

MATERIAL SAFETY DATA SHEET

Essentium Polyamide Carbon Fiber



Rev. Date: 05/27/2019

Thank you for your interest in Essentium's products. We are providing this material safety data sheet [MSDS] as a courtesy to your request. We certainly expect you to read the entire MSDS and to call us with any required points of clarification. Please follow all precautions identified in this document.

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SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Essentium PA-CF

SUPPLIER: Essentium Inc.
ADDRESS: 19025 N. Heatherwilde Blvd., Ste 100
Pflugerville, TX 78660

MANUFACTURER: Essentium Inc.
ADDRESS: 19025 N. Heatherwilde Blvd., Ste 100
Pflugerville, TX 78660

SUPPLIER EMERGENCY CONTACTS & PHONE:

Essentium Inc. 979-777-2354
Email: sales@essentium3d.com
www.essentium3d.com

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SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

<u>INGREDIENT:</u>	<u>CAS NO.</u>	<u>WT%</u>
2,4,8,10-Tetraoxa-3,9-diphosphaspiro[5.5]undecane, 3,9-bis[2,4- bis(1,1-dimethylethyl)phenoxy]-	26741-53-7	>=0.3 - <1.0%
Polyamide copolymer	NA	>89%
Chopped carbon fiber	NA	10%

SECTION 3: HAZARDS IDENTIFICATION

According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200.

Classification of the product: No need for classification according to GHS criteria for this product.

Label elements: No need for a hazard warning label according to GHS criteria for this product.

Other Hazards: No specific dangers known if the regulations/notes for handling and storage are considered.

SECTION 4: FIRST AID MEASURES

The following first aid recommendations are based on an assumption that appropriate personal and industrial best practices are followed. Precautions should be taken to avoid inhalation and eye contact.

General Advice: Remove contaminated clothing. Burns caused by molten material may require hospital treatment.

Eye Contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a physician immediately.

Skin Contact: Adverse effects are not expected from accidental skin contact following occupational exposure. After contact with skin, wash with soap and water. If skin irritation persists, call a physician. Cool skin rapidly with cold water after contact with hot polymer. DO NOT attempt to remove hot polymer from skin or contaminated clothing as skin may be easily damaged. Call a physician immediately.

Ingestion: Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice. Call a physician immediately.

Inhalation: Move to fresh air, keep person calm. Assist in breathing if necessary. Call a physician immediately.

SECTION 5: FIRE-FIGHTING MEASURES

Suitable extinguishing media: Carbon dioxide, water spray, dry powder, and foam.

Unsuitable extinguishing media: None known

Special protective equipment for firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

Special hazards arising from substance: Hazards during fire-fighting: carbon monoxide, hydrogen cyanide, carbon dioxide, caprolactam, nitriles can be emitted at > 320 C. Under special fire conditions traces of other toxic substances are possible. Formation of further decomposition and oxidation products depends upon the fire conditions.

Further information: Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Risk: High risk of slipping due to spillage of product.

Personal precautions: No special precautions necessary.

Environmental precautions: No special precautions necessary.

Methods for cleaning up: Spills should be contained and placed in suitable containers for disposal.

SECTION 7: HANDLING AND STORAGE

Safe handling advice: Use personal protective equipment. Avoid contact with skin and eyes. Low hazard for usual industrial or commercial handling. Workers should be protected from the possibility of contact with molten material during fabrication. Avoid dust formation. If small particles are generated during further processing, handling, or by other means, combustible dust concentrations in air may form. Protect from moisture and impurities. Keep the floor clear. Provide suitable exhaust for ventilation during the drying process and in the area surrounding the melt outlet and processing machines.

Storage stability: Protect against moisture.

Suitable materials for containers: LDPE, aluminum, HDPE, carbon steel (iron)

Precautions: No special precautions required.

Dangerous Reaction: No dangerous reactions are known.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Control:

No occupational exposure limits known.

Advice on system design: Provide local exhaust ventilation to control dusts/vapors.

Personal protective equipment:

Eye protection: Safety goggles with side-shields to protect from hot molten substance/product.

Skin and body protection: Body protection must be chosen based on level of activity and exposure.

Respiratory protection: Wear respiratory protection if ventilation is inadequate. Wear a NIOSH certified (or equivalent) particulate respirator. Wear a NIOSH certified (or equivalent) organic vapor/particulate respirator.

Hand protection: Preventive skin protection. Gloves.

Hygiene measures: Wear protective clothing to prevent contact during mechanical processing and or hot melt conditions. Avoid inhalation of dust. When using, do not eat, drink, or smoke. Hands and/or face should be washed before breaks and at the end of the shift. At the end of the shift the skin should be cleaned, and skin care agents applied.

Special hazard: Workers should be protected from the possibility of contact with molten material during fabrication.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Solid filament
Color:	Black
Odor:	Faint odor
Odor threshold:	Not applicable
pH:	Not applicable
Boiling point / boiling range:	Not applicable
Melting point / melting range:	approx. 190 °C
Sublimation point:	Not applicable
Flash point:	> 400 °C
Flammability:	Not self-igniting
Flammability of aerosol:	Not applicable
Products:	form flammable aerosols
Lower explosion limit:	for solids not relevant for classification and labeling
Upper explosion limit:	for solids not relevant for classification and labeling
Autoignition temperature:	Not applicable
Vapor pressure:	Not applicable
Density:	1.10 – 1.60 g/cm ³ (20 °C)
Relative density:	No data available
Bulk density:	500-800 kg/m ³
Vapor density:	Not applicable
Partitioning coefficient n-octanol/water (log Pow):	Not applicable
Self-ignition temperature:	Not self-igniting
Thermal decomposition:	> 320 °C
Water solubility:	Insoluble
Evaporation rate:	Not applicable
Viscosity, dynamic:	Not applicable
Viscosity, kinematic:	Not applicable
Solubility (quantitative):	No applicable information available
Solubility (qualitative):	No applicable information available

SECTION 10: STABILITY AND REACTIVITY

Reactivity: None expected under conditions of normal use.

Chemical stability: Stable under recommended storage conditions.

Possibility of hazardous reactions: No hazardous reactions known.

Conditions to avoid: > 320 °C

Hazardous decomposition products: carbon monoxide, carbon dioxide, hydrogen cyanide, caprolactam, ammonium hydroxide, nitriles

SECTION 11: TOXICOLOGICAL INFORMATION

Inhalation: Not inhalable due to the properties of the product.

Irritation: Thermal decomposition of the product can irritate eyes, skin, and respiratory tract.

Eyes: Molten material will cause thermal burns.

Skin: Molten material will cause thermal burns.

Other: No specific target organ toxicity (STOT)

No sensitizing effect

No aspiration hazard

No known chronic effects

Chemical structure does not suggest a specific alert to genetic toxicity

Chemical structure does not suggest a specific alert to carcinogenicity

Chemical structure does not suggest a specific alert to reproductive toxicity

Chemical structure does not suggest a specific alert to teratogenicity

SECTION 12: ECOLOGICAL INFORMATION

Aquatic Toxicity: There is a high probability that the product is not acutely harmful to aquatic organisms.

Biodegradable: Inert and non-degradable.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste from residues / unused products: In accordance with local, state and national regulations. Should not be released into the environment. Do not contaminate ponds, waterways or ditches with chemical or used container. Incinerate or dispose in a licensed facility.

Contaminated packaging: Dispose of in accordance with national, state, and local regulations.

THE COMPANY 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

U.S. DEPARTMENT OF TRANSPORTATION

PROPER SHIPPING NAME: Not regulated for transportation

WATER TRANSPORTATION

PROPER SHIPPING NAME: Not regulated for transportation

AIR TRANSPORTATION

PROPER SHIPPING NAME: Not regulated for transportation

SECTION 15: REGULATORY INFORMATION

Regulatory requirements are subject to change and may differ between locations. It is the User's responsibility to ensure that all activities comply with all federal, state or provincial and local laws and regulations. The following specific information is made for the purpose of complying with numerous national, federal, state or provincial, and local laws and regulations. See other sections for health and safety information.

U.S. REGULATIONS

Sara 313 title III: Not Listed

TSCA Inventory List: Listed

EPCRA 311/312: Not hazardous

NFPA Hazard Codes: Health: 1 Fire: 1 Reactivity: 0

HMIS III Rating: Health: 1 Flammability: 1 Physical hazard: 0

INTERNATIONAL REGULATIONS: Contact Essentium Inc. for more information.

Not meant to be all inclusive - selective regulations represented

SECTION 16: OTHER INFORMATION

DISCLAIMER:

Essentium Inc. nor any of its subsidiaries assumes any liability whatsoever for transporting/handling the product. It is the buyer's/user's/licensee's responsibility to ensure that its activities comply with all federal, state, provincial, or local laws and import/export requirements. We assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Essentium Inc. makes no warranties, expressed or implied, including but not limited to, any implied warranty of merchantability or fitness for a particular purpose or course of performance or usage of trade. Final determination of suitability of any material is the sole responsibility of the user.