

Delrin® 900P NC010

Acetal (POM) Homopolymer
DuPont Engineering Polymers



Prospector

Product Description

Delrin® 900P NC010 is a low viscosity acetal homopolymer resin for multicavity and thin wall molding. It offers an improved processing thermal stability.

General

Material Status	• Commercial: Active		
Availability	• Asia Pacific	• Europe	• North America
Features	• Fatigue Resistant • Good Creep Resistance • Good Dimensional Stability	• High Stiffness • High Strength • Homopolymer	• Low Viscosity • Ultrasonic Weldable
Uses	• Engineering Parts • Gears	• General Purpose • Thin-walled Parts	
RoHS Compliance	• Contact Manufacturer		
Appearance	• Natural Color		
Forms	• Pellets		
Processing Method	• Injection Molding		
Multi-Point Data	• Isothermal Stress vs. Strain (ISO 11403-1)	• Shear Modulus vs. Temperature (ISO 11403-2)	• Viscosity vs. Shear Rate (ISO 11403-2)
Part Marking Code (ISO 11469)	• >POM<		
Resin ID (ISO 1043)	• POM		

Physical	Nominal Value (English)	Nominal Value (SI)	Test Method
Specific Gravity			
--	1.42	1.42 g/cm ³	ASTM D792
--	1.42 g/cm ³	1.42 g/cm ³	ISO 1183
Melt Mass-Flow Rate (MFR)			
190°C/1.05 kg	11 g/10 min	11 g/10 min	ASTM D1238
190°C/2.16 kg	25 g/10 min	25 g/10 min	ISO 1133
Melt Volume-Flow Rate (MVR) (190°C/2.16 kg)	1.28 in ³ /10min	21.0 cm ³ /10min	ISO 1133
Molding Shrinkage			
Flow: 24 hr, 0.126 in (3.20 mm)	0.016 to 0.019 in/in	1.6 to 1.9 %	ASTM D955
Across Flow: 24 hr, 0.126 in (3.20 mm)	0.017 to 0.020 in/in	1.7 to 2.0 %	ASTM D955
Across Flow: 0.0787 in (2.00 mm)	1.9 %	1.9 %	ISO 294-4
Flow: 0.0787 in (2.00 mm)	1.9 %	1.9 %	ISO 294-4
Water Absorption			
73°F (23°C), 24 hr	0.43 %	0.43 %	ASTM D570
73°F (23°C), 24 hr	0.56 %	0.56 %	ISO 62
Saturation, 73°F (23°C)	1.4 %	1.4 %	ASTM D570 ISO 62
Equilibrium, 73°F (23°C), 50% RH	0.28 %	0.28 %	ASTM D570
Equilibrium, 73°F (23°C), 50% RH	0.26 %	0.26 %	ISO 62

