

Delrin® 500P NC010

ACETAL RESIN

DuPont Performance Polymers

PROSPECTOR®

www.ulprospector.com

Technical Data

Product Description

Medium Viscosity Acetal Homopolymer with Improved Processing

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 engineers (English)		
UL Yellow Card ²	• E41938-257616		
Search for UL Yellow Card	• DuPont Performance Polymers • Delrin®		
Availability	• Africa & Middle East • Asia Pacific	• Europe • Latin America	• North America
Additive	• Lubricant • Mold Release		
Features	• Good Processability	• Homopolymer	• Medium Viscosity
RoHS Compliance	• Contact Manufacturer		
Automotive Specifications	• ASTM D6778 POM0113 • CHRYSLER MS-DB-100 CPN2203	• FORD WSK-M4D637-A2 • GM GMP.POM.002	• GM GMW19P-POM-H3R • IMDS ID 14075949
Forms	• Pellets		
Processing Method	• Injection Molding		
Multi-Point Data	• Coefficient of Thermal Expansion vs. Temperature (ISO 11403-1) • Creep Modulus vs. Time (ISO 11403-1) • Isochronous Stress vs. Strain (ISO 11403-1) • Isothermal Stress vs. Strain (ISO 11403-1) • Secant Modulus vs. Strain (ISO 11403-1) • Shear Modulus vs. Temperature (ISO 11403-1) • Shear Modulus vs. Temperature, Dynamic (ISO 11403-1) • Shear Stress vs. Shear Rate (ISO 11403-1) • Specific Volume vs Temperature (ISO 11403-2) • Tensile Modulus vs. Temperature (ISO 11403-1) • 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
Density	1.42 g/cm ³	1.42 g/cm ³	ISO 1183
Melt Mass-Flow Rate (MFR) (190°C/2.16 kg)	15 g/10 min	15 g/10 min	ISO 1133
Melt Volume-Flow Rate (MVR) (190°C/2.16 kg)	13 cm ³ /10min	13 cm ³ /10min	ISO 1133
Molding Shrinkage			ISO 294-4
Across Flow	1.9 %	1.9 %	
Flow	2.0 %	2.0 %	
Water Absorption			ISO 62
Saturation, 73°F (23°C), 0.0787 in (2.00 mm)	1.3 %	1.3 %	
Equilibrium, 73°F (23°C), 0.0787 in (2.00 mm), 50% RH	0.20 %	0.20 %	



