

Technical Data Sheet



Product name: EasyFil™ PLA - Glow in the Dark

Date of issue: 29 October 2015

Version: v2

EasyFil™ PLA is an “easy to use” high-end PLA (Poly-Lactic Acid) type of 3D printer filament. With retaining the typical PLA features, EasyFil™ PLA is slightly modified with an impact modifier, making the filament tougher, less rigid, slightly softer and therefore “easy to print” at relatively low temperatures. By being slightly modified, EasyFil™ PLA is much longer preservable than normal PLA.

Another great advantage of EasyFil™ PLA - compared to regular PLA - is EasyFil™'s low shrinkage factor, which makes EasyFil™ PLA nearly warp-free and therefore EasyFil™ PLA will not deform after cooling.

Properties	Typical value	Test Method	Test condition
Physical			
Specific gravity	1.24 g/cc	ASTM D1505	-
Melt flow rate	6.0 g/10min	-	-
Water absorption	-	-	-
Moisture absorption	-	-	-
Mechanical			
Impact strength	7.5 KJ/m ²	-	-
Tensile strength	110 Mpa (MD)	ASTM D882	-
Tensile modulus	3310 Mpa (MD)	ASTM D882	-
Elongation at break	160% (MD)	ASTM D882	-
Flexural strength	± 55.2 Mpa	-	-
Flexural modulus	± 2392.5 Mpa	-	-
Hardness	-	-	-
Thermal			
Print temperature	± 180 - 220° C	-	-
Melting temperature	± 210 ± 10° C	-	-
Viscat softening temp.	± 60° C	ISO 306	-
Optical			
Haze	2.1%	ASTM D1003	-
Transmittance	-	-	-
Gloss	90	ASTM D1003	Gloss, 20°

Product details, certifications and compliance	Diameter	Tolerance	Roundness
HS Code	1.75mm	± 0.05mm	≥ 95%
REACH compliant	2.85mm	± 0.10mm	≥ 95%
RoHS certified			
FDA compliant			

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Material Safety Data Sheet

According to EU Regulation No. 1907/2006
Issued on: 14 October 2015



EasyFil™ PLA

1. Identification of the substance/preparation and of the company

- 1.1 Trade name: EasyFil™ PLA
- 1.2 Chemical name: PolyLactic Acid based polymer blend
- 1.3 Typical use of the material: Monofilament for FFF/FDM technology based 3D printing
- 1.4 Identification of the company: Formfutura VOF
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2. Identification of the substance/preparation and of the company

- 2.1 Risk advise to man and the environment: No risk exists to the health of users if the product is handled and processed properly.
- 2.2 Classification of the substance or mixture: Not classified as dangerous according to Directive 67/548/EEC
- 2.3 Special advice on hazards: Danger of burns while handling the heated or molten product.

3. Composition / information on ingredients

- 3.1 Chemical nature: Blend of PLA based polymers enhanced for 3D printing
- 3.2 CAS number: 9051-89-2
- 3.3 Additional information: No harmful substances used.

4. First-aid measures

- 4.1 If inhaled: After inhalation of decomposition products, gases or dust, bring the affected person to a source of fresh air and keep calm. Contact a physician in case of discomfort.
- 4.2 On skin contact: In case of contact with melted material, immediately cool the skin with plenty of cold running water. Removal of adhering to skin polymer, or burns caused by molten material require hospital treatment.
- 4.3 On contact with eyes: In case of contact with eyes, rinse open eyes thoroughly with water. If irritation develops, seek immediate medical attention.
- 4.4 On ingestion: No effects known. Rinse mouth with water and then drink plenty of water. Seek medical attention if difficulties or discomfort occur.
- 4.5 Note to the physician: Treat symptomatically

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5. Firefighting measures

- 5.1 Suitable extinguishing media: Dry extinguishing media, water, or CO₂.
- 5.2 Specific hazards: Carbon monoxide (CO), carbon dioxide (CO₂), and hydrocarbons during incomplete combustion. The substances mentioned can be released at highly elevated temperatures and in case of fire.
- 5.3 Special protective equipment: Full protective clothing and self-contained breathing apparatus.
- 5.4 Further information: Fine dust dispersed in air may ignite. Risk of ignition followed by flame propagation or secondary explosions shall be prevented by avoiding accumulation of dust.
Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

6. Accidental Release Measures

- 6.1 Personal precautions: Use personal protective equipment/clothing (see Section 8). Avoid eye contact and dust formation and remove all sources of ignition. Sweep up to prevent slipping hazard.
- 6.2 Environmental precautions: Prevent entry into drainage systems, or surface water.
- 6.3 Methods for cleaning up: Sweep/shovel into suitable container for disposal.
Avoid raising dust and ensure adequate ventilation.