Mechanical	Nominal Value (English)	Nominal Value (SI)	Test Method
Tensile Modulus			
-40°F (-40°C) ²	570000 psi	3930 MPa	ASTM D638
73°F (23°C) ²	505000 psi	3480 MPa	ASTM D638
212°F (100°C) ²	135000 psi	930 MPa	ASTM D638
73°F (23°C)	479000 psi	3300 MPa	ISO 527-2
Tensile Strength			
Yield, -40°F (-40°C) ²	14100 psi	97.0 MPa	ASTM D638
Yield, 73°F (23°C) ²	10000 psi	69.0 MPa	ASTM D638
Yield, 212°F (100°C) ²	4350 psi	30.0 MPa	ASTM D638
Yield, 73°F (23°C)	10300 psi	71.0 MPa	ISO 527-2
-40°F (-40°C) ²	14100 psi	97.0 MPa	ASTM D638
73°F (23°C) ²	10000 psi	69.0 MPa	ASTM D638
212°F (100°C) ²	4500 psi	31.0 MPa	ASTM D638
Tensile Elongation			
Yield, -40°F (-40°C) ²	9.0 %	9.0 %	ASTM D638
Yield, 73°F (23°C) ²	11 %	11 %	ASTM D638
Yield, 212°F (100°C) ²	9.0 %	9.0 %	ASTM D638
Yield, 73°F (23°C)	13 %	13 %	ISO 527-2
Break, -40°F (-40°C) ²	12 %	12 %	ASTM D638
Break, 73°F (23°C) ²	25 %	25 %	ASTM D638
Break, 212°F (100°C) ²	> 250 %	> 250 %	ASTM D638
Break, 73°F (23°C)	28 %	28 %	ISO 527-2/50
Nominal Tensile Strain at Break			ISO 527-2
73°F (23°C)	23 %	23 %	
Tensile Creep Modulus			ISO 899-1
1 hr	406000 psi	2800 MPa	
1000 hr	218000 psi	1500 MPa	
Flexural Modulus			
-40°F (-40°C)	580000 psi	4000 MPa	ASTM D790
73°F (23°C)	470000 psi	3240 MPa	ASTM D790
212°F (100°C)	120000 psi	830 MPa	ASTM D790
73°F (23°C)	435000 psi	3000 MPa	ISO 178
Flexural Strength			ASTM D790
5.0% Strain, 73°F (23°C)	15200 psi	105 MPa	
Shear Strength (73°F (23°C))			ASTM D732
	9570 psi	66.0 MPa	
Impact			
Charpy Notched Impact Strength			ISO 179/1eA
-40°F (-40°C)	3.8 ft-lb/in ²	8.0 kJ/m ²	
-22°F (-30°C)	3.3 ft-lb/in ²	7.0 kJ/m ²	
73°F (23°C)	3.8 ft-lb/in ²	8.0 kJ/m ²	
Charpy Unnotched Impact Strength			ISO 179/1eU
-22°F (-30°C)	95 ft-lb/in ²	200 kJ/m ²	
73°F (23°C)	95 ft-lb/in ²	200 kJ/m ²	
Notched Izod Impact			
73°F (23°C)	1.3 ft-lb/in	69 J/m	ASTM D256
-40°F (-40°C)	3.8 ft-lb/in ²	8.0 kJ/m ²	ISO 180/1A
73°F (23°C)	3.3 ft-lb/in ²	7.0 kJ/m ²	ISO 180/1A
Unnotched Izod Impact (73°F (23°C))			ASTM D4812
	31 ft-lb/in	1600 J/m	
Hardness			
Rockwell Hardness			
R-Scale	120	120	ASTM D785 ISO 2039-2
M-Scale	92	92	ISO 2039-2

