| | | |
|---|---|---|
| **Asbury Graphite Mills, Inc.** | PO Box 144, 405 Old Main St. Asbury, NJ 08802 | 908-537-2155 |
| **Cummings – Moore Graphite Co.** | 1646 N. Green Ave. Detroit, MI 48209 | 313-841-1615 |
| **Anthracite Industries** | PO Box 112, Sunbury, PA 17801 | 570-286-2176 |
| **Southwestern Graphite** | PO Box 876, 2564 Hwy 12 DeQuincy, LA 70633 | 337-786-5905 |
| **Asbury Graphite of California** | 2855 Franklin Canyon Rd. Rodeo, CA 94572 | 510-799-3636 |
| **Asbury – Wilkinson** | 1115 Sutton Drive Burlington, ON, L7L 5Z8 Canada | 905-332-0862 |
| **Asbury Graphite & Carbons NL B.V.** | Fregatweg 46 B-C, Maastricht 6222 NZ Netherlands | +31437600610 |
| **Graphitos Mexicanos de Asbury, S.A. de C.V.** | Blvd José Maria Morelos No.389 Nte, Hermosillo 83148 Mexico | 526622678598 |


# Safety Data Sheet

## Section 1 – Identification of the Substance / Preparation, and of the Company

1.1: Product Identifier

| | | |
|---|---|---|
| Trade Name: | Natural Flake Graphite/Synthetic Graphite/Calcined Petroleum Coke/PET Fiber Mixture. | Grade: TS0994 |
| REACH Registration Number: | 01-2119486977-12-0027(synthetic graphite only) | |
| Substance Name: | Graphite, CAS 7782-42-5<br>Calcined Petroleum Coke, CAS 64743-05-1,<br>PET Fibers CAS#25038-59-9 | EC Number: 231-955-3<br>EC Number: 265-210-9<br><br>EC Number not available |

1.2: Indentified uses of the substance or mixtures

1.2.1 Uses: Loss circulation and wellbore strengthening.

1.2.2 Uses Advised Against: For industrial use only, not for food, drug, or cosmetic applications.

1.3: Supplier Information

| | | |
|---|---|---|
| Company/Manufacturer: | Asbury Carbons, Inc.<br>PO Box 144, 405 Old Main Street<br>Asbury, NJ 08802 | Telephone: 908-537-2155<br>Telefax: 908-723-2908<br>Preparer: AVT<br>Email Address: albert@asbury.com<br>Date Prepared: 9/26/2016 |

1.4: Emergency Telephone Number

Callers must reference the Contract Number:
Chemtel Contract Number: MIS0001931
Collect Calls are accepted
US: 1-800-255-3924
International: +01-813-248-0585.
China: 400-120-0751, Brazil: 0-800-591-6042,

**Section 2: Hazards Identification**

2.1: Classification of substance

2.1.1: Under certain conditions this mixture may be considered hazardous according to OSHA 29 CFR 1910.1200.

2.1.2: Classification according to Regulation EC No. 72/2008: Not classified as hazardous per Regulation No. 1272/2008 (CLP/GHS)

2.1.3Classification according to Directive 67/548/EEC: This substance is not classified as dangerous according to Directive 67/548/EEC

2.2: Label Elements

Hazard Statement: H373 may cause damage to lung through prolonged or repeated inhalation.
Precautionary Statement: P260: do not breath dust
P285: In case of inadequate ventilation wear respiratory protection.

2.3: Other hazards

None known

**Section 3 – Composition/Information on Ingredients:**

Chemical Composition:
Carbon, variety Natural Graphite 10-90%
CAS # 7782-42-5, EC # 231-955-3
Molecular Weight: 12.0

Carbon, variety Synthetic Graphite, 10-90%
CAS# 7782-42-5
Molecular Weight: 12.0

Carbon variety Calcined Petroleum Coke 10-90%
CAS# CAS64743-05-1, Molecular Weight: 12.0

Polyethylene terephthalate 1-5%
CAS#25038-59-9
Molecular Weight: Various(polymer)

Silica, Crystalline Silica, variety Quartz <0.5% (may or may not be in respirable form, not intentionally added)
CAS # 14808-60-7, EC # 238-878-4,
Molecular Weight: 60.0

