

# PVA

## Safety data sheet

### 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 BV Stationsplein 32 3511 ED Utrecht 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 the 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	Not applicable		
3.2 Mixture	CAS nr. / EC nr.	Concentration	Classification
Polyvinyl alcohol compound	25213-24-5/ -	> 96%	-
Methanol (impurity)	67-56-1/ 200-659-6	< 1% (impurity)	Flam. Liq. Cat 2 (H225) Acute Tox., Oral Cat 3 (H301) Acute Tox., Dermal Cat 3 (H311) Acute Tox., inhalation Cat 3 (H331) Specific Target Organ Toxicity (SE) Cat 1. (H370) – optic nerve, central nervous system

### 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 medical attention, if necessary, for material 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 fog, dry chemical Unsuitable extinguishing media: water jet
5.3	Special hazards arising from the substance or mixture	Burning produces unpleasant and toxic fumes: aldehydes, carbon oxides (CO <sub>x</sub> )
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 molten material to solidify. 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 oxidizing 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/m <sup>3</sup> (TWA) and 325 mg/m <sup>3</sup> (STEL)*  DNEL: PNEC:
		No data available
		No data available
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 used. Respirator type: air-purifying respirator with a 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

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

## 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	Natural
Odor	Slight
Flash point	> 70 °C
Ignition temperature	440 °C
Thermal decomposition	> 210 °C
Auto-ignition temperature	-
Melting point / range	163 °C
Density	1.23 g/cm <sup>3</sup>
Water solubility	Soluble
Solubility in other solvents	Dimethyl sulfoxide (DMSO)

### 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 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/m <sup>3</sup> , 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 environmentally 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 Bioaccumulative 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
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## 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
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## 16. Other information

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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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