposure controls/personal protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Copper oxide (CAS 1317-38-0)	TWA	1 mg/m ³	Dust and mist.
		0.2 mg/m ³	Fume.
Manganese dioxide (CAS 1313-13-9)	TWA	0.1 mg/m ³	Inhalable fraction.
		0.02 mg/m ³	Respirable fraction.

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value
Manganese dioxide (CAS 1313-13-9)	TWA	0.2 mg/m ³

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value	Form
Manganese dioxide (CAS 1313-13-9)	TWA	0.2 mg/m ³	Total
		0.02 mg/m ³	Respirable.

Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

Components	Type	Value	Form
Copper oxide (CAS 1317-38-0)	TWA	1 mg/m ³	Dust and mist.
		0.2 mg/m ³	Fume.
Manganese dioxide (CAS 1313-13-9)	TWA	0.1 mg/m ³	Inhalable fraction.
		0.02 mg/m ³	Respirable fraction.

Canada. New Brunswick OELs: Threshold Limit Values (TLVs) Based on the 1991 and 1997 ACGIH TLVs and BEIs Publication (New Brunswick Regulation 91-191)

Components	Type	Value
Manganese dioxide (CAS 1313-13-9)	TWA	0.2 mg/m ³

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value	Form
Copper oxide (CAS 1317-38-0)	TWA	0.2 mg/m ³	Fume.
Manganese dioxide (CAS 1313-13-9)	TWA	0.1 mg/m ³	Inhalable fraction.

Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety)

Components	Type	Value	Form
Manganese dioxide (CAS 1313-13-9)	TWA	0.2 mg/m ³	Fume, total dust.

Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21)

Components	Type	Value
Manganese dioxide (CAS 1313-13-9)	15 minute	0.6 mg/m ³
	8 hour	0.2 mg/m ³

Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. If material is ground, cut, or used in any operation which may generate dusts, use appropriate local exhaust ventilation to keep exposures below the recommended exposure limits. Ventilate as needed to control airborne dust. Observe occupational exposure limits and minimise the risk of inhalation of dust. Eye wash facilities and emergency shower must be available when handling this product. Provide adequate ventilation.
Individual protection measures, such as personal protective equipment	
Eye/face protection	Wear dust-resistant safety goggles where there is danger of eye contact.
Skin protection	
Hand protection	Wear protective gloves. Suitable gloves can be recommended by the glove supplier.
Other	Wear suitable protective clothing. Use of an impervious apron is recommended.
Respiratory protection	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. In case of inadequate ventilation or risk of inhalation of dust, use suitable respiratory equipment with particle filter. Seek advice from local supervisor.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Keep away from food and drink.

9. Physical and chemical properties

Appearance	
Physical state	Solid.
Form	Granular.
Colour	Brown or black.
Odour	Odourless.
Odour threshold	Not applicable.
pH	Not applicable (insoluble in water).
Melting point/freezing point	Property has not been measured.
Initial boiling point and boiling range	Property has not been measured.
Flash point	Not applicable (solid).
Evaporation rate	Not applicable (solid).
Flammability (solid, gas)	Non flammable.
Upper/lower flammability or explosive limits	
Explosive limit - lower (%)	Not applicable (solid).
Explosive limit – upper (%)	Not applicable (solid).
Vapour pressure	Property has not been measured.
Vapour density	Not applicable (solid).
Relative density	Property has not been measured.
Solubility(ies)	
Solubility (water)	Insoluble in water.
Partition coefficient (n-octanol/water)	Not applicable, product is a mixture.

Auto-ignition temperature	Not applicable (solid).
Decomposition temperature	704 °C (1299.2 °F)
Viscosity	Not applicable (solid).
Other information	
Bulk density	800 - 900 kg/m ³
Kinematic viscosity	Not applicable (solid).

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Stable under normal temperature conditions.
Possibility of hazardous reactions	Hazardous polymerisation does not occur.
Conditions to avoid	Avoid incompatible materials and intense heat.
Incompatible materials	Oxidising material. Combustible material. Organic material. Reducing Agents. Halogenated compounds. Strong acids. Aluminium.
Hazardous decomposition products	Carbon oxides. Metal oxides. Copper fumes.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Harmful if inhaled. Dust may irritate respiratory system or lungs.
Skin contact	Dust may irritate skin.
Eye contact	Dust in the eyes may cause irritation.
Ingestion	Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics Dust may irritate the respiratory tract, skin and eyes. Prolonged exposure may cause chronic effects.

Information on toxicological effects

Acute toxicity Harmful if inhaled or swallowed.

Components	Species	Test Results
Copper oxide (CAS 1317-38-0)		
Acute		
Dermal		
LD50	Rat	> 2000 mg/kg, 24 Hours (OECD Test Guideline 402)
Oral		
LD50	Rat	> 2500 mg/kg (OECD Test Guideline 423)

Skin corrosion/irritation Dust may cause skin irritation.

Corrosivity

Manganese dioxide (CAS 1313-13-9)	OECD 404, EU Method B.4 Result: Not irritating. Species: Rabbit
Copper oxide (CAS 1317-38-0)	OECD Test Guideline 404 Result: Not irritating. Species: Rabbit

Serious eye damage/eye irritation Dust may cause eye irritation.

Eye

Manganese dioxide (CAS 1313-13-9)	OECD 405, EU Method B.5 Result: Not irritating. Species: Rabbit
Copper oxide (CAS 1317-38-0)	OECD Test Guideline 405 Result: Not irritating. Species: Rabbit

Respiratory or skin sensitisation Not classified.

