Delrin® 500P NC010

ACETAL RESIN

DuPont Performance Polymers

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Technical Data

Product Description

anoral			
General Material Status	Commercial: Active		
Literature ¹	 Processing - Injection Molding (English) Typical Processing for DuPont Engineering Polymers (English) White Paper - Property Advantages of Delrin® Acetal Homopolymer - a guide for design enginee (English) 		
UL Yellow Card ²	• E41938-257616		
Search for UL Yellow Card	 DuPont Performance Polyn Delrin® 	ners	
Availability	 Africa & Middle East Asia Pacific	EuropeLatin America	North America
Additive	Lubricant	 Mold Release 	
Features	 Good Processability 	 Medium Viscosity 	
RoHS Compliance	 Contact Manufacturer 		
Forms	Pellets		
Processing Method	 Injection Molding 		
Multi-Point Data	 Isothermal Stress vs. Strair (ISO 11403-1) Secant Modulus vs. Strain 11403-1) 	 Shear Modulus vs. Temperature (ISO 11403-1) Shear Stress vs. Shear Rate (ISO 11403-1) 	 Specific Volume vs Temperature (ISO 11403-2) Viscosity vs. Shear Rate (ISC 11403-2)
Part Marking Code (ISO 11469)	• >POM<		
Resin ID (ISO 1043)	• POM		

