MATERIAL SAFETY DATA SHEET
according to Regulation (EU) No. 1907/2006

EVERFIL ™ PLA

1. IDENTIFICATION OF THE SUBSTANCE, COMPANY (name, address)

PRODUCT INFORMATION:

Trade name: EVERFIL™ PLA

Chemical name: Poly Lactic Accid

Chemical family: Thermoplastic Copolymers

Use: Filament for 3D printing

Company: 3DKordo Sp. J. ul. Wiejska 70 lok.31 15-352 Białystok, Poland
e-mail biuro@3dkordo.pl

2. RISK IDENTIFICATION

a. Classification of substance or mixture

Classification – REGULATION (EC) No 1272/2008
This product is not classified as dangerous according to EC criteria.
Classification according to EU Directive 67/548/EEC or 1999/45/EC
This product is not classified as dangerous according to EC criteria.

b. Label elements

Labelling – REGULATION (EC) No 1272/2008
This product is not classified as dangerous according to EC criteria.

c. Other hazards

No information available

3. INGREDIENTS

EVERFIL ™ PLA is a mixture

Component	CAS-No	EC-No	Amount
Polyactide resin	9051-89-2	Polymer	>98.0%

4. FIRST AID

First aid description:

First aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment

a. **Inhalation -** Move person to fresh air, if effects occur, consult a medic

b. **Skin contact** - Wash skin with plenty of water. Seek first aid or medical attention as needed. If molten material comes in contact with the skin, do not apply ice but cool under ice water or running stream of water. DO NOT attempt to remove the material from skin. Removal could result in severe tissue damage. Seek medical attention immediately. Suitable emergency safety shower facility should be immediately available

c. **Eye contact -** Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a medic, preferably an ophthalmologist

d. **Ingestion -** If swallowed, seek medical attention. May cause gastrointestinal blockage. Do not give laxatives. Do not induce vomiting unless directed to do so by medical personnel

Most important symptoms and effects, both acute and delayed

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of immediate medical attention and special treatment needed

If burn is present, treat as any thermal burn, after decontamination. If lavage is performed, suggest endotracheal and/or oesophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE SAFETY

Extinguishing media

Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Special hazards arising from the substance or mixture

Hazardous Combustion Products

During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Nitrogen oxides. Carbon

monoxide. Carbon dioxide. Combustion products may include trace amounts of: Styrene. Hydrogen cyanide.

Unusual Fire and Explosion Hazards

Autoignition temperature - 388ºC

Pneumatic conveying and other mechanical handling operations can generate combustible dust. To reduce the potential for dust explosions, do not permit dust to accumulate. Dense smoke is produced when product burns.

Advice for firefighters

Fire-fighting procedures: Keep people away. Isolate fire and deny unnecessary entry. Soak thoroughly with water to cool and prevent re-ignition. If material is molten, do not apply direct water stream. Use fine water spray or foam. Cool surroundings with water to localize fire zone. Hand held dry chemical or carbon dioxide extinguishers may be used for small fires.

Special Protective Equipment for Firefighters

Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire-fighting clothing (includes fire-fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

6. ACCIDENTAL RELEASE ISSUE

Personal precautions:

Spilled material may cause a slipping hazard. Use protective equipment appropriate safety equipment. For additional information, and emergency procedures refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions:

Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for cleaning up:

Contain spilled material if possible. Sweep up. Collect in containment and cleaning up suitable and properly labelled containers. See Section 13, Disposal Considerations, for additional information.

7. STORAGE AND HANDLING

a. **Storage condition –** according to the best storage practices

b. **Handling** - No smoking, open flames or sources of ignition in handling and storage area. Good housekeeping and controlling of dusts are necessary for safe handling of product. Avoid breathing process fumes. Use with adequate ventilation. When appropriate, unique handling information for containers can be found on the product label. Workers should be protected from the possibility of contact with molten resin. Do not get molten material in eyes, on skin or clothing. Pneumatic conveying and other mechanical handling operations

can generate combustible dust. To reduce the potential for dust explosions, electrically bond and ground equipment and do not permit dust to accumulate. Dust can be ignited by static discharge.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

a. **Exposure limits -** Not established

b. Personal protection

Eye/Face Protection

Use safety glasses (with side shields). Safety glasses (with side shields) should be consistent with EN 166 or equivalent. If there is a potential for exposure to particles which could cause eye discomfort, wear chemical goggles. Chemical goggles should be consistent with EN 166 or equivalent. If exposure causes eye discomfort, use a full-face respirator.

Skin Protection

No precautions other than clean body-covering clothing should be needed.

Hand protection

Chemical protective gloves should not be needed when handling this material. Consistent with general hygienic practice for any material, skin contact should be minimized. Use gloves with insulation for thermal protection (EN 407), when needed. Use gloves to protect from mechanical injury. Selection of gloves will depend on the task.

