

AvaSpire® AV-621

polyaryletherketone

AvaSpire® AV-621 is an unreinforced polyaryletherketone (PAEK) that offers improved ductility and impact strength relative to PEEK while retaining most of the key performance attributes of PEEK. The AV-621 grade is the low melt flow (higher molecular weight) analog of the medium flow grade AvaSpire® AV-651 that is tailored primarily for injection molding applications as well as film extrusion. AvaSpire® AV-621 resin is suited for a variety of processing methods including compression molding, stock shape extrusion, as well as injection molding.

AV-621 has been formulated for applications requiring a balance of chemical resistance and

mechanical strength along with good part aesthetics, thereby bridging the performance gaps within the ultra polymers space. These and other properties make this resin well-suited for applications in healthcare, transportation, semiconductor, electronics, chemical processing, and other industries.

AvaSpire® AV-621 is easily fabricated using conventional thermoplastic melt processing techniques and standard equipment. The resin has a uniform opaque appearance with a beige color similar to that of PEEK.

- AvaSpire® AV-621 NT

General

| | | |
|-------------------|---|---|
| Material Status | • Commercial: Active | |
| Availability | • Africa & Middle East • Asia Pacific • Europe | • Latin America • North America |
| Features | • Chemical Resistant • Ductile • Fatigue Resistant • Flame Retardant | • Good Dimensional Stability • Good Impact Resistance • High Heat Resistance |
| Uses | • Bearings • Bushings • Connectors | • Medical/Healthcare Applications • Oil/Gas Applications • Semiconductor Applications |
| Agency Ratings | • ISO 10993 | |
| RoHS Compliance | • RoHS Compliant | |
| Appearance | • Beige | |
| Forms | • Pellets | |
| Processing Method | • Extrusion Blow Molding • Fiber (Spinning) Extrusion • Film Extrusion • Injection Blow Molding • Injection Molding | • Machining • Profile Extrusion • Thermoforming • Wire & Cable Extrusion |

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| Physical | Typical Value | Unit | Test method |
|---|---------------|----------|-------------|
| Density / Specific Gravity | 1.29 | | ASTM D792 |
| Melt Mass-Flow Rate (MFR) (400°C/2.16 kg) | 5.0 | g/10 min | ASTM D1238 |
| Molding Shrinkage ¹ | | | ASTM D955 |
| Flow : 3.18 mm | 0.70 to 0.90 | % | |
| Across Flow : 3.18 mm | 1.1 to 1.3 | % | |
| Water Absorption (24 hr) | 0.20 | % | ASTM D570 |

| Mechanical | Typical Value | Unit | Test method |
|----------------------|---------------|------|-----------------|
| Tensile Modulus | | | |
| -- ² | 2900 | MPa | ASTM D638 |
| -- | 3100 | MPa | ISO 527-1/1A/1 |
| Tensile Stress | | | |
| Yield | 87.0 | MPa | ISO 527-2/1A/50 |
| -- ² | 84.0 | MPa | ASTM D638 |
| Tensile Elongation | | | |
| Yield ³ | 6.0 | % | ASTM D638 |
| Yield | 5.7 | % | ISO 527-2/50 |
| Break ³ | > 40 | % | ASTM D638 |
| Break | > 40 | % | ISO 527-2/1A/50 |
| Flexural Modulus | | | |
| -- | 3100 | MPa | ASTM D790 |
| -- | 3000 | MPa | ISO 178 |
| Flexural Strength | | | |
| -- | 122 | MPa | ASTM D790 |
| -- | 106 | MPa | ISO 178 |
| Compressive Strength | 111 | MPa | ASTM D695 |
| Shear Strength | 81.0 | MPa | ASTM D732 |
| Poisson's Ratio | 0.39 | | ASTM E132 |

| Impact | Typical Value | Unit | Test method |
|-----------------------|---------------|-------------------|-----------------------|
| Notched Izod Impact | | | |
| -- | 100 | J/m | ASTM D256 |
| -- | 7.6 | kJ/m ² | ISO 180 |
| Unnotched Izod Impact | No Break | | ASTM D4812 ISO 180 |

