



MATERIAL SAFETY DATA SHEET

Page 1 of 5
MSDS No. 0001
Rev. 1.2
Issued Date: 03/8/2008
Revised Date: 06/18/2009

Multi-Wall Carbon Nanotubes

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Multi-wall Carbon Nanotubes (MWNT)

Product Code: FloTube 9000

Company: CNano Technology Limited

Tel: +86-10-67892366 *Fax:* +86-10-67892846

Emergency Telephone Number: +86-10-67892366

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient(s)	CAS Number	%(by weight)
MWNT	Carbon Nanotubes	>95%
Other inorganic substance	-	<5%

3. HAZARDS IDENTIFICATION

Potential Health Effects

General Overview

Product is in the form of odorless black powder and is not expected to cause environmental hazard under good industrial hygiene plan.

Dusts from handling or processing may cause eye, skin and respiratory tract irritation when exposed.

Product contains small amount of metal oxides and consequently may produce an allergic reaction.

Wear appropriate personal protective equipment. Keep the product handling in confined space. Proper air ventilation system is advised in handling the product.

Eye

Contact with the eyes may cause irritation due to abrasive action of the dust. Not expected to cause prolonged or significant eye irritation.

Skin

There is no known hazard, but may be mildly irritating to the skin. It is not expected to cause prolonged or significant irritation, even at high concentration. Not expected to be absorbed through the intact skin.

Inhalation

The dust from this material may cause respiratory irritation.

Ingestion

No known hazards. The product is not expected to be harmful if swallowed.

Acute and Chronic Health Effects

High concentration of dusts may be irritating to eyes, skin, mucus membranes and respiratory tract. No applicable chronic information at this moment, but none of the components is known to be a carcinogen or a suspected



MATERIAL SAFETY DATA SHEET

Page 2 of 5
MSDS No. 0001
Rev. 1.2
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Revised Date: 06/18/2009

Multi-Wall Carbon Nanotubes

carcinogen.

Target Organ Effects

No data

Developmental Information

There are no data available for assessing risk to the fetus from maternal exposure to this material.

4. FIRST AID MEASURES

General

Remove all contaminated clothing immediately.

Eyes

Hold the eyes open and rinse with water for a sufficiently long period of time (at least 10 minutes). Obtain medical attention if pain, blinking or redness persists.

Skin

In case of skin contact, rinse thoroughly with soap and plenty of water. Obtain medical attention if irritation persists.

Inhalation

If dusts are inhaled, move the person into fresh air, keep warm and allow to rest. If breathing is difficult, oxygen may be administered and medical attention should be obtained

Ingestion

Rinse mouth with water and obtain medical attention.

5. FIRE FIGHTING MEASURES

Flash Point

Not applicable

Explosive Limit

No data

Auto ignition Temperature

No data

Hazardous Products of Combustion

Carbon oxide, small quantity of metal oxides

Fire and Explosion Hazards

No special fire hazards are known to be associated with this product

Extinguishing Media

Water, Carbon Dioxide, Dry Chemical, or Foam



MATERIAL SAFETY DATA SHEET

Page 3 of 5
MSDS No. 0001
Rev. 1.2
Issued Date: 03/8/2008
Revised Date: 06/18/2009

Multi-Wall Carbon Nanotubes

Fire Fighting Instructions

Wear a self-contained breathing apparatus for fire fighting

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Equip cleanup crew with proper protection. Ensure adequate ventilation.

Environmental precautions

Prevent entry to sewers and public waters

Spill Procedures

Sweep or vacuum according to normal housekeeping practices

7. HANDLING AND STORAGE

General

Keep in closed container. Additional sealing may prevent accidental dust release

Precautions in handling and storage

Good ventilation of the workplace required. Contact with the skin and the eyes as well as inhalation of dusts must be avoided

Storage

Keep only in the original container in a dedicated place

Handling

Handle in accordance with good industrial hygiene and safety procedures

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye Protection

Chemical goggles, safety glasses or full-faced shields

Skin Protection

Suits, gloves and other items of protective clothing. Protecting gloves including, for example: nitrile, latex, and rubber

Respiratory Protections

Wear suitable respiratory equipment with High Efficiency Particulate Air Filter (HEPA), such as NIOSH P100 filter, or air-supplied respirators when directly exposed or handling the powder

Engineering Controls

Provide sufficient mechanical (general and/or local exhaust) ventilation for dust

Exposure Guidelines

In case of contact, ensure prompt removal from eyes, skin and clothing. Wash hands and other exposed areas



MATERIAL SAFETY DATA SHEET

Page 4 of 5
MSDS No. 0001
Rev. 1.0
Issued Date: 03/8/2008
Revise Date:

Multi-Wall Carbon Nanotubes

with mild soap and water before eat, drink or smoke and when leaving work

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point : Not applicable	Appearance : Black Powder
Specific Gravity : >1 @ 77 F	Soluble in Water : Insoluble
Melting Point : No data	Odor : Odorless

10. STABILITY AND REACTIVITY

Stability

Thermal decomposition or combustion may produce smoke of carbon oxide and metal oxide

Incompatibility

Avoid contacting strong oxidizing and reducing agents. No hazardous reaction when used as directed.

Conditions to avoid

Avoid excessive heating (above 400 C) in oxygen rich atmosphere

11. TOXICOLOGICAL INFORMATION

Rat oral LD50 [mg/kg]

No data

Rabbit dermal LD50 [mg/kg]

No data

Rat inhalation LC50 [mg//4h]

No data

Health Hazard Data

Experimentations performed on reconstituted human epidermis have shown no sign of toxicity of even very large doses (full skin coverage for 24 hours) of carbon nanotubes (results to be published). However, preliminary reports, based on pre-studies on rats which were instilled with severe, high-level doses of carbon nanotubes material, indicate that, if inhaled in large quantities, carbon nanotubes are potentially toxic for humans. Such an exposure scenario is however unrealistic. Nevertheless it is recommended that respiratory protection should be used to prevent inhalation exposure to carbon nanotubes.

12. ECOLOGICAL INFORMATION

The product is not expected to present environmental hazard.



MATERIAL SAFETY DATA SHEET

Page 5 of 5
MSDS No. 0001
Rev. 1.0
Issued Date: 03/8/2008
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Multi-Wall Carbon Nanotubes

13. DISPOSAL CONSIDERATION

Disposal

As prepared the product is considered as non hazardous. It can then be either disposed in an approved landfill or destroyed by incineration. Volatile dust must be collected during incineration. Liquids containing significant amount of carbon nanotubes must be filtered before being released to the sewer.

14. TRANSPORT INFORMATION

Not regulated. Use precaution during transport in order to prevent accidental spill. Not dangerous cargo. Keep separated from foodstuffs.

15. REGULATORY INFORMATION

Symbol(s): None

R Phrase(s): None

S Phrase(s): S22 Do not breathe dust

S29 Do not empty into drains

S36/37/39 Wear suitable protective clothing, gloves, eye/face protection

Regulations

This product is listed in TSCA (US Toxic Substances Control Act)

Canadian Domestic Substances List (DSL)

European Inventory of Existing Commercial Chemical Substances (EINECS)

Korean Existing Chemicals List (ECL)

Australian Inventory of Chemical Substances (AICS)

Philippines Inventory of Chemicals and Chemical Substances (PICCS)

Swiss Giftliste 1 Inventory of Notified New Substances

This product is not regulated in Japan and excluded from the Japanese Chemical Substances Control Law according to the Japanese Ministry of Economy, Trade and Industry, formerly the Ministry of International Trade and Industry (MITI)

16. OTHER INFORMATION

Further information: None

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances.