MATERIAL SAFETY DATA SHEET

Section 1:
IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Product name:	**Filaticum PLA Engineering**
Product Use:	A biopolymer which can be used for 3D printing
Supplier:	Filamania Ltd. 2310 Szigetszentmiklós, Fenyőfa utca 23/a, Hungary

Emergency telephone numbers: +36 30 9 313 973

Section 2:
HAZARDS IDENTIFICATION

Classification:	This product is NOT classified according to 29 CFR 1910.1200 Hazard Communication Standard 2012
Hazard Statement:	None Precautionary Statement: None Signal word: None Pictogram: None

Section 3:
COMPOSITION/INFORMATION ON INGREDIENTS

Substances
Not Applicable. This material is regulated as a mixture.

Mixtures
This material is defined as a mixture and contains Polylactic acid, Polyethylene with a phenolic additive with carbon black pigment

No Hazardous Substance(s) required for disclosure.

Section 4:
FIRST AID MEASURES

Emergency telephone numbers: (+36 30 9313 973 a day)

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 immediately with plenty of 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.
Inhalation:	Move to fresh air. Call a physician immediately.
Ingestion:	Drink water as a precaution. Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice. Call a physician

immediately

Notes to physician: Treat symptomatically

Section 5:
FIRE-FIGHTING MEASURES

Flammability:	Autoignition temperature: not know
Flammability Limits in Air:	Flammable limits in air - lower (%): Not applicable Flammable limits in air - upper (%): Not applicable
Suitable extinguishing media:	Foam, Water, Carbon dioxide (CO2), Dry chemical, Alcohol resistant foams are preferred if available. General-purpose synthetic foams (including AFFF) or protein foams may function, but much less effectively.
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.
Under fire conditions:	Cool containers / tanks with water spray. Water mist may be used to cool closed containers. Fine dust dispersed in air may ignite. Risks of ignition followed by flame propagation or secondary explosions shall be prevented by avoiding accumulation of dust, e.g. on floors and ledges.

Advice for fire fighters:

Fire Fighting Instructions: Assure an extended cooling down period to prevent re-ignition. Evacuate area.
Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. Fire-fighters
should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA).
Use water spray to cool fire exposed surfaces and to protect personnel.

Section 6:
ACCIDENTAL RELEASE MEASURES

Personal precautions:	Use personal protective equipment. Avoid contact with skin and eyes. Avoid dust formation. Remove all sources of ignition. Sweep up to prevent slipping hazard.
Environmental precautions:	Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system.
Methods for cleaning up:	Clean up promptly by scoop or vacuum. Sweep up and shovel into 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.
Storage:	Store under cool dry conditions and observe normal standards of industrial hygiene when handling pellets. Pallets should not be double stacked, unless the appropriate risk assessment has been undertaken

	and actions are in place for pedestrian clearance and spillage clear up in case the stack becomes unstable.
	Loading/Unloading Temperature: [Ambient] Transport Temperature: [Ambient] Transport Pressure: [Ambient] Static Accumulator: This material is not a static accumulator.
	Store at temperatures not exceeding 50°C/ 122°F. Keep cool. No special restrictions on storage with other products.
Precautions:	No special precautions required.

Section 8:
EXPOSURE CONTROLS/PERSONAL

Exposure Control

Engineering measures:	Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. Provide appropriate exhaust ventilation at places where dust is formed.
Exposure limits:	None established. This material can generate Particulates Not Otherwise Classifiable (PNOC). The Occupational Safety and Health Administration (OSHA) PEL/TWA for PNOC is 15 mg/m3 for total dust and 5 mg/m3 for the respirable fraction. The American Conference of Governmental Industrial Hygienists (ACGIH) TLV/TWA for PNOC is 10 mg/m3 for inhalable particulates and 3 mg/m3 for respirable particulates.

