Safety Data Sheet
According to EU Directive 1907/2006

Product name: PVA-S
Date of issue: 31-05-2018

Version: 1.1

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

1.1 Trade name:
PVA-S

1.2 Use of the product:
3Dprinter Filament

1.3 Supplier:
MCPP Netherlands BV
Grasbeemd 19
5705DE Helmond, The Netherlands
Phone: +31(0)492 210 210
Emergency phone number: +31 (0)30 274 8888

2. Hazards identification

2.1 Classification of the substance or mixture classification (REGULATION (EC) No 1272/2008)
The mixture has been assessed and/or tested for its physical, health and environmental hazards and
the following classification applies.
This mixture does not meet the criteria for classification according to Regulation (EC) 1272/2008 as
amended.

2.2 Label elements
Label according to Regulation (EC) No. 1272/2008 as amended
Contains: Polyvinyl alcohol compound
Hazard pictograms None.
Signal word None.
Hazard statements The mixture does not meet the criteria for classification.
Precautionary statements
Prevention Use personal protective equipment as required.
Response No specific first aid measures noted.
Storage Store in a dry area. Store in a closed container.
Disposal Dispose of waste and residues in accordance with local authority
requirements.

2.3 Other hazards
Fine particles may form explosive mixtures with air. This material does not ignite easily; however,
feasible precautions against dust explosion are recommended.
3. Composition/information on ingredients

3.2 Mixtures

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Classification (1272/2008/EC)</th>
<th>Concentration [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyvinyl alcohol</td>
<td>N/A</td>
<td></td>
<td></td>
<td>&gt;95%</td>
</tr>
<tr>
<td>Methanol (impurity)</td>
<td>67-56-1</td>
<td>200-659-6</td>
<td>Flam. Liq. 2;H225, Acute Tox. 3;H301, Acute Tox. 3;H311, Acute Tox. 3;H331, STOT SE 1;H370</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Styrene</td>
<td>100-42-5</td>
<td>202-851-5</td>
<td>Flam. Liq. 3 /H226 Acute Tox. 4 /H332 Skin Irrit. 2 / H315 Eye Irrit. 2 / H319 Repr. 2 / H361d</td>
<td>Trace &lt;0,001%</td>
</tr>
</tbody>
</table>

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. First aid measures

4.1 Description of first aid measures

General information:
If you feel unwell, seek medical advice (show the label where possible). Never give anything by mouth to an unconscious person. Take off contaminated clothing and shoes immediately.

After inhalation:
Provide fresh air. Put victim at rest and keep warm.
If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions.

In case of skin contact:
The melted product can cause severe burns.
Do not attempt to remove molten product, or molten product that has cooled, from skin without medical assistance.
After contact with molten product, cool skin area rapidly with cold water. Consult physician. Brush off loose particles from skin. Rinse skin with water/shower.

After eye contact:
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Consult an eye specialist in the event of irritation.
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After swallowing:
Rinse mouth with water. Induce vomiting immediately and call a physician. If a person vomits when lying on his back, place him in the recovery position. Never give an unconscious person anything through the mouth. Seek medical attention.

4.2 Most important symptoms and effects, both acute and delayed
No data available.

4.3 Indication of any immediate medical attention and special treatment needed
No data available.

5. Fire fighting measures

5.1 Extinguishing media
Suitable extinguishing media:
Water spray, Foam, Dry powder, Carbon dioxide (CO2).
Unsuitable extinguishing media:
Do not use a solid water stream as it may scatter and spread fire.

5.2 Special hazards arising from the substance or mixture
In case of fire may be liberated: hydrogen cyanide, carbon monoxide and carbon dioxide (CO2). In case of dust (Fine dust): danger of dust explosion.

5.3 Advice for fire fighters
Fire fighting measures
Wear a self-contained breathing apparatus and chemical protective clothing.

Unusual Fire Hazards:
Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. In the event of fire and/or explosion do not breathe fumes.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Provide adequate ventilation.
Wear personal protection equipment. Do not breathe dust.

