



NanoSolve® Dispersion in Water (Acidic)
Material Safety Data Sheet

Section I Product and Company Identification

Manufacturer	Zyvex Performance Materials
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Emergency	Chemtrec (North America): 800.424.9300 Chemtrec (International): 703.527.3887 (collect calls accepted)
E-mail	safety@zyvexpro.com
Product Name	NanoSolve Dispersion (K1MC4) in Water
Chemical Name	Carbon nanotube (fullerene) functionalized in water
Formula	Carbon with proprietary functionalization agent in water
Issue Date	October 1, 2009

Section II Hazard Ingredients/Identity Information

Substance	CAS Number	OSHA PEL	Carcinogenicity Classification	wt%
Carbon Nanotubes (Graphite)	7782-42-5	Total Dust: 15mg/m3 Respirable Fraction: 5mg/m3	Not Listed	< 10%
Proprietary Ingredient	N/A	Not Available	Not Listed	< 5%
Water	7732-18-5	Not Available	Not Listed	> 90%

Section III Physical/Chemical Characteristics

Boiling Point	Not applicable.
Vapor Pressure (mm Hg)	Not applicable.
Vapor Density (AIR = 1)	Not known.
Specific gravity (H₂O = 1)	Not applicable.
Melting point	Not determined.
Evaporation rate	Not applicable.
Solubility in Water	Water
Appearance and Odor	Black liquid solution

Section IV Fire and Explosion Hazard Data

Flash Point	Not applicable.
Explosion Limits	Not available.
Extinguishing Media	May use water spray, dry chemical, or carbon dioxide
Special Fire Fighting Procedures	Fire procedures should include wearing a self-contained breathing apparatus (MSHA/NIOSH) and all fire equipment should be fully decontaminated after use.
Decomposition Products	Possibly carbon monoxide and carbon dioxide.
Unusual Fire and Explosion Hazards	Possibly irritating and toxic vapors can occur.

Section V Reactivity Data

Stability	Stable under normal conditions.
Incompatibility	Not available.
Decomposition	Possible decomposition when exposed to extremely high temperatures
Hazardous Polymerization	None known.

Section VI Health Hazard Data

Symptoms of Exposure:	Mild mucous membrane irritation possible; otherwise unknown.
Eye	Toxicity is not known in humans. Carbon nanotubes were not toxic to rabbit eye in Draize test.
Skin	Studies on the effects of dermal contact with carbon nanotubes are limited. Carbon nanotubes did not cause enzyme induction, increased DNA synthesis, or hyperplasia in the skin of allergy-susceptible people.
Ingestion	Toxicity is unknown in humans and laboratory animals.
Inhalation	Toxicity is not known in humans. Carbon nanotubes may cause pulmonary irritation, inflammation, granuloma formation, and/or altered pulmonary function in laboratory animals. Inhaled particles may be transported to other areas of the body.

Conditions aggravated by exposure	Existing skin and pulmonary diseases may be aggravated by skin or inhalation exposure to carbon nanotubes.
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Section VII First Aid Measures Section

Eye	Flush with large amounts of water for at least 15 minutes, lifting the eyelids to separate them. Do not rub eyes or keep them closed. Seek medical assistance if needed.
Skin	Immediately wash with large amounts of soap and water, remove contaminated clothing, and seek medical assistance if needed.
Ingestion	Do not induce vomiting. If person is conscious, wash mouth out with water. Be sure person does not aspirate into lungs. Seek medical assistance immediately.
Inhalation	Remove to fresh air. Get medical assistance. If person isn't breathing, give artificial respiration.

Section VIII Precautions for Safe Handling and Use

Material Escape or Spills	When managing spills or releases, wear a NIOSH-approved full face respirator with N-100 cartridges, gloves that are impervious to this chemical substance and lab coats or garments that are impervious to the chemical substance or DuPoint™ TYCHEM® garments must be worn. Absorb spill with inert material (vermiculite, sand, or earth) and vacuum areas with a HEPA filtration vacuum cleaner (>99.9% efficiency at sub micron particle size). Place in suitable container. Clean up immediately and avoid runoff into waterway and ground penetration. Dispose of properly.
Waste Disposal	Dispose in accordance with applicable laws.
Handling	Use Personal Protective Equipment (see IX).
Storage	Store in cool, dry place. Keep away from ignition sources and incompatibilities. Store in a closed, sealed container.

Section IX Control Measures

Personal Protective Equipment (PPE)	Respiratory protection is required under normal conditions of use. Open containers of this product must be handled in a fume hood or closed system equipped with HEPA filter under negative pressure. A NIOSH-approved full face respirator with N-100 cartridges must be used when handling this product. Avoid contact with skin. Gloves that are impervious to this chemical substance must be worn. Lab coats or garments that are impervious to the chemical substance or DuPoint™ TYCHEM® garments must be worn. Remove and discard all contaminated clothing upon exposure. Wear chemical goggles. If molten product use face shield if there is a splash potential.
Chemical Hygiene	Wash hands after handling material to minimize the spread of undetected skin contamination. All applicable laboratory safety guidelines should be followed when using this material.

Section X Transportation Measures

DOT Proper Shipping Name	Not Regulated
DOT Hazard Class	Not Regulated
UN Identification Number	Not Regulated
Packaging Group	Not Regulated

Section XI Regulatory Information

Occupational Safety and Health Act (OSHA)	This MSDS has been prepared in compliance with the federal OSHA Hazard Communication Standard 29 CFR 1910.1200. This product is considered to be a hazardous chemical under that standard.
Resource Conservation and Recovery Act (RCRA)	This product is not specifically listed as hazardous waste under RCRA (40 CFR 261). However, it is strongly recommended that this product be treated as a hazardous waste and disposed of accordingly.
SARA Title III: Section 313 Toxic Chemical List (TCL)	This product contains does not contain chemicals at levels which require reporting under this statute.
TSCA Section 8(b)-Inventory Status	All chemical components of this product are listed and in compliance with TSCA inventory requirements.
TSCA Section 12(b)-Export Notification	This product does not contain any chemical(s) that are subject to a Section 12(b) export notification.

Section XII Other

This information is provided for in good faith and is believed to be correct. Zyvex Performance Materials; however, makes no representation as to the comprehensiveness or accuracy of this information. Final determination of the suitability of this product and its safe use is the sole responsibility of the user. Accordingly, Zyvex Performance Materials will not be responsible for damages of any kind resulting from the use of or reliance upon the provided information.