

GRAPHENE POWDER

MATERIAL SAFETY DATA SHEET

SECTION I – PRODUCT AND COMPANY INFORMATION

Supplier's Name & Address: Carbon Rivers Nano, Inc.
Emergency No. (888) 373-2227 2409 Sycamore Drive
Knoxville, Tennessee 37921

General Chemical Composition: Carbon

SECTION II – HAZARDS IDENTIFICATION

Classification: Graphene is not currently listed as a hazardous material under US Federal regulations. It is not listed under the Clean Air Act, the Clean Water Act, SARA (section 302, section 311/312, or section 313), HAPS, or IAR.

Hazard Statement: May cause damage to lung through prolonged or repeated inhalation



Precautionary Statement: May causes serious eye irritation.
May cause respiratory irritation.
May form combustible dust concentrations in air. Use personal protective equipment as required.
If exposed or concerned: seek medical attention/advice.

SECTION III – COMPOSITION/INFORMATION ON INGREDIENT

Color: Black

Ingredients:

CAS Number	Wt %	Component Name
1034343-98-0	Grade dependent (95.5 to 99.9)	Graphene Nanoplatelets (Carbon)

Exposure Limits: No occupational exposure limits established by OSHA, ACGIH, or NIOSH.

SECTION IV – FIRST AID MEASURES

Eye Contact: Gently lift the eyelids and flush immediately and continuously with ample amounts of water for at least 15 minutes. Consult physician for treatment.

Skin Contact: Quickly remove contaminated clothing. Rinse with large amounts of water for at least 15 minutes. Wash affected area with soap and water. For reddened or blistered skin, consult a physician.

Ingestion: Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink.
Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Inhalation: Remove from exposure area to fresh air immediately. If breathing has stopped, give artificial respiration and seek medical attention immediately.

GRAPHENE POWDER

MATERIAL SAFETY DATA SHEET

SECTION V – FIRE-FIGHTING MEASURES

Suitable Extinguishing Media:	Use water spray, dry powder, foam, or carbon dioxide. Do not allow water runoff to enter sewers or drains.
Fire Fighting Instructions:	<p>Dust generated in handling this material may present a potential fire and explosion hazard if suspended in air at high concentrations. Settled dust presents a fire hazard. Re-suspension of the dust into the air by vibration, traffic, material handling, etc. in high concentrations in the presence of an ignition source could result in a dust explosion. Do NOT use a solid stream of water. A solid stream of water can cause a dust explosion. Fire fighters and others who may be exposed to products of combustion should wear full firefighting turn-out gear and self-contained breathing apparatus.</p> <p>Firefighting equipment should be thoroughly decontaminated after use.</p> <p>Special hazards caused by the material or the combustion products: In the event of a fire, carbon dioxide, carbon monoxide, or other toxic gases may be released.</p> <p>Protective equipment: Wear self-contained breathing apparatus for firefighting if necessary.</p>

SECTION VI – ACCIDENTAL RELEASE MEASURES

Personal Precautions:	Use personal protective equipment. Ensure adequate ventilation. Avoid dust formation. Avoid contact with skin, eyes, and clothing.
Environmental Precautions:	Avoid release to the environment.
Methods for Containment & Clean Up:	Sweep up or vacuum up spillage and collect in a suitable container for disposal. Avoid dust formation.

SECTION VII – HANDLING AND STORAGE

Precautions for Safe Handling:	<p>Do not breathe dust. Avoid contact with eyes, skin, and clothing. Wear proper protective clothing and equipment. Ensure adequate ventilation. Do not eat, drink, or smoke when using this material. Minimize the generation and accumulation of dust. Avoid creating dust during handling, transfer or clean up and prevent dust accumulation e. g. by wetting and careful handling.</p> <p>Keep dust away from open flames, hot surfaces, strong oxidizers, and sources of ignition. Follow good housekeeping practices to keep surfaces, including areas overhead such as piping, ductwork, etc., free from settled dust. Clean all work areas as necessary, using either an explosion-proof HEPA vacuum cleaner or wet wiping methods. Dry powders can build static electricity charges when subjected to friction of transfer and in mixing operations. Graphene is electrically conductive and may cause a short circuit in electrical equipment. Provide adequate precautions, such as grounding and/or inert atmospheres.</p>
Conditions for Safe Storage:	Store in closed containers. Keep away from ignition sources and strong oxidizers.