**Section 4 – First Aid Measures**

| | |
|---|---|
| **4.1.1 Inhalation** | Remove patient to particulate-free environment. Wear approved dust mask to avoid breathing dust. Seek medical attention if irritation persists. |
| **4.1.2 Skin contact** | Wash with mild soap and warm water: This mixture is non-staining to skin and is not a chemical irritant. |
| **4.1.3 Eye contact** | Rinse with tepid water until eyes are clear of particulates. Seek medical attention if irritation persists. |
| **4.1.4 Ingestion** | Get immediate medical attention. Do not induce vomiting unless directed by medical personnel. This mixture is not known to be toxic by ingestion. However, ingestion may cause digestive system blockage. |
| 4.2 Most important symptoms and effects, both acute and delayed: No Data Available | |
| 4.3 Indication of any immediate medical attention and special treatment needed: If patient exhibits shortness of breath, choking, powder inundated eyes or mouth; immediate medical attention may be required. | |

**Section 5 – Fire Fighting Measures**

| | |
|---|---|
| Mixture is not flammable under normal conditions | |
| 5.1 Extinguishing Media | Dry chemical extinguisher, water, sand, limestone powder, |
| 5.2 Special Hazards | This substance will burn but is not easily ignited. At temperatures above 1500 C, carbon may react with substances containing oxygen, including water and carbon dioxide. In case of intensely hot fire events, use sand to cover and isolate calcined petroleum coke. |
| Products of Combustion: | Carbon dioxide, $CO_2$, carbon monoxide, CO, sulfur dioxide, $SO_2$, mixed hydrocarbon thermal degradation products |
| 5.3 Advice for Fire Fighters: Use self contained air pack, gloves, safety goggles | |
| 5.4 Additional Information: USA NFP Rating 010: HMIS Rating 010 | |

**Section 6 – Accidental Release Measures**

| | |
|---|---|
| | Wear approved dust mask, safety goggles, and conventional work gloves. |
| Methods for Cleaning Up: | Conventional Sweep or vacuum. Avoid creating dusting conditions |
| 6.1 Personal precautions , protective equipment and emergency procedures | |
| 6.1.1 For non-emergency personnel: Wear approved dust mask, safety goggles, and conventional work gloves. Use conventional cleanup techniques and avoid creating dust. Vacuum is preferred over sweeping. Wear a dust mask/respirator to reduce the change of inhaled dust. This mixture is electrically conductive and any cleanup methods should avoid contact with electrical circuitry | |
| 6.1.2 For emergency responders: Wear approved dust mask, safety goggles, and conventional work gloves. Same methodology as for non-emergency personnel(sec 6.1.1) | |
| 6.2 Environmental Precautions: This mixture is inert and insoluble and will not pose any soluble ion hazards to the environment. However, good housekeeping practices should be followed and spilled material should be cleaned up, and disposed of in an appropriate manner. | |
| 6.3 Methods and material for containment and clean up: No special containment needed other than conventional vacuuming and waste containment. Avoid creating dust. This mixture is electrically conductive and any cleanup methods should avoid contacting graphite with electrical circuitry | |
| 6.4 Reference to other sections: Not needed<br>6.5 Additional information: Graphite powder is slippery and when spilled on pedestrian surfaces will present a slip hazard. | |

**Section 7 – Handling and Storage**
**7.1 Precautions for safe handling**

| |
|---|
| 7.1.1 Handling Use conventional methods, but avoid dusting conditions. Provide sufficient exhaust ventilation in areas where dust is created. Wear suitable respiratory protection. Keep powder from contacting eyes. This mixture is a good conductor of electricity. Avoid contact between this mixture and electrical circuitry.<br><br>Slip Hazard: This mixture contains graphite which is a highly lubricious material and may present a slip hazard if spilled on wet or dry pedestrian surfaces. |
| 7.2 Conditions for safe storage, including any incompatibilities. |
| Storage: Store all carbonaceous materials in a dry location. Keep packaging closed or covered |
| Incompatibilities: This mixture is incompatible with all oxidizing agents. |
| Dust Explosibility Hazards: Very finely divided graphite powder poses a very slight risk of dust explosion hazard: Dust class ST1, MIE greater that 10 J (very low hazard of spark ignition)<br><br>Polyethylene terephthalate (PET) polymer is combustible and high airborne concentrations of PET fibers may result in a potentially explosive atmosphere. However, the concentration of PET fibers in the mixture is below 5%, which will significantly reduce the probability of occurrence of a dust explosion. Also, the carbonaceous components of this mixture are conductive, which will reduce the potential of static sparking hazards. |

