Delrin® 511CPE NC010 (PRELIMINARY)

ACETAL RESIN

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® 511CPE is a medium viscosity acetal homopolymer with enhanced crystallization for faster cycle times, excellent creep and fatigue resistance, and very low VOC emissions. Delrin® 511CPE provides improved thermal stability, excellent dimensional stability, low warpage, fewer voids, and improved productivity for injection moulding.

Product information

Resin Identification	POM	ISO 1043
Part Marking Code	>POM<	ISO 11469

Rheological properties

Melt volume-flow rate	13	cm³/10min	ISO 1133
Melt mass-flow rate	14	g/10min	ISO 1133
Temperature	190	°C	ISO 1133
Load	2.16	kg	ISO 1133
Melt mass-flow rate, Temperature	190	°C	ISO 1133
Melt mass-flow rate, Load	2.16	kg	ISO 1133
Moulding shrinkage, parallel	1.8	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.8	%	ISO 294-4, 2577

Typical mechanical properties

Tensile Modulus	3400	MPa	ISO 527-1/-2
Yield stress	75	MPa	ISO 527-1/-2
Yield strain	13	%	ISO 527-1/-2
Nominal strain at break	25	%	ISO 527-1/-2
Flexural Modulus	3200	MPa	ISO 178
Flexural Stress at 3.5%	89	MPa	ISO 178
Charpy impact strength, 23°C	235	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	7	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	6.5	kJ/m²	ISO 179/1eA
Hardness, Rockwell, M-scale	95	-	ISO 2039-2
Hardness, Rockwell, R-scale	122	-	ISO 2039-2
Poisson's ratio	0.37	-	

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Thermal properties

Melting temperature, 10°C/min	178	°C	ISO 11357-1/-3
Temp. of deflection under load, 1.8 MPa	115	°C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	165	°C	ISO 75-1/-2
Coeff. of linear therm. expansion, parallel	95	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	95	E-6/K	ISO 11359-1/-2
RTI, electrical, 0.75mm	50	°C	UL 746B
RTI, electrical, 1.5mm	110	°C	UL 746B
RTI, electrical, 3mm	110	°C	UL 746B
RTI, impact, 0.75mm	50	°C	UL 746B
RTI, impact, 1.5mm	85	°C	UL 746B
RTI, impact, 3mm	90	°C	UL 746B
RTI, strength, 0.75mm	50	°C	UL 746B
RTI, strength, 1.5mm	90	°C	UL 746B
RTI, strength, 3mm	95	°C	UL 746B

Flammability

Burning Behav. at 1.5mm nom. thickn.	HB	class	IEC 60695-11-10
Thickness tested	1.5	mm	IEC 60695-11-10
UL recognition	yes	-	UL 94
Burning Behav. at thickness h	HB	class	IEC 60695-11-10
Thickness tested	0.8	mm	IEC 60695-11-10
UL recognition	yes	-	UL 94
FMVSS Class	B	-	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	30	mm/min	ISO 3795 (FMVSS 302)

Electrical properties

Relative permittivity, 100Hz	3.9	-	IEC 62631-2-1
Relative permittivity, 1MHz	3.9	-	IEC 62631-2-1
Dissipation factor, 100Hz	40	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	45	E-4	IEC 62631-2-1
Volume resistivity	>1E13	Ohm.m	IEC 62631-3-1
Surface resistivity	>1E15	Ohm	IEC 62631-3-2
Comparative tracking index	600	-	IEC 60112

Other properties

Density	1420	kg/m³	ISO 1183
Density of melt	1160	kg/m³	

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VDA Properties

Emissions	<2	mg/kg	VDA 275

Injection

Drying Recommended	yes	
Drying Time, Dehumidified Dryer	2 - 4	h
Melt Temperature Optimum	205	°C
Min. melt temperature	200	°C
Max. melt temperature	210	°C
Max. screw tangential speed	0.3	m/s
Mold Temperature Optimum	90	°C
Min. mould temperature	80	°C
Max. mould temperature	100	°C
Hold pressure range	80 - 100	MPa
Hold pressure time	8	s/mm
Annealing time, optional	30	min/mm
Annealing temperature	160	°C

Additional Information

Injection molding

Drying is recommended, but not necessary for newly opened packaging stored in a dry location.