Personal protective equipment

Eye protection:	Safety glasses with side-shields. Goggles.
Skin and body protection:	Impervious clothing.
Respiratory protection:	Respirator must be worn if exposed to dust. Wear respirator with dust filter. Respiratory protection is needed if any of the exposure limits in Section 3 are exceeded. Consult an industrial hygiene professional prior to respirator selection and use. Use a positive-pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection. WARNING: Air purifying respirators do not protect workers in oxygen-deficient atmospheres.
Hand protection:	Preventive skin protection.
Hygiene measures:	Avoid contact with skin, eyes and clothing.
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 Appearance: filament. Color: Black, Odor: Sweet pH: Not applicable Vapor pressure: Not determined Vapor density: Not determined Evaporation rate: Not determined Density: 1.25 g/m3 Decomposition temperature: 250C. Boiling point / boiling range: Not applicable Melting point / melting range: 150-180C, Tg (Glass Transition Temperature): 55-60C (131-140F) Autoignition temperature: not determined, Water

solubility: Insoluble Solubility in other solvents: Not determined

Section 10:
STABILITY AND REACTIVITY

Reactivity:	None expected under conditions of normal use.
Chemical stability:	Stable under recommended storage conditions.
Conditions to avoid:	Temperatures above 446F (230 °C). Avoid keeping resin molten for excessive periods of time at elevated temperatures. Prolonged exposure will cause polymer degradation.
Materials to avoid:	Oxidizing agents, Strong bases
Hazardous decomposition products:	Burning produces obnoxious and toxic fumes, Aldehydes, Carbon monoxide (CO), carbon dioxide (CO2

Section 11:
TOXICOLOGICAL INFORMATION

Principle routes of exposure:	Eye contact, Skin contact, Inhalation, Ingestion.
Acute toxicity:	There were no target organ effects noted following ingestion or dermal exposure in animal studies.
Local effects:	Product dust may be irritating to eyes, skin and respiratory system. Resin particles, like other inert materials, are mechanically irritating to eyes. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.
Specific effects:	May cause skin irritation and/or dermatitis. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough. Burning produces irritant fumes.
Long term toxicity:	Did not cause skin allergic reactions in skin sensitization studies using guinea pigs.
Mutagenic effects:	Not yet measured.
Reproductive toxicity:	No data is available on the product itself.
Carcinogenic effects:	None of the components of this product are listed as carcinogens by IARC, NTP, or OSHA.
Target organ effects:	There were no target organ effects noted following ingestion or dermal exposure in animal studies.
Skin:	Negligible hazard at ambient/normal handling temperatures on skin.
Ingestion:	Negligible hazard at ambient/normal handling temperatures on skin.

Section 12:
ECOLOGICAL INFORMATION

Ecotoxicity effects:	Not yet determined
Persistence and degradability:	The main component PLA is Inherently biodegradable under industrial composting conditions
Bioaccumulation:	Not expected to bioconcentrate or bioaccumulate.
Mobility:	No data available

Section 13:
DISPOSAL CONSIDERATIONS

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

manufacturer.

Contaminated packaging: Empty remaining contents. Do not re-use empty containers. Empty containers should be transported/delivered using a registered waste carrier to local recyclers for disposal.

Section 14:
TRANSPORT INFORMATION

UN NUMBER: Not regulated - material is classified as non-hazardous.
UN SHIPPING NAME: Philamant PLA_ESD
UN LAND TRANSPORT CLASSIFICATION (ADR/RID): 14.1-14.6 Not Regulated for Land Transport
UN INLAND WATERWAYS CLASSIFICATION (ADNR/ADN): 14.1-14.6 Not Regulated for Inland Waterways Transport
UN SEA CLASSIFICATION (IMDG): 14.1-14.6 Not Regulated for Sea Transport according to IMDG-Code
UN AIR CLASSIFICATION (IATA): 14.1-14.6 Not Regulated for Air Transport
UN PACKING GROUP: Not regulated -material is classified as non-hazardous.
UN ENVIRONMENTAL HAZARD CODE (IMDG): Not regulated -material is classified as non-hazardous.
MARPOL ANNEX II 73/78 (MARINE POLLUTION REGULATIONS): Not regulated - material is classified as nonhazardous

Section 15:
REGULATORY INFORMATION

REGULATORY STATUS AND APPLICABLE LAWS AND REGULATIONS
Complies with the following national/regional chemical inventory requirements: TSCA (Toxic substances
control act)
15.1. SAFETY, HEALTH AND ENVIRONMENTA REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE
Not regulated - material is classified as non-hazardous
15.2. CHEMICAL SAFETY ASSESSMENT
REACH Information: A Chemical Safety Assessment has not been carried out for any of the substances
present in the material.

Section 16:
OTHER INFORMATION

The company does not recommend any of its products, including samples, for use: (A) in any application which is intended for any internal contact with human body fluids or body tissues (B) as a critical component in any medical device that supports or sustains human life; and (C) specifically, pregnant women or in any applications designed specifically, to promote or interfere with human reproduction. Components of products intended for human or animal consumption.