7. Handling and storage

- 7.1 Handling: Handle in a well ventilated area. Install local exhaust at 3D printers area is recommended when many printers are operated at once. Avoid contact with heated or molten product. Use personal protective equipment (see Section 8). Avoid dust formation and electrostatic charge. Keep away from fire ignition sources.
- 7.2 Storage: Protect from water, moisture and direct sunlight. Store material in dry rooms and keep material in closed packaging/container with desiccant when not in use. Store at ambient temperatures. Avoid all sources of ignition.
- 7.3 Precautions: No special precautions required.
- 7.4 Specific end use(s): Primarily used for 3D printing.

8. Exposure controls / personal protection

- 8.1 Occupational exposure limits: Given suitable ventilation it can be that the threshold limits will not be reached.
- 8.2 Exposure controls: Provide appropriate exhaust ventilation at places where dust is formed. Avoid electrostatic charge by use of grounding cables.
- 8.3 Personal protective equipment
- 8.3.1 Hand protection: Wear heat protection gloves, preferably cotton or leather, when handling hot molten product.
- 8.3.2 Eye protection: Wear protective glasses, preferable with side-shields.
- 8.3.3 Skin and body protection: Wear (protective) clothing to avoid direct exposure of skin to hot molten product when handling.

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8.3.4 Safety and hygiene measures: Avoid contact of hot molten material to skin. Avoid inhalation of dust, mists and vapours. Eye wash fountains and safety showers must be easily accessible. Handle in accordance with good industrial hygiene and safety practice. No eating or drinking during working.

8.4 Environmental exposure controls: Prevent entry into drainage systems, or surface water.

9. Physical and chemical properties

9.1 Form: Granules
9.2 Colour: Natural
9.3 Odour: Almost odourless
9.4 Melting point/range: 150 °C - 170 °C
9.5 Auto-ignition temperature: Not self-igniting / Not highly flammable
9.6 Explosions limit: Not specified
9.7 Density: 1.24 g/cc
9.8 Solubility in water: Insoluble

10. Stability and reactivity

10.1 Stability: Product is stable at recommended storage conditions.
10.2 Conditions to avoid: Avoid extreme heat and all sources of ignition. Thermal decomposition > 240°C.
10.3 Substances to avoid: Strong oxidizing agents.
10.4 Hazardous reactions: The product is chemically stable.
10.4.1 Hazardous decomposition products: Carbon monoxide (CO), carbon dioxide (CO₂), and hydrocarbons.

11. Toxicological information

11.1 Information on toxicological effects: Toxicological data has not been determined for this product. Information is based on similar products.

11.1.1 Acute toxicity

Inhalation:	No data available, but not expected.
Ingestion:	After ingestion stomach pain or nausea are possible.
Skin contact:	No data available, but not expected.
Eye contact:	No data available, but not expected.

11.1.2 Irritation

Skin:	Dust can cause irritation of eyes, respiratory organs and skin.
Eye:	Dust can cause irritation of eyes, respiratory organs and skin.

11.1.3 Sensitization: Not expected to be a skin sensitizer.
11.1.4 Repeated dose toxicity: Not expected to cause toxic effects.
11.1.5 Carcinogenicity: No data available, but not expected.
11.1.6 Mutagenicity: No data available, but not expected.
11.1.7 Toxicity for reproduction: No data available, but not expected.

11.2 Other information: Based on our state of knowledge and experience no injurious health effects are expected if product is properly handled for the designated use.

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12. Ecological information

- 12.1 Information on eco-toxicity: No ecological toxicity data has been generated for this product. There are no test results available and information is based on similar products.
- 12.1.1 Ecological toxicity effects: No negative ecological effects are known at the present state of knowledge.
- 12.2 Mobility in soil: The product is essentially insoluble in water. The product has low mobility in soil.
- 12.3 Persistence and degradability: Product is biodegradable.
- 12.4 Bioaccumulation potential: The product will not be readily bioavailable due to its consistency and insolubility in water.

13. Disposal considerations

- 13.1 Product: Generation of waste should be minimized, check possibility for recycling. Waste product can be incinerated or dumped together with domestic waste in compliance with local authority requirements.
- 13.2 Packaging: Packaging material has to be emptied completely and disposed in accordance with the regulations. Packaging can be recycled if not contaminated.