Follow the drying guidelines above in the following cases:

- If moisture is above the Processing Moisture Content recommendation,
- When a resin container is damaged,
- When the material is not properly stored in a dry place at room temperature

or

- When packaging stays open for a significant time.

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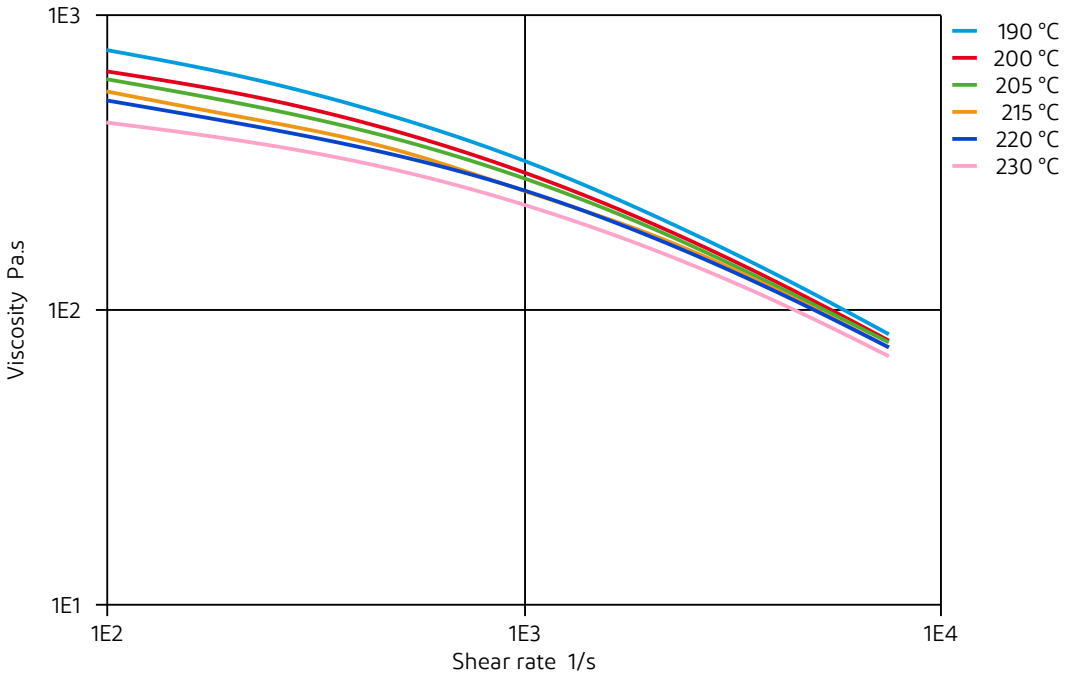
Viscosity-shear rate



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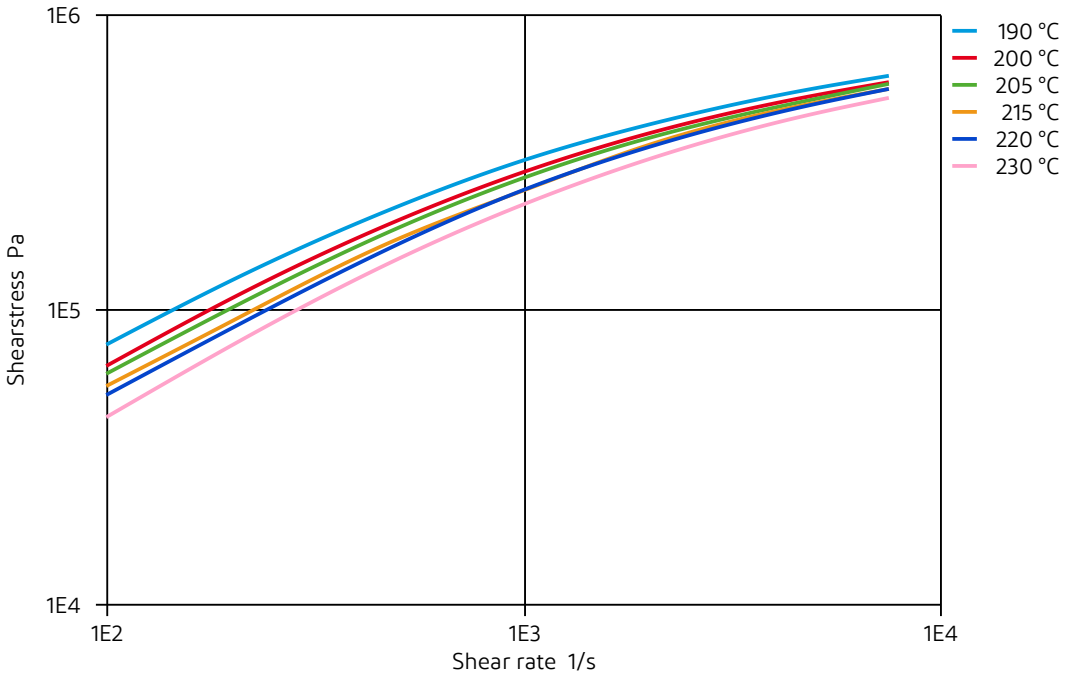
Shearstress-shear rate



