Safety data sheet
PVA

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

1.1 Trade name
PVA

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
Polyvinyl alcohol compound

3.2 Mixture
Not applicable

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.

Safety data sheet – Ultimaker PVA
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 fog, dry chemical

5.3 Special hazards arising from the substance or mixture

Unsuitable extinguishing media: water jet

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 (< 50% relative humidity) and cool place at temperatures between 0 °C to +30 °C. Avoid direct sunlight. Minimize moisture uptake by leaving it in a sealed package with the supplied desiccant. Keep away from oxidising agents and strongly acid or alkaline materials. Keep away from food, drink, and animal feeding stuffs.

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:

- Methanol (CAS 67-56-1) < 1% (impurity) : 260 mg/m³ (TWA) and 325 mg/m³ (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.

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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Filament</td>
</tr>
<tr>
<td>Color</td>
<td>Natural</td>
</tr>
<tr>
<td>Odor</td>
<td>Slight</td>
</tr>
<tr>
<td>Flash point</td>
<td>&gt; 70 °C</td>
</tr>
<tr>
<td>Ignition temperature</td>
<td>440 °C</td>
</tr>
<tr>
<td>Thermal decomposition</td>
<td>&gt; 210 °C</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>-</td>
</tr>
<tr>
<td>Melting point / range</td>
<td>163 °C</td>
</tr>
<tr>
<td>Density</td>
<td>1.23 g/cm³</td>
</tr>
<tr>
<td>Water solubility</td>
<td>Soluble</td>
</tr>
<tr>
<td>Solubility in other solvents</td>
<td>Dimethyl sulfoxide (DMSO)</td>
</tr>
</tbody>
</table>

9.2 Other information

- 

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 230 °C (at standard printing speeds). While printing, keep away from sparks and open flame.

10.5 Incompatible materials  
Oxidizing agents, acids, 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

Oral (LD50; tested in rats; value: 1,187 - 2,769 mg/kg)
Inhalation (LC50; tested in rats; value: 128,200 mg/m³, exposure time 4 h)
Dermal (LD50; tested in rats; value: 17,100 mg/kg)

Skin corrosion / irritation

No data available, but prolonged skin contact may cause temporary irritation

Serious eye damage / eye irritation

No data available

Respiratory or skin sensitization

No data available

Reproductive toxicity

No data available

Carcinogenicity

Not classified as carcinogenic to humans

12. Ecological information

12.1 Toxicity

Not classified as environmental hazardous

Methanol (CAS 67-56-1) < 1% impurity: EC-50 (algae, 96 h): 22,000 mg/ml; EC-50 (daphnia magna, 48 h): > 10,000 mg/l; LC-50 (fish, 96 h): 15,400 mg/l

12.2 Persistence and degradability

- 

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

If PVA is dissolved in water, the PVA solution can be disposed through the drain only if the waste water distribution network is connected to a waste water treatment plant

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

-
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
- TSCA Inventory List
- OSHA hazard category
- CERCLA
- WHMIS
- State right-to-know requirements

**Other Inventories:**
- Canada DSL Inventory List
- REACH / EU EINECS (Not listed)
- 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

**Version**
Version 4.002

**Date**
January 14, 2019