

MATERIAL SAFETY DATA SHEET

Synthetic Graphite	<i>MSDS No.:</i>	200DG
	<i>Revision No.:</i>	4
	<i>Date:</i>	11/04/04

PRODUCT AND COMPANY INFORMATION – SECTION 1

Manufacturer/Distributor:	Graphite Sales Inc.
	16710 West Park Circle Drive
	Chagrin Falls, Ohio 44023
	440-543-8221
Product Name:	Synthetic Graphite
Synonyms:	Graphite
Intended Use:	Catalyst

**FOR CHEMICAL EMERGENCY, SPILL, LEAK,
FIRE, EXPOSURE, OR ACCIDENT:**

In the continental U.S.: 440-543-8221

COMPOSITION INFORMATION – SECTION 2

Chemical Name:	Graphite
Percent:	98.5
CAS Number:	7782-42-5
Chemical Name:	Iron Oxide
Percent:	1.5
CAS Number:	1309-37-1

HAZARDS IDENTIFICATION – SECTION 3

EMERGENCY OVERVIEW AND HAZARDS PRESENT TO MAN AND THE ENVIRONMENT	May be harmful if inhaled. May cause irritation to skin, eyes, and respiratory tract. Affects respiratory and cardiovascular systems.
REGULATORY STATUS	This material is classified as hazardous under OSHA regulations.
PRIMARY ROUTES OF EXPOSURE:	In dust form, inhalation is the primary route of exposure.
<u>POTENTIAL HEALTH EFFECTS:</u>	
<i>Eyes:</i>	In dust form, may be abrasive and irritating to the eyes.
<i>Skin:</i>	In dust form, may cause mild irritation.
<i>Inhalation:</i>	If exposure limits are exceeded, the respiratory tract may become irritated. May cause shortness of breath, coughing and/or chest tightness due to temporary physical overloading of the lungs.
<i>Ingestion:</i>	May cause gastrointestinal disturbances.

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MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:	Persons with pre-existing respiratory impairments including, Emphysema, and asthma.
<u>CHRONIC HEALTH EFFECTS:</u>	
<i>Eyes:</i>	In dust form, may be abrasive and irritating to the eyes through mechanical abrasion.
<i>Skin:</i>	In dust form, may be abrasive and irritating to the skin through mechanical abrasion.
<i>Inhalation:</i>	Prolonged or repeated inhalation of dust may cause pulmonary fibrosis or emphysema. Possible lung cancer hazard.
<i>Ingestion:</i>	May cause nausea, vomiting, and diarrhea.

FIRST AID MEASURES – SECTION 4	
SEEK MEDICAL ATTENTION FOR ALL CASES OF OVEREXPOSURE.	
<u>FIRST AID MEASURES:</u>	
<i>Eyes:</i>	Flush thoroughly with water, taking special care to rinse under the eyelids. Do not rub the eye as mechanical abrasion due to the dust may be damaging to the cornea. If irritation persists, continue flushing for fifteen (15) minutes. If discomfort persists, seek consultation from a physician.
<i>Skin:</i>	Remove contaminated clothing. Wash irritated area thoroughly with water. Do not rub as mechanical abrasion due to the dust may prolong irritation to the skin.
<i>Inhalation:</i>	If overcome by dust concentrations, remove to a more ventilated area (fresh air).
<i>Ingestion:</i>	Do not induce vomiting. Seek consultation from a physician.
<i>Instructions for Physician:</i>	None recommended.

FIRE FIGHTING MEASURES – SECTION 5			
<i>NFPA Classification</i>			
<u>Health</u>	<u>Fire</u>	<u>Reactivity</u>	<u>Other</u>
1	0	0	N/A
<u>FLAMMABILITY PROPERTIES</u>			
Flash Point:	N/A	Method:	N/A
Flammability Limits: (in air % by volume)	LEL:	N/A	UEL: N/A

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Autoignition Temperature:

N/A

Hazardous Combustion Products:

Products of combustion include carbon monoxide (CO), and carbon dioxide (CO₂).

Extinguishing Media:

Use any means suitable for extinguishing surrounding fire.

Prohibited Extinguishing Media:

Avoid high-pressure water stream as this may spread burning powder (burning powder will float).

Firefighting Instructions:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face-piece operated in the pressure demand or other positive pressure mode.

Unusual Fire and Explosion Hazards:

In dust form, this material is combustible at high temperatures. Dusts may form explosive mixtures in air. Material itself burns with difficulty.

ACCIDENTAL RELEASE MEASURES – SECTION 6

Environmental Precautions:

Spill and releases of this material to navigable water in sufficient amounts that cause sludge or emulsion under the water must be reported immediately to the National Response Center (800/424-8802), as required by U.S. Federal Law. Contact the Coast Guard and appropriate state and local regulatory agencies. Failure to report these spills may result in substantial civil and criminal penalties.

Cleanup Methods:

Small spills: should be vacuumed when possible. Dry sweeping is not recommended. A vacuum equipped with HEPA (high efficiency particulate air) filtration is recommended. If necessary, light water spray will reduce dust for dry sweeping.

Large spills: may be shoveled into containers. Wear appropriate personal protective equipment and respiratory protection.

HANDLING & STORAGE – SECTION 7

Handling:

Avoid handling that will unnecessarily generate airborne dust. Graphite is a good conductor of electricity. Exercise caution when handling in areas where contact with electrical circuitry is possible.

