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:	Graphite/Calcined Petroleum Coke/Portland Cement Mixture.	Grade: SANEARTH Conductive Cement
REACH Registration Number:	01-2119486977-12-0027(synthetic graphite only other components are exempt)	
Substance Name:	Graphite, CAS 7782-42-5	EC Number: 231-955-3
	Calcined Petroleum Coke, CAS 64743-05-1	EC Number: 265-210-9
	Metallurgical Coke, CAS65996-77-2	EC Number:266-010-4
	Portland Cement: CAS:65997-15-1	EC Number:266-043-4

1.2: Indentified uses of the substance or mixtures

1.2.1 Uses: Conductive chemical set filler, thermal filler, back fill additive.

1.2.2 Uses Advised Against: For industrial use only.

1.3: Supplier Information

Company/Manufacturer:	Asbury Carbons, Inc. .	Telephone: 908-537-2155
	PO Box 144, 405 Old Main Street	Telefax: 908-723-2908
	Asbury, NJ 08802	Preparer: AVT
		Email Address: albert@asbury.com
		Date Prepared 11/8/2017

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,
India: 000-800-100-4086 Mexico: 01-800-099-0731.

Section 2: Hazards Identification: This mixture contains a significant fraction of Portland cement.

Danger! Overexposure to Portland cement mixed with water can cause skin or eye damage in the form of chemical (caustic) burns, including third-degree burns. The same type of injury can occur if wet or moist skin has prolonged exposure to dry Portland cement. Portland cement and water mixture has a pH > 12.

2.1: Classification of substance
2.1.1: This mixture is considered hazardous according to OSHA 29 CFR 1910.1200.

2.1.2: Classification according to Regulation EC No. 72/2008: Not Available.

2.1.3Classification according to Directive 67/548/EEC: Not Available.

2.2: Label Elements: Carbon and Graphite: See Part 2 for Portland Cement 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.

OVEREXPOSURE TO PORTLAND CEMENT MIXED WITH WATER CAUSES SEVERE SKIN BURNS AND EYE DAMAGE.
MAY CAUSE AN ALLERGIC SKIN REACTION.
SWALLOWING MAY CAUSE DAMAGE TO MOUTH, THROAT OR INTERNAL ORGANS.
INHALATION MAY CAUSE RESPIRATORY IRRITATION. LONG TERM INHALATION MAY DAMAGE LUNGS OR CAUSE CANCER.

2.3: Other hazards

SKIN CORROSION/IRRITATION: Category 1
SERIOUS EYE DAMAGE/ EYE IRRITATION: Category 1
SKIN SENSITIZATION: Category 1
CARCINOGENICIT Y/INHALATION: Category 1
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Respiratory tract irritation]: Category 3

Section 3 – Composition/Information on Ingredients:

Chemical Composition:
Carbon, variety Natural Graphite 0-75%
CAS # 7782-42-5, EC # 231-955-3
Molecular Weight: 12.0

Carbon, variety Synthetic Graphite, 0-75%
CAS# 7782-42-5
Molecular Weight: 12.0

Carbon variety Calcined Petroleum Coke 0-75%
CAS# CAS64743-05-1, Molecular Weight: 12.0

Metallurgical Coke, 0-75%
CAS#65996-77-2, Molecular Weight: 12.0

Portland Cement, 10-90%,
CAS#65997-15-1, Molecular Weight,

Silica, Crystalline Silica, variety Quartz 1.0-5.0% (may or may not be in respirable form, not intentionally added. Crystalline silica is a naturally occurring mineral impurity) 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. Remove source of contamination or move victim to fresh air. If breathing is difficult, trained personnel should administer emergency oxygen. DO NOT allow victim to move about unnecessarily. Seek medical help if coughing and other symptoms persist. Inhalation of large amounts of Portland cement requires immediate medical attention.
4.1.2 Skin contact	Heavy exposure to Portland cement dust, wet concrete or associated water requires prompt attention. Quickly remove contaminated clothing, shoes, and leather goods (e.g. watchband, belts). Quickly and gently blot of brush away excess Portland cement. Immediately wash thoroughly with lukewarm, gently flowing water and not-abrasive soap. Seek medical attention for rashes, burns, irritation, dermatitis and prolonged unprotected exposures to wet cement, cement mixtures or liquids from wet cement. Burns should be treated as caustic burns. Portland cement causes skin burns with little warning; discomfort or pain cannot be relied upon to alert a person to a serious injury. You may not feel pain of the severity of the burn until hours after the exposure
4.1.3 Eye contact	Quickly and gently blot or brush Portland cement off the face. Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 15-20 minutes, while holding the eyelid(s) open. Take care not to rinse contaminated water into the unaffected eye or onto the face. Obtain immediate medical attention.
4.1.4 Ingestion	NEVER give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. Have victim drink 60 to 240 mL (2 to 8 oz.) water. Immediately obtain medical attention.
4.2 Most important symptoms and effects, both acute and delayed: EYES: Direct eye contact with Portland cement may cause serious and irreversible eye damage: SKIN: Continuous contact with Portland cement can result in caustic burns, irritation, and dermatitis. INHALATION: Repeated inhalation of this mixture can result in lung diseases.	
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

