

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY

<u>1.1 Trade name</u>	Polylactic acid (PLA)
<u>1.2 Use of the product</u>	3D-Printer filament
<u>1.3 Supplier</u>	Ultimaker (Watermolenweg 2 4191PN Geldermalsen The Netherlands)
Emergency phone number	+31 (0) 345 712 017

2. HAZARDS IDENTIFICATION ACCORDING TO 1272/2008/EC

<u>2.1 Classification of the substance or mixture</u>	No risk exists to the health of users if the product is handled and processed properly
<u>2.2 Label elements</u>	
Labelling (Regulation 1272/2008/EC)	Not applicable
<u>2.3 Other hazards</u>	Not known

3. COMPOSITION/INFORMATION ON INGREDIENTS

<u>3.1 Composition</u>	Polylactic acid
<u>3.2 Mixture</u>	Polylactic acid

4. FIRST AID MEASURES

<u>4.1 Description of first aid measures</u>	General advice: If you feel unwell, seek medical advice (show the label where possible). Never give anything by mouth to an unconscious person
Inhalation	In case of inhalation of gases released from molten filament, move person into fresh air
Skin contact	Wash with soap and water. Seek medical attention if symptoms occur. If burned by contact with hot material, cool molten material adhering to skin as quickly as possible with water, do not try to peel it off and seek for medical attention, if necessary, for removal and treatment of the burns
Eye contact	Any material that contacts the eye should be washed out immediately with water. If easy to do, remove contact lenses. Seek medical attention if symptoms persist. If molten material contacts the eye, immediately flush with plenty of water for at least 15 minutes. Seek medical attention immediately
Ingestion	Seek medical advice in case ingestion occurs
Note to physician	Treat symptomatically
<u>4.2 Most important symptoms and effects, both acute and delayed</u>	Burns should be treated as thermal burns. The material will come off as healing occurs; therefore immediate removal from skin is not necessary
<u>4.3 Indication of any immediate medical attention and special treatment needed</u>	No data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Material can accumulate static charges which may cause an electrical spark (ignition source). Use proper bonding and/or grounding procedures

Foam, carbon dioxide (CO₂), water, dry chemical. Alcohol resistant foams are preferred if available. General-purpose synthetic foams (including AFFF) or protein foams may function but much less effective

Unsuitable extinguishing media: not known

5.2 Special hazards arising from the substance or mixture

Burning produces obnoxious and toxic fumes: aldehydes, carbon oxides (CO_x)

5.3 Advice for firefighters

Use self-contained breathing apparatus and full protective clothing

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Avoid breathing gases released from molten filament. Ensure adequate ventilation, especially in confined areas

6.2 Environmental precautions

No data available

6.3 Methods and materials for containment and cleaning up

Allow to solidify molten material. Dispose like general garbage

6.4 Reference to other sections

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid contact with molten material

7.2 Conditions for safe storage, including any incompatibilities

Product should be stored in a dry and cool place at temperatures between -20 to +30 °C. Avoid direct sunlight. Minimize moisture uptake by leaving it in a sealed package together with the supplied desiccant

7.3 Specific end use(s)

Filament for 3D printing

8. EXPOSURE CONTROLS/PERSONAL PROTECTION8.1 Control parameters

None

DNEL:

No data available

PNEC:

No data available

8.2 Exposure controls

Eye protection

Use safety glasses for prolonged stare at printing

Skin and body protection

Good practices suggest to minimize skin contact. When material is heated, wear gloves to protect against thermal burns

Respiratory protection

If engineering controls do not maintain airborne concentrations below recommended exposure limits (when applicable) or to an acceptable level (in countries where exposure limits have not been established) an approved respirator must be worn. Respirator type: air-purifying respirator with an appropriate government approved (where applicable) air purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information

Hand protection

Follow good industrial hygiene practices

Hygiene measures

Follow good industrial hygiene practices

Engineering measures

Good general ventilation (typically 10 air changes per hour) is recommended. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation or other engineering controls that maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Filament
Color	Various (incl. translucent)
Odor	Slight
Odor Threshold	-
Flash point	-
Ignition temperature	388 °C
Thermal decomposition	250 °C
Lower explosion limit	-
Upper explosion limit	-
Explosive properties	-
Flammability	-
Oxidizing properties	-
Auto-ignition temperature	-
Burning number	-
Molecular Weight	-
pH	-
Melting point/range	145-160 °C
Vapor pressure	-
Density	1.24 g/cm ³
Bulk density	-
Water solubility	Insoluble
Solubility in other solvents	Chloroform smoothable
Viscosity, dynamic	-
Viscosity, kinematic	-
Evaporation rate	-

9.2 Other information

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10. STABILITY

Stable under recommended storage conditions

10.1 Reactivity

No data available

10.2 Chemical stability

Biodegradable

10.3 Possibility of hazardous reactions

No decomposition or hazardous reactions if stored and applied as directed

10.4 Conditions to avoid

Print temperatures above 230 °C (at standard printing speeds)

10.5 Incompatible materials

Oxidizing agents, strong bases

10.6 Hazardous decomposition products

See 5.2

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

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
Skin corrosion/irritation	May cause eye/skin irritation. Product dust may be irritating to eyes, skin and respiratory system. Caused mild to moderate conjunctival irritation in eye irritation studies using rabbits. Caused very mild redness in dermal irritation studies using rabbits (slightly irritating)
Serious eye damage/eye irritation	No data available
Respiratory or skin sensitization	No data available
Reproductive toxicity	No data available
Carcinogenicity	No data available

12. ECOLOGICAL INFORMATION

<u>12.1 Toxicity</u>	No data available
<u>12.2 Persistence and degradability</u>	
<u>12.3 Bio accumulative potential</u>	Does not bio accumulate
<u>12.4 Mobility in soil</u>	No data available
<u>12.5 Results of PBT and vPvB assessment</u>	No data available
<u>12.6 Other adverse effects</u>	No data available

13. DISPOSAL CONSIDERATIONS

<u>13.1 Waste treatment methods</u>	In accordance with local and national regulations
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14. TRANSPORT INFORMATION

ADR	Not regulated
RID	Not regulated
IATA	Not regulated
IMDG	Not regulated
Special precautions for user	

15. REGULATORY INFORMATION

Not meant to be all inclusive - selected regulations represented

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

US Regulations:

Sara 313 title III	Not listed
TSCA Inventory List	Listed
OSHA hazard category	
CERCLA	Not listed
WHMIS	
State right-to-know requirements	

Other Inventories:

Canada DSL Inventory List	Listed
REACH/EU EINECS	Components are in compliance with REACH and/or are listed
NEHAPS	
Japan (ECL/MITI)	Listed
Australia (AICS)	Listed
Korean chemical inventory	Listed
Philippines (PICCS) inventory	Not listed
Chinese Chemical Inventory (IECSC)	Listed

15.2 Chemical Safety Assessment

No data available

16. OTHER INFORMATION

The information provided in this Safety Data Sheet (SDS) is based on current knowledge and experience. This information is provided without warranty. This information should help to make an independent determination of the methods to ensure proper and safe use and disposal of the filament

VERSION

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DATE

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