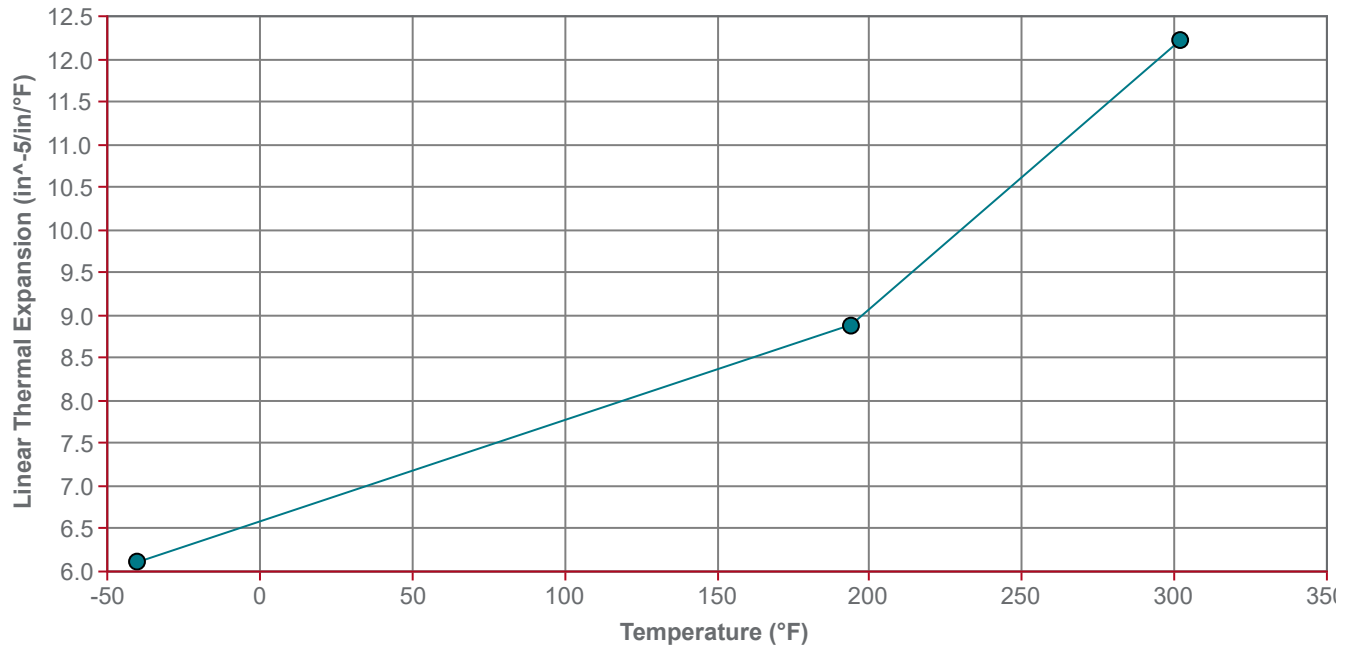
Mechanical	Nominal Value (English)	Nominal Value (SI)	Test Method
Tensile Modulus	450000 psi	3100 MPa	ISO 527-2
Tensile Stress (Yield)	10300 psi	71.0 MPa	ISO 527-2
Tensile Strain (Yield)	17 %	17 %	ISO 527-2
Nominal Tensile Strain at Break	30 %	30 %	ISO 527-2
Tensile Creep Modulus			ISO 899-1
1 hr	406000 psi	2800 MPa	
1000 hr	232000 psi	1600 MPa	
Flexural Modulus	435000 psi	3000 MPa	ISO 178
Flexural Stress (3.5% Strain)	11600 psi	80.0 MPa	ISO 178
Impact	Nominal Value (English)	Nominal Value (SI)	Test Method
Charpy Notched Impact Strength			ISO 179/1eA
-22°F (-30°C)	3.8 ft·lb/in ²	8.0 kJ/m ²	
73°F (23°C)	4.3 ft·lb/in ²	9.0 kJ/m ²	
Charpy Unnotched Impact Strength			ISO 179/1eU
-22°F (-30°C)	130 ft·lb/in ²	280 kJ/m ²	
73°F (23°C)	150 ft·lb/in ²	320 kJ/m ²	
Notched Izod Impact Strength			ISO 180/1A
-22°F (-30°C)	3.8 ft·lb/in ²	8.0 kJ/m ²	
73°F (23°C)	4.3 ft·lb/in ²	9.0 kJ/m ²	
Unnotched Izod Impact Strength			ISO 180/1U
-22°F (-30°C)	120 ft·lb/in ²	250 kJ/m ²	
73°F (23°C)	130 ft·lb/in ²	280 kJ/m ²	
Multi-Axial Instrumented Impact Energy			ISO 6603-2
73°F (23°C)	2.21 ft·lb	3.00 J	
Multi-Axial Instrumented Impact Peak Force			ISO 6603-2
73°F (23°C)	450 lbf	2000 N	
Hardness	Nominal Value (English)	Nominal Value (SI)	Test Method
Rockwell Hardness			ISO 2039-2
M-Scale	92	92	
R-Scale	120	120	
Ball Indentation Hardness			ISO 2039-1
H 358/30	27800 psi	192 MPa	
H 961/30	24700 psi	170 MPa	
Thermal	Nominal Value (English)	Nominal Value (SI)	Test Method
Heat Deflection Temperature			
66 psi (0.45 MPa), Unannealed	320 °F	160 °C	ISO 75-2/B
264 psi (1.8 MPa), Unannealed	203 °F	95.0 °C	ISO 75-2/A
264 psi (1.8 MPa), Annealed	230 °F	110 °C	ISO 75-2/A
Vicat Softening Temperature	311 °F	155 °C	ISO 306/B50
Ball Pressure Test (329°F (165°C))	Pass	Pass	IEC 60695-10-2
Melting Temperature ⁴	352 °F	178 °C	ISO 11357-3
CLTE			ISO 11359-2
Flow	5.6E-5 in/in/°F	1.0E-4 cm/cm/°C	
Flow : -40 to 73°F (-40 to 23°C)	5.0E-5 in/in/°F	9.0E-5 cm/cm/°C	
Transverse	5.6E-5 in/in/°F	1.0E-4 cm/cm/°C	
Transverse : -40 to 73°F (-40 to 23°C)	5.0E-5 in/in/°F	9.0E-5 cm/cm/°C	
Annealing Temperature	320 °F	160 °C	
Annealing Time - Optional	30.0 min/mm	30.0 min/mm	
Effective Thermal Diffusivity	9.00E-8 m ² /s	9.00E-8 m ² /s	



