## GENERAL ENGINEERING

DELRIN - NOREL - PET-P

| | | | Units | ASTM Test Method | Noryl EN265 Modified Polyphenelyene Oxide | Noryl SE-1 GFN3 30% Glass Filled Polyphenelyene Oxide | Acetron GP Acetal Poly-oxymethylene Copolymer | Delrin Acetal Poly-oxymethylene Homopolymer | Delrin 570 Blend 20% Glass Filled POM Homopolymer | 25% Glass-Filled Acetal Copolymer 25% Glass Filled POM Copolymer | Delrin AF Filled Acetal PTFE Filled POM Homopolymer | Ertalyte TX Bearing Grade PET-P | Delrin 500 CL Lubricated POM Homopolymer | Ertalyte PET-P Polyethylene-terephalate | Hydex 4101 PBT Polybutalyene-terephalate | Hydex 4101L Filled PBT PTFE Filled Polybutalyene-terephalate |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MECHANICAL | 1 | Strength to Weight Ratio | ksi | - | 4.0 | 13.0 | 6.7 | 7.8 | 5.4 | 10.1 | 5.3 | 7.6 | 6.7 | 8.8 | 5.7 | 5.3 |
| | 2 | Specific Gravity @ 73 F | - | D792 | 1.06 | 1.36 | 1.41 | 1.41 | 1.56 | 1.59 | 1.50 | 1.44 | 1.42 | 1.41 | 1.31 | 1.36 |
| | 3 | Tensile Strength @73 F, (ult/yld) | psi | D638 | 9600 (ult) | 17800 (ult) | 9500 (ult) | 11000 (ult) | 8500 (ult) | 16000 (yld) | 8000 (ult) | 11000 (ult) | 9500 (yld) | 12400 (ult) | 7500 (yld) | 7200 (yld) |
| | 4 | Tensile Modulus of Elasticity @ 73 F | psi | D638 | 350000 | 1000000 | 400000 | 450000 | 900000 | 1200000 | 435000 | 500000 | 450000 | 460000 | 377000 | 380000 |
| | 5 | Tensile Elongation at Break @ 73 F | % | D638 | 30 | 4 | 30 | 30 | 12 | 2-3% | 15 | 5 | 40 | 20 | 200 | 40 |
| | 6 | Flexural Strength @73 F | psi | D790 | 13500 | 20000 | 12000 | 13000 | 10700 | - | 12000 | 16000 | 13000 | 18000 | 12000 | - |
| | 7 | Flexural Modulus of Elasticity @ 73 F | psi | D790 | 360000 | 1100000 | 400000 | 450000 | 730000 | 1050000 | 445000 | 460000 | 400000 | 490000 | 420000 | 390000 |
| | 8 | Shear Strength @ 73 F | psi | D732 | - | - | 8000 | 9000 | - | - | 7600 | 8500 | - | 8000 | - | - |
| | 9 | Compressive Strength, (%Deformation) @ 73 F | psi | D695 | - | - | 15000 (10) | 16000 (10) | - | - | 16000 (10) | 15250 (10) | 4500 (1) | 15000 (10) | 12800 (10) | - |
| | 10 | Compressive Modulus of Elasticity @ 73 F | psi | D695 | - | - | 400000 | 450000 | - | - | 350000 | 400000 | - | 420000 | - | - |
| | 11 | Hardness, Rockwell, Scale as noted @ 73 F | - | D785 | (R119) | (L108) | M88 (R120) | M89 (R122) | M90 (R118) | M80 | M85 (R115) | M94 | M90 (R120) | M93 (R125) | M72 | - |
| | 12 | Hardness, Durometer, Shore D @ 73 F | - | D2240 | - | - | D85 | D86 | - | - | D83 | - | - | D87 | - | - |
| | 13 | Izod Impact, (Notched) @ 73 F | ft-lb/in of notch | D256 TypeA | 5.0 | 2.3 | 1.0 | 1.0 | 0.8 | 1.1 | 0.7 | 0.4 | 1.4 | 0.5 | 1.0 | 0.7 |
| | 14 | Coefficient of Friction, (Dry vs. Steel) Dynamic | - | - | 0.39 | 0.27 | 0.25 | 0.25 | 0.34 | - | 0.19 | 0.19 | - | 0.20 | - | - |
| | 15 | Limiting PV, with 4 to 1 factor of safety applied | psi-ft/min | - | - | - | 2700 | 2700 | - | - | 8300 | 6000 | - | 2800 | - | - |
| THERMAL | 16 | Coefficient of Linear Thermal Expansion @ 73 F | in/in/F | E-831 (TMA) | 3.5E-05 | 1.4E-05 | 5.4E-04 | 4.7E-05 | 4.5E-05 | 2.2E-05 | 5.0E-05 | 4.5E-05 | 6.8E-05 | 3.3E-05 | 7.8E-05 | - |
| | 17 | Heat Deflection Temperature @ 264 psi | F | D648 | 265 | 275 | 220 | 250 | 316 | 322 | 244 | 180 | 257 | 240 | 200 | 195 |
| | 18 | Tg-Glass transition temperature, (Amorphous) | F | D3418 | - | - | - | - | - | - | - | - | - | - | - | - |
| | 19 | Melting Point, (VS= Vicat Softening Temp.) | F | D3418 | 310 | 330 | 335 | 347 | 347 | - | 347 | 491 | 347 | 491 | 428 | - |
| | 20 | Continuous Service Temperature in Air, (Max.) | F | - | 221 | 221 | 180 | 180 | 185 | - | 180 | 210 | - | 210 | 221 | 221 |
| | 21 | Thermal Conductivity | BTU-in/hr-ft2F | - | 1.32 | - | 1.60 | 2.50 | - | - | - | 1.90 | - | 2.00 | 1.46 | - |
| ELECTRICAL | 22 | Dielectric Strength, Short Term | Volts/ mil | D149 | 500 | 530 | 420 | 450 | 490 | - | 400 | - | 400 | 385 | 400 | - |
| | 23 | Volume Resistivity | ohm-cm | D257 | 1.0E+17 | 1.0E+17 | >E13 | >E13 | >E13 | - | >E13 | >E13 | >E13 | >E13 | >E13 | >E13 |
| | 24 | Dielectric Constant @ 10E6Hz | - | D150 | - | - | 3.8 | 3.7 | - | - | 3.1 | - | 3.5 | - | - | - |
| | 25 | Dissipation Factor @ 10E6Hz | - | D150 | - | - | 0.005 | 0.005 | 0.006 | - | 0.010 | - | 0.006 | - | 0.001 | - |
| | 26 | Flammability @ 3.1 mm unless noted | - | UL94 | V-O(5.9mm) | V-O(5.9mm) | HB | HB | HB | - | HB | HB | HB (.78mm) | HB | HB | - |
| H2O | 27 | Water Absorbtion, Immersion, 24 Hrs. | % by wt | D570(7) | 0.07 | 0.06 | 0.20 | 0.20 | 0.25 | 0.29 | 0.20 | 0.06 | 0.27 | 0.07 | 0.08 | 0.07 |
| | 28 | Water Absorbtion, Saturation | % by wt | D570(7) | 0.20 | - | 0.90 | 0.90 | 1.00 | - | 1.00 | 0.47 | 1.00 | 0.90 | 0.50 | - |