GRAPHENE POWDER

MATERIAL SAFETY DATA SHEET

SECTION VIII – EXPOSURE CONTROLS / PERSONAL PROTECTON FOR ROUTINE HANDLING AND/OR SPILLS

Repeated or Prolonged Exposure or Overexposure to Dust:	None established. It is recommended that exposure levels be maintained as low as possible by following good industrial hygiene practice so as to minimize any potential for lung effects. Skin exposure should also be minimized.
Engineering Controls:	Use only with adequate controls such as a source enclosure or local exhaust ventilation to minimize worker exposure. For operations where airborne particulates are possible, in general technologies that are adequate for the control of asbestos fibers (for example: closed systems, enclosures with negative pressure, HEPA filtered exhaust, and wet methods in conjunction local exhaust ventilation) should be effective in the control of engineered nanoparticles. It is recommended that all dust control equipment, such as local exhaust ventilation and material transport systems, involved in handling this product contain explosion relief vents, an explosion suppression system and/or an oxygen deficient environment. Ensure that dust handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e. there is no leakage from the equipment).
Respiratory Protection:	If needed, an approved respirator with high efficiency particulate filters may be used. For higher exposures, a supplied air respirator may be required. Respirator selection and use should be based on contaminant type, form and concentration. Follow applicable regulations and good Industrial Hygiene practice. Use only with adequate controls such as a source enclosure or local exhaust ventilation to minimize worker exposure. For operations where airborne particulates are possible, in general, use technologies that are adequate for the control of asbestos.
Eye Protection:	Use proper protection – safety glasses as a minimum.
Skin Protection:	Impervious gloves such as rubber are recommended.
Waste Disposal Method:	If media becomes wet, store for waste disposal in plastic lined containers. Dispose of contaminated media in accordance with federal, state, and local regulations.

SECTION IX – PHYSICAL AND CHEMICAL PROPERTIES

Physical Description:	Black (and a hint of grey) powder
Density:	158 kg/m ³
Solubility:	Insoluble
Auto-ignition Temperature:	452°C

SECTION X – STABILITY AND REACTIVITY

Reactivity:	Not reactive under standard conditions. Reactive at high temperature in the presence of oxidizer.
Chemical Stability:	Stable
Possibility of Hazardous Reactions:	Reaction with oxidizer could be highly exothermic. Also carbon dioxide, carbon monoxide, or other toxic gases may be released.
Conditions to Avoid:	Heat, sparks, flames and all other ignition sources, strong oxidizers.

GRAPHENE POWDER

MATERIAL SAFETY DATA SHEET

SECTION XI – TOXICOLOGICAL INFORMATION

Health Effects of Exposure:	The toxicity of graphene has not been fully investigated. All exposure to graphene nanoparticles by inhalation or skin contact should be minimized.
Eye:	May cause irritation.
Ingestion:	Not likely to be a relevant route of exposure; however, repeated ingestion or swallowing large amounts may cause internal injury.
Inhalation:	Inhalation of dust may irritate the nose, throat, and upper respiratory tract.
Skin:	Effects have not yet been fully evaluated.
Chronic Effects of Exposure:	Effects have not yet been fully evaluated. However, prolonged or repeated exposure should be avoided unless proper protective equipment/clothing is used.
Reproductive Toxicity:	Effects have not yet been fully evaluated. No adverse effects are expected.
STOT - Single Exposure:	Respiratory system
STOT - Repeated Exposure:	Lungs
Germ Cell Mutagenicity:	Effects have not yet been fully evaluated. No adverse effects are expected.
Numerical Measures of Toxicity:	No data available

SECTION XII – ECOLOGICAL INFORMATION

Ecotoxicity:	Do not discard graphene into drains.
Persistence and Degradability:	No information available.
Bioaccumulation/ Accumulation:	No information available.
Mobility:	No information available

SECTION XIII – DISPOSAL CONSIDERATIONS

Graphene is not listed as RCRA hazardous waste. Confirm with state or local regulations before disposal.

DOT:	Not regulated.
TDG:	Not regulated.
IMDG/IMO:	Not regulated.
ATA:	Not regulated.

SECTION XV – REGULATORY INFORMATION

Contents of this SDS comply with the OSHA Hazard Communication Standard 29 CFR 1910.1200. None of the chemicals in this product appear on any of following lists:

- Health & Safety Reporting List
- Chemical Test Rules
- TSCA Section 12(b)
- Clean Water Act - Not Applicable
- TSCA Significant New Use Rule
- SARA Section 302 Extremely Hazardous Substances
- OSHA (Not included in highly hazardous list)
- Clean Air Act - Not Applicable

SECTION XVI – OTHER INFORMATION

Prepared By: Carbon Rivers Nano, Inc. Created: 7/1/2019

Disclaimer: The information provided is based on the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal, and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process.