Safety data sheet TPU 95A

Ultimaker

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

1.1 Trade name	TPU 95A
1.2 Use of the product	3D printer filament
1.3 Supplier	Ultimaker B.V. Watermolenweg 2 4191 PN, 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	Not applicable
2.3 Other hazards	Not known

3. Composition / information on ingredients

3.1 Composition	Thermoplastic polyurethane
3.2 Mixture	-

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. 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

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 (CO_2), water, dry extinguishing media
	Unsuitable extinguishing media: not known
5.3 Special hazards arising from the substance or mixture	Burning produces unpleasant and toxic fumes: carbon oxides (CO_x), nitrogen oxides (NO_x), and traces of hydrogen cyanide (HCN), and isocyanate (RNCO)
5.4 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 according to local regulations
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 and below 50% relative humidity. Avoid direct sunlight
7.3 Specific end use(s)	Filament for 3D printing

8. Exposure controls / personal protection

8.1 Control parameters	The regulations for the substances listed below must be observed when processing this product, particularly if processing takes place at elevated temperatures. In our experience printing in a well ventilated area will ensure compliance with the following occupational exposure limits: - Aluminum oxide (CAS 1344-28-01) ≤ 0.03% : 1 mg/m³ (TLV)* - Carbon Black (CAS 1333-86-4) ≤ 0.05% : 3.5 mg/m³ (TLV) - C.I. Pigment Black 28 (CAS 68186-91-4) ≤ 0.02% : 0.5 mg/m³ (TLV) - Ethylene Bisstearamide (CAS 110-30-5) ≤ 0.2% - Limestone (CAS 1317-65-3) ≤ 0.3% : 10 mg/m³ (TLV) - Silicon Dioxide (CAS 7631-86-9) ≤ 0.05% : 10 mg/m³ (TLV) - Titanium Dioxide (CAS 13463-67-7) ≤ 1.1% : 10 mg/m³ (TLV)
DNEL	No data available
PNEC	No data available

*TLV (Threshold limit value)

8.2 Exposure controls

Eye protection	Use safety glasses for prolonged staring 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

Appearance	Filament
Color	Black, white, blue, red
Odor	Slight
Flash point	-
Ignition temperature	Not self-igniting
Thermal decomposition	> 230 °C
Auto-ignition temperature	> 400 °C
Melting point / range	220 °C
Density	1.22 g/cm^3
Water solubility	Insoluble
Solubility in other solvents	Tetrahydrofurane, dimethyl formamide, dimehtyl acetamide, N-methyl pyrrolidone, dimethyl sulphoxide, pyridine
9.2 Other information	-

10. Stability

	Stable under recommended storage conditions
10.1 Reactivity	No data available
10.2 Chemical stability	This product is stable if stored and handled as indicated
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 250 °C (at standard printing speeds)
10.5 Incompatible materials	Not known
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	Oral (LD50; tested in rats; value: > 5,000 mg/kg)
Skin corrosion / irritation	No data available
Serious eye damage / eye irritation	No data available
Respiratory or skin sensitization	No data available
Reproductive toxicity	No known chronic effects
Carcinogenicity	The chemical structure does not suggest a specific alert for such an effect

12. Ecological information

12.1 Toxicity	No data available
12.2 Persistence and degradability	Poorly biodegradable
12.3 Bio accumulative potential	Does not significantly accumulate in organisms
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	-
RID	-
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	Chronic target organ effects reported
CERCLA	Not reportable
WHMIS	Black pigment contains carbon black (D2A if airborne, unbound particles of respirable size), and red and blue pigments contain titanium dioxide (D2B if airborne, unbound particles of respirable size). Note that both chemicals are bound within the applicable polymer structures and are not expected to be a health hazard when used as directed
State right-to-know requirements	- Acrylonitrile in blue pigment: CA, MA, MI, MN, NJ, PA, WA (< 100 ppm) - Carbon black (airborne, unbound particles of respirable size) in black pigment: CA -Titanium dioxide (airborne, unbound particles of respirable size) in red and blue pigments: CA - PCBs (≤ 25 ppm) in blue pigment: CA - Polyurethane polyester elastomer in all colors: NJ, PA Note that these chemicals are bound within the applicable polymer structures and are not expected to be a health hazard

Other Inventories:

Canada DSL Inventory List	-
REACH / EU EINIECS	Components are in compliance with REACH and/or are listed
NEHAPS	Not regulated
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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