



MATERIAL SAFETY DATA SHEET

Carbon nanotubes solution (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-CNTSOL
Chemical Name & Family: Synthetic Graphite plus solvent

2. Information on ingredients

2.1. Components % (wt.)

Synthetic graphite (Carbon nanotubes) CAS N° 7782-42-5
Inorganic impurities (metal oxides)
– Cobalt CAS N°7440-48-4: Less than 1%
– Other inert inorganic impurities (metal oxides): Traces
Water
N,N-Dimethylformamide CAS N°68-12-2

3. Hazards identification

3.1. General Overview

Risk advice to man and the environment.
May cause harm to the unborn child. Also harmful by inhalation and in contact with skin. Irritating to eyes.
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.

4. First aid measures

General: Consult a physician. Show this safety data sheet to the doctor in attendance. Remove all contaminated clothing immediately

After inhalation: 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: Never give anything by mouth to an unconscious person. Rinse mouth with water and obtain medical attention.

5. Fire – fighting measures

Extinguisher Medium: Water, Carbon Dioxide, Dry Chemical, or Foam
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. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

Environmental precautions: Prevent entry to sewers and public waters.

Spill Procedures: Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling: Avoid exposure. Avoid inhalation of vapour or mist. Keep away from sources of ignition- No smoking. Take measures to prevent the build up of electrostatic charge. Handle in accordance with good industrial hygiene and safety procedures.

Storage: Storage in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. Exposure controls / personal protection

Hand protection: Handle with gloves. The selected protective gloves have to satisfy the specifications of EU Directive 89/869/EEC and the standard EN 374 derived from it.

Skin and body protection: Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Respiratory protection: Where risk assessment shows air purifying are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hygiene measures: 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 liquid

Boiling Point: Not determined

Melting Point: Not determined

Solubility in Water: not soluble

Odour: amine like

10. Stability and reactivity

Stability: Stable under recommended storage conditions.

Materials to avoid: Strong oxidizing and reducing agents.

Incompatibilities: None known

Conditions to avoid: Avoid excessive heating.

Hazardous decomposition products: by fire and thermal decomposition, carbon oxides, nitrogen oxides (NOx).

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

Irritation and corrosion: Skin-human-mild skin irritation-24h

Chronic exposure: This product contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP or EPA classification.

Genotoxicity in vitro-mouse lymphocyte, mutation in mammalian cells and may cause congenital malformation in the fetus.

Warning: intolerance for alcohol can occur up to 4 days after dimethylformamide exposure. N, N-dimethylformamide is considered to be a potent liver toxin. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Potential Health Effects: Inhalation-harmful if inhaled, may cause respiratory tract irritation. Skin-harmful if absorbed through skin, may cause skin irritation. Eyes-causes eye irritation. Ingestion-may be harmful if swallowed. Target organs-kidney, liver, blood, cardiovascular system and central nervous system.

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: toxic to fish and daphnia or other aquatic invertebrates. Further information on ecology is not available.

13. Disposal considerations

Disposal: This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Observe federal, state, and local environmental regulations. Contact a licensed waste disposal service to dispose this material. 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): R61-May cause harm to the unborn child, R20/21-Also harmful by inhalation and in contact with skin, R36-Irritating to eyes.

S Phrase(s): S29-Do not empty into drains, S36/37/39-Wear suitable protective clothing, gloves, eye/face protection. S45-Avoid exposure-obtain special instructions before use. S45-In case of accident or if you feel unwell, seek medical advice immediately.

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.

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.