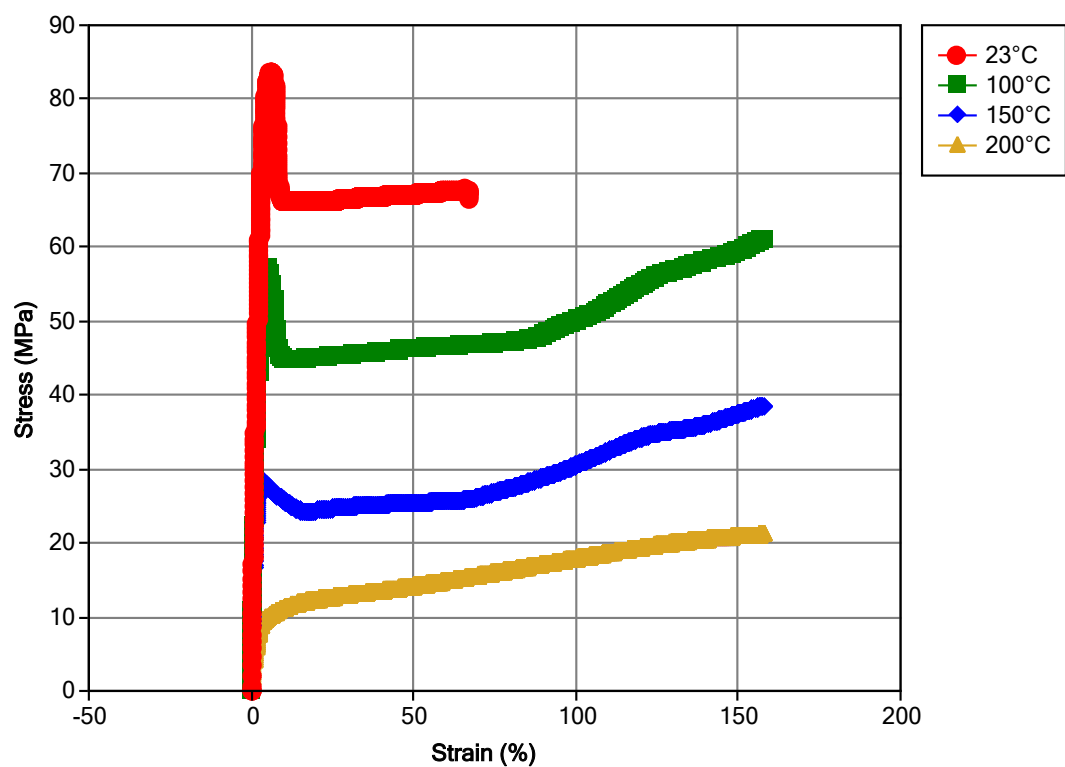
| Hardness | Typical Value | Unit | Test method |
|-----------------------------|---------------|------|-------------|
| Rockwell Hardness (M-Scale) | 93 | | ASTM D785 |