**Section 8 – Exposure Controls/ Personal Protection**
**8.1 Control parameters**

8.1.1 Occupational exposure limits: The occupational exposure limits posted here are from ACGIH. For equivalent values of other countries please consult a verified source for local regulatory exposure limit values.

| Component | CAS No. | % | ACGIH TWA | Control Reference |
|---|---|---|---|---|
| Natural Mineral Graphite | 7782-42-5 | 10-90 | 2.0 mg/m$^3$ Respirable dust<br>10.0 mg/m$^3$ Inhalable dust | 2016 ACGIH TLV Handbook |
| Synthetic Graphite | 7782-42-5 | 10-90 | 2.0 mg/m$^3$ Respirable dust<br>10.0 mg/m$^3$ Inhalable dust | 2016 ACGIH TLV Handbook |
| Petroleum coke, calcined | 64743-05-1 | 10-90 | 3.0 mg/m$^3$ Respirable particles | 2016 ACGIH TLV Handbook: Low toxicity/insoluble or poorly soluble-Not otherwise specified |
| Polyethylene terephthalate(fibers) | 25038-59-9 | 1-5 | 3.0 mg/m$^3$ Respirable particles | 2016 ACGIH TLV Handbook: Low toxicity/insoluble or poorly soluble-Not otherwise specified |
| Silica (quartz) | 14808-60-7 | <0.5 | 0.025 mg/m$^3$ Respirable dust | 2014 ACGIH TLV Handbook |
| Engineering Measures | Use adequate dust collection to maintain dust levels below the control or recommended values. | | | |
| Respiratory Protection | Approved dust mask, type N95 recommended. | | | |
| Eye Protection | Conventional safety glasses or goggles. | | | |
| Skin Protection | Conventional work gloves and clothing. | | | |
| Additional | Graphite spilled on pedestrian surfaces may pose a significant slip hazard. | | | |

**Section 8 – Exposure Controls/ Personal Protection continued**

8.2 Exposure controls

| |
|---|
| 8.2.1 Appropriate engineering controls: Use adequate dust collection to maintain dust levels below the control or recommended values. |
| 8.2.2 Personal protective equipment<br>8.2.2.1 Eye/Face Protection: Wear laboratory goggles, or full side shielded safety glasses.<br>8.2.2.2 Skin Protection: Conventional work gloves and clothing.<br>8.2.2.3 Respiratory Protection: Approved dust mask, type N95 recommended. |
| 8.2.3 Environmental exposure controls: This mixture is inert and insoluble and to the best of our knowledge, will not present any environmental hazards. No special environmental exposure controls, other than standard practices for dust and spill control, are required. |

**Section 9 – Physical and Chemical Properties**

**9.1 Information on basic physical and chemical properties**

| | | | |
|---|---|---|---|
| Color: | Gray to Black, with white polymer fibers | Material State | Solid, granular or powder, with entrained fibers |
| Odor | None | | |
| Boiling Point: | NA | Melting Point | PET mp > 200 ℃ |
| Specific Gravity | 2.0-2.2 | Vapor Density | Not applicable |
| Vapor Pressure (mm Hg) | NA | % Volatile (By Wt.) | 0-6% |
| Solubility in Water | Insoluble | Evaporation Rate: | Not applicable |
| pH | NA | Auto Ignition | Above 500 ˚C |
| Decomposition Temp | Oxidizes above 450C | Dust Explosion class | Carbon fraction: ST1=KST>0-200 bar m/s, MIE above 10 J. |
| Flash Point | Not available | | |

**Section 10 – Stability and Reactivity**

| | |
|---|---|
| 10.1 Reactivity | Mixture is non-reactive under ambient conditions. |
| 10.2 .Stability | Stable. Will not polymerize or self react spontaneously. |
| 10.3 Possibility of hazardous reactions | None known |
| 10.4 Conditions to Avoid | Avoid contact with oxidizing agents. Mixture will begin to oxidize at temperatures above 400 C. |
| 10.5 Incompatible materials | Oxidizing agents |
| 10.6 Hazardous products of decomposition | Carbon Dioxide ($CO_2$), Carbon Monoxide (CO), Sulfur Dioxide($SO_2$), mixed hydrocarbon thermal byproducts. |
| Flammable Limits (% by Vol.) | LEL and UEL values not available: Minimum Ignition Energy (MIE) for graphite and petroleum coke fractions greater than 10 joules. When exposed to extremely high energy ignition sources very finely divided Graphite/Petroleum coke mixture powder can form explosive mixtures with air. Avoid contact between carbonaceous dust clouds and high energy ignition sources. Classified as combustible but not flammable.<br><br>Polyethylene terephthalate(PET) polymer is combustible and high airborne concentrations of PET fibers may result in a potentially explosive atmosphere. However, the concentration of PET fibers in this mixture is below 5%, which will significantly reduce the probability of occurrence of a dust explosion. Also, the carbonaceous components of this mixture are conductive, which will reduce the potential of static sparking hazards. |