6.2 Environmental precautions
Do not allow to penetrate into soil, waterbodies or drains.

6.3 Methods and materials for containment and cleaning up
Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Take precautionary measures against static discharge. Use only non-sparking tools. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Collect dust using a vacuum cleaner equipped with HEPA filter. Stop the flow of material, if this is without risk.

Large Spills:
Wet down with water and dike for later disposal. Shovel the material into waste container. Following product recovery, flush area with water.
Small Spills:
Sweep up or vacuum up spillage and collect in suitable container for disposal.

Additional information:
Special danger of slipping by leaking/spilling product.

6.4 Reference to other sections
Refer to section (8)

7. Handling and storage

7.1 Handling
Minimize dust generation and accumulation. Avoid significant deposits of material, especially on horizontal surfaces, which may become airborne and form combustible dust clouds and may contribute to secondary explosions. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Explosion-proof general and local exhaust ventilation. Avoid prolonged exposure. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

7.2 Conditions for safe storage, including any incompatibilities
Requirements for storerooms and containers:
Store in a well-ventilated place. Keep container tightly closed. Protect against heat /sun rays. Protect from moisture contamination.

Storage class:
11 = Combustible solids

Advice on common storage:
Keep away from oxidising agents and strongly acid or alkaline materials. Keep away from food, drink and animal feedingstuffs.

Storage temperature:
<= 40 °C

Other data:
No decomposition if stored and applied as directed
8. Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values:

<table>
<thead>
<tr>
<th>CAS no.</th>
<th>Designation</th>
<th>Type</th>
<th>Limit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-56-1</td>
<td>Methanol</td>
<td>2006/15/EC</td>
<td>TWA: 266 mg/m³, 200 ppm Sk,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>STEL: 333 mg/m³, 250 ppm Sk.</td>
</tr>
<tr>
<td>100-42-5</td>
<td>Styrene</td>
<td>Great Britain: WEL-STE L ⇒ Great Britain: WEL-TWA Ireland: 15 minutes Ireland: 8 hours</td>
<td>1.080 mg/m³; 250 ppm 430 mg/m³; 100 ppm 170 mg/m³; 40 ppm 85 mg/m³; 20 ppm</td>
</tr>
<tr>
<td></td>
<td>Dust</td>
<td>TWA</td>
<td>4 mg/m³ Respirable dust.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10 mg/m³ Inhalable dust.</td>
</tr>
</tbody>
</table>

Biological limit values
No biological exposure limits noted for the ingredient(s).

Recommended monitoring
Follow standard monitoring procedures.

Derived no-effect level (DNEL)
Not available.

Predicted no effect concentrations (PNECs)
Not available.

8.2 Exposure controls

Provide good ventilation and/or an exhaust system in the work area

Appropriate engineering controls
Explosion-proof general and local exhaust ventilation. Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. If engineering measures are not sufficient to maintain concentrations of dust particulates below the OEL (occupational exposure limit), suitable respiratory protection must be worn.

Respiratory protection:
In the case of dust or aerosol formation use respirator with an approved filter. Half mask with a particle filter P2 (EN 143).

Hand protection:
Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.

Eye protection:
Wear safety glasses with side shields (or goggles).
Body protection:
Wear suitable protective clothing.

General protection and hygiene measures:
Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

Environmental exposure controls
Environmental manager must be informed of all major releases.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Solid Filament</td>
</tr>
<tr>
<td>Odour</td>
<td>Odourless to mild</td>
</tr>
<tr>
<td>Colour</td>
<td>depending on product grade</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>No information available</td>
</tr>
<tr>
<td>pH</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Melting/freezing point</td>
<td>&gt; 200 °C (DIN EN ISO 306)</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flash point</td>
<td>&gt; 400 °C</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No information available</td>
</tr>
<tr>
<td>Upper/lower flammability or explosive</td>
<td>UEL: No data available</td>
</tr>
<tr>
<td>limits</td>
<td>LEL: No data available</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapour density</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Relative density</td>
<td>at 20 °C: approx. 1.04 g/cm³ (DIN 53479)</td>
</tr>
<tr>
<td>Solubility(ies)</td>
<td>Negligible</td>
</tr>
<tr>
<td>Partition coefficient (n-octanol/water)</td>
<td>Not available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>not self-igniting</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>approx. 300 °C</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Dust explosion risk at fine dust</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>Oxidising potential: not oxidising</td>
</tr>
</tbody>
</table>