Tensile Modulus3100 MPaISO 527-2Tensile Stress (Yield)71.0 MPaISO 527-2Tensile Strain (Yield)17 %ISO 527-2Nominal Tensile Strain at Break30 %ISO 527-2Tensile Creep Modulus30 %ISO 527-21 hr2800 MPaISO 899-11 000 hr1600 MPa1Flexural Modulus3000 MPaISO 178Flexural Stress (3.5% Strain)80.0 MPaISO 178Poisson's Ratio0.37ISO 527-2	Physical	Nominal Value Unit	Test Method
Melt Volume-Flow Rate (MVR) (190°C/2.16 kg) 13.0 cm³/10min ISO 1133 Molding Shrinkage ISO 294-4 Across Flow 1.9 % Flow 2.0 % Water Absorption ISO 62 Saturation, 23°C, 2.00 mm 1.4 % Equilibrium, 23°C, 2.00 mm, 50% RH 0.40 % Mechanical Nominal Value Unit Test Method Tensile Modulus 3100 MPa ISO 527-2 Tensile Stress (Yield) 71.0 MPa ISO 527-2 Tensile Strain (Yield) 17 % ISO 527-2 Nominal Tensile Strain at Break 300 % ISO 527-2 Nominal Tensile Strain at Break 300 % ISO 527-2 Tensile Creep Modulus ISO 899-1 1 hr 1 hr 2800 MPa ISO 899-1 1 hr 2800 MPa ISO 899-1 1 000 hr 1600 MPa ISO 178 Flexural Modulus 3000 MPa ISO 178 Poisson's Ratio 0.37 ISO 527-2 Impact 0.37 ISO 527-2 Impact Nominal Value Unit	Density	1.42 g/cm ³	ISO 1183
Molding ShrinkageISO 294-4Across Flow1.9 %Flow2.0 %Water AbsorptionISO 62Saturation, 23°C, 2.00 mm1.4 %Equilibrium, 23°C, 2.00 mm, 50% RH0.40 %MechanicalNominal Value UnitTest MethodTensile Modulus3100 MPaISO 527-2Tensile Stress (Yield)71.0 MPaISO 527-2Tensile Stress (Yield)71.0 MPaISO 527-2Tensile Strain at Break30 %ISO 527-2Tensile Creep Modulus17 %ISO 527-21 hr2800 MPaISO 527-21 hr1600 MPaISO 527-2Tensile Strain at Break30 %ISO 527-2Tensile Strain at Break30 %ISO 527-2Tensile Strain at Break300 MPaISO 1781 hr2800 MPaISO 178Flexural Modulus3000 MPaISO 178Flexural Modulus3000 MPaISO 178Flexural Stress (3.5% Strain)80.0 MPaISO 178Poisson's Ratio0.37ISO 527-2ImpactNominal Value UnitTest MethodCharpy Notched Impact StrengthISO 179/1eA-30°C8.0 kJ/m²	Melt Mass-Flow Rate (MFR)	15 g/10 min	ISO 1133
Across Flow1.9 % 2.0 %Water AbsorptionISO 62Saturation, 23°C, 2.00 mm, 50% RH0.40 %MechanicalNominal Value UnitTensile Modulus3100 MPaTensile Modulus3100 MPaISO 527-2Tensile Strain (Yield)71.0 MPaISO 527-2Tensile Strain at Break30 %ISO 527-2Tensile Creep ModulusISO 527-2Tensile Creep ModulusISO 527-2Tensile Strain at Break30 %ISO 899-11 hr1 hr2800 MPa1000 hr1600 MPaFlexural Modulus3000 MPaISO 178Flexural Modulus0.37ISO 527-2Impact0.37Iso 527-2Tensile Creep NotureISO 899-11 hr2800 MPa1000 hr1000 hr1000 hrFlexural Modulus3000 MPaISO 178Flexural Stress (3.5% Strain)80.0 MPaISO 178Poisson's Ratio0.37Iso 179/1eA-30°C8.0 kJ/m²	Melt Volume-Flow Rate (MVR) (190°C/2.16 kg)	13.0 cm³/10min	ISO 1133
Flow 2.0% Water Absorption ISO 62 Saturation, 23°C, 2.00 mm, 50% RH 0.40 % Mechanical Nominal Value Unit Test Method Tensile Modulus 3100 MPa ISO 527-2 Tensile Stress (Yield) 71.0 MPa ISO 527-2 Tensile Strain (Yield) 17 % ISO 527-2 Tensile Strain at Break 30 % ISO 527-2 Tensile Creep Modulus ISO 527-2 ISO 899-1 1 hr 2800 MPa ISO 899-1 1 hr 2800 MPa ISO 178 1000 hr 1600 MPa ISO 178 Flexural Modulus 3000 MPa ISO 178 Poisson's Ratio 0.37 ISO 527-2 Impact Nominal Value Unit Test Method Charpy Notched Impact Strength 0.37 ISO 527-2 Charpy Notched Impact Strength S0 179/1eA	Molding Shrinkage		ISO 294-4
Water AbsorptionISO 62Saturation, 23°C, 2.00 mm, 50% RH0.40 %MechanicalNominal Value UnitTest MethodTensile Modulus3100 MPaISO 527-2Tensile Stress (Yield)71.0 MPaISO 527-2Tensile Strain (Yield)17 %ISO 527-2Nominal Tensile Strain at Break30 %ISO 527-2Tensile Creep ModulusISO 899-11 hr1 hr2800 MPaISO 899-11 hr1600 MPaISO 178Flexural Modulus3000 MPaISO 178Flexural Stress (3.5% Strain)80.0 MPaISO 178Poisson's Ratio0.37ISO 527-2ImpactNominal Value UnitTest MethodCharpy Notched Impact StrengthISO 179/1eA-30°C8.0 kJ/m²	Across Flow	1.9 %	
Saturation, 23°C, 2.00 mm1.4 %Equilibrium, 23°C, 2.00 mm, 50% RH0.40 %MechanicalNominal Value UnitTest MethodTensile Modulus3100 MPaISO 527-2Tensile Stress (Yield)71.0 MPaISO 527-2Tensile Strain (Yield)17 %ISO 527-2Nominal Tensile Strain at Break30 %ISO 527-2Tensile Creep ModulusISO 899-1ISO 899-11 hr2800 MPaISO 899-11000 hr1600 MPaISO 178Flexural Modulus3000 MPaISO 178Flexural Stress (3.5% Strain)80.0 MPaISO 178Poisson's Ratio0.37ISO 527-2ImpactNominal Value UnitTest MethodCharpy Notched Impact StrengthISO 179/1eA-30°C8.0 kJ/m²	Flow	2.0 %	