**Section 11 – Toxicological Information**
**11.1 Information on toxicological effects(graphite only)**

| | Effect dose | Species | Method | Remarks |
|---|---|---|---|---|
| Acute oral toxicity | LD50 > 2000 mg/kg bw | Rat | OECD 423 | |
| Acute inhalation toxicity | LC50 > 2000 mg/m3 | Rat | OECD 403 | Limit dose acc. to CLP. |

| | Species | Method | Result |
|---|---|---|---|
| Skin corrosion/irritation | Rabbit | OECD 404 | Not irritating |
| Serious eye damage/irritation | Rabbit | OECD 405 | Not irritating |
| Respiratory or skin sensitization | Mouse | OECD 429 | Not sensitizing |

| | Species | Method | Result of effect dose | Remarks |
|---|---|---|---|---|
| Genotoxicity | In vitro | OECD 471 | Negative | Bacterial reverse mutation assay. |
| Genotoxicity | In vitro | OECD 473 | Negative | Mammalian chromosome aberration test. |
| Genotoxicity | In vitro | OECT476 | Negative | Mammalian cell gene mutation test (gene mutation). |
| Carcinogenicity | | Literature | Not carcinogenic (DFG, 2002). | Based on available data the classification criteria are not met. |
| Reproductive toxicity | Rat | OECD 422 | NOAEL > 1000 mg/kg bw | Dose as nominal food intake, corresponding to limit dose according to OECD 422. Based on available data the classification criteria are not met |

STOT-single exposure

| Single exposure | Specific effect | Affected organs | Remark |
|---|---|---|---|
| Acute oral toxicity OECD 423 (rat) | No specific effects. | Not applicable. | Based on available data the classification criteria are not met. |
| Acute inhalation toxicity OECD 403 (rat) | Only usual signs of discomfort after the end of exposure were observed. | Not applicable. | Based on available data the classification criteria are not met. |

STOT-repeated exposure: This product contains quartz (respirable) as an impurity, and as a result is classified as STOT RE2 according to EC 1272/2008.

Prolonged and/or massive exposure to respirable crystalline silica-containing dust may cause silicosis, a nodular pulmonary fibrosis caused by deposition in the lungs of fine respirable particles of crystalline silica.

In 1997, IARC (the International Agency for Research on Cancer) concluded that crystalline silica inhaled from occupational sources can cause lung cancer in humans. However it pointed out that not all industrial circumstances, nor all crystalline silica types, were to be incriminated. *(IARC Monographs on the evaluation of the carcinogenic risks of chemicals to humans, Silica, silicates dust and organic fibres, 1997, Vol. 68, IARC, Lyon, France.)*

In June 2003, SCOEL (the EU Scientific Committee on Occupational Exposure Limits) concluded that the main effect in humans of the inhalation of respirable crystalline silica dust is silicosis. “There is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis (and, apparently, not in employees without silicosis exposed to silica dust in quarries and in the ceramic industry). Therefore preventing the onset of silicosis will also reduce the cancer risk…“ *(SCOEL SUM Doc 94-final, June 2003).*

Aspiration hazard: Solid substance. Based on available data the classification criteria are not met.

11.1 Information on toxicological effects: continued
Symptoms related to the physical, chemical and toxicological characteristics: SYNTHETIC GRAPHITE COMPONENT ONLY

| |
|---|
| In case of ingestion: No signs of systemic toxicity found in studies acc. to OECD 423 and OECD 422. No human data on effects after ingestion. See section 4 for first aid measures. |
| In case of skin contact: No irritation or corrosion found in a study acc. to OECD 404. No human data on effects after skin contact. See section 4 for first aid measures |
| .In case of inhalation: No signs of systemic toxicity found in studies acc. to OECD 403 and OECD 412. Usual signs after inhalation of poorly soluble dusts with low toxicity were found in these studies. No symptoms are expected if relevant occupational exposure levels and derived no effect levels are complied with. In situations of repeated excessive lung overload due to a high airborne concentration of particles of respirable size for extended periods of time pneumoconiosis may develop. See section 4 for first aid measures |
| In case of eye contact: No irritation or corrosion found in a study acc. to OECD 405. No human data on effects after eye contact. See section 4 for first aid measures. |

