MULTI3D

SAFETY DATA SHEET

Section 1: Identification

Product Name: Electrifi Conductive Polyethylene Composite
Chemical Name/Synonyms: Electrifi
Company: Multi3D Inc.
Address: 10235 E. Finch Ave
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In emergency call 911.
For information about this SDS, use this contact phone#: 1-919-907-8141

Chemical Family: Polymer-metal composite
Product Use: Injection Molding and 3D Printing

Section 2: Hazard(s) Identification

Emergency Overview: Under normal use conditions, this material is considered to present minimal human health and environmental hazards.

Signs and Symptoms of Potential Overexposure:
INHALATION: Dust particles may require cleaning of nasal passages. EYES: Mechanical irritation from particulates generated by product. SKIN: Decomposition gases may be irritating to the skin. INGESTION: Minimal hazard expected in normal industrial use.

Section 3: Composition/ Information on Ingredients

Chemical Name	Synonym	CAS#	%w/w
Copper	Cu	7440-50-8	10-90
Polyethylene	PE	9002-88-4	10-90
Processing Aides		Trade secret	<1%

Section 4: First-Aid Measures

Inhalation
Heating may release vapors which may be irritating. In case of inhalation of decomposition products, affected person should be moved into fresh air and kept still. Get medical advice/attention.
Skin
It is unlikely that first aid will be required. IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention.

Eyes
It is unlikely that first aid will be required. Dust may be irritating to the eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention, if needed.
Ingestion
IF SWALLOWED: Rinse mouth. Get immediate medical advice/attention.

Indication of any immediate medical attention and special treatment needed
First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. Treat symptomatically and supportively.

Most Important Symptoms/Effects
Acute
Molten material may cause thermal burns.
Delayed
No information on significant adverse effects.
Note to Physicians
Treat symptomatically. Give artificial respiration if not breathing.
Antidote
None known. Treat symptomatically and supportively

Section 5: Fire-Fighting Measures

Extinguishing Media
Suitable Extinguishing Media
Water, alcohol resistant foam, regular dry chemical
Unsuitable Extinguishing Media
None known
Special Hazards Arising from the Chemical
Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.
Hazardous Combustion Products
Oxides of carbon, aldehydes. May decompose upon heating to produce corrosive and/or toxic fumes.
Fire Fighting Measures
Wear full protective firefighting gear including self-contained breathing apparatus (SCBA) for protection against possible exposure. Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.
Special Protective Equipment and Precautions for Firefighters
Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

Section 6: Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures
No measures required.
Methods and Materials for Containment and Cleaning Up
Collect spilled material in appropriate container for reuse or disposal. Dispose in accordance with all applicable regulations.

Environmental Precautions
Avoid release to the environment. Comply with all applicable regulations on spill and release reporting. Prevent entry into waterways, sewers, basements, or confined areas.

Section 7: Handling and Storage

Precautions for Safe Handling
Minimize dust generation and accumulation. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations.
Conditions for Safe Storage, Including any Incompatibilities
None needed according to classification criteria.
Store in a cool dry place. Store below 50 °C. Avoid heat, flames, sparks and other sources of ignition. Keep away from incompatible materials.
Incompatible Materials
Oxidizing agents, strong bases

Section 8: Exposure Controls/Personal Protection

Exposure Limits

Authorized limit Values	**OSHA PEL**
PNOC (Particulates not otherwise classified)	15 mg/m^3 – total dust
	5 mg/m^3 – respirable fraction

Personal Protective Equipment:
RESPIRATORY: Use appropriate respiratory protection in case of dust or dust formation. SKIN: Where contact is likely, wear chemical-resistant gloves (PVC). EYES: Wear safety glasses with side shields. Wear chemical splash goggles and face shield, if risk of splashing. SKIN: Where contact is likely, wear chemical- resistant gloves, a chemical suit and boots. Recommended materials are PVC, neoprene or rubber. Wear appropriate thermal protection when handling hot material. Wear chemical protective clothing in dusty areas.
Engineering Controls: Provide local ventilation suitable for the emission risk.
Special Hazard: Workers should be protected from the possibility of contact with molten material during fabrication.
Environmental Protection: Do not allow to enter drains or watercourses.