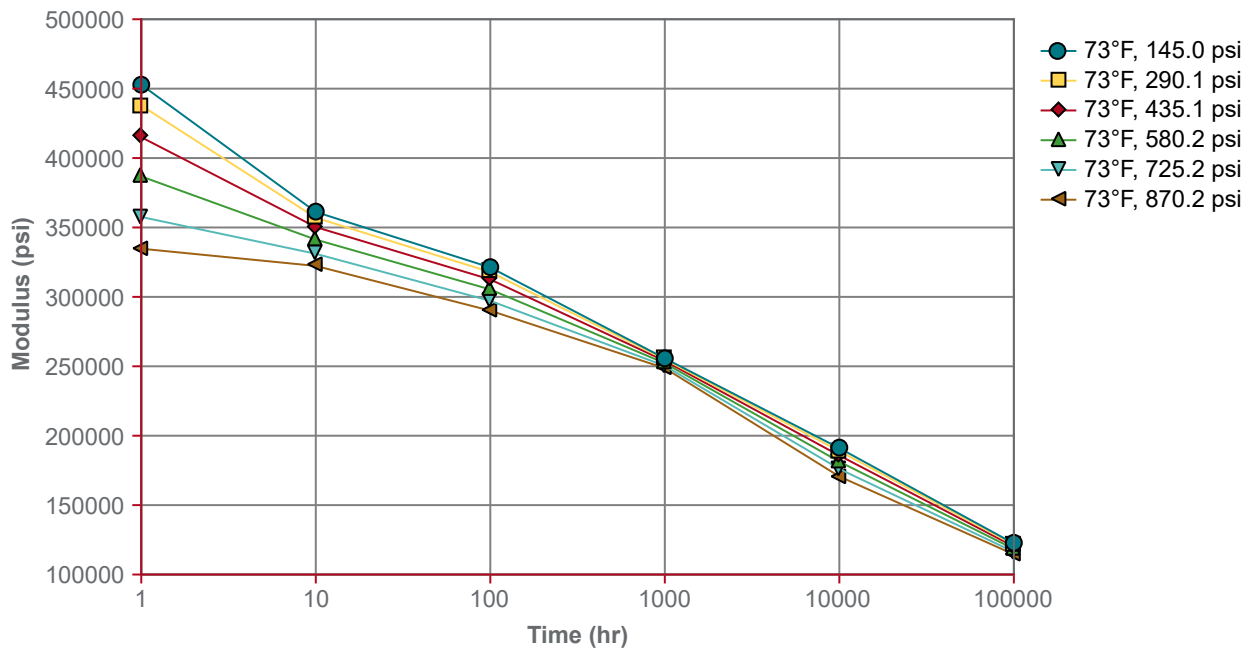
Electrical	Nominal Value (English)	Nominal Value (SI)	Test Method
Surface Resistivity	4.0E+14 ohms	4.0E+14 ohms	IEC 62631-3-2
Volume Resistivity	2.0E+12 ohms·m	2.0E+12 ohms·m	IEC 62631-3-1
Electric Strength	1100 V/mil	44 kV/mm	IEC 60243-1
Relative Permittivity			IEC 62631-2-1
100 Hz	3.80	3.80	
1 MHz	3.80	3.80	
Dissipation Factor			IEC 62631-2-1
1 MHz	5.5E-3	5.5E-3	
100 Hz	9.0E-3	9.0E-3	
Comparative Tracking Index	600 V	600 V	IEC 60112
Flammability	Nominal Value (English)	Nominal Value (SI)	Test Method
Burning Rate ⁵ (0.0394 in (1.00 mm))	0.79 in/min	20 mm/min	ISO 3795
Flame Rating			
0.031 in (0.8 mm)	HB	HB	UL 94
0.06 in (1.5 mm)	HB	HB	UL 94 IEC 60695-11-10, -20
0.03 in (0.8 mm)	HB	HB	IEC 60695-11-10, -20
Oxygen Index	22 %	22 %	ISO 4589-2
FMVSS Flammability	B	B	FMVSS 302
Fogging			ISO 6452
F-value (refraction)	90 %	90 %	
G-value (condensate)	3.5E-4 g	3.5E-4 g	
Fill Analysis	Nominal Value (English)	Nominal Value (SI)	
Melt Density	1.19 g/cm ³	1.19 g/cm ³	
Thermal Conductivity of Melt	1.7 Btu·in/hr/ft ² ·°F	0.24 W/m/K	
Additional Information	Nominal Value (English)	Nominal Value (SI)	Test Method
Emission	< 8.00 mg/kg	< 8.00 mg/kg	VDA 275
Injection	Nominal Value (English)	Nominal Value (SI)	
Drying Temperature	176 °F	80 °C	
Drying Time - Desiccant Dryer	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	419 °F	215 °C	
Mold Temperature	176 to 212 °F	80 to 100 °C	
Mold Temperature, Optimum	194 °F	90 °C	
Holding Pressure	11600 to 14500 psi	80.0 to 100 MPa	
Drying Recommended	yes	yes	
Hold Pressure Time	8.00 s/mm	8.00 s/mm	



