

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

<u>1.1 Trade name</u>	PC
<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	<i>In case of toxicological emergency contact your physician</i>

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>	Not applicable
<u>3.2 Mixture</u>	Polycarbonate (transparent and colored filament), Acrylic and Polyester (only in colored filament)

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	Not probable. 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 spray, dry chemical, extinguishing powder

Unsuitable extinguishing media: not known

5.2 Special hazards arising from the substance or mixture

Burning produces obnoxious and toxic fumes: carbon oxides (CO_x), nitrogen oxides (NO_x), and traces of hydrogen cyanide (HCN)

5.3 Advice for firefighters

Use self-contained breathing apparatus and full protective clothing. Do not allow contaminated extinguishing water to enter the soil, ground-water or surface waters

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 molten material to solidify. 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 with the supplied dessicant

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:

- Phenol: 10 mg/m³ (TWA)
- Chlorobenzene: 50 mg/m³ (TWA)
- Dust: 8 mg/m³ (TWA) and 10 mg/m³ (STEL)

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. Suitable materials for safety gloves are EN 374: Polyvinyl chloride - PVC (≥ 0.5 mm). Dirty and/or damaged gloves must be changed

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

(*) TWA (Time Weighted Average) and STEL (Short Term Exposure Limits)

9. PHYSICAL AND CHEMICAL PROPERTIES9.1 Information on basic physical and chemical properties

Appearance	Filament
Color	Transparent, black and white
Odor	Slight
Flash point	-
Ignition temperature	> 450 °C
Thermal decomposition	> 380 °C
Auto-ignition temperature	-
Melting point/range	145 - 160 °C
Density	1.18 - 1.20 g/cm ³
Water solubility	Insoluble
Solubility in other solvents	-

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

Chemically stable

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 300 °C (at standard printing speeds)

10.5 Incompatible materials

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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	No data available
Skin corrosion/irritation	No data available
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

This material is practically insoluble in water. In view of its consistency and in water, no ecological problems are to be expected if the product is properly handled. The product is not readily biodegradable

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

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	-
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

Na 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 2.001

DATE

09/08/2016