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

1.1 Trade name
PLA

1.2 Use of the product
3D-Printer filament

1.3 Supplier
Ultimaker
(Watermolenweg 2, 4191PN, Geldermalsen, The Netherlands)

Emergency phone number
In case of toxicological emergency contact your doctor

2. Hazards identification according to regulation (EC) No 1272/2008 and GHS

2.1 Classification of the substance or mixture
No risk exists to the health of users if the product is handled and processed properly

2.2 Label elements

Labelling
Not applicable

2.3 Other hazards
Not known

3. Composition/information on ingredients

3.1 Composition
Polylactic acid

3.2 Mixture
Not applicable

4. First aid measures

4.1 Description of first aid measures
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

Not probable. Seek medical advice in case ingestion occurs.

Note to physician

Treat symptomatically.

4.2 Most important symptoms and effects, both acute and delayed

Burns should be treated as thermal burns. The material will come off as healing occurs; therefore immediate removal from skin is not necessary.

4.3 Indication of any immediate medical attention and special treatment needed

No data available.

5. Firefighting measures

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

5.1 Extinguishing media

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 (COₓ).

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 of waste and residue in accordance with local regulations.

6.4 Reference to other sections

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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 protection

8.1 Control parameters

DNEL: None
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 a 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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Filament</td>
</tr>
<tr>
<td>Color</td>
<td>Various (incl. transparent)</td>
</tr>
<tr>
<td>Odor</td>
<td>Slight</td>
</tr>
<tr>
<td>Flash point</td>
<td>-</td>
</tr>
<tr>
<td>Ignition temperature</td>
<td>388 °C</td>
</tr>
<tr>
<td>Thermal decomposition</td>
<td>250 °C</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>-</td>
</tr>
<tr>
<td>Melting point/range</td>
<td>145-160 °C</td>
</tr>
<tr>
<td>Density</td>
<td>1.24 g/cm³</td>
</tr>
<tr>
<td>Water solubility</td>
<td>Insoluble</td>
</tr>
<tr>
<td>Solubility in other solvents</td>
<td>Chloroform smoothable</td>
</tr>
</tbody>
</table>

9.2 Other information

-
10. Stability

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 240 °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

12.1 Toxicity
No data available

12.2 Persistence and degradability
- Does not bio accumulate

12.3 Bio accumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
No data available

12.6 Other adverse effects
No data available

13. Disposal considerations

13.1 Waste treatment methods
In accordance with local and national regulations
14. Transport information

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

15. Regulatory information

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 -
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 toxic substances control act (ECL) Listed
Philippines inventory (PICCS) 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

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