Equilibrium, 23°C, 2.00 mm, 50% RH0.40 %MechanicalNominal Value UnitTest MethodTensile Modulus3100 MPaISO 527-2Tensile Stress (Yield)71.0 MPaISO 527-2Tensile Strain (Yield)17 %ISO 527-2Nominal Tensile Strain at Break30 %ISO 527-2Tensile Creep ModulusISO 899-1ISO 899-11 hr2800 MPaISO 899-11 hr1600 MPaISO 1787000 hr1600 MPaISO 178Flexural Modulus3000 MPaISO 178Flexural Stress (3.5% Strain)80.0 MPaISO 178Poisson's Ratio0.37ISO 527-2ImpactNominal Value UnitTest MethodCharpy Notched Impact StrengthISO 179/1eA-30°C8.0 kJ/m²ISO 179/1eA	Water Absorption		ISO 62
MechanicalNominal Value UnitTest MethodTensile Modulus3100 MPaISO 527-2Tensile Stress (Yield)71.0 MPaISO 527-2Tensile Strain (Yield)17 %ISO 527-2Nominal Tensile Strain at Break30 %ISO 527-2Tensile Creep Modulus17 %ISO 527-21 hr2800 MPaISO 899-11 hr1600 MPa150 178Flexural Modulus3000 MPaISO 178Flexural Stress (3.5% Strain)80.0 MPaISO 178Poisson's Ratio0.37ISO 527-2ImpactNominal Value UnitTest MethodCharpy Notched Impact StrengthISO 179/1eA-30°C8.0 kJ/m²	Saturation, 23°C, 2.00 mm	1.4 %	
Tensile Modulus3100 MPaISO 527-2Tensile Stress (Yield)71.0 MPaISO 527-2Tensile Strain (Yield)17 %ISO 527-2Nominal Tensile Strain at Break30 %ISO 527-2Tensile Creep Modulus30 %ISO 527-21 hr2800 MPaISO 899-11 hr1600 MPa1600 MPa1000 hr1600 MPaISO 178Flexural Modulus3000 MPaISO 178Flexural Stress (3.5% Strain)80.0 MPaISO 178Poisson's Ratio0.37ISO 527-2ImpactNominal Value UnitTest MethodCharpy Notched Impact StrengthISO 179/1eA-30°C8.0 kJ/m²	Equilibrium, 23°C, 2.00 mm, 50% RH	0.40 %	
Tensile Stress (Yield)71.0 MPaISO 527-2Tensile Strain (Yield)17 %ISO 527-2Nominal Tensile Strain at Break30 %ISO 527-2Tensile Creep Modulus30 %ISO 527-21 hr2800 MPaISO 899-11 000 hr1600 MPa1000 hr1600 MPaFlexural Modulus3000 MPaISO 178Flexural Stress (3.5% Strain)80.0 MPaISO 178Poisson's Ratio0.37ISO 527-2ImpactNominal Value UnitTest MethodCharpy Notched Impact StrengthISO 179/1eA-30°C8.0 kJ/m²	Mechanical	Nominal Value Unit	Test Method
Tensile Strain (Yield)17 %ISO 527-2Nominal Tensile Strain at Break30 %ISO 527-2Tensile Creep ModulusISO 899-11 hr2800 MPa1000 hr1600 MPa1000 hr1600 MPaFlexural Modulus3000 MPaFlexural Stress (3.5% Strain)80.0 MPaPoisson's Ratio0.37ImpactNominal Value UnitCharpy Notched Impact StrengthISO 179/1eA-30°C8.0 kJ/m²	Tensile Modulus	3100 MPa	ISO 527-2
Nominal Tensile Strain at Break30 %ISO 527-2Tensile Creep ModulusISO 899-11 hr2800 MPa1000 hr1600 MPaFlexural Modulus3000 MPaFlexural Stress (3.5% Strain)80.0 MPaPoisson's Ratio0.37ImpactNominal Value UnitCharpy Notched Impact StrengthISO 179/1eA-30°C8.0 kJ/m²	Tensile Stress (Yield)	71.0 MPa	ISO 527-2
Tensile Creep Modulus ISO 899-1 1 hr 2800 MPa 1000 hr 1600 MPa Flexural Modulus 3000 MPa Flexural Stress (3.5% Strain) 80.0 MPa Poisson's Ratio 0.37 Impact Nominal Value Unit Charpy Notched Impact Strength ISO 179/1eA -30°C 8.0 kJ/m²	Tensile Strain (Yield)	17 %	ISO 527-2
1 hr 2800 MPa 1000 hr 1600 MPa Flexural Modulus 3000 MPa ISO 178 Flexural Stress (3.5% Strain) 80.0 MPa ISO 178 Poisson's Ratio 0.37 ISO 527-2 Impact Nominal Value Unit Test Method Charpy Notched Impact Strength ISO 179/1eA -30°C 8.0 kJ/m²	Nominal Tensile Strain at Break	30 %	ISO 527-2
1000 hr1600 MPa1000 hr1600 MPaFlexural Modulus3000 MPaStress (3.5% Strain)80.0 MPaPoisson's Ratio0.37Impact0.37Charpy Notched Impact StrengthISO 179/1eA-30°C8.0 kJ/m²	Tensile Creep Modulus		ISO 899-1
Flexural Modulus3000 MPaISO 178Flexural Stress (3.5% Strain)80.0 MPaISO 178Poisson's Ratio0.37ISO 527-2ImpactNominal Value UnitTest MethodCharpy Notched Impact StrengthISO 179/1eA-30°C8.0 kJ/m²	1 hr	2800 MPa	
Flexural Stress (3.5% Strain) 80.0 MPa ISO 178 Poisson's Ratio 0.37 ISO 527-2 Impact Nominal Value Unit Test Method Charpy Notched Impact Strength -30°C ISO 179/1eA	1000 hr	1600 MPa	
Poisson's Ratio 0.37 ISO 527-2 Impact Nominal Value Unit Test Method Charpy Notched Impact Strength ISO 179/1eA -30°C 8.0 kJ/m²	Flexural Modulus	3000 MPa	ISO 178
Impact Nominal Value Unit Test Method Charpy Notched Impact Strength ISO 179/1eA -30°C 8.0 kJ/m²	Flexural Stress (3.5% Strain)	80.0 MPa	ISO 178
Charpy Notched Impact Strength ISO 179/1eA -30°C 8.0 kJ/m ²	Poisson's Ratio	0.37	ISO 527-2
-30°C 8.0 kJ/m ²	Impact	Nominal Value Unit	Test Method
	Charpy Notched Impact Strength		ISO 179/1eA
23°C 9.0 kJ/m²	-30°C	8.0 kJ/m ²	
	23°C	9.0 kJ/m ²	