Respiratory sensitisation	Not classified.	
Skin sensitisation	Not classified.	
Skin Sensitisation Copper oxide (CAS 1317-38-0)		OECD Test Guideline 406 Result: Not sensitizing. Species: Guinea pig
Germ cell mutagenicity	Not classified.	
Carcinogenicity	Not classified.	
ACGIH Carcinogens Manganese dioxide (CAS 1313-13-9)		A4 Not classifiable as a human carcinogen.
Canada - Manitoba OELs: carcinogenicity Manganese dioxide (CAS 1313-13-9)		Not classifiable as a human carcinogen.
Reproductive toxicity	Not classified.	
Specific target organ toxicity - single exposure	Not classified.	
Specific target organ toxicity - repeated exposure	May cause damage to the following organs through prolonged or repeated exposure: Brain.	
Aspiration hazard	Not classified.	
Chronic effects	Prolonged exposure, usually over many years, to manganese oxide fume/dust can lead to chronic manganese poisoning, chiefly affecting the central nervous system.	
Further information	Chronic exposure to breathing low levels of manganese dust or fume over a long period of time can result in "manganism," a disease of the central nervous system similar to Parkinson's Disease, gait impairment, muscle spasms and behavioral changes. Frequent inhalation of dust over a long period of time increases the risk of developing asthma, chronic lung diseases, and skin irritation. Prolonged exposure, usually over many years, to manganese oxide fume/dust can lead to chronic manganese poisoning, chiefly affecting the central nervous system.	

12. Ecological information

Ecotoxicity	Toxic to aquatic life. The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. A 28-day Transformation/Dissolution protocol test was conducted with this product at a 1 mg/L loading in a standard aqueous medium at pH 6. The 7 and 28 days release factors for copper were 1.82% and 4.35%, respectively. For manganese, no concentrations were measured above the validated and accredited reporting limits after 7 and 28 days of extraction (limit of 5 µg/L).		
	The implementation of the GHS classification system, taking into account the results of the T/Dp test, results in an Aquatic Acute 2 classification for the product; this classification is driven by the presence of copper (as CuO). Under CLP (EU-implementation of GHS) there is no environmental classification for the product.		

Components	Species		Test Results
Manganese dioxide (CAS 1313-13-9)			
Other			
Other	EC50	Activated sewage sludge	> 1000 mg/l, 3 hr
	NOEC	Activated sewage sludge	1000 mg/l
Persistence and degradability	No data available.		
Bioaccumulative potential	No data available.		
Mobility in soil	Not available.		
Mobility in general	The product is insoluble in water.		
Other adverse effects	None known.		

13. Disposal considerations

Disposal instructions	Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose in accordance with all applicable regulations. Do not allow this material to drain into sewers/water supplies.

Contaminated packaging

Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information**TDG**

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

This product is not intended to be transported in bulk.

15. Regulatory information**Canadian regulations**

This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.

Controlled Drugs and Substances Act

Not regulated.

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Ontario. Toxic Substances. Toxic Reduction Act, 2009. Regulation 455/09 (July 1, 2011)

Copper oxide (CAS 1317-38-0)

Manganese dioxide (CAS 1313-13-9)

Precursor Control Regulations

Not regulated.

International regulations**Stockholm Convention**

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto Protocol

Not applicable.

Montreal Protocol

Not applicable.

Basel Convention

Not applicable.

International Inventories**Country(s) or region****Inventory name****On inventory (yes/no)***

Australia	Australian Inventory of Industrial Chemicals (AICIS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information

Issue date	05-April-2018
Revision date	18-February-2022
Version No.	02
Further information	NFPA Ratings: Health: 2 Flammability: 0 Physical hazard: 0
List of abbreviations	ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road. IARC: International Agency for Research on Cancer. IMDG: International Maritime Dangerous Goods. MARPOL: International Convention for the Prevention of Pollution from Ships.
References	ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices HSDB® - Hazardous Substances Data Bank IARC Monographs. Overall Evaluation of Carcinogenicity National Toxicology Program (NTP) Report on Carcinogens US. IARC Monographs on Occupational Exposures to Chemical Agents Registry of Toxic Effects of Chemical Substances (RTECS) Industry Code of Practice on Chemicals Classification and Hazard Communication
Disclaimer	This safety data sheet was prepared in accordance with the Safety Data Sheet for Chemical Products (JIS Z 7250:2005). Additional information is given in the Material Safety Data Sheet. The information contained herein is accurate to the best of our knowledge. However, data, safety standards and government regulations are subject to change and, therefore, holders and users should satisfy themselves that they are aware of all current data and regulations relevant to their particular use of product. CARUS LLC DISCLAIMS ALL LIABILITY FOR RELIANCE ON THE COMPLETENESS OR ACCURACY OR THE INFORMATION INCLUDED HEREIN. CARUS LLC MAKES NO WARRANTY, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR PARTICULAR USE OR PURPOSE OF THE PRODUCT DESCRIBED HEREIN. All conditions relating to storage, handling, and use of the product are beyond the control of Carus LLC, and shall be the sole responsibility of the holder or user of the product. (Carus and design) is a registered service mark of Carus LLC. CARULITE® is a registered trademark of Carus LLC.
This SDS contains revisions in the following section(s):	1, 2, 3, 4, 7, 8, 9, 11, 12, 14, 15, 16.