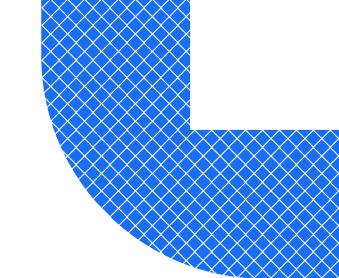
Ultimaker

Tough PLASafety data sheet



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

.1 Trade name Tough PLA

1.2 Use of the product 3D printer filament

1.3 Supplier Ultimaker BV

Stationsplein 32 3511 ED Utrecht 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 Not applicable2.3 Other hazards Not known

3. Composition / information on ingredients

3.1 Composition Not applicable

3.2 Mixture Polylactic acid, Acrylic polymer

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

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. Seek medical attention, if necessary, for material

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

5.1 **General advice** Material can accumulate static charges, which may cause an electrical spark (ignition

source). Use proper bonding and/or grounding procedures

5.2 Extinguishing media Foam, carbon dioxide (CO₂), water, dry chemical. Alcohol-resistant foams are preferred.

Unsuitable extiniquishing media: not known

5.3 Special hazards arising from the

substance or mixture

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

5.4 Advice for firefighters Use self-contained breathing apparatus and full protective clothing

6. Accidental release measures

5.1 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

ment Allow to solidify molten material. Dispose of waste and residue according to local

and cleaning up

regulations

7. Handling and storage

Reference to other sections

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 with

desiccant

7.3 Specific end use(s) Filament for 3D printing

8. Exposure controls / personal protection

8.1 Control parameters None

DNEL: No data available
PNEC: No data available

8.2 Exposure controls

Eye protection Use safety glasses for prolonged staring at printing

Skin and body protection Good practice suggests 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 used.

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

Appearance Filament

Color Black, white, green, red, gray, yellow, blue

Odor Odorless

Flash point - Ignition temperature -

Thermal decomposition -

Auto-ignition temperature > 350 °C

Melting point / range > 140 °C

Density 1.22 g/cm³

Water solubility Negligible

Solubility in other solvents
9.2 Other information -

10. Stability

Stable under recommended storage conditions

10.1 Reactivity No data available10.2 Chemical stability Chemically stable

10.3 Possibility of hazardous reactionsNo 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 and strong bases

10.6 Hazardous decomposition products See 5.2

11. Toxicological information

11.1 Information on toxicological effects

Principal routes of exposure Eye contact, skin contact, inhalation, ingestion

Acute toxicity

No data available

Skin corrosion / irritation

No data available

Serious eye damage / eye irritation

Respiratory or skin sensitization

Reproductive toxicity

No data available

Carcinogenicity

No data available

12. Ecological information

12.1 Toxicity No data available12.2 Persistence and degradability No data available

12.3 Bioaccumulative potential The main resin is biodegradable

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 No data available
RID No data available
IATA No data available
IMDG No data available

Special precautions for user -

15. Regulatory information

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

US regulations:

Sara 313 title III

TSCA Inventory List Listed

OSHA hazard category -

CERCLA -

WHMIS -

State right-to-know requirements

Other inventories:

Canada DSL Inventory List

REACH / EU EINIECS Listed. Not regulated as hazardous substances

EU/722/2012 Does not contain human / animal tissue

NEHAPS -

Japan (ECL/MITI) -

Australia (AICS)

Korean toxic substances control act (ECL) -

Philippines inventory (PICCS) -

Chinese chemical inventory (IECSC)

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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