Respiratory Protection

Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. Use an approved air-purifying respirator when vapours are generated at increased temperatures or when dust or mist is present. Use the following CE approved air-purifying respirator: When dust/mist are present use a/an Particulate filter, type P2. When combinations of vapours, acids, or dusts/mists are present use a/an Organic vapour cartridge with a particulate pre-filter, type AP2.

Ingestion

Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating

c. Engineering Controls

Ventilation

Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for

most operations. Local exhaust ventilation may be necessary for some operations.

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9. PHYSICAL AND CHEMICAL PROPERTIES

a. Appearance

Form : Filament (solid at room temperature)
Color : Transparent
Odour : Sweet

b. Relevant data

Melting point : 150 – 180 ºC
Flash point : Not applicable
Auto-ignition temperature : No data available
Specific density : 1.25 (literature)
Explosive properties : No data available
Flammability (solid, gas) : No
Solubility in water : Insoluble
pH value : Not applicable
Octanol / water partition coefficient : Not data available
Vapour pressure : Not applicable

10. STABILITY AND REACTIVITY

Reactivity : No dangerous reaction known under conditions of normal use.
Chemical stability : Stable.
Possibility of hazardous : Polymerization will no occur. reactions
Conditions to avoid : Avoid temperatures above 230 °C. Exposure to elevated temperatures can cause product to decompose.
Incompatibility : None known.

Hazardous decomposition

Decomposition products depend upon temperature, air products supply and the presence of other materials. Processing may release fumes and other decomposition products. At temperatures exceeding melt temperatures, polymer fragments can be released. Fumes can be irritating.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity Ingestion

Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts. May cause choking if swallowed. Single dose oral LD50 has not been determined. Typical for this family of materials. Estimated. LD50, rat > 5,000 mg/kg.

Aspiration hazard

Based on physical properties, not likely to be an aspiration hazard.

Dermal

No adverse effects anticipated by skin absorption. The dermal LD50 has not been determined. Typical for this family of materials. Estimated. LD50, rabbit > 2000mg/kg.

Inhalation

No adverse effects are anticipated from single exposure to dust. Vapours released during thermal processing may cause respiratory irritation. The LC50 has not been determined.

Eye damage or eye irritation

Solid or dust may cause irritation or corneal injury due to mechanical action. Elevated temperatures may generate vapour levels sufficient to cause eye irritation. Effects may include discomfort and redness.

Skin corrosion or irritation

Prolonged contact is essentially no irritating to skin. Mechanical injury only. Under normal processing conditions, material is heated to elevated temperatures; contact with the material may cause thermal burns.

Sensitization

Skin : No relevant data found.
Respiratory : No relevant data found.
Repeated Dose Toxicity : Additives are encapsulated in the product and are not expected to be released under normal processing conditions or foreseeable emergency.
Chronic Toxicity and Carcinogenicity : No relevant data found.
Developmental Toxicity : No relevant data found.
Reproductive Toxicity : No relevant data found.
Genetic Toxicology : In vitro genetic toxicity studies were negative.

12. ECOLOGICAL INFORMATION

Toxicity

Not expected to be acutely toxic, but material in pellet or bead form may mechanically cause adverse effects if ingested by waterfowl or aquatic life.

Persistence and Degradability

This water-insoluble polymeric solid is expected to be inert in the environment. Surface photo degradation is expected with exposure to sunlight. No appreciable biodegradation is expected.

Bioaccumulation

No bio concentration is expected because of the relatively

high molecular weight (MW greater than 1000).

Mobility in soil

In the terrestrial environment, material is expected to remain in the soil. In the aquatic environment, material will sink and remain in the sediment.

Results of PBT and vPvB assessment

This mixture has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Other adverse effects

No relevant data found.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

For uncontaminated material the disposal options include mechanical and chemical recycling or energy recovery. In some countries landfill is also allowed. For contaminated material the options remain the same, although additional evaluation is required. For all countries the disposal methods must be in compliance with national and provincial laws and any municipal or local by-laws. All disposal methods must be in compliance with the EU framework Directives 2008/98/EC and their subsequent adaptations, as implemented in National Laws and Regulations, as well as EU Directives dealing with priority waste streams. Transboundary shipment of wastes must be in compliance with Regulation (EC) No 1013/2006 and subsequent modifications.

14. TRANSPORT INFORMATION

ADR / RID : Not regulated
ADN/ADNR : Not regulated
IMDG : Not regulated
IATA-DGR : Not regulated

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

European Inventory of Existing Commercial Chemical Substances (EINECS)

The components of this product are on the EINECS inventory or are exempt from inventory requirements.

Chemical Safety Assessment

Not applicable.

16. OTHER INFORMATION

The information in this Material Safety Data Sheet (MSDS) is based on current knowledge and experience. No liability can be assumed for the accuracy and completeness of this information.

Users should consider this information only as additional to other data gathered. Independent determination of suitability and completeness off information from all available sources is essential to ensure proper and safe use and disposal of these materials.

The information in this MSDS applies for this specific material only. It therefore does not apply for its usage in combination with other materials or ways of processing.