

Material Safety Data Sheet
Version No.: 3.0(Rev. date : 2023-06-09)

CNT-Silver Composite

1. Product and company identification

1.1. Product Name /Synonyms: CNT-Silver Composite

1.2. Recommended use of the product and restrictions on use

Recommended use of the product: None available

Restrictions on use of the product: None available

1.3. Supplier information:

Company name: BIONIA Co., Ltd.

Address: 8-11 Munpyeongseo-ro, Daedeok-gu, Daejeon 34302, Republic of Korea

Emergency phone number: +82-42-930-8594

2. Hazards identification

Hazard Description:

F Highly Flammable

NFPA Ratings (Scale 0-4):

Health = 1

Flammability = 3

Reactivity = 2

Pictogram



Signal word Danger

Emergency Overview: Harmful by inhalation, in contact with skin and if swallowed. Irritating to the eyes, respiratory system and skin.

The toxicological properties of this material have not been thoroughly investigated. Use prudent laboratory practices for handling chemical substances of unknown toxicity.

Potential Health Effects:

Skin Contact: Short Term Exposure: Possible Irritant
Long Term Exposure: No information available

Eye Contact: Short Term Exposure: Possible Irritant
Long Term Exposure: No information available

Ingestion: Short Term Exposure: Possible Irritant
Long Term Exposure: No information available

Inhalation: Short Term Exposure: Possible Irritant
Long Term Exposure: No information available

Injection: Short Term Exposure: Possible Irritant
Long Term Exposure: No information available

CARCINOGEN/REPRODUCTIVE TOXIN STATUS:

OSHA: Not Listed

NTP: Not Listed

IARC: Not Listed

3. Composition/information on ingredients

Active Component: Carbon Nanotube–Silver Composite

Description: (CAS Number)

Silver (CAS Number: 7440-22-4); 50~70%

Carbon Nanotube (Graphite CAS Number: 7782-42-5); 30~50%

4. First aid measures

Skin Contact: Remove contaminated clothing. Flush affected area with water and then wash with soap or mild detergent and water. Observe for signs of irritation. If irritation is present, get medical attention.

Eye Contact: Wash eyes with large amounts of water or normal saline for at least 15 minutes. Observe for signs of irritation. If irritation is present, get medical attention.

Ingestion: Get medical attention.

Inhalation: Remove from exposure area to fresh air immediately. Get medical attention immediately.

Injection: If accidentally injected, get medical attention.

Note to Physician: There is no specific antidote. Treat symptomatically and supportively.

5. Fire-fighting measures

Suitable Extinguishing Agents: Use any means suitable for extinguishing surrounding fire. If material is burning, use dry powder.

Protective Equipment: Wear self-contained respirator. Wear fully protective impervious suit.

6. Accidental release measures

Person-related safety precautions: Wear protective equipment. Keep unprotected persons away. Ensure adequate ventilation. Keep away from ignition sources.

Measures for environmental protection: Do not allow material to be released to the environment without proper governmental permits.

Measures for cleaning/collecting: Ensure adequate ventilation. Do not flush with water or aqueous cleansing agents. Keep away from ignition sources.

7. Handling and storage

Handling

Information for safe handling: Keep container tightly sealed. Store in cool, dry place in tightly closed containers. Ensure good ventilation at the workplace. Prevent formation of dust.

Information about protection against explosions and fires: Keep ignition sources away. Protect against electrostatic charges. Fumes can combine with air to form an explosive mixture. Substance/product may be self ignitable.

Storage

Requirements to be met by storerooms and receptacles: Store in a cool location.

Information about storage in one common storage facility: Store away from oxidizing agents. Do not store together with acids.

Further information about storage conditions: Store under dry inert gas. Keep container tightly sealed. Store in cool, dry conditions in well sealed containers. Protect from humidity and water

8. Exposure controls / personal protection

Exposure Controls: Use in laboratory hood or other ventilated device. Occupational exposure limits for this substance have not been established by OSHA, ACGIH, or NIOSH. Use prudent laboratory practices for handling chemical substances of unknown toxicity.

General protective and hygienic measures: The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed. Remove all soiled and contaminated clothing immediately. Wash hands before breaks and at the end of work. Avoid contact with the eyes. Avoid contact with the skin.

Eye Protection: Employees must wear splash-proof or dust-resistant safety goggles to prevent eye contact with this substance.

Clothing: Employee must wear appropriate protective clothing (laboratory coat with long sleeves) and equipment to prevent skin contact with this material.

Gloves: Employee must wear appropriate protective gloves to prevent contact with this material.

9. Physical and chemical properties

Description: Odorless, Black and Gray powder

Melting point: Not determined

Boiling point: Not determined

Vapor pressure: Not determined

Vapor density: Not determined

Flash point: Not applicable

Flammability: Highly flammable

Decomposition temperature: Not determined

Explosion limits: Not determined

Solubility in water: insoluble

10. Stability and Reactivity

Stability: Stable under normal temperatures and pressure.

Solubility: Insoluble in water or organic solvents.

Decomposition products: Decomposition will not occur if used and stored according to specifications.

Materials to be avoided: Acids and Water/moisture.

Polymerization: Not applicable

Dangerous reactions: No dangerous reactions known.

11. Toxicological information

Acute toxicity:

Primary irritant effect

On the skin: Irritant to skin.

On the eye: Irritant effect.

Sensitization: Sensitization possible through skin contact.

Subacute to chronic toxicity: Absorption of silver compounds by ingestion, inhalation or through broken skin can cause argyria, a permanent bluish-grey discoloration of the skin, conjunctiva and mucous membranes.

Subacute to chronic toxicity: The Registry of Toxic Effects of Chemical Substances (RTECS) reports the following effects in laboratory animals:

Tumorigenic – equivocal tumorigenic agent by RTECS criteria.

Tumorigenic – tumors at site of application

Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of these materials is now fully known.

EPA-D: Not classifiable as to human carcinogenicity: inadequate human and animal evidence of carcinogenicity or no data are available.

12. Ecological information

Environmental impact rating (0–4): No data available.

Degradability: No data available.

LOG BIOCONCENTRATION FACTOR (BCF): No data available.

13. Disposal considerations

Observed all Federal, State, and Local Regulations.

14. Transport information

Ship as a non-regulated material. No transportation restrictions apply. The acute toxicity profile does not warrant shipment as a hazardous material (DOT) or a dangerous good (IATA).

Dot regulations

Hazard class: None

Land transport ADR/RID (cross-border)

ADR/RID class: None

Maritime transport IMDG

IMDG class: None

Air transport ICAO-TI and IATA-DGR

ICAO/IATA class: None

15. Regulatory information

EINECS/ELINCS: No

NDSL/DSL: No

TSCA STATUS: No

CERCLA SECTION 103 (40 CFR 302.4): No

SARA SECTION 302 (40 CFR 355.30): No

SARA SECTION 304 (40 CFR 355.40): No

SARA SECTION 313 (40 CFR 372.65): No

OSHA PROCESS SAFETY (29 CFR 1910.119): No

CALIFORNIA PROPOSITION 65: No

SARA ACUTE HAZARD (40 CFR 370.21): No

CHRONIC HAZARD: No

FIRE HAZARD: No

REACTIVITY HAZARD: No

SUDDEN RELEASE HAZARD: No

16. Other information

16.1. List of references

16.2. Initial creation date: 2011-04-17

16.3. Number of revisions and date of last revision: 3.0 / 2023-06-09

16.4. Further information

The material safety data sheet (MSDS) provided by the Korea Occupational Safety and Health Agency was used as a

reference and partially modified.

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