

Solvay Specialty Polymers AvaSpire® AV-621 Polyaryletherketone (PAEK)

Category : Polymer , Thermoplastic , Polyketone

Material Notes:

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. Features: Ductile; Fatigue Resistant; Flame Retardant; Good Chemical Resistance; Good Dimensional Stability; Good Impact Resistance; High Heat Resistance. Uses: Bearings; Bushings; Connectors; Medical/Healthcare Applications; Oil/Gas Applications; Semiconductor Molding Compounds. Information provided by Solvay Specialty Polymers.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Solvay-Specialty-Polymers-AvaSpire-AV-621-Polyaryletherketone-PAEK.php

| Physical Properties | Metric | English | Comments |
|-----------------------------------|---|---|----------------------------|
| Density | 1.29 g/cc | 0.0466 lb/in ³ | ASTM D792 |
| Water Absorption | 0.20 % @Time 86400 sec | 0.20 % @Time 24.0 hour | ISO 62 |
| Viscosity | 410000 cP @Shear Rate 1000 1/s, Temperature 400 Å°C | 410000 cP @Shear Rate 1000 1/s, Temperature 752 Å°F | Melt Viscosity; ASTM D3835 |
| Linear Mold Shrinkage, Flow | 0.0070 - 0.0090 cm/cm @Thickness 3.18 mm | 0.0070 - 0.0090 in/in @Thickness 0.125 in | |
| Linear Mold Shrinkage, Transverse | 0.011 - 0.013 cm/cm @Thickness 3.18 mm | 0.011 - 0.013 in/in @Thickness 0.125 in | ASTM D955 |
| Melt Flow | 5.0 g/10 min @Load 2.16 kg, Temperature 400 Å°C | 5.0 g/10 min @Load 4.76 lb, Temperature 752 Å°F | ASTM D1238 |

| Mechanical Properties | Metric | English | Comments |
|-----------------------|----------|-----------|----------------------|
| Hardness, Rockwell M | 93 | 93 | ASTM D785 |
| Tensile Strength | 84.0 MPa | 12200 psi | 50 mm/min; ASTM D638 |

| Mechanical Properties | Metric (Pa) | English (psi) | Comments |
|------------------------------|------------------------|----------------------------|-------------------------------|
| Elongation at Break | >= 40 % | >= 40 % | Type 1A, 50 mm/min; ISO 527-2 |
| | >= 40 % | >= 40 % | 50 mm/min; ASTM D638 |
| Elongation at Yield | 5.7 % | 5.7 % | 50 mm/min; ISO 527-2 |
| | 6.0 % | 6.0 % | 50 mm/min; ASTM D638 |
| Tensile Modulus | 2.90 GPa | 421 ksi | 50 mm/min; ASTM D638 |
| | 3.10 GPa | 450 ksi | 1 mm/min, Type 1A; ISO 527-2 |
| Flexural Strength | 106 MPa | 15400 psi | ISO 178 |
| | 122 MPa | 17700 psi | ASTM D790 |
| Flexural Modulus | 3.00 GPa | 435 ksi | ISO 178 |
| | 3.10 GPa | 450 ksi | ASTM D790 |
| Compressive Strength | 111 MPa | 16100 psi | ASTM D695 |
| Poissons Ratio | 0.39 | 0.39 | ASTM E132 |
| Shear Strength | 81.0 MPa | 11700 psi | ASTM D732 |
| Izod Impact, Notched | 1.00 J/cm | 1.87 ft-lb/in | ASTM D256 |
| Izod Impact, Unnotched | NB | NB | ASTM D256 |
| Izod Impact, Notched (ISO) | 7.60 kJ/m ² | 3.62 ft-lb/in ² | ISO 180 |
| Izod Impact, Unnotched (ISO) | NB | NB | ISO 180 |

