

# DuPont™ Delrin® 100ST NC010

## ACETAL RESIN

### Product Information

Common features of Delrin® acetal resins include mechanical and physical properties such as high mechanical strength and rigidity, excellent fatigue and impact resistance, as well as resistance to moisture, gasoline, lubricants, solvents, and many other neutral chemicals. Delrin® acetal resins also have excellent dimensional stability and good electrical insulating characteristics. They are naturally resilient, self-lubricating, and available in a variety of colors and speciality grades.

Delrin® acetal resin typically is used in demanding applications in the automotive, domestic appliances, sports, industrial engineering, electronics, and consumer goods industries.

**Delrin® 100ST is a super-toughened, high viscosity acetal homopolymer grade with superior impact resistance. It is designed for highly stressed parts where outstanding toughness is essential.**

General information	Value	Unit	Test Standard
Resin Identification	POM-HI	-	ISO 1043
Part Marking Code	POM-HI	-	ISO 11469
Rheological properties	Value	Unit	Test Standard
Melt volume-flow rate	1.7	cm <sup>3</sup> /10min	ISO 1133
Temperature	190	°C	ISO 1133
Load	2.16	kg	ISO 1133
Melt mass-flow rate	2	g/10min	ISO 1133
Molding shrinkage, parallel	0.8	%	ISO 294-4, 2577
Molding shrinkage, normal	1.1	%	ISO 294-4, 2577
Mechanical properties	Value	Unit	Test Standard
Tensile Modulus	1400	MPa	ISO 527-1/-2
Yield stress	41	MPa	ISO 527-1/-2
Yield strain	30	%	ISO 527-1/-2
Nominal strain at break	>50	%	ISO 527-1/-2
Flexural Modulus	1100	MPa	ISO 178
Flexural Stress at 3.5%	34	MPa	ISO 178
Tensile creep modulus			ISO 899-1
1h	1100	MPa	
1000h	550	MPa	
Charpy impact strength			ISO 179/1eU
73°F	N	kJ/m <sup>2</sup>	
-22°F	N	kJ/m <sup>2</sup>	
Charpy notched impact strength			ISO 179/1eA
73°F	90	kJ/m <sup>2</sup>	
-22°F	18	kJ/m <sup>2</sup>	
Izod notched impact strength			ISO 180/1A
73°F	90	kJ/m <sup>2</sup>	
-40°F	20	kJ/m <sup>2</sup>	
Hardness, Rockwell, M-scale	58	-	ISO 2039-2
Hardness, Rockwell, R-scale	105	-	ISO 2039-2
Coefficient of sliding friction, 1h against itself	0.32	-	ASTM 1894
Specific wear rate, against itself	60	E-6 mm <sup>3</sup> /Nm	ASTM 1894
Thermal properties	Value	Unit	Test Standard
Melting temperature, 18°F/min	178	°C	ISO 11357-1/-3
Glass transition temperature, 18°F/min	-35	°C	ISO 11357-1/-2
Temp. of deflection under load			ISO 75-1/-2
260 psi	60	°C	
65 psi	100	°C	
Vicat softening temperature, 90°F, 2 lbf	170	°C	ISO 306
Coeff. of linear therm. expansion, parallel	130	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	140	E-6/K	ISO 11359-1/-2
Eff. thermal diffusivity	6E-8	m <sup>2</sup> /s	-
RTI, electrical			UL 746B
60mil	105	°C	
120mil	105	°C	

