Ultrasint® PA6

The Best Material Solution for Durable Parts with Outstanding High Temperature Performance

Ultrasint® PA6 is the material of choice for advanced technical applications in tough environments. Besides PA6 being one of the most-used technical polymer for serial production applications, Ultrasint® PA6 boasts high strength and rigidity, uncompromising media tightness, as well as excellent thermal distortion and heat-ageing performance – properties where other PBF materials often show limitations. Ultrasint® PA6 thus redefines the horizon for PBF applications.

Benefits at a Glance
- High strength and rigidity
- Media tightness as-printed
- High HDTs
- Excellent heat-ageing performance
- Colors: Black and white

Example Applications
- Engine compartment parts
- Jigs and fixtures
- Piping and media flow/storage parts
- Fluid reservoirs
- Multi-purpose industrial goods

Material Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile Strength</td>
<td>54 MPa</td>
</tr>
<tr>
<td>Young’s Modulus</td>
<td>1600 MPa</td>
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<tr>
<td>Elongation at Break</td>
<td>51 %</td>
</tr>
<tr>
<td>Charpy Impact unnotched</td>
<td>13 kJ/m²</td>
</tr>
<tr>
<td>HDT B (0.45 MPa, dry)</td>
<td>194 °C</td>
</tr>
</tbody>
</table>

Burst Pressure (even) at High Temperatures

- Burst pressure up to 90 bar (geometry-dependent)
- Excellent long-term heat-ageing performance up to ~120 °C
- Even higher thermal resistance for short-term use

Benchmark with Injection Molded PA6

- Superior performance vs. injection molded neat PA6
- Lower water uptake compared to Injection Molding
- Reduced ductility is easily compensated via redesign

www.forward-am.com  sales@basf-3dps.com  Phone: +49 6221 67417 900
This brake fluid reservoir printed using Ultrasint® PA6 was used by Daimler as a functional prototype.

- No leakage or burst even at very high temperatures and inner pressure for the duration of the whole test series.
- Lower water uptake compared to injection molded PA6, with easy weldability.
- Semi-translucency allows visual detection of filling level.
- Readily implemented material model allows for further part optimization via BASF Ultrasim® simulation and design services.

Project Reference
Brake Fluid Reservoir