



MATERIAL SAFETY DATA SHEET

Carbon nanotubes (Rev. Date 01/01/2008)

Company

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1. Identification of the product and the company

Company identification: DropSens

Identification of the product: DRP-MWCNT, DRP-MWCNTCOOH, DRP-MWCNTNH₂, DRP-SWCNT, DRP-SWCNTCOOH.

Chemical Name & Family: Synthetic Graphite

2. Information on ingredients

2.1. Components % (wt.)

Synthetic graphite (Carbon nanotubes) CAS N° 7782-42-5 Up to 99.9 %

Inorganic impurities (metal oxides)

– Cobalt CAS N°7440-48-4: Less than 1%

– Other inert inorganic impurities (metal oxides): Traces

3. Hazards identification

3.1. General Overview

Product is odourless black shapes.

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

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

Wear appropriate personal protective equipment. Keep individual not involved in the cleanup out of the area.

Product is not expected to have environmental hazard.

3.2. Potential Health effects

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

Skin Contact: There is no known hazards, 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 carcinogen.

4. First aid measures

General: Remove all contaminated clothing immediately

After 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.

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

Eye contact: 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 persist.

Ingestion: Rinse mouth with water and obtain medical attention.

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 Oxides, Metal Oxides in small quantities

Firemen have to wear self-contained breathing apparatus.

6. Accidental release measures

Personal precautions: Equip cleanup crew with proper protection (see chapter 8). 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

Skin protection: Protecting gloves, for example in nitrile rubber (thickness ≥ 0.35 mm).

Respiratory protection: Wear suitable respiratory equipment with High Efficiency Dust Cartridge (at least a P2 filter) when directly exposed or handling the powder.

Eye protection: Chemical goggles or safety glasses.

In case of contact, ensure prompt removal from eyes, skin and clothing.

Wash hands and other exposed areas with mild soap and water before eat, drink or smoke and when leaving work.

9. Physical and chemical properties

Form and Colour: black powder

Boiling Point: Not applicable

Melting Point: Not determined

Specific Gravity: > 1

Solubility in Water: Insoluble

Odour: Odourless

10. Stability and reactivity

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

Materials to avoid: Strong oxidizing and reducing agents.

Incompatibilities: None known

Conditions to avoid: Avoid excessive heating.

No hazardous reaction when used as directed.

11. Toxicological information

Rat oral LD50 [mg/kg]: Data not yet available

Rabbit dermal LD50 [mg/kg]: Data not yet available

Rat inhalation LC50 [mg/l/4h]: Data not yet available

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

Ecological effects information: The product is not expected to present an environmental hazard.

13. Disposal considerations

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 their 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

Labelling in accordance with EU Directive 1999/45/EC Annex V (special provisions concerning the labelling of certain preparations): contains cobalt, may produce an allergic reaction.

This material is listed on the US Toxic Substances Control Act (TSCA) Inventory and the following chemical inventories: Canadian Domestic Substances List (DSL), European Inventory of Existing Commercial Chemical Substances (EINECS), Korean Existing Chemicals List (ECL), Australian Inventory of Chemical Substances (AICS), the Philippines Inventory of Chemicals and Chemical Substances (PICCS), and the Swiss Giftliste 1 Inventory of Notified New Substances. In addition, this substance 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 contents and format of this MSDS are in accordance with EEC Commission Directive 93/112/EEC.

Disclaimer: DropSens S.L. provides the information contained herein in good faith and makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. As the conditions or methods of use are beyond our control, we do not assume any responsibility and expressly disclaim any liability for any use of this material.

