

MATERIAL SAFETY DATA SHEET

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Product: Unidym™ Carbon Nanotubes

Section 1 Product Identification

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

Section 2 Composition and Information on Ingredients

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

* Exposure limits based on synthetic graphite

Section 3 Hazards Identification

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.

Section 4 First Aid Measures

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.

Section 5 Fire Fighting Measures

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.

Section 6 Accidental Release Measures

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.

Section 7 Handling and Storage

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.

Storage: Keep in closed container for storage.

Section 8 Exposure Controls and Personal Protection

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.

Section 9 Physical and Chemical Properties

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

Section 10 Stability and Reactivity

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

Section 11 Toxicological Information

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/>

Section 12 Environmental Information

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

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

Section 13 Disposal Considerations

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

Section 14 Transportation Information

Not regulated.

Section 15 Regulatory Information

This material is not listed on the TSCA Inventory.

Section 16 Other Information

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.

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Preparation Date: September 17, 2004

Revision Dates: March 2, 2006, September 7, 2007, November 30, 2007, April 22, 2008, May 22, 2008, June 16, 2008

Current Revision: August 29, 2009