**Polyethylene terephthalate(PET) fibers:**

| |
|---|
| In case of ingestion: No data available. |
| In case of skin contact: Limited animal testing indicates that PET fibers are slightly irritating to the skin. |
| .In case of inhalation: No data available |
| In case of eye contact: Mild eye irritation, mechanical in nature, is possible. |

**Section 12 – Ecological Information**

| | |
|---|---|
| 12.1 Toxicity: | This mixture is inert and insoluble. To the best of our knowledge, this mixture does not present any significant environmental hazards unless present in very high concentrations. Carbon is the principal constituent of this mixture and is not expected to pose a toxic hazard to aquatic organisms. |
| 12.1.1 Aquatic Toxicity: Data not available. This mixture is not water soluble and does not present a soluble-ion hazard. Fine carbon particles and polymer fibers suspended in natural water bodies may be harmful to organisms sensitive to suspended solids. | |
| 12.1.2 Sediment toxicity: None known. | |
| 12.1.3 Terrestrial toxicity: None known. | |
| 12.2 Persistence and degradability: This mixture will not degrade further under normal conditions. This mixture is stable, unreactive in water under ambient conditions, and is insoluble. | |
| 12.3 Bioaccumulation potential: There is no evidence indicating that this mixture is bioaccumulative. | |
| 12.4 Soil Mobility: Not expected to have mobility in soil as all components are insoluble substances. | |
| 12.5 PBT and vPvB assessment: Not a persistent bioaccumulative and toxic substance. | |
| 12.6 Other adverse effects: None known. This mixture has no ozone depleting potential. | |

**Section 13 – Disposal Considerations**
Dispose of in a manner which conforms to local, state and Federal regulations.

This mixture is non-hazardous but disposal of waste should be handled in a responsible matter. .

This mixture contains elemental carbon and polymer fibers so it is not biodegradable. Elemental carbon is already in its simplest for so it will not degrade further. The biodegradability properties of PET polymer fibers are not available.

Packaging should be completely emptied of contents and disposed of in a manner specified by the recycler/regional disposal contractor. Dust formation from packaging residues should be avoided. Store empty packaging in a suitable receptacle

**Section 14 – Transport Information**

| | |
|---|---|
| 14.1 UN Number | Not applicable |
| 14.2 UN Proper shipping name | Not applicable |
| 14.3 Transport hazard class | Not applicable |
| 14. 4 Packing Group | Not applicable |
| 14.5 Environmental hazards | None known |
| Marine Transport | Not classified as a hazardous material |
| Land Transport | Not classified as a hazardous material |
| Air Transport | Not classified as a hazardous material or regulated by IATA. |
| Transport Label Required | No label required |

**Section 15 – Regulatory Information**

**15.1 Regulatory Status and Inventories**

| Not Classified | | | |
|---|---|---|---|
| Inventory Information: | Calcined Petroleum Coke | Graphite | Polyethylene Terephthalate Fiber |
| EEC EINECS | #265-210-9 | 231-955-3 | RNL EC No: 607-507-1;924-655-5 |
| US TSCA | Yes | Yes | Yes |
| Canada DSL | Yes | Yes | Yes |
| Canada NDSL | No | No | No |
| Australian AICS | Yes | Yes | Yes |
| Korean ECL | Yes KE-06252 | Yes | Yes |
| IECSC | Yes | Yes | Yes |
| New Zealand NZLoC | Yes | Yes | Yes |
| Philippines PICCS | No | Yes | Yes |
| INSQ Mexico | Yes | No | No |
| REACH: Synthetic graphite is REACH registered. Polyethylene terephthalate fibers are on the List of Pre-Registered Substances March 2009, Registration Date Nov 2010<br>Calcined petroleum coke and natural graphite are exempt from REACH registration per Annex V, Paragraph X. . | | | |
| RoHS: This mixture is compliant with the EU RoHS directive | | | |
| WEEE: This mixture is compliant with the EU waste electrical and electronic equipment directive | | | |
| 15.2 Chemical Safety Assessment: For this mixture a chemical safety assessment has not been performed | | | |

**Section 16 – Other Information**

**Abbreviations Used:**

ACGIH TWAAmerican Council of Government and Industrial Hygienists Time Weighted Average value.
CAS Chemical Abstracts Service
NA Not applicable
N.O.S. Not otherwise specified
BW Body weight