9.2 Other Information

Ignition temperature: > 400 °C (DIN 51794)

10. Stability

10.1 Reactivity:
The product is stable and non-reactive under normal conditions of use, storage and transport.

10.2 Chemical stability:
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions:
In case of dust (Fine dust): danger of dust explosion
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10.4 Conditions to avoid:
Avoid elevated temperatures for prolonged periods of time.

10.5 Incompatible materials:
Strong oxidising agents. Strong acids.

10.6 Hazardous decomposition products
In case of fire may be liberated: Carbon oxides.
Thermal decomposition: approx. 300 °C
Material becomes insoluble after overheating

11. Toxicological information

11.1 Information on toxicological effects

Toxicological effects:
Methanol (impurity) (CAS 67-56-1)

Acute toxicity (oral): LD50 Rat 1187 - 2769 mg/kg
Acute toxicity (dermal): LD50 Rabbit 17100 mg/kg
Acute toxicity (inhalative): LC50 Rat 128200 mg/m³, 4 Hours

Skin corrosion/irritation: Lack of data. May cause irritations.
Eye damage/irritation: Lack of data. May cause irritations.
Sensitisation to the respiratory tract: Not a respiratory sensitiser.
Skin sensitisation: Lack of data. Not to be expected
Germ cell mutagenicity/Genotoxicity: No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity: Not classifiable as to carcinogenicity to humans
Reproductive toxicity: Based on available data, the classification criteria are not met.
Specific target organ toxicity (single exposure): Lack of data.
Dusts: Possible Irritating to eyes, respiratory system and skin.
Specific target organ toxicity (repeated exposure): Lack of data.
Aspiration hazard: Not an aspiration hazard.

Other information:
Not available
12. Ecological information

12.1 Toxicity
The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Components:
Methanol (impurity) (CAS 67-56-1)

<table>
<thead>
<tr>
<th>Species</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algae</td>
<td>EC50 22000 mg/l, 96 hours</td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC50 &gt; 10000 mg/l, 48 hours</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50 15400 mg/l, 96 hours</td>
</tr>
</tbody>
</table>

12.2. Persistence and degradability
No data is available on the degradability of this product.

12.3 Bioaccumulative potential
No data available.

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
This substance does not meet the PBT/vPvB criteria of REACH, annex XIII.

12.6 Other adverse effects
No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

13.1 Waste treatment methods
Residual waste
Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging
Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

EU waste code
07 02 13
Waste codes should be assigned by the user based on the application for which the product was used.
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Disposal methods/information
Collect and reclaim or dispose in sealed containers at licensed waste disposal site.

Special precautions
Dispose in accordance with all applicable regulations.

14. Transport information

Product has been classified as being non-dangerous substance according to transport regulations ADR, RID, IMDG, IATA/ICAO

14.1 UN number
Not applicable

14.2 UN proper shipping name
Not applicable

14.3 Transport hazard class(es)
Not applicable

14.4 Packing Group
Not applicable

14.5 Environmental hazards
No additional data is available

14.6 Special precautions for user
No data available

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
Not evaluated

15. Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Directive 96/82/EC does not apply

Further information: Reserved for industrial and professional use.

15.2 Chemical Safety Assessment
No Chemical Safety Assessment has been carried out.

16. Other information

Information is referenced from other manufacturers.

For abbreviations and acronyms, see: ECHA Guidance on information requirements and chemical safety assessment, chapter R.20 (Table of terms and abbreviations).

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The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.