This mixture 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. The Portland cement component of this mixture will not burn.
Products of Combustion:	Carbon dioxide, CO_2, carbon monoxide, CO, sulfur dioxide, SO_2.
5.3 Advice for Fire Fighters: Use self contained air pack, gloves, safety goggles	
5.4 Additional Information: USA NFP Rating 010: HMIS Rating 110	

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: Once hydrated 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 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. Slip Hazard: The Graphite component of this mixture is a highly lubricious material and may present a slip hazard if spilled on wet or dry pedestrian surfaces. Skin and eye contact with cement should be avoided. Do not get Portland cement inside boots, shoes or gloves. Do not allow wet clothing saturated with cement to remain against the skin. Promptly remove clothing and shoes that are dusty or wet with cement fluids and launder/clean before reuse. Wash thoroughly after exposure to dust or wet cement mixtures.
7.2 Conditions for safe storage, including any incompatibilities.
Storage: Store in a dry location. Keep packaging closed or covered. Contact with water will result in chemical set of the Portland cement, which will result in irreversible hardening of the mixture. Do not enter a confined space that stores or contains Portland cement unless appropriate procedures and protection are available. Portland cement can build up or adhere to walls of a confined space and release or fall suddenly. Likewise, do not walk on top of Portland cement stored in vessels, bins, and silos (engulfment hazard)
Incompatibilities: This Graphite/Petroleum coke 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).The Portland cement fraction of this mixture will reduce the dust explosion hazard potential significantly.

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	0-90	2.0 mg/m^3 Respirable dust 10.0 mg/m^3 Inhalable dust	2016 ACGIH TLV Handbook
Synthetic Graphite	7782-42-5	0-90	2.0 mg/m^3 Respirable dust 10.0 mg/m^3 Inhalable dust	2016 ACGIH TLV Handbook
Petroleum coke, calcined	64743-05-1	0-90	3.0 mg/m^3 Respirable particles	2016 ACGIH TLV Handbook: Low toxicity/insoluble or poorly soluble-Not otherwise specified
Metallurgical coke	65996-77-2	0-90	3.0 mg/m^3 Respirable particles 10.0 mg/m^3 Inhalable dust	2016 ACGIH TLV Handbook: Low toxicity/insoluble or poorly soluble-Not otherwise specified
Portland Cement (See part 2 for more details)	65997-15-1	10-90	1.0 mg/m^3 Respirable particles	2016 ACGIH TLV Handbook
Silica (quartz)	14808-60-7	1.0-5.0	0.025 mg/m^3 Respirable dust	2016 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.

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
8.2.2.1 Eye/Face Protection: Wear laboratory goggles, or full side shielded safety glasses.
8.2.2.2 Skin Protection: Use impervious, waterproof, abrasion- and alkali-resistant boots and protective long-sleeved and long-legged clothing to protect the skin from contact with wet Portland cement. Where required to reduce foot and ankle exposure, wear impervious boots that are high enough to prevent Portland cement from getting inside them. Do not get Portland cement inside boots, shoes or gloves. Remove clothing and protective equipment that becomes saturated with cement and immediately was exposes areas.
8.2.2.3 Respiratory Protection: Approved dust mask, type N95 recommended.

8.2.3 Environmental exposure controls:. 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	Material State	Solid, granular or powder
Odor	None		
Boiling Point:	NA	Melting Point	Sublimates at 3652C
Specific Gravity	2.0-3.5	Vapor Density	Not applicable
Vapor Pressure (mm Hg)	NA	% Volatile VOC	0-1%
Solubility in Water	Insoluble	Evaporation Rate:	Not applicable
pH	12-13(Portland cement)	Auto Ignition	Above 500 ˚C
Decomposition Temp	Oxidizes above 450C	Dust Explosion class	ST1=KST>0-200 bar m/s, MIE above 10 J.
Flash Point	NA Solid substance with very high melting point.		

Section 10 – Stability and Reactivity

10.1 Reactivity	This mixture is non-reactive under ambient conditions, but must be kept dry.
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. Graphite/Petroleum coke mixture will begin to oxidize at temperatures above 450 C.
10.5 Incompatible materials	Oxidizing agents. . Contact with water will result in chemical set of the Portland cement, which will result in irreversible hardening of the mixture.
10.6 Hazardous products of decomposition	Carbon Dioxide (CO_2), Carbon Monoxide (CO)
Flammable Limits (% by Vol.)	LEL and UEL values not available: Minimum Ignition Energy (MIE) 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.

Section 11 – Toxicological Information

11.1 Information on toxicological effects(pure 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

11.1 Information on toxicological effects: continued
STOT-single exposure(Graphite Only)

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.

