

1. Identification

Product name eGRAF® Flexible Graphite, with Thermal Additive, with or without Adhesive Backing including: HITHERM™ 2500 Series

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Manufacturer GrafTech International Holdings Inc.
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Recommended use and Limitations on use

Recommended use Thermal interface.
SDS number 0081

2. Hazards identification

GHS classification

Physical hazards Not classified.
Health hazards Not classified.
Environmental hazards Not classified.

GHS label elements

Pictograms None.
Signal word None.
Hazard statement None.

Precautionary statement

Prevention Observe good industrial hygiene practices.
Response Wash skin with soap and water.
Storage Store away from incompatible materials.
Disposal Dispose of waste and residues in accordance with local authority requirements.

Other hazards

Processing may generate graphite dusts and fumes with the below listed potential health effects. Dust and fumes generated from the material can enter the body by inhalation. High concentrations of dust and fumes may irritate the throat and respiratory system and cause coughing. Frequent inhalation of dust over a long period of time increases the risk of developing lung diseases. Dust may irritate the eyes. Ingestion of dusts generated during working operations may cause nausea and vomiting. Dust may irritate skin. Prolonged and repeated overexposure to dust can lead to pneumoconiosis. Pre-existing pulmonary disorders, such as emphysema, may possibly be aggravated by prolonged exposure to high concentrations of graphite dusts. The material may form dust and can accumulate electrostatic charges, which may cause an electrical spark (ignition source).

3. Composition/information on ingredients

Substance or mixture Mixture

Chemical property

Chemical name	CAS Number	Concentration (%)
Graphite	7782-42-5	50 - 70

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First aid measures

Inhalation	Move injured person into fresh air and keep person calm under observation. For breathing difficulties, oxygen may be necessary. If breathing stops, provide artificial respiration. Get medical attention. In case of persistent throat irritation or coughing seek medical attention and take along these instructions.
Skin contact	Wash with soap and water. If skin irritation or an allergic skin reaction develops, get medical attention.
Eye contact	Flush thoroughly with water for at least 15 minutes. Do not rub eye. If irritation occurs, get medical assistance.
Ingestion	Rinse mouth thoroughly. Get medical attention if any discomfort occurs.
Most important symptoms/effects, acute and delayed	Dusts may irritate the respiratory tract, skin and eyes.
Personal protection for first-aid responders	First aid personnel must be aware of own risk during rescue.
Notes to physician	Treat symptomatically.

5. Fire-fighting measures

Extinguishing media	Bulk material is non-combustible. Dust: Extinguish with foam, carbon dioxide, dry powder or water fog.
Extinguishing media to avoid	None.
Specific hazards during fire fighting	Thermal decomposition may produce smoke, oxides of carbon and lower molecular weight organic compounds whose composition have not been characterized. Explosive dust mixtures can be formed at concentrations as low as 25 g/m ³ when carbon/graphite dusts are milled to less than 50 microns. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Special fire fighting procedures	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Protection of fire-fighters	Use standard firefighting procedures and consider the hazards of other involved materials.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Avoid generation and spreading of dust. Avoid inhalation of dust and contact with skin and eyes. Remove sources of ignition. Wear suitable protective clothing and gloves. See Section 8 of the MSDS for Personal Protective Equipment.
Environmental precautions	Do not allow material to enter storm or sanitary sewers, groundwater or soil.
Spill cleanup methods	Collect dust using a vacuum cleaner equipped with HEPA filter. If not possible, gently moisten dust before it is collected with shovel, broom or the like. Collect in approved containers and seal securely. Containers must be labeled. For waste disposal, see section 13 of the MSDS.

7. Handling and storage

Handling	
Precautions	Use work methods which minimize dust production. Avoid inhalation of dust and contact with skin and eyes. Observe good industrial hygiene practices.
Safe handling advice	Wear appropriate personal protective equipment.
Storage	
Suitable storage conditions	Keep container closed. Store away from: Oxidizing agents. Store away from incompatible materials.
Incompatible materials	Strong oxidizing agents.

8. Exposure controls/personal protection

Control parameters/Occupational exposure limits

Singapore. PELs. (Workplace Safety and Health (Permissible Exposure Levels of Toxic Substances) Order)

Components	Type	Value	Form
Graphite (CAS 7782-42-5)	TWA	2 mg/m ³	Respirable dust.

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Graphite (CAS 7782-42-5)	TWA	2 mg/m ³	Respirable fraction.