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RTI, impact			UL 746B
60mil	85	°C	
120mil	85	°C	
RTI, strength			UL 746B
60mil	85	°C	
120mil	85	°C	
<b>Flammability</b>	<b>Value</b>	<b>Unit</b>	<b>Test Standard</b>
Burning Behav. at 60mil nom. thickn.	HB	class	IEC 60695-11-10
Thickness tested	1.5	mm	IEC 60695-11-10
UL recognition	yes	-	UL 94
Glow Wire Flammability Index			IEC 60695-2-1/2
40mil	550	°C	
80mil	550	°C	
120mil	550	°C	
FMVSS Class	B	-	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	41	mm/min	ISO 3795 (FMVSS 302)
<b>Electrical properties</b>	<b>Value</b>	<b>Unit</b>	<b>Test Standard</b>
Relative permittivity			IEC 60250
100Hz	4.4	-	
1MHz	3.8	-	
Volume resistivity	1E12	Ohm*m	IEC 60093
Surface resistivity	1E14	Ohm	IEC 60093
Comparative tracking index	600	-	IEC 60112
<b>Other properties</b>	<b>Value</b>	<b>Unit</b>	<b>Test Standard</b>
Humidity absorption, 80mil	0.35	%	Sim. to ISO 62
Water absorption, 80mil	0.9	%	Sim. to ISO 62
Density	1340	kg/m <sup>3</sup>	ISO 1183
Density of melt	1140	kg/m <sup>3</sup>	-
<b>VDA Properties</b>	<b>Value</b>	<b>Unit</b>	<b>Test Standard</b>
Emissions	<8	mg/kg	VDA 275
1:			
<b>Injection</b>	<b>Value</b>	<b>Unit</b>	<b>Test Standard</b>
Drying Recommended	yes	-	-
Drying Temperature	80	°C	-
Drying Time, Dehumidified Dryer	2 - 4	h	-
Processing Moisture Content	≤0.05	%	-
Melt Temperature Optimum	205	°C	-
Min. melt temperature	200	°C	-
Max. melt temperature	210	°C	-
Mold Temperature Optimum	50	°C	-
Min. mold temperature	40	°C	-
Max. mold temperature	60	°C	-
Hold pressure range	60 - 80	MPa	-
Hold pressure time	7.5	s/mm	-
Annealing time, optional	30	min/mm	-
Annealing temperature	160	°C	-
<b>Extrusion</b>	<b>Value</b>	<b>Unit</b>	<b>Test Standard</b>
Drying Temperature	75 - 85	°C	-
Drying Time, Dehumidified Dryer	2 - 4	h	-
Processing Moisture Content	≤0.05	%	-
Melt Temperature Optimum	200	°C	-
Melt Temperature Range	195 - 205	°C	-
<b>Characteristics</b>			
Processing	<ul style="list-style-type: none"> <li>• Injection Molding</li> <li>• Profile Extrusion</li> </ul>	<ul style="list-style-type: none"> <li>• Sheet Extrusion</li> <li>• Other Extrusion</li> </ul>	

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Delivery form	• Pellets		
Additives	• Lubricants	• Release agent	
Regional Availability	• North America	• Asia Pacific	• Near East/Africa
	• Europe	• South and Central America	• Global

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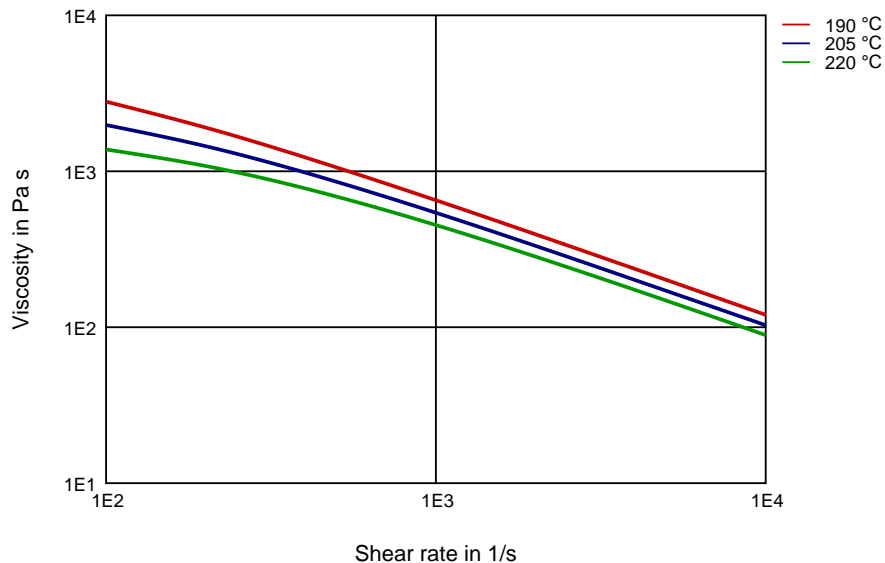