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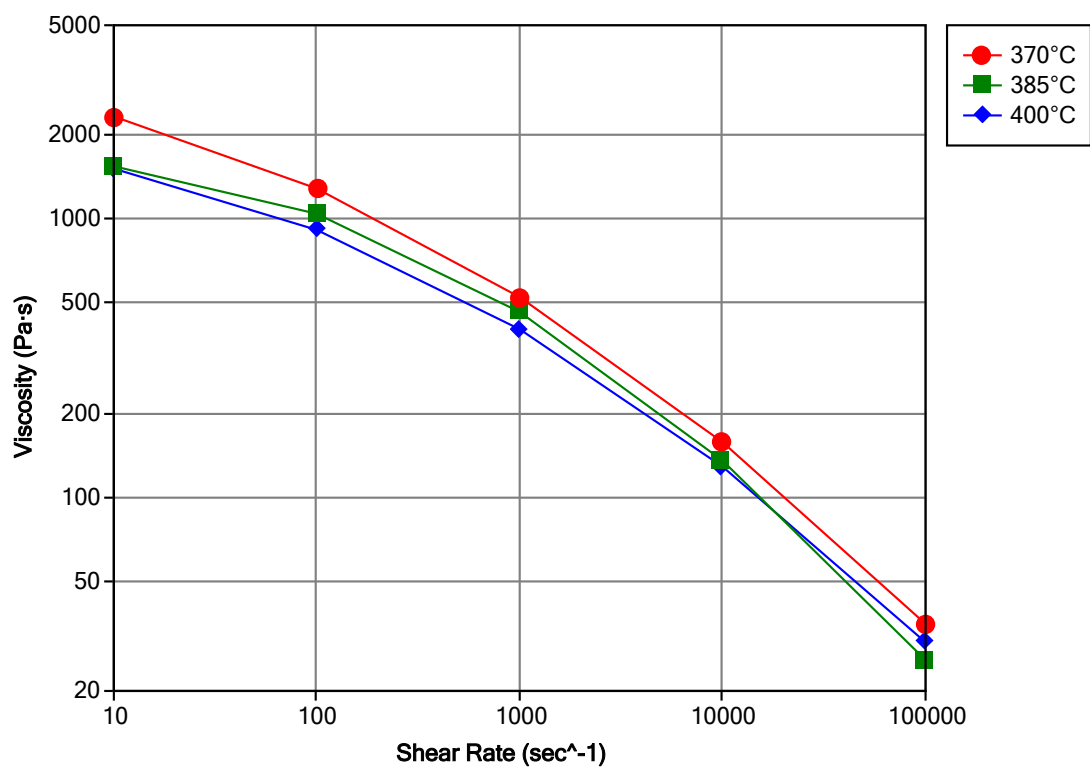
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| Thermal | Typical Value | Unit | Test method |
|--|--------------------|----------|-------------|
| Deflection Temperature Under Load ⁴ 1.8 MPa, Annealed, 3.20 mm | 187 | °C | ASTM D648 |
| Glass Transition Temperature | 158 | °C | ASTM D3418 |
| Peak Melting Temperature | 340 | °C | ASTM D3418 |
| CLTE - Flow (-50 to 50°C) | 4.7E-5 | cm/cm/°C | ASTM E831 |
| Specific Heat | | | DSC |
| 50°C | 1450 | J/kg/°C | |
| 200°C | 2000 | J/kg/°C | |
| Thermal Conductivity | 0.20 | W/m/K | ASTM E1530 |
| Electrical | Typical Value | Unit | Test method |
| Surface Resistivity | > 1.9E+17 | ohms | ASTM D257 |
| Volume Resistivity | 6.2E+17 | ohms-cm | ASTM D257 |
| Dielectric Strength | | | ASTM D149 |
| 0.0500 mm, Amorphous Film | 190 | kV/mm | |
| 3.00 mm | 17 | kV/mm | |
| Dielectric Constant | | | ASTM D150 |
| 60 Hz | 3.07 | | |
| 1 kHz | 3.12 | | |
| 1 MHz | 3.10 | | |
| Dissipation Factor | | | IEC 60250 |
| 60 Hz | 1.0E-3 | | |
| 1 kHz | 1.0E-3 | | |
| 1 MHz | 4.0E-3 | | |
| Flammability | Typical Value | Unit | Test method |
| Flame Rating | | | UL 94 |
| 0.8 mm | V-0 | | |
| 1.6 mm | V-0 | | |
| Oxygen Index | 34 | % | ASTM D2863 |
| Fill Analysis | Typical Value | Unit | Test method |
| Melt Viscosity (400°C, 1000 sec ⁻¹) | 410 | Pa·s | ASTM D3835 |
| Injection | Typical Value | Unit | |
| Drying Temperature | 150 | °C | |
| Drying Time | 4.0 | hr | |
| Rear Temperature | 355 | °C | |
| Middle Temperature | 365 | °C | |
| Front Temperature | 370 | °C | |
| Nozzle Temperature | 375 | °C | |
| Processing (Melt) Temp | 365 to 390 | °C | |
| Mold Temperature | 150 to 180 | °C | |
| Injection Rate | Fast | | |
| Screw Compression Ratio | 2.0:1.0 to 3.0:1.0 | | |

Isothermal Stress vs. Strain (ISO 11403)



Viscosity vs. Shear Rate (ISO 11403)



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Notes

Typical properties: these are not to be construed as specifications.

¹ 5" x 0.5" x 0.125"

² 50 mm/min

³ 51 mm/min

⁴ 2 hours at 200°C

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