

Material Safety Data Sheet
NanoSperse AQ
Revised April 2009

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME	NanoSperse AQ
PRODUCT USE DESCRIPTION	Surfactant for preparation of carbon nanotube suspensions
MANUFACTURER	NanoLab, Inc. 55 Chapel St. Newton, MA 02458
TELEPHONE	1-617-581-6747

Emergency overview:

HMIS Rating Health: 2 Flammability: 1 Physical hazard: 0

2. COMPOSITION/INFORMATION ON INGREDIENTS

Components CAS Number Concentration (Weight)

1.	Poly(oxy-1,2-ethanediyl), a-(nonylphenyl)-whydroxy-, branched 68412-54-4 20% - 50 %
2.	Tetramethyl-5-decyne-4,7-diol, 2,4,7,9-, 126-86-3 2% - 10 %
3.	Butoxyethanol, 2- 111-76-2 < 1 %

Notes: Proprietary Surfactant Blend. The remaining components are trade secret. The product contains no other components or impurities which will influence the classification of the product.

3. HAZARDS IDENTIFICATION

Emergency Overview

Contains material which may cause cancer based on animal data

Mild skin irritant. Moderate eye irritant. Mild respiratory tract irritant.

Potential Health Effects

INHALATION	May cause nose, throat, and lung irritation. Inhalation of vapors and/or aerosols in high concentration may cause irritation of respiratory system.
EYE CONTACT	Causes eye irritation.
SKIN CONTACT	Mild skin irritation.
CHRONIC HEALTH HAZARD	This product contains listed carcinogen(s) according to IARC, ACGIH, NTP and/or OSHA in concentrations of 0.1 percent or greater. Subchronic exposure of this material or component in test animals has caused abnormalities in the following organ(s) Liver.

Exposure Guidelines

TARGET ORGANS	Eyes.
	Lungs.
	Respiratory system.
	Liver or the hepatic system.

Symptoms:

Repeated and/or prolonged exposure to low concentrations of vapors may cause: Sore throat

Aggravated Medical Condition:

Liver disorders (such as jaundice or liver enlargement). Adverse eye effects (such as conjunctivitis or corneal damage). Eye disease, Asthma. Adverse respiratory effects (such as cough, tightness of chest or shortness of breath).

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4. FIRST AID MEASURES

GENERAL	Seek medical advice. If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately.
EYE CONTACT	Rinse immediately with plenty of water also under the eyelids for at least 20 minutes. Remove contact lenses.
SKIN CONTACT	Wash off immediately with plenty of water for at least 20 minutes. Wash off with soap and water. Immediately remove contaminated clothing, and any extraneous chemical, if possible to do so without delay.
INGESTION	If a person vomits when lying on his back, place him in the recovery position. Prevent aspiration of vomit. Turn victim's head to the side
INHALATION	If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately. Move to fresh air

5. FIRE-FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA	Alcohol-resistant foam.
	Carbon dioxide (CO ₂).
	Dry chemical.
	Dry sand.
	Limestone powder.

Specific hazards: Incomplete combustion may form carbon monoxide. Downwind personnel must be evacuated. Burning produces obnoxious and toxic fumes.

Special protective equipment for fire-fighters:

Avoid contact with the skin. In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment. Wear self contained breathing apparatus for fire fighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS	Use self-contained breathing apparatus and chemically protective clothing.
	Wear suitable protective clothing, gloves and eye/face protection. Evacuate personnel to safe areas.
ENVIRONMENTAL PRECAUTIONS	Construct a dike to prevent spreading.
METHODS FOR CLEAN-UP	Approach suspected leak areas with caution. Contact NanoLab for advice. Place in appropriate chemical waste container.
ADDITIONAL ADVICE	Open enclosed spaces to outside atmosphere. If possible, stop flow of product.

7. HANDLING AND STORAGE

HANDLING	Emergency showers and eye wash stations should be readily accessible. Adhere to work practice rules established by government regulations. Avoid breathing vapors and/or aerosols. Avoid contact with eyes. Use only in well-ventilated areas. Use personal protective equipment. When using, do not eat, drink or smoke.
STORAGE	Do not store near acids. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep in a cool, well-ventilated place.

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8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures:

Provide readily accessible eye wash stations and safety showers. Provide natural or explosion-proof ventilation adequate to ensure concentrations are kept below exposure limits.

Personal protective equipment

RESPIRATORY PROTECTION	Wear appropriate respirator when ventilation is inadequate.
HAND PROTECTION	Nitrile rubber. The breakthrough time of the selected glove(s) must be greater than the intended use period.
EYE PROTECTION	Chemical resistant goggles must be worn.
SKIN AND BODY PROTECTION	Long sleeve shirts and trousers without cuffs.
ENVIRONMENTAL EXPOSURE CONTROLS	Construct a dike to prevent spreading.
SPECIAL INSTRUCTIONS FOR PROTECTION AND HYGIENE	Provide readily accessible eye wash stations and safety showers. Wash at the end of each workshift and before eating, smoking or using the toilet.

