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 (CO₂), water, dry extinguishing media

5.3 Special hazards arising from the substance or mixture
Burning produces unpleasant and toxic fumes: carbon oxides (COₓ), nitrogen oxides (NOₓ), 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/cm³

Water solubility
Insoluble

Solubility in other solvents
Tetrahydrofuran, dimethyl formamide, dimethyl acetamide, N-methyl pyrrolidone, dimethyl sulfoxide, 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:**

<table>
<thead>
<tr>
<th>Regulation</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sara 313 title III</td>
<td>Not listed</td>
</tr>
<tr>
<td>TSCA Inventory List</td>
<td>Listed</td>
</tr>
<tr>
<td>OSHA hazard category</td>
<td>Chronic target organ effects reported</td>
</tr>
<tr>
<td>CERCLA</td>
<td>Not reportable</td>
</tr>
<tr>
<td>WHMIS</td>
<td>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</td>
</tr>
</tbody>
</table>

**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:**

<table>
<thead>
<tr>
<th>Inventory</th>
<th>Information</th>
</tr>
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<tbody>
<tr>
<td>Canada DSL Inventory List</td>
<td>-</td>
</tr>
<tr>
<td>REACH / EU EINIECS</td>
<td>Components are in compliance with REACH and/or are listed</td>
</tr>
<tr>
<td>NEHAPS</td>
<td>Not regulated</td>
</tr>
<tr>
<td>Japan (ECL/MITI)</td>
<td>-</td>
</tr>
<tr>
<td>Australia (AICS)</td>
<td>-</td>
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<tr>
<td>Korean toxic substances control act (ECL)</td>
<td>-</td>
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<tr>
<td>Philippines inventory (PICCS)</td>
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<tr>
<td>Chinese chemical inventory (IECSC)</td>
<td>-</td>
</tr>
</tbody>
</table>

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**

Version 4.002

**Date**

January 14, 2019