DuPont Performance Polymers Delrin® 111P NC010 Acetal Homopolymer

Category : Polymer , Thermoplastic , Acetal (POM)

Material Notes:

Delrin® 111P is a high viscosity acetal homopolymer with improved thermal stability and modifications for more precise molding (reduced warpage, fewer voids). It has higher tensile strength and modulus than Delrin® 100P.Information provided by DuPont Performance Polymers

Order this product through the following link:
http://www.lookpolymers.com/polymer_DuPont-Performance-Polymers-Delrin-111P-NC010-Acetal-Homopolymer.php

Physical Properties	Metric	English	Comments
Specific Gravity	1.42 g/cc	1.42 g/cc	ASTM D792
Density	1.42 g/cc	0.0513 lb/in³	ISO 1183
Water Absorption	0.30 % @Temperature 23.0 °C	0.30 % @Temperature 73.4 °F	Immersion 24h; ASTM D570
	1.0 % @Temperature 23.0 °C	1.0 % @Temperature 73.4 °F	Saturation, immersed; ISO 62, Similar to
Linear Mold Shrinkage	0.017 - 0.020 cm/cm @Thickness 3.20 mm	0.017 - 0.020 in/in @Thickness 0.126 in	Transverse, 24h; ASTM D955
	0.018 - 0.021 cm/cm @Thickness 3.20 mm	0.018 - 0.021 in/in @Thickness 0.126 in	Flow, 24h; ASTM D955
Linear Mold Shrinkage, Flow	0.018 - 0.021 cm/cm @Thickness 4.00 mm	0.018 - 0.021 in/in @Thickness 0.157 in	Parallel, 24h; ISO 294-4
	0.021 cm/cm @Thickness 2.00 mm	0.021 in/in @Thickness 0.0787 in	ISO 294-4
Linear Mold Shrinkage, Transverse	0.019 cm/cm @Thickness 2.00 mm	0.019 in/in @Thickness 0.0787 in	ISO 294-4
	0.018 - 0.021 cm/cm @Thickness 4.00 mm	0.018 - 0.021 in/in @Thickness 0.157 in	Normal, 24h; ISO 294-4
Melt Flow	1.0 g/10 min @Load 1.05 kg, Temperature 190 °C	1.0 g/10 min @Load 2.31 lb, Temperature 374 °F	ASTM D1238
	2.4 g/10 min @Load 2.16 kg,	2.4 g/10 min @Load 4.76 lb,	ISO 1133

Physical Properties	Metric	English	Comments
	Temperature 190 °C	Temperature 374 °F	
Melt Index of Compound	1.9 g/10 min @Load 2.16 kg, Temperature 190 °C	1.9 g/10 min @Load 4.76 lb, Temperature 374 °F	cm3/10 min; ISO 1133

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell M	92	92	ISO 2039/2
Hardness, Rockwell R	120	120	ISO 2039/2
	121	121	ASTM D785
Tensile Strength	72.0 MPa @Temperature 23.0 °C	10400 psi @Temperature 73.4 °F	5mm/min (0.2in/min); ASTM D638
Tensile Stress	60.799 MPa @Strain 2.8574 %, Temperature -40.0 °C	8818.2 psi @Strain 2.8574 %, Temperature -40.0 °F	ISO 527
	87.176 MPa @Strain 5.7149 %, Temperature -40.0 °C	12644 psi @Strain 5.7149 %, Temperature -40.0 °F	ISO 527
	94.877 MPa @Strain 8.5723 %, Temperature -40.0 °C	13761 psi @Strain 8.5723 %, Temperature -40.0 °F	ISO 527
	96.84 MPa @Strain 11.43 %, Temperature -40.0 °C	14050 psi @Strain 11.43 %, Temperature -40.0 °F	ISO 527
	97.432 MPa @Strain 14.287 %, Temperature -40.0 °C	14131 psi @Strain 14.287 %, Temperature -40.0 °F	ISO 527
	97.672 MPa @Strain 17.145 %, Temperature -40.0 °C	14166 psi @Strain 17.145 %, Temperature -40.0 °F	ISO 527
	98.055 MPa @Strain 20.002 %, Temperature -40.0 °C	14222 psi @Strain 20.002 %, Temperature -40.0 °F	ISO 527
	98.733 MPa @Strain 22.86 %, Temperature -40.0 °C	14320 psi @Strain 22.86 %, Temperature -40.0 °F	ISO 527
	99.053 MPa	14366 psi	ISO 527