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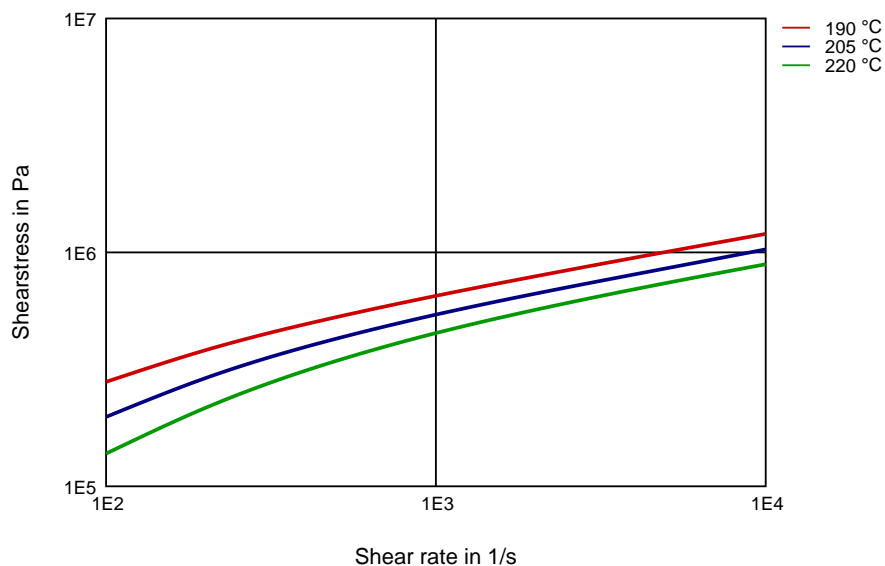
## ACETAL RESIN

### Diagrams

#### Viscosity-shear rate



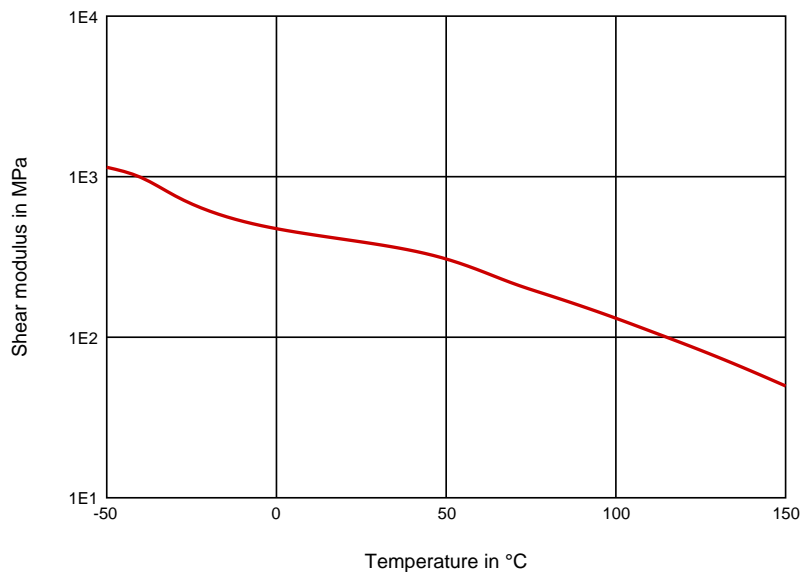
#### Shearstress-shear rate



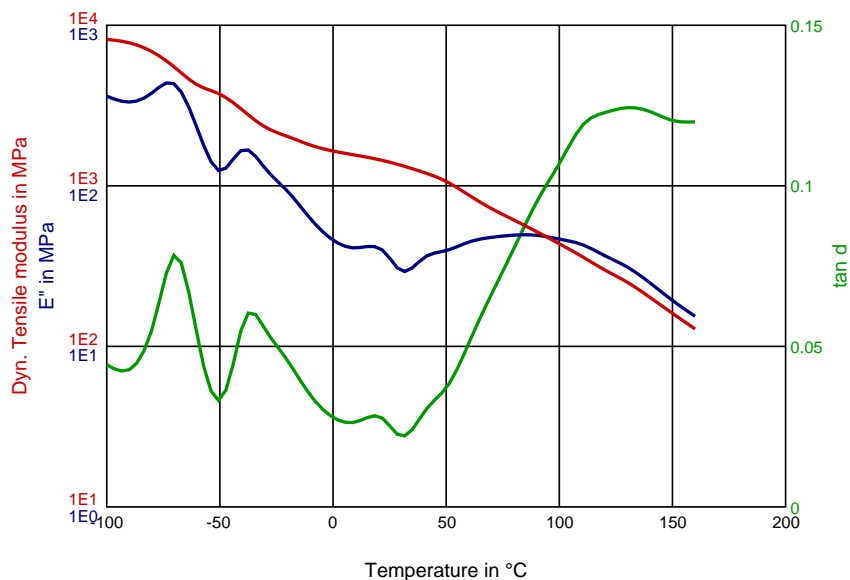
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## ACETAL RESIN