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Thermal	Nominal Value (English)	Nominal Value (SI)	Test Method
Deflection Temperature Under Load			
66 psi (0.45 MPa), Unannealed	325 °F	163 °C	ASTM D648
66 psi (0.45 MPa), Unannealed	324 °F	162 °C	ISO 75-2/B
264 psi (1.8 MPa), Unannealed	221 °F	105 °C	ASTM D648
264 psi (1.8 MPa), Unannealed	201 °F	94.0 °C	ISO 75-2/A
Melting Temperature ³	352 °F	178 °C	ISO 11357-3 ASTM D3418
CLTE			
Flow: -40 to 86°F (-40 to 30°C)	0.000058 in/in/°F	0.00010 cm/cm/°C	ASTM E831 ISO 11359-2
Flow: 73 to 131°F (23 to 55°C)	0.000068 in/in/°F	0.00012 cm/cm/°C	ASTM E831
Flow: 140 to 221°F (60 to 105°C)	0.000076 in/in/°F	0.00014 cm/cm/°C	ASTM E831 ISO 11359-2
Flow: 221 to 302°F (105 to 150°C)	0.000083 in/in/°F	0.00015 cm/cm/°C	ASTM E831 ISO 11359-2
Flow: 73 to 131°F (23 to 55°C)	0.000067 in/in/°F	0.00012 cm/cm/°C	ISO 11359-2
Transverse: 73 to 131°F (23 to 55°C)	0.000067 in/in/°F	0.00012 cm/cm/°C	ASTM E831 ISO 11359-2
Electrical	Nominal Value (English)	Nominal Value (SI)	Test Method
Surface Resistivity			
--	5.0E+14 ohms	5.0E+14 ohms	ASTM D257
--	> 1.0E+15 ohms	> 1.0E+15 ohms	IEC 60093
Volume Resistivity			
73°F (23°C)	2.0E+14 ohm·cm	2.0E+14 ohm·cm	ASTM D257
--	1.0E+14 ohm·cm	1.0E+14 ohm·cm	IEC 60093
Dielectric Strength			
73°F (23°C), 0.126 in (3.20 mm) ⁴	440 V/mil	17 kV/mm	ASTM D149
73°F (23°C), 0.0394 in (1.00 mm)	810 V/mil	32 kV/mm	IEC 60243-1
Dielectric Constant			
73°F (23°C), 1 MHz	3.60	3.60	ASTM D150
73°F (23°C), 100 Hz	3.80	3.80	IEC 60250
73°F (23°C), 1 MHz	3.80	3.80	IEC 60250
Dissipation Factor			
73°F (23°C), 1 MHz	0.0060	0.0060	ASTM D150
73°F (23°C), 100 Hz	0.018	0.018	IEC 60250
73°F (23°C), 1 MHz	0.0050	0.0050	IEC 60250
Comparative Tracking Index	600 V	600 V	IEC 60112
Flammability	Nominal Value (English)	Nominal Value (SI)	Test Method
Flame Rating - UL			
0.0295 in (0.750 mm)	HB	HB	UL 94
0.0591 in (1.50 mm)	HB	HB	
0.118 in (3.00 mm)	HB	HB	
Flammability Classification			
0.0295 in (0.750 mm)	HB	HB	IEC 60695-11-10, -20
0.0591 in (1.50 mm)	HB	HB	
0.118 in (3.00 mm)	HB	HB	
Oxygen Index	23 %	23 %	ISO 4589-2

UL 746	Nominal Value (English)	Nominal Value (SI)	Test Method
RTI Str			UL 746
0.0295 in (0.750 mm)	122 °F	50.0 °C	
0.0591 in (1.50 mm)	194 °F	90.0 °C	
0.118 in (3.00 mm)	203 °F	95.0 °C	
RTI Imp			UL 746
0.0295 in (0.750 mm)	122 °F	50.0 °C	
0.0591 in (1.50 mm)	185 °F	85.0 °C	
0.118 in (3.00 mm)	194 °F	90.0 °C	
RTI Elec			UL 746
0.0295 in (0.750 mm)	122 °F	50.0 °C	
0.0591 in (1.50 mm)	230 °F	110 °C	
0.118 in (3.00 mm)	230 °F	110 °C	
Comparative Tracking Index (CTI)			UL 746
0.118 in (3.00 mm)	600 V	600 V	

Injection	Nominal Value (English)	Nominal Value (SI)
Drying Temperature	176 °F	80.0 °C
Drying Time	2.0 to 4.0 hr	2.0 to 4.0 hr
Suggested Max Moisture	< 0.20 %	< 0.20 %
Processing (Melt) Temp	410 to 428 °F	210 to 220 °C
Melt Temperature, Optimum		
Injection Molding	419 °F	215 °C
Mold Temperature	176 to 212 °F	80.0 to 100 °C
Mold Temperature, Optimum		
Injection Molding	194 °F	90 °C
Drying Recommended	Not normally required unless moisture content of resin exceeds recommended level	Not normally required unless moisture content of resin exceeds recommended level

Notes

- ¹ Typical properties: these are not to be construed as specifications.
- ² 0.20 in/min (5.0 mm/min)
- ³ 10°C/min
- ⁴ Method A (Short-Time)