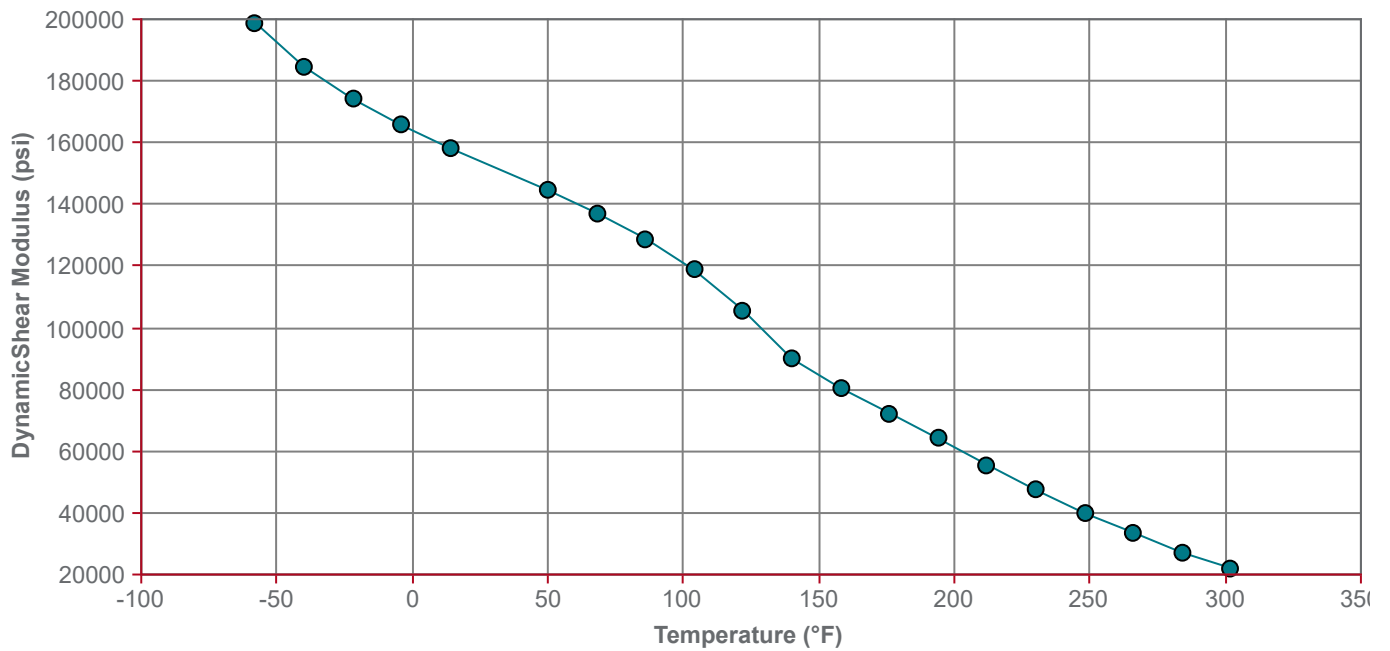
Coefficient of Thermal Expansion vs. Temperature (ISO 11403-1)



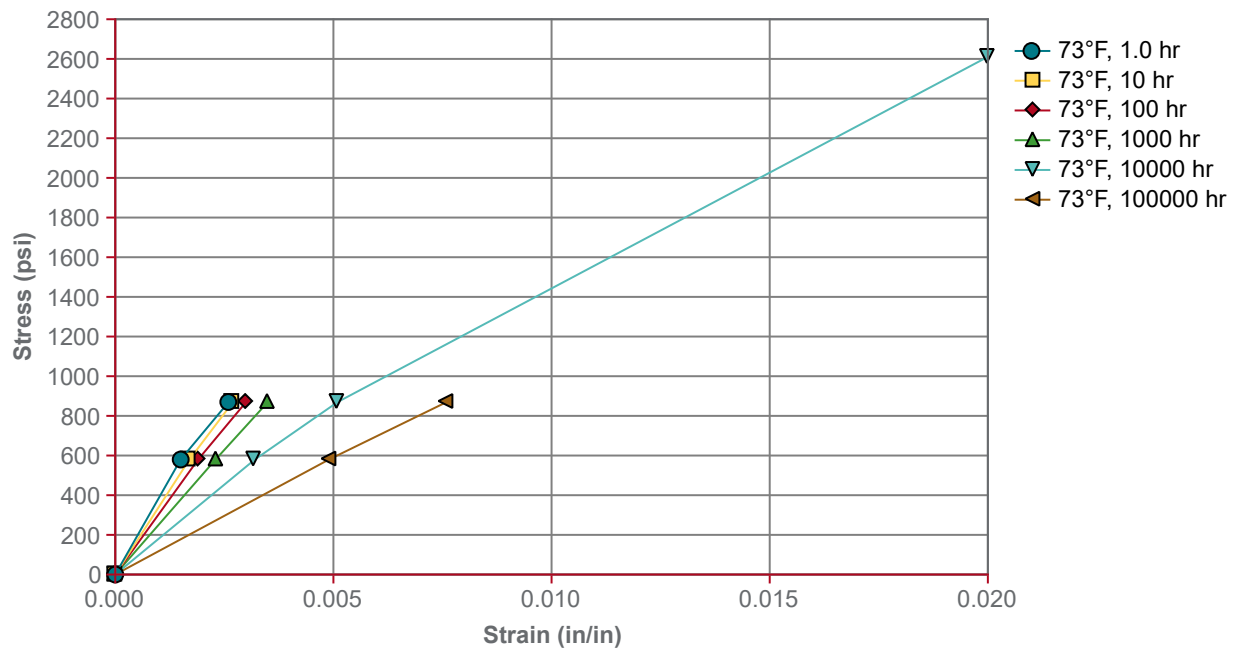
Creep Modulus vs. Time (ISO 11403-1)