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Impact	Nominal Value Unit	Test Method
Charpy Unnotched Impact Strength		ISO 179/1eU
-30°C	280 kJ/m ²	
23°C	320 kJ/m ²	
Notched Izod Impact Strength		ISO 180/1A
-30°C	8.0 kJ/m ²	
23°C	9.0 kJ/m ²	
Unnotched Izod Impact Strength		ISO 180/1U
-30°C	250 kJ/m ²	
23°C	280 kJ/m²	
Multi-Axial Instrumented Impact Energy		ISO 6603-2
23°C	3.00 J	
Multi-Axial Instrumented Impact Peak Force		ISO 6603-2
23°C	2000 N	
Hardness	Nominal Value Unit	Test Method
Rockwell Hardness		ISO 2039-2
M-Scale	92	
R-Scale	120	
Ball Indentation Hardness (H 358/30)	192 MPa	ISO 2039-1
Thermal	Nominal Value Unit	Test Method
Heat Deflection Temperature		
0.45 MPa, Unannealed	160 °C	ISO 75-2/B
1.8 MPa, Unannealed	95.0 °C	ISO 75-2/A
Vicat Softening Temperature	155 °C	ISO 306/B50
Ball Pressure Test (165°C)	Pass	IEC 60309-1
Melting Temperature ⁴	178 °C	ISO 11357-3
CLTE		ISO 11359-2
Flow	1.1E-4 cm/cm/°C	100 11000 1
Transverse	1.1E-4 cm/cm/°C	
Annealing Temperature	160 °C	
Annealing Time - Optional	30.0 min/mm	
Effective Thermal Diffusivity	9.00E-8 m²/s	
Electrical	Nominal Value Unit	Test Method
Surface Resistivity	4.0E+14 ohms	IEC 60093
Volume Resistivity	2.0E+14 ohms·cm	IEC 60093
Electric Strength	44 kV/mm	IEC 60243-1
Relative Permittivity		IEC 60250
100 Hz	3.80	120 00200
1 MHz	3.80	
Dissipation Factor	5.00	IEC 60250
100 Hz	9.0E-3	ILC 00230
1 MHz	5.5E-3	
Comparative Tracking Index	600 V	IEC 60112
Flammability	Nominal Value Unit	Test Method
Burning Rate ⁵ (1.00 mm)	20 mm/min	ISO 3795
	201111/11111	
Flame Rating		UL 94 IEC 60695-11-10, -20
0.800 mm	HB	
1.50 mm	HB	100 4500 0
Oxygen Index	22 %	ISO 4589-2
Fogging	00.04	ISO 6452
F-value (refraction)	90 %	
G-value (condensate)	3.5E-4 g	
Fill Analysis	Nominal Value Unit	
Thermal Conductivity of Melt	0.24 W/m/K	
4		Form No. TDS-36

