Technical data sheet PVA

Chemical name | Polyvinyl alcohol
--- | ---
Description | PVA (polyvinyl alcohol) is a water soluble support material for multi-extrusion 3D printing. With a good thermal stability, Ultimaker PVA is ideal for printing complex models that require supports for large overhangs, deep internal cavities, and intricate geometries. Designed for a seamless 3D printing experience, our PVA provides good adhesion to both PLA and Nylon.
Key features | Good thermal stability resulting in better degradation resistance compared to other PVA filaments; less moisture sensitive than other PVA filaments; great adhesion to both PLA and Nylon; safe dissolution in tap water (no harmful chemicals required); biodegradable with no hazardous by-products.
Applications | Reliable 3D printing of water soluble support structures for PLA and Nylon build materials. PVA molds
Non-suitable for | Reliable 3D printing of water soluble support structures for ABS or CPE build materials
Filament specifications | 
| **Value** | **Method** |
| Diameter | 2.85±0.10 mm | - |
| Max roundness deviation | 0.10 mm | - |
| Net filament weight | 350 g / 750 g | - |
| Filament length | ~45 m / ~96 m | - |
Color information | 
<p>| <strong>Color</strong> | <strong>Color code</strong> |
| Natural | n/a |</p>
<table>
<thead>
<tr>
<th>Mechanical properties (*)</th>
<th>Injection molding</th>
<th>3D printing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile modulus</td>
<td>3860 MPa</td>
<td>-</td>
</tr>
<tr>
<td>Tensile stress at yield</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Tensile stress at break</td>
<td>78 MPa</td>
<td>-</td>
</tr>
<tr>
<td>Elongation at yield</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Elongation at break</td>
<td>9.90 %</td>
<td>-</td>
</tr>
<tr>
<td>Flexural strength</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Flexural modulus</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Izod impact strength, notched (at 23˚C)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Charpy impact strength, unnotched (at 23˚C)</td>
<td>1.6 kJ/m²</td>
<td>-</td>
</tr>
<tr>
<td>Hardness</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Thermal properties</th>
<th>Typical value</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melt mass-flow rate (MFR)</td>
<td>17-21 g/10 min</td>
<td>(190 ˚C, 21.6 kg)</td>
</tr>
<tr>
<td>Heat deflection (HDT) at 0.455 MPa</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Heat deflection (HDT) at 1.82 MPa</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vicat softening temperature at 10N</td>
<td>60.2 ˚C</td>
<td>ISO 306</td>
</tr>
<tr>
<td>Glass transition</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Coefficient of thermal expansion</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Melting temperature</td>
<td>163 ˚C</td>
<td>ISO 11357</td>
</tr>
<tr>
<td>Thermal shrinkage</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other properties</th>
<th>Typical value</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific gravity</td>
<td>1.23</td>
<td>ASTM D1505</td>
</tr>
<tr>
<td>Flame classification</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

(*) See notes.
Notes

Properties reported here are average of a typical batch. Ultimaker is constantly working on extending the TDS data.

Disclaimer

Any technical information or assistance provided herein is given and accepted at your risk, and neither Ultimaker or its affiliates make any warranty relating to it or because of it. Neither Ultimaker nor its affiliates shall be responsible for the use of this information, or of any product, method or apparatus mentioned, and you must make your own determination of its suitability and completeness for your own use, for the protection of the environment, and for the health and safety of your employees and purchasers of your products. No warranty is made of the merchantability or fitness of any product; and nothing herein waives any of Ultimaker's conditions of sale. Specifications are subject to change without notice.