

DuPont™ Rynite® PET

thermoplastic polyester resin

Rynite® 935 NC010

Rynite® 935 NC010 is a 35% mica/glass reinforced modified polyethylene terephthalate resin with exceptionally low warpage, excellent electrical properties, high stiffness, and high heat resistance.

Property	Test Method	Units	Value
Identification			
Resin Identification	ISO 1043		PET-(MD+GF)35
Part Marking Code	ISO 11469		>PET-(MD+GF)35<
Mechanical			
Stress at Break	ISO 527	MPa (kpsi)	85 (12.3)
Tensile Strength	ASTM D 638	MPa (kpsi)	
-40°C (-40°F)			121 (17.5)
23°C (73°F)			89.6 (13.0)
90°C (194°F)			40.7 (5.9)
150°C (300°F)			29.7 (4.3)
Strain at Break	ISO 527	%	2
Elongation at Break	ASTM D 638	%	
-40°C (-40°F)			1.8
23°C (73°F)			2.0
90°C (194°F)			5.0
150°C (300°F)			7.0
Tensile Modulus	ASTM D 638	MPa (kpsi)	
-40°C (-40°F)			11200 (1620)
23°C (73°F)			9930 (1440)
90°C (194°F)			3170 (460)
150°C (300°F)			2420 (351)

Contact DuPont for Material Safety Data Sheet, general guides and/or additional information about ventilation, handling, purging, drying, etc.

ISO Mechanical properties measured at 4.0mm, ISO Electrical properties measured at 2.0mm, and all ASTM properties measured at 3.2mm.

Test temperatures are 23°C unless otherwise stated.

Shrinkage generated per ISO 294-4 based on 60 X 60mm end-gated plaques or ASTM D 955 based on 76 X 127mm (3 X 5in) end-gated plaques.

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Mechanical			
Tensile Modulus	ISO 527	MPa (kpsi)	10200 (1480)
Tensile Creep Modulus	ISO 899	MPa (kpsi)	
1h			9350 (1360)
1000h			7690 (1115)
Shear Strength	ASTM D 732	MPa (kpsi)	53.7 (7.8)
Poissons Ratio			0.38
Flexural Modulus	ASTM D 790	MPa (kpsi)	
-40°C (-40°F)			11700 (1700)
23°C (73°F)			9600 (1400)
90°C (194°F)			3370 (489)
150°C (300°F)			2200 (320)
Flexural Modulus	ISO 178	MPa (kpsi)	
-40°C (-40°F)			11800 (1710)
23°C (73°F)			9100 (1320)
93°C (200°F)			3400 (490)
150°C (300°F)			2200 (320)
Flexural Strength	ASTM D 790	MPa (kpsi)	
-40°C (-40°F)			176 (25.5)
23°C (73°F)			141 (20.5)
90°C (194°F)			62.1 (9.0)
150°C (300°F)			42.7 (6.2)
Compressive Strength	ASTM D 695	MPa (kpsi)	141 (20.5)
Flexural Fatigue	ASTM D 671	MPa (kpsi)	
Cycles 10E6			33.1 (4.8)
Flexural Creep Strain	ASTM D 2990	%	
23°C (73°F), 27.6MPa (4000psi)			0.50
60°C (140°F), 27.6MPa (4000psi)			0.91
125°C (257°F), 27.6MPa (4000psi)			2.50

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Mechanical				
Notched Izod Impact Strength -30°C (-22°F)	ISO 180/1A	kJ/m ²	4	
			23°C (73°F)	6
Izod Impact -40°C (-40°F)	ASTM D 256	J/m (ft lb/in)	43 (0.8)	
			23°C (73°F)	64 (1.2)
Unnotched Izod Impact Strength Unnotched Impact	ISO 180/1U	kJ/m ²	30	
			ASTM D 4812	J/m (ft lb/in)
23°C (73°F)	425 (8.0)			
Notched Charpy Impact Strength -30°C (-22°F)	ISO 179/1eA	kJ/m ²	4	
			23°C (73°F)	6
Unnotched Charpy Impact Strength -30°C (-22°F)	ISO 179/1eU	kJ/m ²	20	
			23°C (73°F)	25
Thermal				
Deflection Temperature 0.45MPa	ISO 75f	°C (°F)	235 (455)	
			1.80MPa	200 (392)
Melting Temperature 10°C/min	ISO 11357-1/-3	°C (°F)	252 (486)	
CLTE, Normal -40 - 23°C (-40 - 73°F)	ISO 11359-1/-2	E-4/C (E-4/F)	0.53 (0.29)	
			23 - 55°C (73 - 130°F)	0.52 (0.29)
			23 - 55°C (73 - 130°F), 2.0mm	0.74 (0.41)
			55 - 160°C (130 - 320°F)	0.81 (0.45)