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Additional Information	Nominal Value Unit	Test Method
Emission	< 8.00 mg/kg	VDA 275
Emission of Organic Compounds	3.10 µgC/g	VDA 277
Injection	Nominal Value Unit	
Drying Temperature	80.0 °C	
Drying Time	2.0 to 4.0 hr	

Suggested Max Moisture	0.20 %
Processing (Melt) Temp	210 to 220 °C
Melt Temperature, Optimum	215 °C
Mold Temperature	80.0 to 100 °C
Mold Temperature, Optimum	90 °C
Holding Pressure	80.0 to 100 MPa
Drying Recommended	yes
Hold Pressure Time	8.00 s/mm

Notes

¹ These links provide you with access to supplier literature. We work hard to keep them up to date; however you may find the most current literature from the supplier.

² A UL Yellow Card contains UL-verified flammability and electrical characteristics. UL Prospector continually works to link Yellow Cards to individual plastic materials in Prospector, however this list may not include all of the appropriate links. It is important that you verify the association between these Yellow Cards and the plastic material found in Prospector. For a complete listing of Yellow Cards, visit the UL Yellow Card Search.

³ Typical properties: these are not to be construed as specifications.

⁴ 10°C/min

⁵ FMVSS 302



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Where to Buy

Supplier

DuPont Performance Polymers Wilmington, DE USA Telephone: 302-999-4592 Web: http://plastics.dupont.com/

Distributor

Biesterfeld Plastic GmbH

Biesterfeld Plastic GmbH is a Pan European distribution company. Contact Biesterfeld Plastic GmbH for availability of individual products by country.

Telephone: +49-40-32008-0

Web: http://www.biesterfeld-plastic.com/

Availability: Algeria, Austria, Belgium, Bosnia and Herzegovina, Brazil, Bulgaria, Croatia, Cyprus, Czech Republic, Egypt, France, Germany, Greece, Hungary, Italy, Libyan Arab Jamahiriya, Luxembourg, Mauritania, Morocco, Netherlands, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Switzerland, Tunisia, Turkey

CCC Plastics

Telephone: 800-465-6917 Web: http://www.cccplastics.com/ Availability: Canada

Distrupol Ltd

Distrupol Ltd is a Pan European distribution company. Contact Distrupol Ltd for availability of individual products by country. Telephone: 08452003040 Web: http://www.distrupol.com/ Availability: Denmark, Finland, Ireland, Norway, Sweden, United Kingdom

PolyOne Distribution

PolyOne Distribution is a global distribution company. Contact PolyOne Distribution for availability of individual products by country. Telephone: 800-894-4266 Web: http://polyonedistribution.com/ Availability: Global



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