MITSUBISHI CHEMICAL ADVANCED MATERIALS

# Mitsubishi Chemical Advanced Materials Duratron® PAI T4501 Polyamide-imide, compression molded bearing grade (ASTM Product Data Sheet)

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| **Categories:** | Polymer; Thermoplastic; Polyamide-imide (PAI); Polyamide-Imide, Molded |
| **Material Notes:** | Quadrant Engineering Plastic Products is now Mitsubishi Chemical Advanced Materials. |

| Physical Properties | Metric | English | Comments |
|---|---|---|---|
| Specific Gravity | 1.45 g/cc | 1.45 g/cc | ASTM D792 |
| Water Absorption | 0.30 % | 0.30 % | Immersion, 24hr; ASTM D570(2) |
| Water Absorption at Saturation | 1.5 % | 1.5 % | Immersion; ASTM D570(2) |

| Mechanical Properties | Metric | English | Comments |
|---|---|---|---|
| Hardness, Rockwell E | 70 | 70 | ASTM D785 |
| Hardness, Rockwell M | 106 | 106 | ASTM D785 |
| Hardness, Shore D | 90 | 90 | ASTM D2240 |
| Tensile Strength | 68.9 MPa | 10000 psi | ASTM D638 |
| Tensile Strength at 150°C (300°F) | 48.3 MPa | 7000 psi | ASTM D638 |
| Tensile Strength at 65°C (150°F) | 55.2 MPa | 8000 psi | ASTM D638 |
| Elongation at Break | 3.0 % | 3.0 % | ASTM D638 |
| Tensile Modulus | 3.03 GPa | 440 ksi | ASTM D638 |
| Flexural Strength | 138 MPa | 20000 psi | ASTM D790 |
| Flexural Modulus | 4.48 GPa | 650 ksi | ASTM D790 |
| Compressive Strength | 110 MPa | 16000 psi | 10% Def.; ASTM D695 |
| Compressive Modulus | 2.48 GPa | 359 ksi | ASTM D695 |
| Izod Impact, Notched | 0.267 J/cm | 0.500 ft-lb/in | ASTM D256 Type A |
| Coefficient of Friction, Dynamic | 0.20 | 0.20 | Dry vs. Steel; QTM55007 |
| K (wear) Factor | 302 x $10^{-8}$ mm³/N-M | 150 x $10^{-10}$ in³-min/ft-lb-hr | QTM 55010 |
| Limiting Pressure Velocity | 0.788 MPa-m/sec | 22500 psi-ft/min | 4:1 safety factor; QTM 55007 |

| Electrical Properties | Metric | English | Comments |
|---|---|---|---|
| Surface Resistivity per Square | >= 1.00e+13 ohm | >= 1.00e+13 ohm | EOS/ESD S11.11 |
| Dielectric Constant | 6.0<br>@Frequency 1e+6 Hz | 6.0<br>@Frequency 1e+6 Hz | ASTM D150 |
| Dissipation Factor | 0.042<br>@Frequency 1e+6 Hz | 0.042<br>@Frequency 1e+6 Hz | ASTM D150 |

| Thermal Properties | Metric | English | Comments |
|---|---|---|---|
| CTE, linear | 36.0 µm/m-°C<br>@Temperature -40.0 - 149 °C | 20.0 µin/in-°F<br>@Temperature -40.0 - 300 °F | ASTM E831 |
| Thermal Conductivity | 0.533 W/m-K | 3.70 BTU-in/hr-ft²-°F | ASTM F433 |
| Maximum Service Temperature, Air | 260 °C | 500 °F | Long Term |
| Deflection Temperature at 1.8 MPa (264 psi) | 279 °C | 534 °F | ASTM D648 |
| Glass Transition Temp, Tg | 275 °C | 527 °F | ASTM D3418 |
| Flammability, UL94 | V-0<br>@Thickness 3.17 mm | V-0<br>@Thickness 0.125 in | Estimated Rating |

| Compliance Properties | Metric | English | Comments |
|---|---|---|---|
| 3A-Dairy | No | No | |
| Canada AG | No | No | |
| FDA | No | No | |
| NSF | No | No | |
| USDA | No | No | |
| USP Class VI | No | No | |

| Chemical Resistance Properties | Metric | English | Comments |
|---|---|---|---|
| Acids, Strong (pH 1-3) | Limited | Limited | |
| Acids, Weak | Acceptable | Acceptable | |
| Alcohols | Acceptable | Acceptable | |
| Alkalies, Strong (pH 11-14) | Unacceptable | Unacceptable | |
| Alkalies, Weak | Limited | Limited | |
| Chlorinated Solvents | Acceptable | Acceptable | |
| Conductive / Static Dissipative | No | No | |
| Continuous Sunlight | Acceptable | Acceptable | |

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|---|---|---|---|
| Hot Water / Steam | Limited | Limited | |
| Hydrocarbons - Aliphatic | Acceptable | Acceptable | |
| Hydrocarbons - Aromatic | Acceptable | Acceptable | |
| Inorganic Salt Solutions | Acceptable | Acceptable | |
| Ketones, Esters | Acceptable | Acceptable | |

**Descriptive Properties**

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|---|---|---|
| Machinability | 6 | 1-10, 1=Easier to Machine |