14. Transport information

- 14.1 International Air Transportation Association Classification (IATA): This product is not classified as hazardous.
- 14.2 International Maritime Organization (IMDG): This product is not classified as hazardous.
- 14.3 14.3 UN, IMO, ADR/RID, ICAO Code: This product is not classified as hazardous.

15. Regulatory information

- 15.1 EU / National regulations: This product does not require a hazard warning label in accordance with EC Directives.

16. Other information

- Company name: Formfutura VOF
- Additional data: In addition to the information given in this Material Safety Data Sheet (MSDS) we refer to the products specific Technical Data Sheet (TDS).
- Disclaimer: The information given in the Material Safety Data Sheet only applies to the described product in connection with its appropriate use. All information is based on the latest state of our knowledge. In particular, it describes our product under the aspect of possible hazards and pertaining safety measures. The information does not constitute any guarantee of specific product and/or quality properties. The information given in this Material Safety Data Sheet is not required according to article 31 and Annex II of Regulation (EC) No.1907/2006. It merely serves the purpose of providing sufficient information on a voluntary basis to ensure safe use of the compound/product. There is no obligation on the part of Formfutura to revise this document.

Date: 2 January 2018
Subject: Declaration of conformity food contact EU
Version: v 1.0

Declaration of Conformity for Food Contact European Union

Product(s): EasyFil PLA

Formfutura BV declares that the natural version of its filaments and/or granules and (if applicable) below listed colour variations in appendix A (hereinafter called 'Products') have been evaluated and complies with the EU regulations stipulated below on food contact applications in the European Union.

Regulations

Commission Regulation (EU) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with food.

Commission Regulation (EU) No 1935/2004 of 27 October 2004 on materials and articles intended to come into contact with food.

Commission Regulation (EU) No 2023/2006 of 22 December 2006 on good manufacturing practice for materials and articles intended to come into contact with food

Responsibility and end usage

It is the responsibility of the manufacturer of the final product, which is intended as a food contact product, to determine that the use of the product is safe and also suitable for the intended application. While it is the conclusion of Formfutura BV that the products mentioned in this document are permitted, it is the final product which must meet the given regulations and the manufacturer of the final product should take responsibility to check if the final product is in compliance with the regulations stipulated in this document.

Appendix A

Below listed colour variations of the products mentioned in this document comply with the compositional requirements according to Commission Regulation (EU) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with food.

EasyFil PLA - Black	EasyFil PLA - Brown	EasyFil PLA - Dark Blue	EasyFil PLA - Bronze
EasyFil PLA - Light Green	EasyFil PLA - Magenta	EasyFil PLA - Natural	EasyFil PLA - Orange
EasyFil PLA - White	EasyFil PLA - Yellow		

This Declaration of Conformity was prepared according to our present standard of knowledge and may be amended if new cognitions are available and applies only for products mentioned in this document.

Authorised Signature:



Ir. R.J. Schuurhuis
(Managing Director Formfutura BV)

Drs. A. Medenblik
(Managing Director Formfutura BV)

Date: 3 April 2018
Subject: Declaration of conformity food contact FDA
Version: v 1.0

Declaration of Conformity for Food Contact - FDA

Product(s): EasyFil PLA

Formfutura BV declares that under regulations administered by the U.S. Food and Drug Administration (FDA) the raw materials for the natural version of its filaments and/or granules and (if applicable) below listed colour variations in appendix A (hereinafter called 'Products') are in compliance with the FDA regulations stipulated below.

Book 21, section 177.1640

The raw materials for the product are in compliance as appropriately regulated indirective additive.

Book 21, CFR 174.5

The product's fabrication process meets the requirements on good manufacturing practice for materials and articles intended to come into contact with food.

Responsibility and end usage

It is the responsibility of the manufacturer of the final product (end-use article), which is intended as a food contact product, to determine that the use of the product is safe for food-contact use and also suitable for the intended application. While it is the conclusion of Formfutura BV that the products mentioned in this document are permitted, it is the final product which must meet the given regulations and the manufacturer of the final product should take responsibility to check if the final product is in compliance with the regulations stipulated in this document.

Conditions and limitations of use for this polymer

Not specifically limited.

Appendix A

Below listed colour variations of the products mentioned in this document comply with the compositional requirements according to U.S. Food and Drug Administration (FDA) regulations stipulated in this document.

EaysFil PLA - Natural			
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Disclaimer

**) This Declaration of Conformity was prepared according to our present standard of knowledge and may be amended if new cognitions are available and applies only for products mentioned in this document.*

**) The Food Contact Notification number is not mentioned as it gives special information on the origin of the material and is confidential information.*

Authorised Signature:



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