| Thermal Properties | Metric | English | Comments |
|-------------------------------|-------------------------------|------------------------------|------------|
| CTE, linear, Parallel to Flow | 47.0 Åµm/m-Å°C | 26.1 Åµin/in-Å°F | 1 |
| | @Temperature -50.0 - 50.0 Å°C | @Temperature -58.0 - 122 Å°F | |
| Specific Heat Capacity | 1.45 J/g-Å°C | 0.347 BTU/lb-Å°F | ASTM C351 |
| | @Temperature 50.0 Å°C | @Temperature 122 Å°F | |
| | 2.00 J/g-Å°C | 0.478 BTU/lb-Å°F | ASTM C351 |
| | @Temperature 200 Å°C | @Temperature 392 Å°F | |
| Thermal Conductivity | 0.200 W/m-K | 1.39 BTU-in/hr-ftÅ²-Å°F | ASTM C177 |
| Melting Point | 340 Å°C | 644 Å°F | ASTM D3418 |

| Thermal Properties | Metric | English | Comments |
|---|-----------------------------------|--------------------------------------|---------------------|
| Deflection Temperature at 1.8 MPa (264 psi) | 167 Â°C @Thickness 3.20 mm | 302 Â°F @Thickness 0.126 in | Annealed; ASTM D648 |
| Glass Transition Temp, Tg | 158 Â°C | 316 Â°F | DSC |
| Flammability, UL94 | V-0 @Thickness 0.800 - 1.60 mm | V-0 @Thickness 0.0315 - 0.0630 in | |
| Oxygen Index | 34 % | 34 % | ASTM D2863 |

| Electrical Properties | Metric | English | Comments |
|-----------------------|-----------------------------------|-------------------------------------|---------------------------|
| Volume Resistivity | 6.20e+17 ohm-cm | 6.20e+17 ohm-cm | ASTM D257 |
| Surface Resistance | >= 1.90e+17 ohm | >= 1.90e+17 ohm | ASTM D257 |
| Dielectric Constant | 3.07 @Frequency 60.0 Hz | 3.07 @Frequency 60.0 Hz | ASTM D150 |
| | 3.1 @Frequency 1.00e+6 Hz | 3.1 @Frequency 1.00e+6 Hz | ASTM D150 |
| | 3.12 @Frequency 1000 Hz | 3.12 @Frequency 1000 Hz | ASTM D150 |
| Dielectric Strength | 17.0 kV/mm @Thickness 3.00 mm | 432 kV/in @Thickness 0.118 in | ASTM D149 |
| | 190 kV/mm @Thickness 0.0500 mm | 4830 kV/in @Thickness 0.00197 in | Amorphous Film; ASTM D149 |
| Dissipation Factor | 0.0010 @Frequency 60.0 Hz | 0.0010 @Frequency 60.0 Hz | IEC 60250 |
| | 0.0010 @Frequency 1000 Hz | 0.0010 @Frequency 1000 Hz | IEC 60250 |
| | 0.0040 @Frequency 1.00e+6 Hz | 0.0040 @Frequency 1.00e+6 Hz | IEC 60250 |

| Processing Properties | Metric | English | Comments |
|-------------------------|---------|---------|----------|
| Rear Barrel Temperature | 355 Â°C | 671 Â°F | |

| Middle Barrel Temperature Processing Properties | 365 Â°C Metric | 689 Â°F English | Comments |
|--|----------------------------|----------------------------|----------|
| Front Barrel Temperature | 370 Â°C | 698 Â°F | |
| Nozzle Temperature | 375 Â°C | 707 Â°F | |
| Melt Temperature | 365 - 390 Â°C | 689 - 734 Â°F | |
| Mold Temperature | 150 - 180 Â°C | 302 - 356 Â°F | |
| Drying Temperature | 150 Â°C @Time 14400 sec | 302 Â°F @Time 4.00 hour | |

| Descriptive Properties | Value | Comments |
|-------------------------|--|----------|
| Availability | Africa & Middle East | |
| | Asia Pacific | |
| | Europe | |
| | Latin America | |
| | North America | |
| Color | Beige | |
| Form | Pellets | |
| Injection Rate | Fast | |
| Processing Technique | Extrusion Blow Molding | |
| | Fiber (Spinning) Extrusion; Film Extrusion | |
| | Injection Blow Molding; Injection Molding | |
| | Machining; Profile Extrusion | |
| | Thermoforming; Wire & Cable Extrusion | |
| RoHS Compliance | RoHS Compliant | |
| Screw Compression Ratio | 2.0:1.0 to 3.0:1.0 | |

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