### Dynamic Shear modulus-temperature



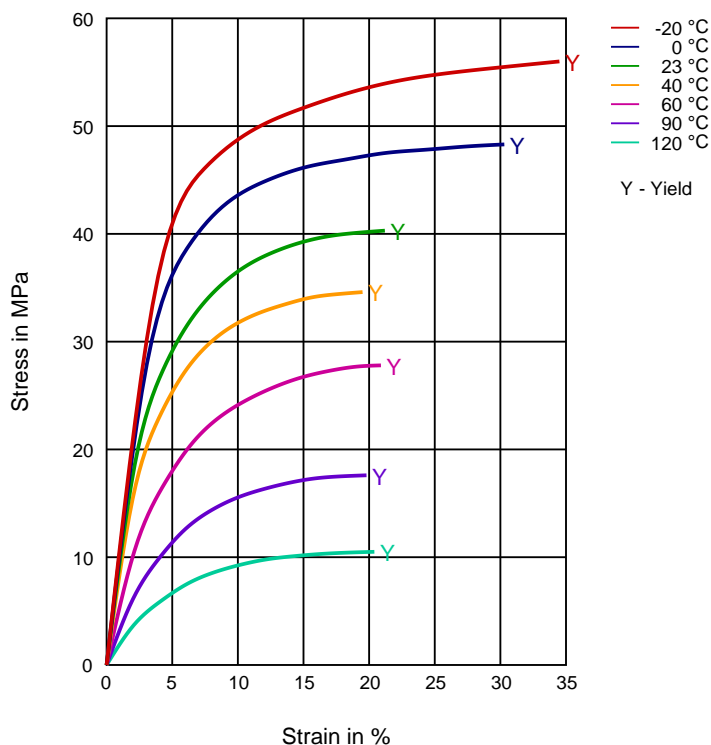
### Dynamic Tensile modulus-temperature



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Stress-strain



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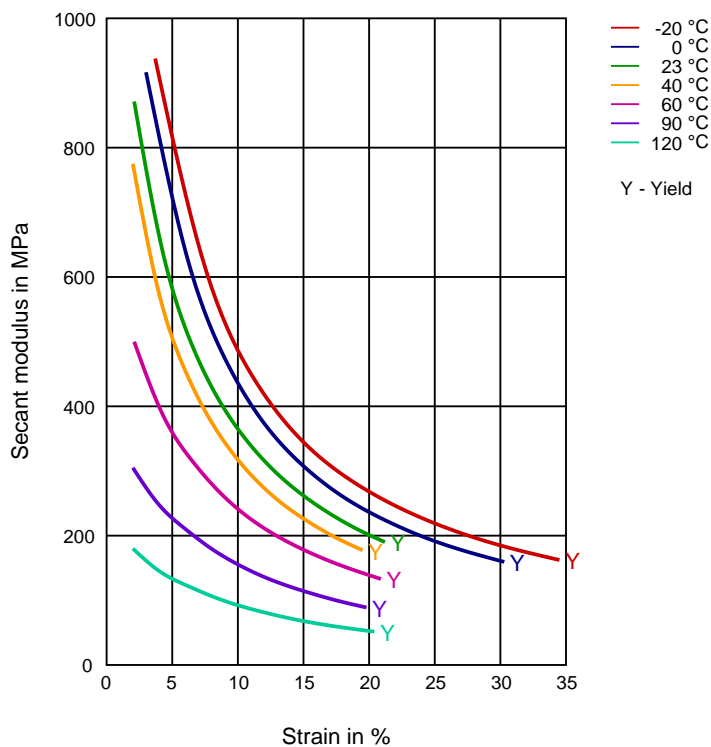


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## ACETAL RESIN

Secant modulus-strain



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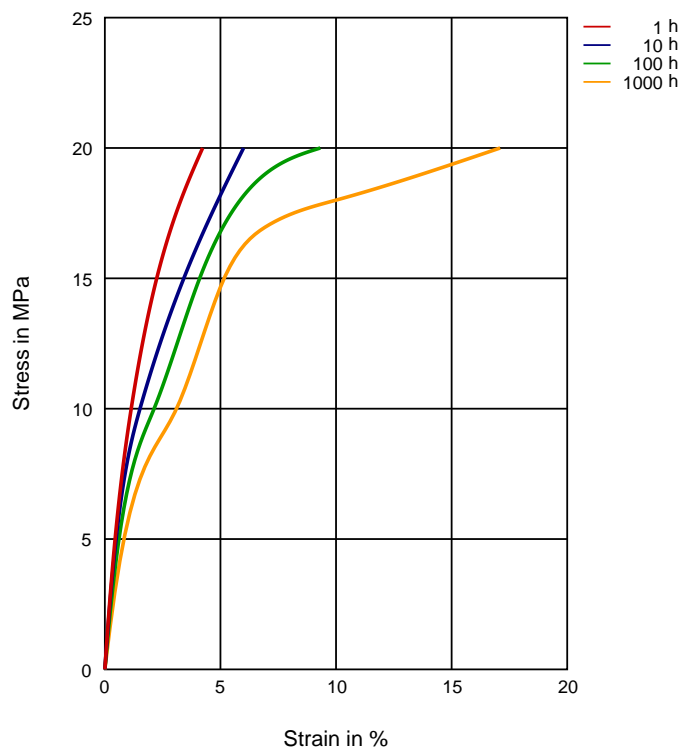
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## ACETAL RESIN

