

AV-650 GF30

AvaSpire AV-650 GF30 is a 30% glass fiber-reinforced, modified PEEK (polyetheretherketone) that has been specifically formulated to provide a high degree of chemical resistance and higher mechanical strength and stiffness than unfilled AV-650 resin. This material can be repeatedly exposed to harsh chemicals and prolonged steam sterilization cycles without any significant loss of properties, and it is USP Class VI compliant. The resin is designed to offer performance comparable to that of glass-reinforced PEEK while generally affording superior economics.

Typical potential applications for this resin include orthopedic and dental instruments, surgical power tool battery housings and other devices and components requiring a combination of high temperature performance and high environmental resistance. AvaSpire AV-650 GF30 can be easily processed by typical injection molding and extrusion methods using standard equipment.

Typical Properties of AvaSpire AV-650 GF30 Resin

| Property | ASTM Test Method | Typical Values ⁽¹⁾ | | | |
|---|------------------------|-------------------------------|----------|----------|--------|
| | | U.S. Customary Units | | SI Units | |
| | | Value | Units | Value | Units |
| Mechanical | | | | | |
| Tensile Strength | D 638 | 20.6 | kpsi | 142 | MPa |
| Tensile Modulus | D 638 | 1460 | kpsi | 10.1 | GPa |
| Tensile Elongation at break | D 638 | 2.6 | % | 2.6 | % |
| Flexural Strength | D 790 | 32.1 | kpsi | 221 | MPa |
| Flexural Modulus | D 790 | 1300 | kpsi | 9.0 | GPa |
| Izod Impact, Notched | D 256 | 1.8 | ft-lb/in | 96 | J/m |
| Izod Impact, Unnotched | D 4812 | 18 | ft-lb/in | 960 | J/m |
| Thermal | | | | | |
| Deflection Temperature ⁽²⁾ at 264 psi (1.82 MPa) | D 648 | 408 | °F | 209 | °C |
| Glass Transition Temperature | D 3417 | 316 | °F | 158 | °C |
| Melting Point | D 3417 | 644 | °F | 340 | °C |
| Coefficient Linear Thermal Expansion ⁽³⁾ | E 831 | 11 | µin/in°F | 19 | µm/m°C |
| General and Fabrication | | | | | |
| Specific Gravity | D 792 | 1.55 | | 1.55 | |
| Water Absorption, 24 hours | D 570 | 0.2 | % | 0.2 | % |
| Water Absorption, 30 days | D 570 | 0.4 | % | 0.4 | % |
| Melt Flow, 400°C, 2.16 kg | D 1238 | 17 | | 17 | |

⁽¹⁾ Properties are typical of limited production and final specification ranges may vary.

⁽²⁾ Measured on annealed specimens

⁽³⁾ Measured in the flow direction over the temperature range of -50°C to 50°C

Drying

AvaSpire AV-650 GF30 resin must be dried completely prior to melt processing. Incomplete drying will result in defects in the formed part ranging from surface streaks to severe bubbling. Pellets can be dried on trays in a circulating air oven or in desiccating hopper dryer. Drying conditions recommended are 4 hours at 300°F (149°C).

Injection Molding

AvaSpire AV-650 GF30 resin can be readily injection molded in most screw injection machines. A general purpose screw with a 2:1 to 3:1 compression ratio is recommended, as is minimum back pressure. Injection speeds should be as fast as possible, consistent with part appearance requirements. Mold temperatures in the range of 320°F to 375°F (160°C to 190°C) are suggested. Melt temperature should generally range from 690°F to 730°F (366°C to 388°C). Recommended starting point barrel temperature settings are shown in the following table.

Caution: Exceeding 780°F (415°C) during processing may cause degradation.

| Zone heater settings | | |
|----------------------|---------------------------------|-----|
| Zone | Recommended Barrel Temperatures | |
| | °F | °C |
| Rear (Feed) | 690 | 365 |
| Middle | 700 | 371 |
| Front | 710 | 377 |
| Nozzle | 720 | 382 |

Standard Packaging and Labeling

AvaSpire AV-650 GF30 resin is packaged in polyethylene buckets, cardboard boxes, or multiwall bags depending upon the order size.

Individual packages will be plainly marked with the product number, the color, the lot number, and the net weight.

Product Safety and Emergency Service

For product safety information or a Material Safety Data Sheet on a product of Solvay Advanced Polymers

1 (800) 621-4557

1 (770) 772-8880 outside of U.S.

For information or help in an emergency such as a spill, leak, fire or explosion, call day or night:

Emergency Health Information

1 (800) 621-4590

1 (770) 772-5177 outside of U.S.

Emergency Spill Information

CHEMTREC 1 (800) 424-9300

1 (703) 527-3887 outside of U.S.

collect calls accepted

For Additional Information

Technical Service

1 (800) 621-4557

Customer Service

1 (800) 848-9744

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