

# Safety data sheet PC

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

<b>1.1 Trade name</b>	PC
<b>1.2 Use of the product</b>	3D printer filament
<b>1.3 Supplier</b>	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

<b>2.1 Classification of the substance or mixture</b>	No risk exists to the health of users if the product is handled and processed properly
<b>2.2 Label elements</b>	Not applicable
<b>2.3 Other hazards</b>	Not known

## 3. Composition / information on ingredients

<b>3.1 Composition</b>	Not applicable
<b>3.2 Mixture</b>	Polycarbonate (transparent and colored filament), Acrylic and polyester (only in colored filament)

## 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<sub>2</sub>), water spray, dry chemical, extinguishing powder

Unsuitable extinguishing media: not known

**5.3 Special hazards arising from the substance or mixture**

Burning produces unpleasant and toxic fumes: carbon oxides (CO<sub>x</sub>), nitrogen oxides (NO<sub>x</sub>), and traces of hydrogen cyanide (HCN)

**5.4 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 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. Avoid direct sunlight. Minimize moisture uptake by leaving it in a sealed package with the supplied desiccant

**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/m<sup>3</sup> (TWA)\*
- Chlorobenzene: 50 mg/m<sup>3</sup> (TWA)
- Dust: 8 mg/m<sup>3</sup> (TWA) and 10 mg/m<sup>3</sup> (STEL)

DNEL

No data available

PNEC

No data available

(\*) TWA (Time weighted average) and STEL (Short term exposure limits)

## 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. Suitable materials for safety gloves are EN 374: Polyvinyl chloride – PVC ( $\geq 0.5$ 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

## 9. Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

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

### 9.2 Other information

-

## 10. Stability

<b>10.1 Reactivity</b>	Stable under recommended storage conditions
<b>10.2 Chemical stability</b>	No data available
<b>10.3 Possibility of hazardous reactions</b>	Chemically stable
<b>10.4 Conditions to avoid</b>	No decomposition or hazardous reactions if stored and applied as directed
<b>10.5 Incompatible materials</b>	Print temperatures above 300 °C (at standard printing speeds)
<b>10.6 Hazardous decomposition products</b>	-
	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	No data available
Respiratory or skin sensitization	No data available
Reproductive toxicity	No data available
Carcinogenicity	No data available

## 12. Ecological information

<b>12.1 Toxicity</b>	No data available
<b>12.2 Persistence and degradability</b>	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
<b>12.3 Bio accumulative potential</b>	No data available
<b>12.4 Mobility in soil</b>	No data available
<b>12.5 Results of PBT and vPvB assessment</b>	No data available
<b>12.6 Other adverse effects</b>	No data available

## 13. Disposal considerations

<b>13.1 Waste treatment methods</b>	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	-

## 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 toxic substances control act (ECL)	Listed
Philippines inventory (PICCS)	Not listed
Chinese chemical inventory (IECSC)	Listed

<b>15.2 Chemical Safety Assessment</b>	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

<b>Version</b>	Version 4.002
<b>Date</b>	January 14, 2019