Stress-strain (isochronous) 23 °C



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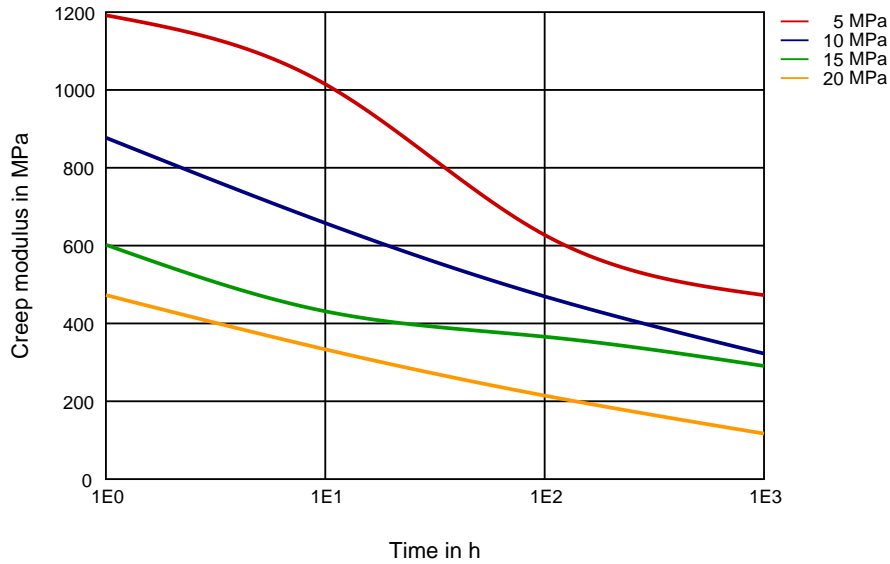




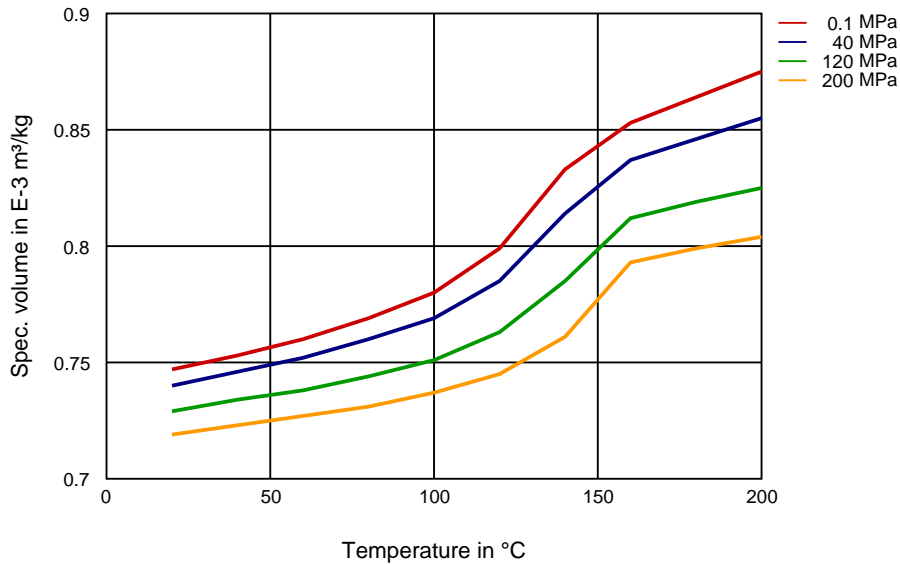
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## ACETAL RESIN

Creep modulus-time 23 °C



Specific volume-temperature (pvT)



Contact DuPont for Material Safety Data Sheet, general guides and/or additional information about ventilation, handling, purging, drying, etc. ISO Mechanical properties measured at 160 mil (Hytrel® measured at 80 mil), IEC Electrical properties measured at 80 mil, all ASTM properties measured at 120 mil, and test temperatures are 73 °F unless otherwise stated.

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