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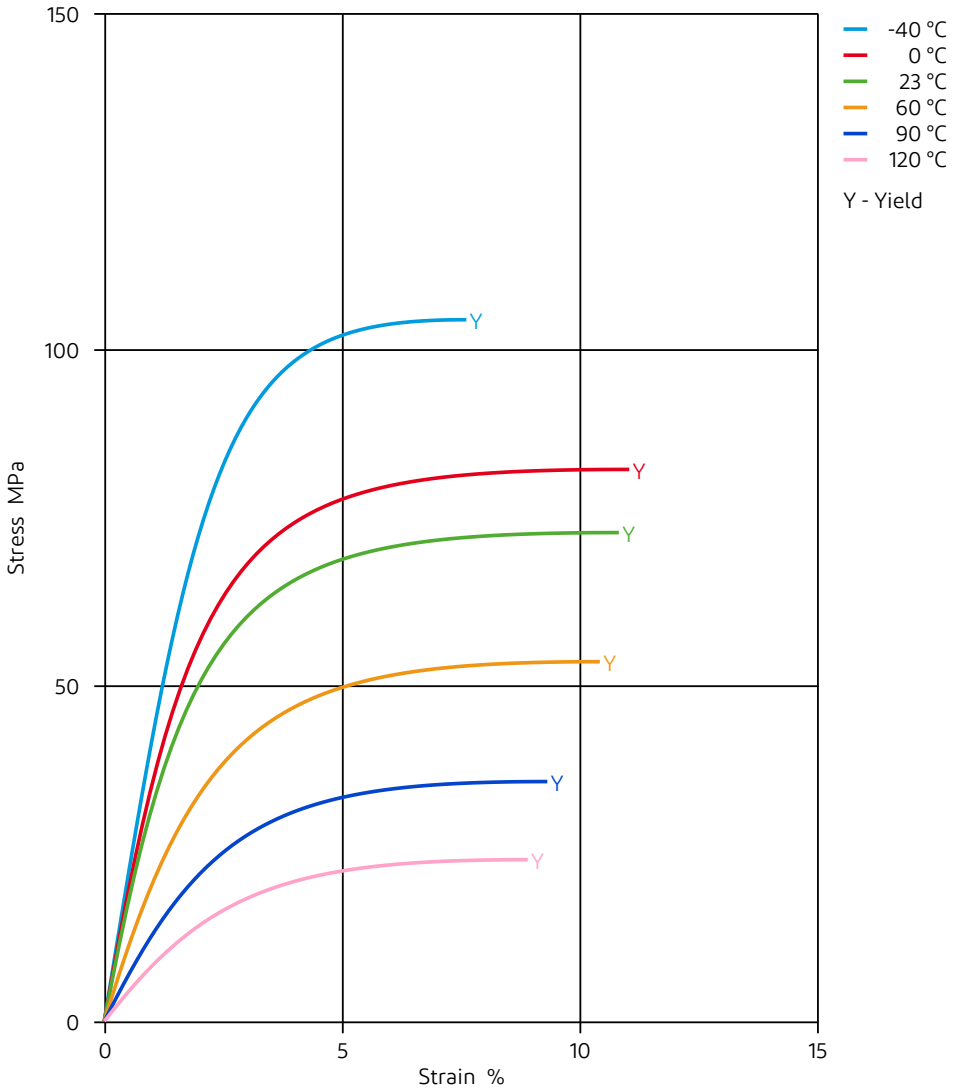
Stress-strain