Symptoms related to the physical, chemical and toxicological characteristics: Mixture with Portland cement.

In case of ingestion: Although small quantities of dust are not known to be harmful, ingestion of large quantities may cause severe irritation and chemical burns of the mouth, throat, stomach and digestive tract. Do not swallow Portland cement.
In case of skin contact: Contact with cement can cause drying of the skin, severe irritation or chemical burns (third-degree), and dermatitis. A single short-term exposure to the dry powder is not likely to cause serious harm. Overexposure to wet cement can cause severe skin damage in the form of chemical burns, including third -degree burns. The same type of injury can occur if wet or moist skin is exposed to dry Portland cement. Cement dust in wet or moist clothing can transmit the caustic effects to the skin, causing chemical burns. Portland cement causes skin burns with little warning; discomfort or pain cannot be relied upon to alert a person to a serious injury. You may not feel pain or the severity of the burn until hours after the exposure. Portland cement can cause dermatitis by irritation and allergy. Irritant dermatitis is caused by fine particles of cement that abrade the skin mechanically and cause irritation resulting in dermatitis. Portland cement may contain trace amounts of hexavalent chromium. Hexavalent chromium is associated with allergic skin reactions which may appear as contact dermatitis and skin ulcerations. Persons already sensitized may react to their first exposure of cement. Other individuals may develop allergic dermatitis after repeated exposure to cement. The symptoms of allergic reactions may include reddening of the skin, rash, and irritation. Symptoms of chronic exposure to wet cement may include reddening, irritation, and eczematous rashes. Drying, thickening, and cracking of the skin and nails may also occur.
.In case of inhalation: Dusts may irritate the nose, throat, and respiratory tract. Coughing, sneezing, and shortness of breath may occur following exposures in excess of appropriate exposure limits. Prolonged and repeated inhalation of respirable crystalline silica-containing dust in excess of appropriate exposure limits has caused silicosis, fibrosis or scar tissue formation in the lungs.
In case of eye contact: Exposure to dust may cause immediate or delayed irritation or inflammation. Eye contact by larger amounts of dry powder or splashes of wet Portland cement may cause effects ranging from moderate eye irritation to chemical burns and blindness. Such exposures require immediate first aid (see Section 4, below) and medical attention to prevent significant damage to the eye.

Section 12 – Ecological Information

12.1 Toxicity:	This carbon and graphite components of this mixture are inert and insoluble. To the best of our knowledge, these components do not present any significant environmental hazards unless present in very high concentrations. Portland cement hardens with water or moisture and is not expected to present unusual eco-toxicity risks to plants or animals. No recognized unusual toxicity to plants or animals.
12.1.1 Aquatic Toxicity: Data not available. Graphite and petroleum coke are not water soluble and do not present a soluble-ion hazard. Fine carbon particles suspended in natural water bodies may be harmful to organisms sensitive to suspended solids. Portland cement hardens with water or moisture and is not expected to present unusual eco-toxicity risks to plants or animals. No recognized unusual toxicity to plants or animals.	
12.1.2 Sediment toxicity: Graphite and petroleum coke are not toxic. Portland cement hardens with water or moisture and is not expected to present unusual eco-toxicity risks to plants or animals. No recognized unusual toxicity to plants or animals.	
12.1.3 Terrestrial toxicity: Graphite and petroleum coke are not toxic. Portland cement hardens with water or moisture and is not expected to present unusual eco-toxicity risks to plants or animals. No recognized unusual toxicity to plants or animals.	
12.2 Persistence and degradability: This mixture will not degrade further under normal conditions and is stable after curing. This mixture has very low solubility after curing.	
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 it is an insoluble, inorganic substance.	
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 contains a reduced form of carbon and Portland cement. The cured mixture is non-hazardous but disposal of waste should be handled in a responsible matter. For details on Portland cement see Part 2.

This mixture is not biodegradable.

Provision of a European Waste Catalog, waste code number, should be handled in agreement with the regional waste disposal company.

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 for Petroleum Coke and Graphite.

Not Classified				
Inventory Information:	Calcined Petroleum Coke	Graphite	Metallurgical Coke	Portland Cement
EEC EINECS	#265-210-9	231-955-3	266-010-4	266-043-4
US TSCA	Yes	Yes	Yes	Yes
Canada DSL	Yes	Yes	Yes	Yes
Canada NDSL	No	No	No	No
Australian AICS	Yes	Yes	Yes	Yes
Korean ECL	Yes KE-06252	Yes	Yes	Yes
IECSC	Yes	Yes	Yes	Yes
New Zealand NZLoC	Yes	Yes	Not known	Yes
Philippines PICCS	No	Yes	Not known	No
INSQ Mexico	Yes	No	Not known	No
REACH: Synthetic graphite is REACH registered, Calcined petroleum coke, natural graphite, metallurgical coke, and Portland cement are exempt from REACH registration per Annex V.				
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