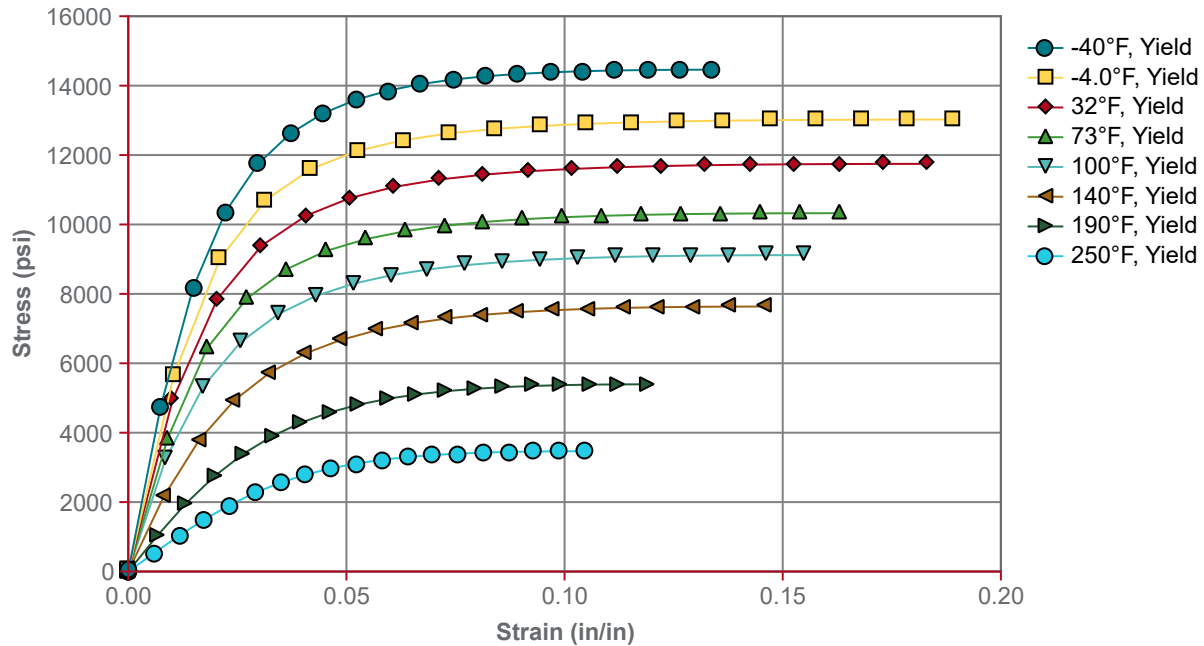
Shear Modulus vs. Temperature, Dynamic (ISO 11403-1)



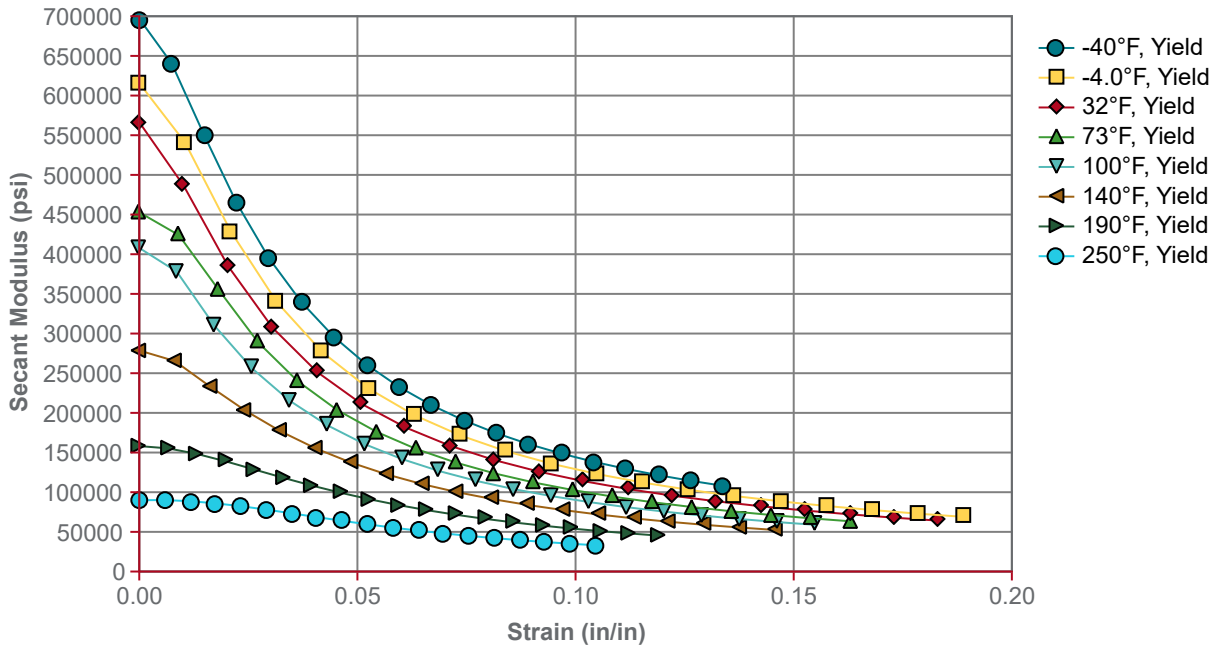
Isochronous Stress vs. Strain (ISO 11403-1)



