MATERIAL SAFETY DATA SHEET

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Product: Unidym™ Carbon Nanotube Aqueous Dispersion-I

Section 1 Product Identification

Chemical Name:	Carbon Fullerene Nanotubes dispersion in aqueous mixture
Formula:	Carbon in H_2O mixture
Chemical Family:	Graphitic carbon dispersed in aqueous mixture
Synonyms:	Carbon Nanotubes in water mixture

Section 2 Composition and Information on Ingredients

Proprietary mixture: The components of this aqueous carbon nanotube dispersion are proprietary.

Section 3 Hazards Identification

Emergency overview:

Harmful. Skin and eye irritant. Harmful if swallowed. Risk of serious damage to eyes.

Warning!
Harmful. Skin and eye irritant. Harmful if swallowed. Risk of serious damage to eyes.

Target Organs: Eyes

Potential Health Effects

Eye Contact:	Causes eye irritation, redness and pain.
Skin Contact:	May cause skin irritation. Symptoms include redness, itching, and pain. May be absorbed through the skin with possible systemic effects. Possible sensitizer.

Inhalation:	May cause irritation to respiratory tract.
Ingestion:	Harmful if swallowed. May cause gastrointestinal irritation, accompanied by nausea, vomiting and diarrhea.
Chronic Effects:	Prolonged or repeated contact may dry skin and cause irritation.

Section 4 First Aid Measures

Eye Exposure: Immediately flush eyes with copious amounts of water for 15 minutes, holding eyelids open. Seek get medical attention.

Skin Contact: Flush skin with water for at least 15 minutes. If irritation develops or persists, seek medical attention. Remove all contaminated clothing and wash before reuse.

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing difficult, give oxygen. If difficulties persist, especially if cough or other symptoms appear, get medical attention.

Ingestion: Do NOT induce vomiting. Wash out mouth with water, provided person is conscious Do not give anything by mouth to an unconscious person. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Seek medical attention.

Note to Physician: Treat symptomatically and supportively.

Section 5 Fire Fighting Measures

Flammability:	Water-based mixture is generally non-combustible. If water is removed or is evaporated, residue is combustible.
Fire Fighting:	Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus. Wear full protective equipment.
Extinguishing Media:	Water, foam, dry chemical, carbon dioxide.
Unusual Hazards:	Hazardous gases/vapors produce in fire are carbon dioxide, carbon monoxide, dense smoke, and possible sulfur oxides.

Section 6 Accidental Release Measures

Spill Procedures: Mop according to normal housekeeping practices or absorb with an inert dry material and place in an appropriate waste disposal container. Do not flush to sewer.

Section 7 Handling and Storage

Handling: Use PERSONAL PROTECTIVE EQUIPMENT and exposure controls given in Section 8. Wash thoroughly after handling. Avoid breathing vapor. Avoid contact with eyes, skin and clothing. Avoid repeated or prolonged exposure. Use with adequate ventilation.

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: Store in tightly closed container at room temperature in a well-ventilated area away from incompatible substances and direct sunlight.

Section 8 Exposure Controls and Personal Protection

Engineering Controls: Eye wash and safety shower required. A local or general exhaust system is recommended.

Personal Protective Equipment:

Eye Protection: Use approved goggles or safety glasses with side shields.

Respiratory Protection: NIOSH-approved full-face respirator with N-100 cartridges or appropriate powered air purifying respirator (PAPR), such as 3M BE-10 is recommended for handling dried nanotubes.

Skin Protection: Wash thoroughly after handling. Impervious gloves, such as nitrile, and protective clothing to prevent skin contact.

Section 9 Physical and Chemical Properties

Form and Color: Black liquid (when shaken) or, upon storage, clear colorless liquid with black particulate settled on bottom of container. Foam possible when shaken.

Odor: Mild to odorless

Molecular Weight:	Not applicable.
Boiling Point:	~100ºC (~212ºF)
Freezing/Melting Point:	~0°C (~32 ºF)
Specific Gravity:	1.00 – 1.10
Solubility in Water:	Liquid is soluble in water, however nanotubes are generally insoluble in water.
pH:	6 – 9.5

Section 10 Stability and Reactivity

Stability:	Stable under ordinary conditions of use and storage.
Hazardous Polymerization:	No
Hazardous Decomposition Products:	Thermal decomposition or combustion of nanotubes may produce dense smoke, carbon monoxide, carbon dioxide, ammonia, hydrogen chloride, oxides of nitrogen and possibly sulfur oxides.
Incompatibilities:	Strong acids, strong bases, strong oxidizing agents and strong reducing agents.
Conditions to avoid:	Contact with incompatibilities.

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

At least one of the components of this mixture is not listed on the US Toxic Substances Control Act (TSCA) Inventory.

Proposition 65: None of the components of this mixture are known to the State of California to cause cancer or reproductive toxicity.

Clean Water Act (CWA) 311: This mixture may contain a component listed under the clean water act. The RQ of this component is 1000 lbs.

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:
Warning!
Harmful. Skin and eye irritant. Harmful if swallowed. Risk of serious damage to eyes.
Do not get in eyes, on skin or on clothing.
Do not ingest. Do not breathe dust of dried nanotubes.
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. In case of ingestion, do NOT induce vomiting. Wash out mouth with water, provided person is conscious Do not give anything by mouth to an unconscious person. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Seek medical attention.

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