

TECHNICAL PROPERTIES OF ZL™ 1500 X (PEEK)

08/2010

| Property | Units | Test Method | Condition of Specimen | Value | |
|---|---|--------------------------|-----------------------|-----------|------------------|
| MECHANICAL PROPERTIES | | | | | |
| Tensile Strength at Break | at 73 °F | psi | ASTM D 638 | dry | 13,200 |
| | at 392 °F | psi | ASTM D 638 | dry | 6,400 |
| Elongation at Break | | % | ASTM D 638 | dry | 119 |
| | | | | | |
| Flexural Modulus | | ksi | ASTM D 638 | dry | 510 |
| Charpy Impact Strength | +73 °F | kJ/m ² | ISO 179/1 eU | dry | no break |
| | -40 °F | kJ/m ² | | dry | |
| Charpy Notched Impact Strength | | kJ/m ² | ISO 179/1 eA | dry | 6.5 |
| | | kJ/m ² | | moist | |
| Hardness Shore Scale D | | | ISO 868 | dry | 87 |
| Time Yield Limit $\sigma_{1/1000}$ | 73°F/50% RH | MPa | ISO 899 | moist | |
| | 100 °C | MPa | ISO 899 | dry | |
| Apparent Modulus E _{C/1000 20} | 73°F/50% RH | MPa | ISO 899 | moist | |
| THERMAL PROPERTIES | | | | | |
| Heat Distortion Temperature ¹⁾ | Method A | °F | ASTM D 648 | dry | > 327 |
| | Method B | °F | ASTM D 648 | dry | > 518 |
| Melting Point | Method A | °F | ASTM D 3418 | - | 644 |
| Continuous Application Temperature | Electrical | °F | UL746B | - | 500 |
| | Mechanical w/o Impact | °F | UL746B | - | 465 |
| | Mechanical w/ Impact | °F | UL746B | - | 356 |
| Temperature Index 20,000 hours | Stress at Break | °F | ISO 2578 | - | 475 |
| | Ultimate Tensile Strength | °F | ISO 2578 | - | 453 |
| Thermal Coefficient of Linear Expansion | | 1/K · 10 ⁻⁵ | DIN 53452 | dry | 5.8 |
| Glass trans. Temperature | DSC | °F | ASTM D 3418 | - | 306 |
| Specific Heat Capacity | | J/(g·K) | IEC 1006 | dry | |
| DIELECTRIC PROPERTIES | | | | | |
| Dielectric Constant | 1 MHz | - | IEC 250 | dry | |
| | | - | IEC 250 | moist | |
| Dissipation Factor tan δ | 1 MHz | - | IEC 250 | dry | 0.005 |
| | | - | IEC 250 | moist | |
| Dielectric Strength | | MV/m | ASTM D 149 | - | 16.4 |
| Volume Resistivity | | $\Omega \cdot \text{cm}$ | ASTM D 257 | - | > 1.98 E + 16 |
| Surface Resistivity R _{OA} | | Ω | IEC 93 | dry | 10 ¹⁵ |
| | | Ω | IEC 93 | moist | |
| Resistance to Tracking | KA/KB method | - | IEC 112 | dry/moist | |
| | KC method | - | IEC 112 | dry/moist | |
| MISCELLANEOUS PROPERTIES | | | | | |
| Mass Density | Method D, E | lb/inch ³ | ASTM D 792 | | 0.047 |
| Moisture Absorption at 73°F/50%RH, Saturation | | % | ISO 1110 | - | |
| Water Absorption | | % | ASTM D 570 | - | 0.25 |
| Fire Performance | Smoke Density | | ASTM DF 814 | - | passed |
| | Oxygen Index | % | ASTM D 2863 | - | 37 |
| | Flammability acc. UL (thickness of specimen 1.6 mm) | - | UL 94 | - | V0 |
| Resistance to Wear ²⁾ | | $\mu\text{m}/\text{km}$ | ISO 7148-2 | dry | |

¹⁾ Tested within extruded specimen

²⁾ Made by a pin / rotating disc test according DIN-ISO 7148-2 under following conditions:

R_s = 0.35 - 0.45 μm (steel disc), v = 0.3 m/s, p = 3 N/mm², time T > 16 h

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