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Property	Test Method	Units	Value
Thermal			
CLTE, Parallel	ISO 11359-1/-2	E-4/C (E-4/F)	
-40 - 23°C (-40 - 73°F)			0.26 (0.14)
23 - 55°C (73 - 130°F)			0.16 (0.09)
23 - 55°C (73 - 130°F), 2.0mm			0.23 (0.13)
55 - 160°C (130 - 320°F)			0.14 (0.08)
Thermal Conductivity	ASTM C 177	W/m K (Btu in/h ft ² F)	0.26 (1.8)
Vicat Softening Temperature	ISO 306	°C (°F)	
50N			204 (399)
Electrical			
Surface Resistivity	IEC 60093	ohm	1E14
Relative Permittivity	IEC 60250		
1E2 Hz			4.5
1E6 Hz			4.1
Volume Resistivity	IEC 60093	ohm m	1E13
Dielectric Strength, Short Time	ASTM D 149	kV/mm (V/mil)	
23°C (73°F), 500 V/s, in oil, 1.6mm (0.062in)			29.5 (750)
23°C (73°F), 500 V/s, in oil, 3.2mm (0.126in)			23.5 (600)
95°C (200°F), 500 V/s, in oil, 1.6mm (0.062in)			25.5 (650)
95°C (200°F), 500 V/s, in oil, 3.2mm (0.126in)			19.5 (495)
150°C (300°F), 500 V/s, in oil, 1.6mm (0.062in)			14.5 (375)
150°C (300°F), 500 V/s, in oil, 3.2mm (0.126in)			12.0 (300)
Dielectric Strength, Step by Step	ASTM D 149	kV/mm (V/mil)	
3.2mm (0.126in)			21 (530)
Dielectric Constant	ASTM D 150		
1E3 Hz			3.8
1E6 Hz			3.7
Dissipation Factor	ASTM D 150		
1E3 Hz			0.008
1E6 Hz			0.010

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Property	Test Method	Units	Value
Electrical			
Dissipation Factor	IEC 60250	E-4	
1E2 Hz			300
1E6 Hz			250
Electric Strength	IEC 60243-1	kV/mm (V/mil)	
1.0mm			39 (990)
Arc Resistance	ASTM D 495	s	120-180
Arc Resistance	UL 746A	s	
Plate 4mm			131
CTI	IEC 60112	V	300
CTI	UL 746A	V	250
Flammability			
Flammability Classification	IEC 60695-11-10		
0.75mm			HB
Flammability Classification	UL94		
0.75mm			HB
Oxygen Index	ISO 4589-1/-2	%	21
Glow Wire Flammability Index	IEC 60695-2-12	°C	
0.75mm			775
1.5mm			775
3.0mm			825
Glow Wire Ignition Temperature	IEC 60695-2-13	°C	
0.75mm			800
1.5mm			800
3.0mm			850
High Amperage Arc Ignition Resistance	UL 746A	arcs	
0.75mm			60
1.5mm			66
3.0mm			60

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Flammability			
High Voltage Arc Tracking Rate	UL 746A	mm/min	10-25
Hot Wire Ignition		s	
0.75mm			30
1.5mm			60
3.0mm			120
Temperature Index			
RTI, Electrical	UL 746B	°C	
0.75mm			140
RTI, Impact	UL 746B	°C	
0.75mm			140
RTI, Strength	UL 746B	°C	
0.75mm			140
Other			
Density	ISO 1183	kg/m ³ (g/cm ³)	1580 (1.58)
Hardness, Rockwell	ASTM D 785		
Scale M			75
Scale R			115
Hardness, Rockwell	ISO 2039/2		
Scale M			75
Scale R			115
Coefficient of Friction	ASTM D 1894		
Self			0.21
Self, static			0.21
Steel			0.19
Steel, static			0.19
Water Absorption	ASTM D 570	%	
50%RH,23°C,24h			

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Other			
Water Absorption	ISO 62, Similar to	%	
Equilibrium 50%RH			0.13
Saturation, immersed			0.83
Molding Shrinkage	ISO 294-4	%	
Normal, 2.0mm			0.7
Normal, Annealed			0.9
Parallel, 2.0mm			0.3
Parallel, Annealed			0.35
Mold Shrinkage		%	
Flow, 1.57mm (0.062in)			0.28
Flow, 3.2mm (0.126in)			0.35
Transverse, 1.57mm (0.062in)			0.52
Transverse, 3.2mm (0.126in)			0.65
Processing			
Melt Temperature Range		°C (°F)	280-300 (535-570)
Melt Temperature Optimum		°C (°F)	285 (545)
Mold Temperature Range		°C (°F)	>95 (>205)
Mold Temperature Optimum		°C (°F)	110 (230)
Drying Time, Dehumidified Dryer		h	4
Drying Temperature		°C (°F)	120 (250)
Processing Moisture Content		%	<0.02
Snake Flow		mm	
90MPa, 5x0.30mm			12
90MPa, 5x0.50mm			43
90MPa, 5x0.75mm			87
90MPa, 5x1.00mm			132

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