Appropriate engineering control measures	Provide adequate ventilation. Mechanical ventilation or local exhaust ventilation may be required. Provide explosion-proof ventilation for high dust concentrations. Observe occupational exposure limits and minimize the risk of inhalation of dust and fumes. Provide access to washing facilities including soap, skin cleanser and fatty cream.
Personal protective equipment	
Respiratory protection	Use specified dust masks. Seek advice from local supervisor. 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 air supplied air respirator must be worn. Respirator type: Seek advice from supervisor on the company's respiratory protection standards.
Skin protection	Wear appropriate clothing to prevent repeated or prolonged skin contact.
Eye/face protection	Wear safety glasses with side shields (or goggles).
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
Hygiene measures	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.

9. Physical and chemical properties

Appearance

Physical state	Solid.
Form	Solid.
Color	Black.
Odor	Slight hydrocarbon.
Odor threshold	Not available.
pH	Not applicable.
Melting point/freezing point	5000 °F (2760 °C)
Boiling point, initial boiling point, and boiling range	Not applicable.
Flash point	Not applicable.
Auto-ignition temperature	Not applicable.
Flammability (solid, gas)	Not available.
Flammability limit - lower (%)	Not applicable.
Flammability limit - upper (%)	Not applicable.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not applicable.
Vapor density	Not applicable.
Evaporation rate	Not applicable.
Relative density	Not available.
Density	Not available.
Solubility	Insoluble.
Partition coefficient (n-octanol/water)	Not applicable.
Decomposition temperature	Not applicable.
Viscosity	Not available.

10. Stability and reactivity

Reactivity	Stable at normal conditions.
Stability	Material is stable under normal conditions.
Conditions to avoid	Dust is combustible, avoid sources of ignition and strong oxidizing agents.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	Carbon oxides. Unidentified organic compounds.
Possibility of hazardous reactions	Will not occur.

11. Toxicological information

Acute toxicity	No data available for this product.
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Routes of exposure	Eyes. Skin. Inhalation. Ingestion.
Symptoms	Exposed individuals may experience eye tearing, redness, and discomfort. Exposed individuals may experience itching and redness. Nausea, vomiting.
Skin corrosion/irritation	Dust may irritate skin. May cause irritation through mechanical abrasion.
Serious eye damage/irritation	Dust may irritate the eyes.
Respiratory sensitizer	No data available.
Skin sensitizer	Not a skin sensitizer.
Germ cell mutagenicity	No data available.
Carcinogenicity	No data available.
Toxic to reproduction	No data available.
Specific target organ toxicity - single exposure	No data available.
Specific target organ toxicity - repeated exposure	No data available.
Aspiration hazard	Not classified.
Chronic effects	Prolonged and repeated overexposure to dust can lead to benign pneumoconiosis. Pre-existing pulmonary disorders, such as emphysema, may possibly be aggravated by prolonged exposure to high concentrations of graphite dusts.
Relevant negative data	Not available.
Other information	Processing may generate graphite dusts and fumes with the below listed potential health effects. Prolonged and repeated overexposure to dust can lead to pneumoconiosis. Pre-existing pulmonary disorders, such as emphysema, may possibly be aggravated by prolonged exposure to high concentrations of graphite dusts. Ingestion of dusts generated during working operations may cause nausea and vomiting. High concentrations of dust may irritate throat and respiratory system and cause coughing. Frequent inhalation of dust over a long period of time increases the risk of developing lung diseases.

12. Ecological information

Ecotoxicity	The product is not expected to be hazardous to the environment.
Persistence and degradability	The degradability of the product has not been stated.
Bioaccumulation	No data available on bioaccumulation.
Mobility	The product is insoluble in water and will sediment in water systems.
Other hazardous effects	The product is not expected to be hazardous to the environment.

13. Disposal considerations

Disposal methods/information	Dispose of waste and residues in accordance with local authority requirements. Do not discharge into rivers, lakes, mountains, etc. because the product may affect the environment.
Special precautions	Not available.

14. Transport information

ADR	Not regulated as dangerous goods.
IATA	Not regulated as dangerous goods.
IMDG	Not regulated as dangerous goods.
SEA (Annex II of MARPOL 73/78 and the IBC Code)	None.

15. Regulatory information

Applicable regulations	
Montreal Protocol	Not applicable.
Rotterdam Convention	Not applicable.
Stockholm Convention	Not applicable.

16. Other information

References	Not available.
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Issued by Not Available
Prepared by Not Available
Further information Grades: HTH.

THIS SAFETY DATA SHEET CONTAINS REVISIONS IN SECTIONS: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16.

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This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.

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Key/legend Not applicable.