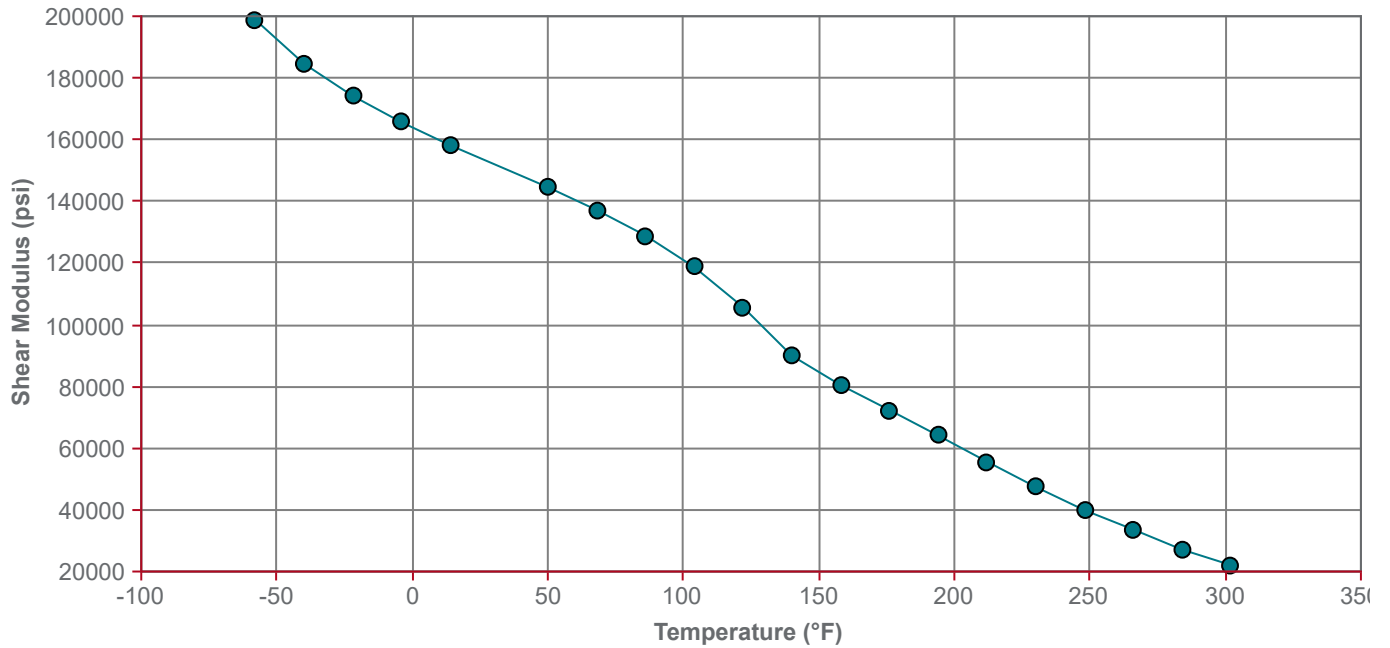
Isothermal Stress vs. Strain (ISO 11403-1)