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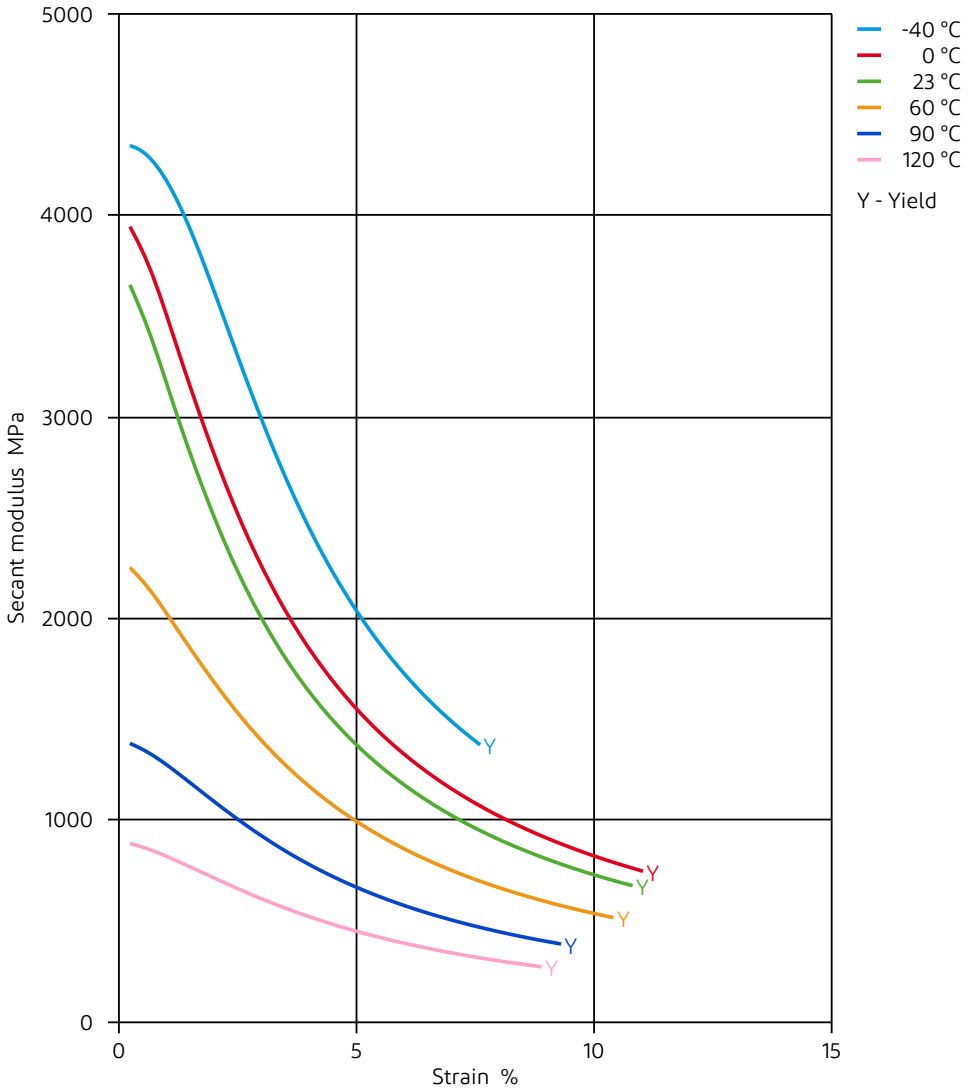
Secant modulus-strain



