SOLVAY
asking more from chemistry®

# AvaSpire® AV-651 GF30

## polyaryletherketone

AvaSpire® AV-651 GF30 is a 30% glass fiber reinforced polyaryletherketone (PAEK) that has been specifically formulated to provide higher mechanical strength and stiffness than unfilled AV-651 resin. This resin offers chemical resistance nearly equivalent to glass fiber-reinforced PEEK in most chemicals, with a lower heat deflection temperature.

These properties make it well suited for applications in healthcare, transportation, electronics, chemical processing and other industrial uses.

- Beige: AvaSpire® AV-651 GF30 BG 20
- Black: AvaSpire® AV-651 GF30 BK 95

### General

| | | | |
|---|---|---|---|
| Material Status | • Commercial: Active | | |
| Availability | • Africa & Middle East<br>• Asia Pacific | • Europe<br>• Latin America | • North America |
| Filler / Reinforcement | • Glass Fiber, 30% Filler by Weight | | |
| Features | • Autoclave Sterilizable<br>• Biocompatible<br>• E-beam Sterilizable<br>• Ethylene Oxide Sterilizable<br>• Fatigue Resistant<br>• Flame Retardant | • Good Chemical Resistance<br>• Good Dimensional Stability<br>• Good Sterilizability<br>• Heat Sterilizable<br>• High Heat Resistance<br>• High Stiffness | • High Strength<br>• Radiation (Gamma) Resistant<br>• Radiation Sterilizable<br>• Radiotranslucent<br>• Steam Resistant<br>• Steam Sterilizable |
| Uses | • Aircraft Applications<br>• Connectors<br>• Dental Applications<br>• Electrical/Electronic Applications | • Film<br>• Hospital Goods<br>• Industrial Applications<br>• Medical Devices | • Medical/Healthcare Applications<br>• Seals<br>• Surgical Instruments |
| Agency Ratings | • ISO 10993 | • ISO 10993-Part 1 | |
| RoHS Compliance | • Contact Manufacturer | | |
| Appearance | • Beige | • Black | |
| Forms | • Pellets | | |
| Processing Method | • Injection Molding | • Machining | • Profile Extrusion |

| Physical | Typical Value | Unit | Test method |
|---|---|---|---|
| Specific Gravity | 1.52 | | ASTM D792 |
| Melt Mass-Flow Rate (MFR) (400°C/2.16 kg) | 9.0 | g/10 min | ASTM D1238 |
| Molding Shrinkage [1] | | | ASTM D955 |
| Flow : 3.18 mm | 0.20 to 0.40 | % | |
| Across Flow : 3.18 mm | 1.3 to 1.5 | % | |
| Water Absorption (24 hr) | 0.20 | % | ASTM D570 |

| Mechanical | Typical Value | Unit | Test method |
|---|---|---|---|
| Tensile Modulus | | | |
| -- [2] | 9900 | MPa | ASTM D638 |
| -- | 10400 | MPa | ISO 527-2/1A/1 |

# AvaSpire® AV-651 GF30
polyaryletherketone

| Mechanical | Typical Value | Unit | Test method |
|---|---|---|---|
| Tensile Stress | | | |
| Yield, 5.00 mm | 162 | MPa | ISO 527-2/1A/5 |
| -- [2] | 156 | MPa | ASTM D638 |
| Tensile Elongation | | | |
| Break [2] | 2.9 | % | ASTM D638 |
| Break | 2.9 | % | ISO 527-2/1A/5 |
| Flexural Modulus | | | |
| -- | 9400 | MPa | ASTM D790 |
| -- | 9700 | MPa | ISO 178 |
| Flexural Strength | | | |
| -- | 234 | MPa | ASTM D790 |
| -- | 228 | MPa | ISO 178 |
| Compressive Strength | 168 | MPa | ASTM D695 |
| Shear Strength | 82.6 | MPa | ASTM D732 |

| Impact | Typical Value | Unit | Test method |
|---|---|---|---|
| Notched Izod Impact | | | |
| -- | 110 | J/m | ASTM D256 |
| -- | 12 | kJ/m² | ISO 180 |
| Unnotched Izod Impact | | | |
| -- | 960 | J/m | ASTM D4812 |
| -- | 64 | kJ/m² | ISO 180 |

| Hardness | Typical Value | Unit | Test method |
|---|---|---|---|
| Rockwell Hardness (M-Scale) | 101 | | ASTM D785 |

| Thermal | Typical Value | Unit | Test method |
|---|---|---|---|
| Deflection Temperature Under Load | | | ASTM D648 |
| 1.8 MPa, Annealed | 213 | °C | |
| Glass Transition Temperature | 158 | °C | ASTM D3418 |
| Peak Melting Temperature | 345 | °C | ASTM D3418 |
| CLTE - Flow (-50 to 50°C) | 1.7E-5 | cm/cm/°C | ASTM E831 |
| Specific Heat | | | DSC |
| 50°C | 1270 | J/kg/°C | |
| 200°C | 1650 | J/kg/°C | |
| Thermal Conductivity | 0.30 | W/m/K | ASTM E1530 |

| Electrical | Typical Value | Unit | Test method |
|---|---|---|---|
| Surface Resistivity | > 1.9E+17 | ohm | ASTM D257 |
| Volume Resistivity | 2.0E+17 | ohm·cm | ASTM D257 |
| Dielectric Strength (3.00 mm) | 17 | kV/mm | ASTM D149 |
| Dielectric Constant | | | ASTM D150 |
| 60 Hz | 3.61 | | |
| 1 kHz | 3.63 | | |
| 1 MHz | 3.58 | | |

# AvaSpire® AV-651 GF30

polyaryletherketone

| Electrical | Typical Value | Unit | Test method |
|---|---|---|---|
| Dissipation Factor | | | ASTM D150 |
| 60 Hz | 2.0E-3 | | |
| 1 kHz | 0.0 | | |
| 1 MHz | 4.0E-3 | | |

| Flammability | Typical Value | Unit | Test method |
|---|---|---|---|
| Flame Rating | | | UL 94 |
| 0.800 mm | V-1 | | |
| 1.60 mm | V-0 | | |

| 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 | 149 | °C |
| Drying Time | 4.0 | hr |
| Rear Temperature | 365 | °C |
| Middle Temperature | 371 | °C |
| Front Temperature | 377 | °C |
| Nozzle Temperature | 382 | °C |
| Processing (Melt) Temp | 366 to 388 | °C |
| Mold Temperature | 160 to 190 | °C |
| Injection Rate | Fast | |
| Screw Compression Ratio | 2.0:1.0 to 3.0:1.0 | |

**Notes**

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

[1] 5" x 0.5" x 0.125" bars

[2] 5.0 mm/min


**www.solvay.com**

**SpecialtyPolymers.EMEA@solvay.com** | Europe, Middle East and Africa

**SpecialtyPolymers.Americas@solvay.com** | Americas

**SpecialtyPolymers.Asia@solvay.com** | Asia and Australia




SOLVAY

asking more from chemistry®