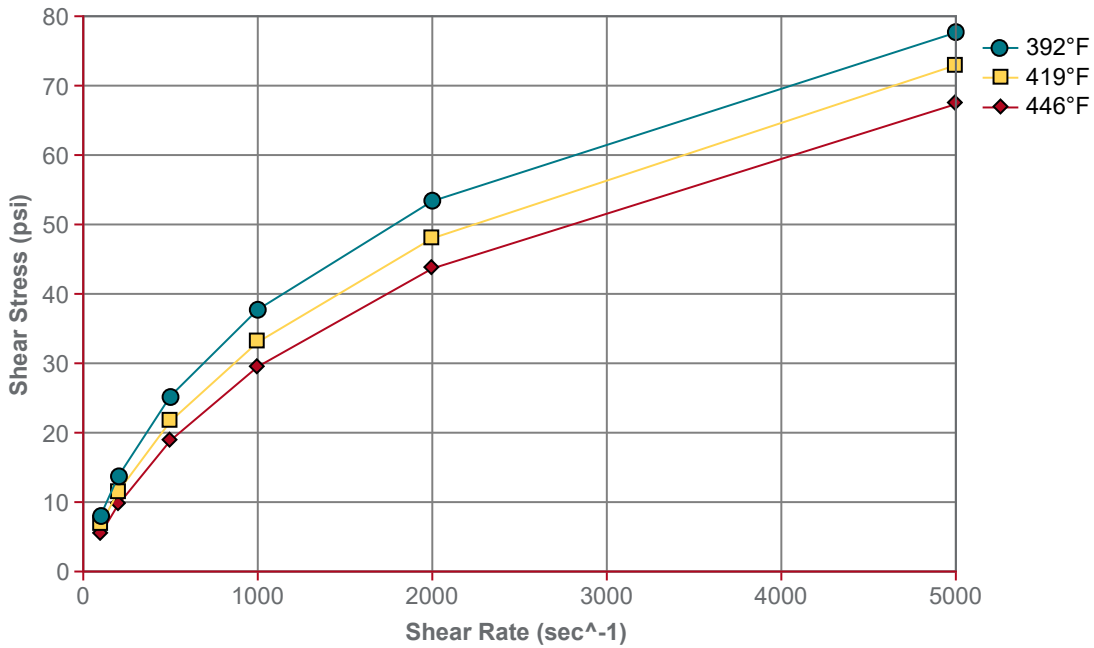
Secant Modulus vs. Strain (ISO 11403-1)



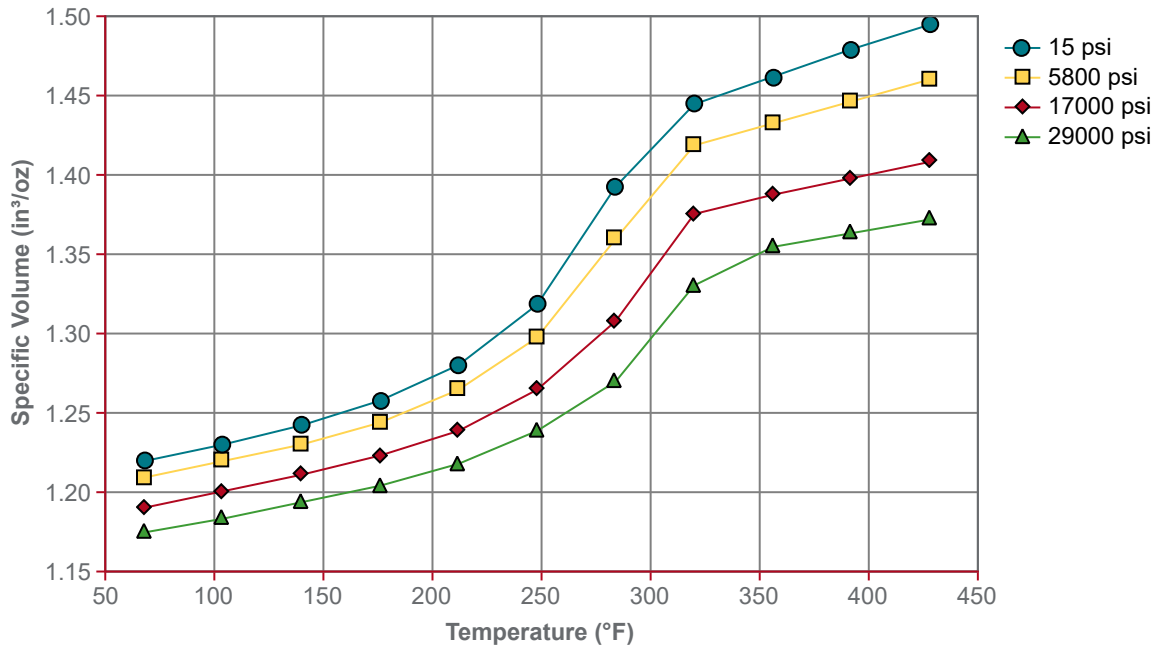
Shear Modulus vs. Temperature (ISO 11403-1)



