
MATERIAL SAFETY DATA SHEET

CNT-Titanium Composite

Section I - Chemical Products & Company Identification

Bioneer Corporation

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Phone: +82-42-930-8594

Creation Date: 10/07

Trade Name/Synonyms: CNT-Titanium Composite

Chemical Family: Carbon Nanotube and Titanium Composite

Section 2 - Composition/Information On Ingredients

Active Component: Carbon Nanotube-Titanium Composite

Description: (CAS Number)

Titanium (CAS Number: 7440-32-6); 70%

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

Section 3 - Hazards Identification

Hazard Description:

Xi Irritant

F Highly Flammable

NFPA Ratings (Scale 0-4):

Health = 1

Flammability = 2

Reactivity = 1

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

Section 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.

Section 5: Fire Fighting Measures

Suitable Extinguishing Agents: Special powder for metal fires. Do not use water.

Unsuitable Extinguishing Agents: Water, Carbon Dioxide, Halogenated Extinguisher

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

Section 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. Keep away from ignition sources.

Section 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.

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 air. Store away from halogens. Do not store together with acids. Store away from oxidizing agents

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

Section 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.

Section 9 - Physical and Chemical Properties

Description: Odorless, Black 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

Section 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: Oxygen, Halogens, Aluminum, Carbon dioxide, Halocarbons, Oxidizing agents, Acids and Water/moisture.

Polymerization: Not applicable

Dangerous reactions: No dangerous reactions known.

Section 11 - Toxicology 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: Titanium compounds are considered physiologically inert. There are no reported cases in the literature where titanium as such has caused human intoxication.

Subacute to chronic toxicity: The inhalation of graphite has caused pneumoconiosis in exposed workers. The pneumoconiosis found is similar to coal worker's pneumoconiosis.

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

Section 12 - Ecological Information

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

Degradability: No data available.

LOG BIOCONCENTRATION FACTOR (BCF): No data available.

Section 13 - Disposal Information

Observed all Federal, State, and Local Regulations.

Section 14 - Transportation 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

Section 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

Section 16 – Other

The aforementioned information is believed to be correct, but does not purport to be all-inclusive and shall be only as a guide. Bioneer shall not be held liable for any damage resulting from handling or from contact with the above product.