Section 9: Physical and Chemical Properties

Appearance Physical state: Solid (Monofilament or Pellet Shape)
Melting point/freezing Point: Approximately 90 °C
Auto Ignition Point (Ignition Point): NA
Color: Bronze
Odor: Odorless
Auto Ignition Point (Ignition Point): NA
Specific Gravity (Relative Density): 1.05-5.15 g/cm^3

Solubility in Water: Insoluble

Section 10: Stability and Reactivity

Stability: Stable under normal conditions of use
Conditions to Avoid: Moisture, excessive temperatures
Hazardous Polymerization: Will not occur
Incompatibilities: Copper is explosively incompatible with sodium azide. Copper dusts may react to acetylene gas to form copper acetylides, which are sensitive to shock. Copper mists may react with magnesium to form flammable hydrogen gas. To avoid thermal decomposition, do not overheat. Avoid keeping resin molten for excessive periods of time at elevated temperatures. Prolonged exposure will cause polymer degradation. Dust formation. Oxidizing agents/materials, Strong bases.
Hazardous Decomposition Products:
Carbon monoxide, carbon dioxide when involved in a fire. Particulates of carbon.

Section 11: Toxicological Information

Principal routes of exposure: Skin contact.
Acute toxicity: Copper is an essential element of mammalian metabolism. Copper metal has little or no toxicity.
Chronic toxicity: None established.
Specific effects: Inhalation of copper fume or dust may result in metal fume fever, which is characterized by upper respiratory irritation, chills, metallic or sweet taste, nausea, and aching muscles. Attacks usually begin after 4-8 hours of exposure and last only 24-48 hours. Inhalation of fumes has been reported to sometimes cause discoloration of the skin and hair. Nausea and vomiting may result if larger amounts of copper are ingested. This is probably due to the conversion of the swallowed metal copper to its irritating salts. It is unlikely that poisoning by ingestion in industry would progress to a serious point because small amounts induce vomiting, emptying of the stomach of copper salts. High airborne concentrations of copper metal would be expected to cause mechanical irritation of the eyes and respiratory tract. Metallic copper may cause keratinization of the hands and soles of the feet, but it is not commonly associated with industrial dermatitis. Inhalation of dust may cause shortness of breath, tightness of chest, a sore throat and cough. Ingestion may cause gastrointestinal irritation. Product dust may be irritating to eyes.
Target organ effects: Eyes, Respiratory system.
Ingestion: May cause gastrointestinal discomfort if consumed in large amounts. Not an expected route of exposure.
Inhalation: Inhalation of dust in high concentration may cause irritation of the respiratory system.
Eye Contact: Dust contact with the eyes can lead to mechanical irritation.
Symptoms related to the physical, chemical, and toxicological characteristics: Redness. Coughing and/or wheezing.
Irritation: Product dust may be irritating to eyes, skin, and respiratory system.

Section 12: Ecological Information (non-mandatory)

Ecotoxicity: Pellets may be eaten by wildlife and should be swept up and placed in closed containers.
EC50/72h/algae > 1100 mg/L
Persistence and degradability: Not readily biodegradable.

Bioaccumulation: Not expected to bioconcentrate or bioaccumulate.
Mobility: Is not likely mobile in the environment.
Other adverse effects: This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).
Ozone: Not applicable.

Section 13: Disposal Considerations

Waste Disposal:
DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. Multi3D HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION.

Section 14: Transport Information

DOT INFORMATION:
Proper Shipping Name: Not regulated
Hazard Class: N/A
Packing Group: N/A
UN#: N/A

IATA INFORMATION:
Proper Shipping Name: Not regulated
Hazard Class: N/A
Packing Group: N/A

Section 15: Regulatory Information

TSCA Inventory 8(b): No
SARA Title III Sec. 302/303 Extremely Hazardous Substances (40 CFR 355): No
SARA Title III Sec. 311/312 (40 CFR 370): No
SARA Title III Sec. 313 Toxic Chemical Emissions Reporting (40 CFR 372): No
CERCLA Hazards Substances (40 CFR Part 302): Listed: NO Unlisted Substances: NO
Canadian DSL Registration: No
WHMIS Classification: Not a controlled product

Section 16: Other Information

HMIS HAZARD RATING
HEALTH: 0
FLAMMABILITY: 1
REACTIVITY: 0
PERSONAL PROTECTION: B

FIRE: Material that must be preheated before ignition can occur.
HEALTH:
Materials which on exposure under fire conditions would offer no hazard beyond that of ordinary combustible material.
REACTIVITY:
Materials which in themselves are normally stable, even under fire exposure conditions, and which are not reactive with water.

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