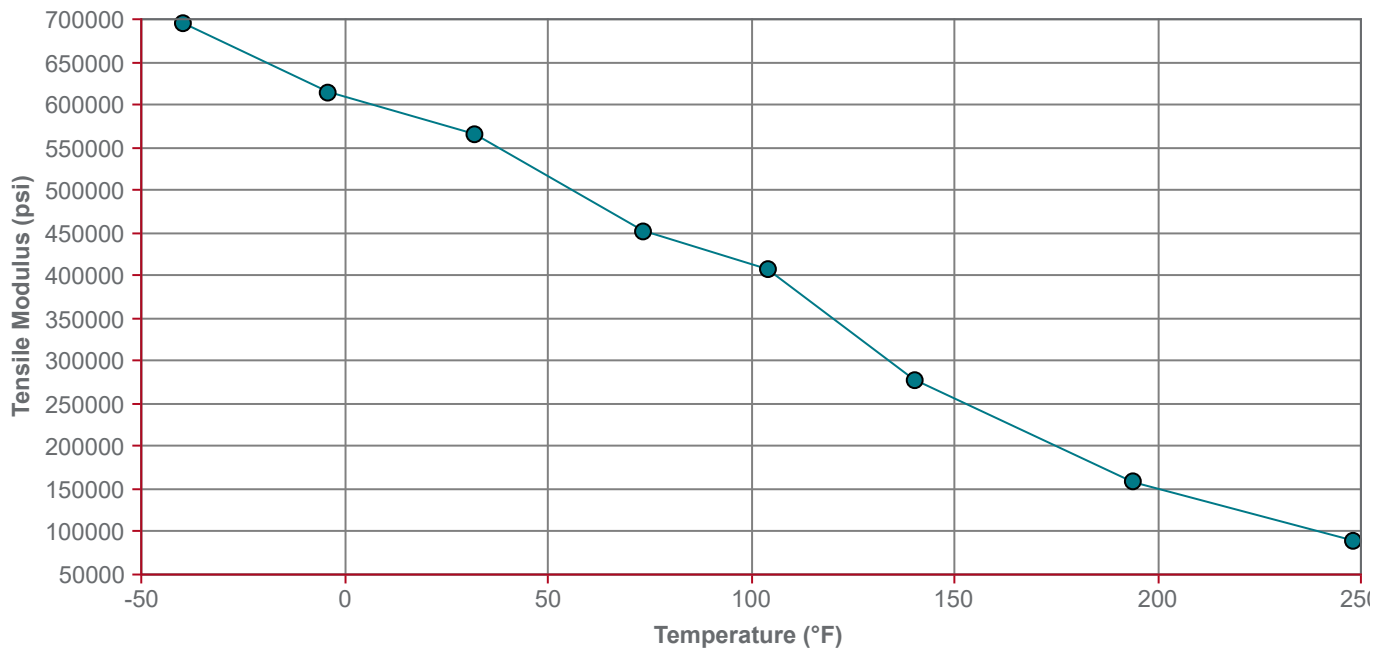
Shear Stress vs. Shear Rate (ISO 11403-1)



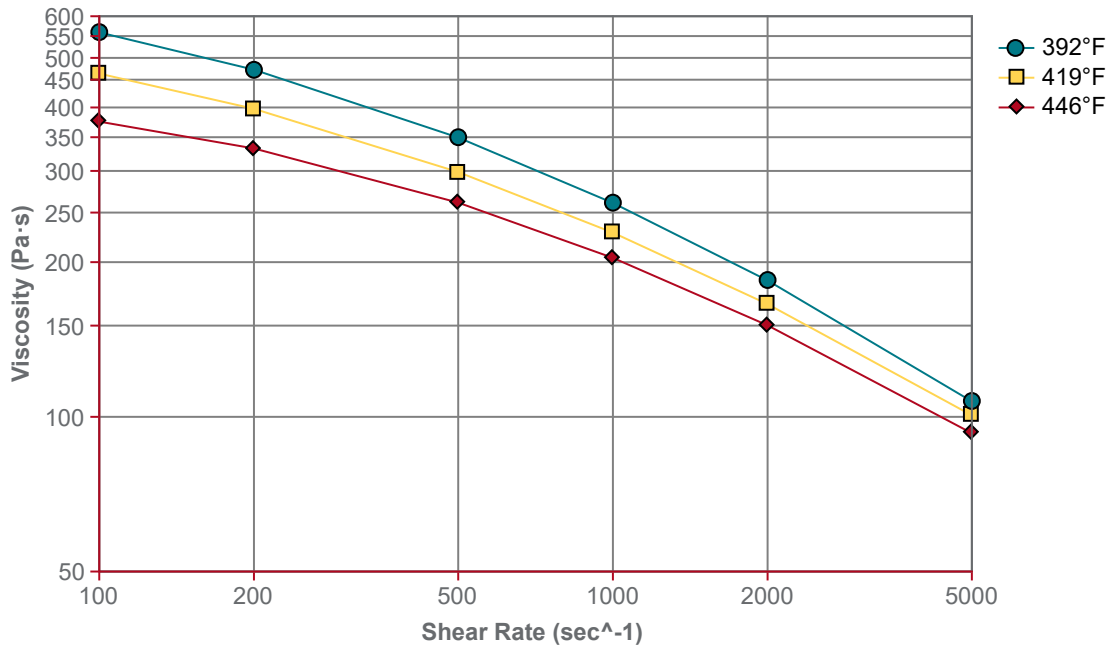
Specific Volume vs Temperature (ISO 11403-2)



Tensile Modulus vs. Temperature (ISO 11403-1)



Viscosity vs. Shear Rate (ISO 11403-2)



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

