

## MATERIAL SAFETY DATA SHEET

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Product: HiPco™ Carbon Nanotubes

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### Section 1 Product Identification

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Chemical Name: Fullerene Nanotube  
Formula: Carbon  
Chemical Family: Graphitic carbon  
Synonyms: Carbon Nanotubes

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### Section 2 Composition and Information on Ingredients

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Component	%	OSHA/PEL	ACGIH/TLV
Synthetic graphite*	Up to 100%	15 mg/m <sup>3</sup> (total dust) 5 mg/m <sup>3</sup> (respirable fraction)	2 mg/m <sup>3</sup> TWA

Metallic impurityBalance

\* Exposure limits based on synthetic graphite

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### Section 3 Hazards Identification

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Potential Health Effects

Eye Contact: May cause eye irritation

Skin Contact: No known hazards, but may be mildly irritating

Inhalation: May cause irritation to respiratory tract

Ingestion: No known hazards, but may irritate gastrointestinal tract

Acute and Chronic Health Effects: High concentration of dusts may be irritating to eyes, skin, mucus membranes and respiratory tract.

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## Section 4 First Aid Measures

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Eye Exposure: Immediately flush eyes with copious amounts of water for 15 minutes.  
If exposure persists, get medical attention.

Skin Contact: Flush skin with water.

Inhalation: Remove to fresh air. If breathing difficulties persist, get medical attention.

Ingestion: Not expected to require first aid. If large amounts swallowed, give water and get medical advice.

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## Section 5 Fire Fighting Measures

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Flash Point:	Not applicable.
Explosion Limits:	Unknown
Extinguisher Medium:	Water, Carbon Dioxide, Dry Chemical, or Foam
Special Procedures:	None
Decomposition Products:	Carbon Monoxide, Carbon Dioxide
Unusual Hazards:	Thermal decomposition or combustion may produce dense smoke.

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## Section 6 Accidental Release Measures

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Safeguards: Review FIRE FIGHTING MEASURES and HANDLING sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Spill Procedures: Sweep or vacuum according to normal housekeeping practices.

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## Section 7 Handling and Storage

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Handling: Use PERSONAL PROTECTIVE EQUIPMENT and exposure controls given in Section 8.

Detailed information on handling carbon nanotubes may be found at the ASTM Standard E 2535 - 07, "Standard Guide for Handling Unbound Engineered Nanoscale Particles in Occupational Settings," ASTM International, West Conshohocken, PA, [www.astm.org](http://www.astm.org).

Storage: Keep in closed container for storage.

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## Section 8 Exposure Controls and Personal Protection

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Eye and Respiratory Protection:	NIOSH-approved full-face respirator with N-100 cartridges or appropriate powered air purifying respirator (PAPR), such as 3M BE-10
Skin Protection:	Impervious gloves such as nitrile or equivalent and protective clothing to prevent skin contact, such as cotton fiber lab coat or uniform or Tyvek coveralls
Ventilation:	A local or general exhaust system is recommended.

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## Section 9 Physical and Chemical Properties

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Form and Color:	Clumpy or fluffy black powder or small black spheres
Molecular Weight:	12,000 to greater than 10,000,000 atomic mass units
Boiling Point:	Not applicable
Melting Point:	Not determined. Expected to be greater than 2000 deg. F
Specific Gravity:	Greater than 1
Solubility in Water:	Insoluble
Odor:	Odorless

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## Section 10 Stability and Reactivity

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Stability:	Stable under normal conditions of use
Hazardous Polymerization:	No
Hazardous Decomposition Products:	Thermal decomposition or combustion may produce dense smoke, carbon monoxide and carbon dioxide
Materials to avoid:	Strong oxidizing and reducing agents
Incompatibilities:	None known
Conditions to avoid:	None known

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## Section 11 Toxicological Information

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Effects: The toxicological properties of this specific product have not been determined.

Toxicological information on carbon nanotubes may be found at the website of the International Council on Nanotechnology at <http://icon.rice.edu/>

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## Section 12 Environmental Information

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Ecological information for this specific product has not been determined.  
Information:

Ecological information on carbon nanotubes may be found at the website  
of the International Council on Nanotechnology at <http://icon.rice.edu/>

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## Section 13 Disposal Considerations

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Disposal: Dispose of this material in accordance with local, state, and federal  
regulations.

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## Section 14 Transportation Information

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Not regulated.

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## Section 15 Regulatory Information

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This material is not listed on the TSCA Inventory.

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## Section 16 Other Information

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### HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS)

Health	Flammability	Reactivity	BASIS
1	0	0	Synthetic graphite powder

### NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

Health	Flammability	Reactivity	BASIS
1	0	0	Synthetic graphite powder

#### Label Precautions:

Do not get in eyes, on skin or on clothing.

Do not breathe dust.

Wash thoroughly after handling.

Keep container closed.

Use with adequate ventilation.

**Label First Aid:**

If inhaled, remove to fresh air. If breathing difficulties persist, get medical attention. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. If irritation develops or persists, get medical attention.

Disclaimer: NanoIntegris, Inc. provides the information contained herein in good faith and makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. NanoIntegris, Inc. makes no representations or warranties, either express or implied, regarding the suitability of the material for any purpose or the accuracy of the information contained within this document. Accordingly, NanoIntegris, Inc. will not be responsible for damages resulting from use of or reliance upon this information.

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