Mechanical Properties	Metric	English	Comments
	@Strain 25.717 %, Temperature -40.0 °C	@Strain 25.717 %, Temperature -40.0 °F	
	99.549 MPa @Strain 28.574 %, Temperature -40.0 °C	14438 psi @Strain 28.574 %, Temperature -40.0 °F	ISO 527
Tensile Strength, Yield	72.0 MPa @Temperature 23.0 °C	10400 psi @Temperature 73.4 °F	5mm/min (0.2in/min); ASTM D638
	72.0 MPa @Temperature 23.0 °C	10400 psi @Temperature 73.4 °F	ISO 527
Elongation at Break	40 % @Temperature 23.0 °C	40 % @Temperature 73.4 °F	nominal; ISO 527
	50 % @Temperature 23.0 °C	50 % @Temperature 73.4 °F	ISO 527
	73 % @Temperature 23.0 °C	73 % @Temperature 73.4 °F	5mm/min (0.2in/min); ASTM D638
Elongation at Yield	20 % @Temperature 23.0 °C	20 % @Temperature 73.4 °F	ISO 527
	21 % @Temperature 23.0 °C	21 % @Temperature 73.4 °F	5mm/min (0.2in/min); ASTM D638
Tensile Modulus	3.00 GPa @Temperature 23.0 °C	435 ksi @Temperature 73.4 °F	5mm/min (0.2in/min); ASTM D638
	3.20 GPa @Temperature 23.0 °C	464 ksi @Temperature 73.4 °F	ISO 527
Flexural Strength	80.0 MPa @Strain 3.50 %, Temperature 23.0 °C	11600 psi @Strain 3.50 %, Temperature 73.4 °F	ISO 178
	92.0 MPa @Strain 5.00 %, Temperature 23.0 °C	13300 psi @Strain 5.00 %, Temperature 73.4 °F	ASTM D790
Flexural Modulus	2.90 GPa @Temperature 23.0 °C	421 ksi @Temperature 73.4 °F	ISO 178
	2.97 GPa @Temperature 23.0 °C	431 ksi @Temperature 73.4 °F	ASTM D790

Mechanical Properties	Metric	English	Comments
Izod Impact, Notched	0.960 J/cm @Temperature 23.0 °C	1.80 ft-lb/in @Temperature 73.4 °F	ASTM D256
Izod Impact, Unnotched	NB @Temperature 23.0 °C	NB @Temperature 73.4 °F	ASTM D4812
Izod Impact, Notched (ISO)	11.0 kJ/m² @Temperature -40.0 °C	5.23 ft-lb/in² @Temperature -40.0 °F	ISO 180/1A
	11.0 kJ/m² @Temperature 23.0 °C	5.23 ft-lb/in² @Temperature 73.4 °F	ISO 180/1A
Charpy Impact Unnotched	27.0 J/cm² @Temperature -30.0 °C	128 ft-lb/in² @Temperature -22.0 °F	ISO 179/1eU
	30.0 J/cm² @Temperature 23.0 °C	143 ft-lb/in² @Temperature 73.4 °F	ISO 179/1eU
Charpy Impact, Notched	0.900 J/cm² @Temperature -30.0 °C	4.28 ft-lb/in² @Temperature -22.0 °F	ISO 179/1eA
	1.10 J/cm² @Temperature 23.0 °C	5.23 ft-lb/in² @Temperature 73.4 °F	ISO 179/1eA
Tensile Creep Modulus, 1 hour	3000 MPa @Temperature 23.0 °C	435000 psi @Temperature 73.4 °F	ISO 899
Tensile Creep Modulus, 1000 hours	1700 MPa @Temperature 23.0 °C	247000 psi @Temperature 73.4 °F	ISO 899

Thermal Properties	Metric	English	Comments
CTE, linear, Parallel to Flow	500 µm/m-°C @Temperature 23.0 - 55.0 °C	278 µin/in-°F @Temperature 73.4 - 131 °F	ASTM E 831
	500 µm/m-°C @Temperature -40.0 - 23.0 °C	278 µin/in-°F @Temperature -40.0 - 73.4 °F	ISO 11359-1/-2
	500 µm/m-°C @Temperature 23.0 - 55.0 °C	278 µin/in-°F @Temperature 73.4 - 131 °F	ISO 11359-1/-2
	500 µm/m-°C @Temperature 55.0 - 100 °C	278 µin/in-°F @Temperature 131 - 212 °F	ISO 11359-1/-2

Thermal Properties	Metric	English	Comments
CTE, linear, Transverse to Flow	@Temperature -40.0 - 23.0 °C	@Temperature -40.0 - 73.4 °F	ISO 11359-1/-2
	110 µm/m-°C @Temperature 23.0 - 55.0 °C	61.1 µin/in-°F @Temperature 73.4 - 131 °F	ASTM E 831
	110 µm/m-°C @Temperature 23.0 - 55.0 °C	61.1 µin/in-°F @Temperature 73.4 - 131 °F	ISO 11359-1/-2

Electrical Properties	Metric	English	Comments
Volume Resistivity	8.00e+14 ohm-cm @Temperature 23.0 °C	8.00e+14 ohm-cm @Temperature 73.4 °F	ASTM D257
Surface Resistance	6.00e+14 ohm @Temperature 23.0 °C	6.00e+14 ohm @Temperature 73.4 °F	ASTM D257
Dielectric Constant	3.7 @Frequency 1.00e+6 Hz, Temperature 23.0 °C	3.7 @Frequency 1.00e+6 Hz, Temperature 73.4 °F	ASTM D150
Dielectric Strength	18.0 kV/mm @Thickness 3.20 mm, Temperature 23.0 °C	457 kV/in @Thickness 0.126 in, Temperature 73.4 °F	Short Time; ASTM D149
Dissipation Factor	0.0050 @Frequency 1.00e+6 Hz, Temperature 23.0 °C	0.0050 @Frequency 1.00e+6 Hz, Temperature 73.4 °F	ASTM D150
Comparative Tracking Index	600 V @Temperature 23.0 °C	600 V @Temperature 73.4 °F	IEC 60112
	600 V @Thickness 3.00 mm, Temperature 23.0 °C	600 V @Thickness 0.118 in, Temperature 73.4 °F	UL 746A

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