

## Solvay Specialty Polymers Torlon® 4435 Polyamide-imide (PAI)

Category : Polymer , Thermoplastic , Polyamide-imide (PAI) , Polyamide-Imide, Extruded

### Material Notes:

Torlon® 4435 is a polyamide-imide resin specifically designed to provide exceptionally low wear performance in non-lubricated applications even at high pressure and velocity (PV) conditions. Not only is Torlon® 4435 particularly suited to applications where lubrication is impossible or undesirable, it provides an additional margin of safety for lubricated systems in the event that lubrication is lost. Features: Flame Retardant; Good Chemical Resistance; Good Creep Resistance; Good Wear Resistance; High Heat Resistance; High Temperature Strength; Low Friction; Self Lubricating; Semi Conductive Uses: Aerospace Applications; Aircraft Applications; Automotive Applications; Bearings; Bushings; Cams; Gears; Industrial Applications; Industrial Parts; Machine/Mechanical Parts; Metal Replacement; Rollers; Sealing Devices; Seals; Thrust Washer; Transmission Applications; Washer Additional Properties: Coefficient of Linear Thermal Expansion - ASTM D696  $1.4 \times 10^{-5}$  cm/cm/°C; Wear Factor - ASTM D3702  $21.0 \text{ in}^3 \cdot \text{lb} \cdot \text{min}^{-1} / \text{ft} \cdot \text{lb} \cdot \text{hr}$ ; Wear Factor - ASTM D3702  $17.0 \text{ in}^3 \cdot \text{lb} \cdot \text{min}^{-1} / \text{ft} \cdot \text{lb} \cdot \text{hr}$  Information provided by Solvay Specialty Polymers.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_Solvay-Specialty-Polymers-Torlon-4435-Polyamide-imide-PAI.php](http://www.lookpolymers.com/polymer_Solvay-Specialty-Polymers-Torlon-4435-Polyamide-imide-PAI.php)

| Physical Properties         | Metric                    | English                   | Comments  |
|-----------------------------|---------------------------|---------------------------|-----------|
| Density                     | 1.59 g/cc                 | 0.0574 lb/in <sup>3</sup> | ASTM D792 |
| Water Absorption            | 0.12 %<br>@Time 86400 sec | 0.12 %<br>@Time 24.0 hour | ISO 62    |
| Linear Mold Shrinkage, Flow | 0.0014 cm/cm              | 0.0014 in/in              |           |

| Mechanical Properties | Metric                           | English                           | Comments   |
|-----------------------|----------------------------------|-----------------------------------|------------|
| Tensile Strength      | 93.8 MPa                         | 13600 psi                         | ASTM D638  |
| Tensile Stress        | 110 MPa                          | 16000 psi                         | ASTM D1708 |
| Tensile Modulus       | 9.72 GPa                         | 1410 ksi                          | ASTM D638  |
| Flexural Strength     | 89.6 MPa<br>@Temperature 232 °C  | 13000 psi<br>@Temperature 450 °F  | ASTM D790  |
|                       | 152 MPa<br>@Temperature 23.0 °C  | 22000 psi<br>@Temperature 73.4 °F | ASTM D790  |
| Flexural Modulus      | 10.3 GPa<br>@Temperature 232 °C  | 1490 ksi<br>@Temperature 450 °F   | ASTM D790  |
|                       | 14.5 GPa<br>@Temperature 23.0 °C | 2100 ksi<br>@Temperature 73.4 °F  | ASTM D790  |

| Mechanical Properties   | MetricPa    | Englishpsi     | Comments   |
|-------------------------|-------------|----------------|------------|
| Compressive Modulus     | 8.55 GPa    | 1240 ksi       | ASTM D695  |
| Poissons Ratio          | 0.42        | 0.42           | ASTM E132  |
| Izod Impact, Notched    | 0.430 J/cm  | 0.806 ft-lb/in | ASTM D256  |
| Izod Impact, Unnotched  | 2.20 J/cm   | 4.12 ft-lb/in  | ASTM D256  |
| Coefficient of Friction | 0.27 - 0.29 | 0.27 - 0.29    | ASTM D1894 |

| Thermal Properties                          | Metric      | English                 | Comments              |
|---------------------------------------------|-------------|-------------------------|-----------------------|
| Thermal Conductivity                        | 0.810 W/m-K | 5.62 BTU-in/hr-ftÂ²-Â°F | ASTM C177             |
| Deflection Temperature at 1.8 MPa (264 psi) | 278 Â°C     | 532 Â°F                 | Unannealed; ASTM D648 |

| Electrical Properties | Metric         | English        | Comments  |
|-----------------------|----------------|----------------|-----------|
| Volume Resistivity    | 2.00e+7 ohm-cm | 2.00e+7 ohm-cm | ASTM D257 |
| Surface Resistance    | 6.00e+6 ohm    | 6.00e+6 ohm    | ASTM D257 |

| Processing Properties   | Metric                     | English                    | Comments |
|-------------------------|----------------------------|----------------------------|----------|
| Rear Barrel Temperature | 304 Â°C                    | 579 Â°F                    |          |
| Nozzle Temperature      | 371 Â°C                    | 700 Â°F                    |          |
| Mold Temperature        | 199 - 216 Â°C              | 390 - 421 Â°F              |          |
| Drying Temperature      | 177 Â°C<br>@Time 10800 sec | 351 Â°F<br>@Time 3.00 hour |          |
| Moisture Content        | <= 0.050 %                 | <= 0.050 %                 |          |
| Back Pressure           | 6.89 MPa                   | 999 psi                    |          |
| Screw Speed             | 50 - 100 rpm               | 50 - 100 rpm               |          |

| Descriptive Properties | Value                | Comments |
|------------------------|----------------------|----------|
| Availability           | Africa & Middle East |          |
|                        | Asia Pacific         |          |
|                        | Europe               |          |
|                        | Latin America        |          |

| Descriptive Properties | Value                                           | Comments |
|------------------------|-------------------------------------------------|----------|
|                        | North America                                   |          |
| Form                   | Pellets                                         |          |
| Processing Technique   | Injection Molding; Machining; Profile Extrusion |          |
| RoHS Compliance        | RoHS Compliant                                  |          |
| Screw L/D Ratio        | 18.0:1.0 to 24.0:1.0                            |          |

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