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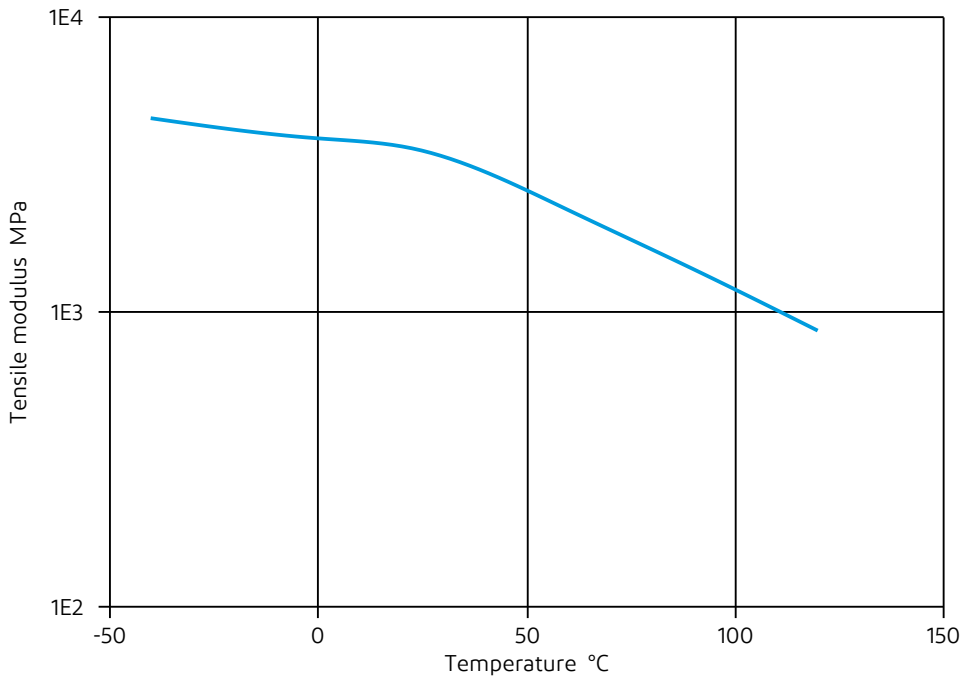
Tensile modulus-temperature



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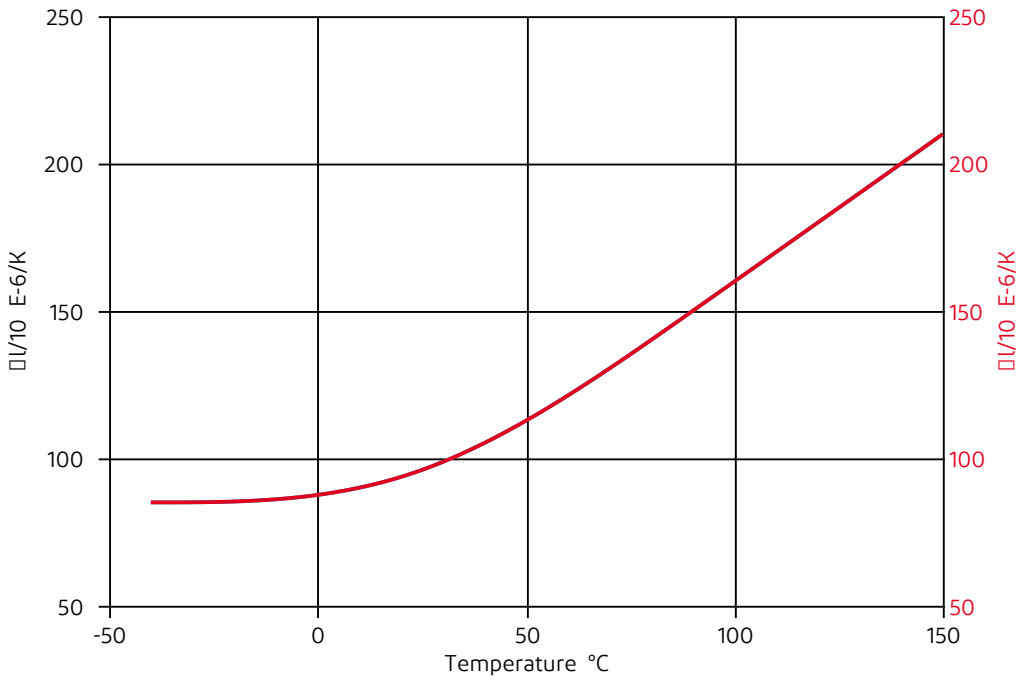
Coeff. of linear thermal expansion



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