9. PHYSICAL AND CHEMICAL PROPERTIES

FORM	Liquid.
COLOR	Light yellow.
ODOR	Odorless.
VAPOR PRESSURE	16.69 mmHg at 70 °F (21 °C)
DENSITY	65.549 lb/ft ³ (1.05 g/cm ³) at 70 °F (21 °C)
PH	8.3
BOILING POINT/RANGE	212 °F (100 °C)
FLASH POINT	> 109 °C

10. STABILITY AND REACTIVITY

STABILITY	Stable under normal conditions.
CONDITIONS TO AVOID	Ammonia can be released on exposure to heat.
MATERIALS TO AVOID	Mineral acids.
	Incompatible with bases.
	Dehydrating Agents.
	Reactive metals (e.g. sodium, calcium, zinc etc.).
	Materials reactive with hydroxyl compounds.
	Organic acids (i.e. acetic acid, citric acid etc.).
	Incompatible with acids.
	Oxidizing agents.
	Metals.
	Halogenated compounds.
HAZARDOUS DECOMPOSITION PRODUCTS	Nitrogen oxides (NO _x), can react with water to form nitric acid
	Carbon monoxide.
	Carbon dioxide (CO ₂).
	Aldehydes.

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11. TOXICOLOGICAL INFORMATION

Acute Health Hazard

INGESTION	LD50 > 2,000 mg/kg,
Species	Rat
Method	Estimated
INHALATION	LC50 (1 h) > 20 mg/l,
Species	Rat
Method	Estimated
EYE IRRITATION	Moderate eye irritation. Irritation data based on estimates.
ACUTE DERMAL IRRITATION	Mild skin irritation
SKIN	No data available.

Skin. - Components

1. Poly(oxy-1,2-ethanediyl), a-(nonylphenyl)-w-hydroxy-, branched
LD50, 2,830 mg/kg
Species: Rabbit.
2. Tetramethyl-5-decyne-4,7-diol, 2,4,7,9-,
LD50, > 2,000 mg/kg
Species: Rat
3. Butoxyethanol, 2-
LD50, 2,000 mg/kg
Species: Rabbit.

Carcinogenicity

Butoxyethanol, 2- ACGIH : Group A3 - Confirmed animal carcinogen with unknown relevance to humans.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Aquatic toxicity: No data is available on the product itself.

Toxicity to fish - Components

Butoxyethanol, 2- LC50 (96 h): 1,490 mg/l Species : Bluegill sunfish (Lepomis macrochirus).

Toxicity to other organisms: No data available.

Persistence and degradability

Mobility: No data available.

Bioaccumulation: No data is available on the product itself.

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products

Contact supplier if guidance is required.

Contaminated packaging: Dispose of container and unused contents in accordance with federal, state, and local requirements.

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14. TRANSPORT INFORMATION

CFR	not regulated
IATA	not regulated
IMDG	not regulated
CTC	not regulated

Not dangerous goods

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard (29 CFR 1910.1200) Hazard Class: Irritant.

Country Regulatory list Notification

USA	TSCA	Included on Inventory.
Canada	DSL	Included on Inventory.
Australia	AICS	Included on Inventory.
Japan	ENCS	Included on Inventory.
China	SEPA	Included on Inventory.
Philippines	PICCS	Included on Inventory.
EU		EINECS Included on EINECS inventory or polymer substance, monomers included on EINECS inventory or no longer polymer.
South Korea	ECL	Included on Inventory.

EPA SARA Title III Section 312 (40 CFR 370) Hazard Classification:
Acute Health Hazard

US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)

This product does not contain any chemicals known to State of California to cause cancer, birth defects or any other harm.

16. OTHER INFORMATION

HMIS Rating

Health : 2

Flammability : 1

Physical hazard : 0

Notice to all NanoLab customers:

1. NanoLab products are manufactured solely for research and development.
2. All NanoLab products are to be used by, or directly under the supervision of, a technically qualified individual.
3. Anyone engaged in experimentation, research, or analysis of NanoLab products, including the processing, use, transport, storage, and disposal of our products, should review our MSDS information and also review available literature on the health and safety of nanomaterials and carbon nanotubes. NanoLab has placed on its website, <http://www.nano-lab.com/safety.html> links to all of the health and safety studies of which it is aware. If you are aware of other studies where NanoLab nanotubes have been used, please inform us at info@nano-lab.com