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Storage:	Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.
Specific Uses:	Users should avoid inhalation of dust.

EXPOSURE CONTROLS / PERSONAL PROTECTION – SECTION 8

EXPOSURE CONTROLS:

Exposure Limit Values:

	<u>OSHA PEL:</u>	<u>ACGIH TLV:</u>
Iron Oxide (dust and fumes)	10 mg/m3	5 mg/m3
Graphite	15 mg/m3 (Total Dust) 5 mg/m3 (Respirable Fraction)	2 mg/m3 (for all forms of graphite except graphite fibers)

Engineering Controls:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.

PERSONAL PROTECTIVE EQUIPMENT:

Respiratory Protection:

If exposure limits are exceeded or if irritation is experienced, NIOSH approved respiratory protection should be worn. Respiratory protection may be needed for non-routine or emergency situations.

Hand Protection:

Appropriate chemical protective gloves should be used while handling this material.

Eye/Face Protection:

Avoid eye contact with this material. Wear safety glasses or chemical goggles. Provide an eyewash station in the work area. Do not wear contact lenses when working with this substance.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

General Hygiene Considerations:

Practice good industrial hygiene by washing with soap and water after each use. Avoid excessive inhalation.

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Other Protective Equipment:

Depending upon conditions of use, additional protection may be necessary such as face shield, apron, arm-covers, etc.

PHYSICAL & CHEMICAL PROPERTIES – SECTION 9

PRODUCT:	Synthetic Graphite
General Information:	
Appearance	Grey to black solid, may be in the form of a dust
Odor	Odorless
Important Health, Safety, and Environmental Information:	
Boiling Point	N/A
Melting Point	N/A
Flash Point	N/A
Explosive Properties	N/A
Oxidizing Properties	N/A
Specific Gravity ($H_2O = 1$)	2.20 - 2.28
Water Solubility	Insoluble
Partition Coefficient (<i>n-octanol/water</i>)	Not Determined
Viscosity	N/A
Vapor Pressure (<i>mm Hg</i>)	N/A
Vapor Density (<i>Air = 1</i>)	N/A
Evaporation Rate	N/A
% Volatile (<i>By Volume @ 68 °F</i>)	Zero

STABILITY & REACTIVITY – SECTION 10

Stability:

This material is stable under normal conditions.

Conditions to Avoid:

Incompatibilities with strong oxidizers. This condition is aggravated when the material is heated.

Materials to Avoid:

Graphite reacts vigorously with liquid potassium, potassium peroxide and will ignite with chlorine trifluoride and fluorine. If graphite contacts liquid potassium, rubidium, or caesium at 300C, intercalation compounds may be formed. These compounds may explode on contact with water or ignite in air.

Hazardous Decomposition Products:

Carbon Monoxide, Carbon dioxide.

Hazardous Polymerization:

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Polymerization will not occur with this material.

TOXICOLOGICAL INFORMATION – SECTION 11

Type of Test	Route of Exposure	Effects	Species Observed	Dose Data
No Information Available				

ECOLOGICAL INFORMATION – SECTION 12

Ecotoxicity:

No effects are expected from this material due its insolubility. Insolubility leads to non-bio-availability.

Mobility:

N/A

Persistence and Degradability:

N/A

Bio-accumulative Potential:

N/A

DISPOSAL CONSIDERATION – SECTION 13

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Do not flush to surface water or sanitary sewer system.

TRANSPORT INFORMATION - SECTION 14

DOT CLASSIFICATION:

UN Number: *This material is not regulated by the DOT for transportation*

Class:

Proper Shipping Name:

Packing Group:

Marine Pollutant:

Other Information:

IATA CLASSIFICATION:

UN Number: *This material is not regulated by IATA for transportation*

Class:

Proper Shipping Name:

Packing Group:

Marine Pollutant:

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Other Information:	
<u>IMDG CLASSIFICATION:</u>	
UN Number:	<i>This material is not regulated by IMDG for transportation</i>
Class:	
Proper Shipping Name:	
Packing Group:	
Marine Pollutant:	
Other Information:	

REGULATORY INFORMATION – SECTION 15	
<u>US REGULATIONS</u>	
ACGIH	2 mg/m3 (TLV, all forms of graphite except graphite fibers)
CAA Section 112	Not Listed
CERCLA	Not Listed
IARC	Not Listed
NTP	Not Listed
OSHA	15 mg/m3 (Total Dust) (PEL Synthetic Graphite) 5 mg/m3 (Respirable Fraction) (PEL Synthetic Graphite) 10 mg/m3 (PEL Iron Oxide, fumes)
SARA Title III	Not Listed
TSCA	Not Listed
<u>STATE REGULATIONS</u>	
MA Substance List	Listed as 2,4 (Graphite, synthetic) Listed as 2 (Iron Oxide, dust)
NJ RTK Hazardous Substance List	Listed (Iron Oxide, fumes)
PA Hazardous Substance List	Listed (Graphite)----- Listed (Iron Oxide)
Canadian WHMIS	Listed

OTHER INFORMATION - SECTION 16	
Revision Number	Revision Date
4	11/04/04

To the best of our knowledge, the information contained herein is accurate. However, neither Graphite Sales Inc. nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. 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.