

XENOY™ Resin 5220U - Americas

Polycarbonate + PBT

SABIC

PROSPECTOR®

www.ulprospector.com

Technical Data

Product Description

Unreinforced PBT+PC Alloy. Impact Modified. Improved retention of mechanical properties under UV exposure. Excellent low temperature impact and chemical resistance.

General

| | |
|-----------------------------|--|
| Material Status | • Commercial: Active |
| UL Yellow Card ¹ | • E121562-220838 |
| Search for UL Yellow Card | • SABIC • XENOY™ Resin |
| Availability | • Latin America • North America |
| Uses | • Appliances • Automotive Exterior Parts • Construction Applications • Decorative Parts • Electrical Parts • Electrical/Electronic Applications • Electronic Displays • Energy Storage • Heavy Transportation • Industrial Applications • Lawn and Garden Equipment • Lighting Applications • Material Handling • Medical Devices • Medical/Healthcare Applications • Military/Defense Applications • Non-specific Food Applications • Optical Applications • Outdoor Applications • Packaging • Recreational Vehicle Applications • Sporting Goods • Surgical Instruments • Water Management |
| Multi-Point Data | • Coefficient of Thermal Expansion vs. Temperature (ASTM E831) • Compressive Stress vs. Strain (ASTM D6641) • Elastic Modulus vs. Temperature (ASTM D4065) • Flexural DMA (ASTM D5023) • Shear DMA (ASTM D4065) • Specific Heat vs. Temperature (ASTM E1269) • Specific Volume vs. Temperature (PVT) • Tensile Fatigue • Tensile Stress vs. Strain (ASTM D638) • Thermal Conductivity vs. Temperature (ASTM E1530) • Viscosity vs. Shear Rate (ASTM D3835) |
| Also Available In | • Asia Pacific • Europe |

| Physical | Nominal Value (English) | Nominal Value (SI) | Test Method |
|--|---------------------------|---------------------------|-----------------|
| Density / Specific Gravity | | | |
| -- | 1.21 | 1.21 g/cm ³ | ASTM D792 |
| -- | 1.22 g/cm ³ | 1.22 g/cm ³ | ISO 1183 |
| Specific Volume | 23.0 in ³ /lb | 0.830 cm ³ /g | ASTM D792 |
| Melt Mass-Flow Rate (MFR) (250°C/5.0 kg) | 16 g/10 min | 16 g/10 min | ISO 1133 |
| Melt Volume-Flow Rate (MVR) (250°C/5.0 kg) | 15 cm ³ /10min | 15 cm ³ /10min | ISO 1133 |
| Molding Shrinkage | | | Internal Method |
| Across Flow ³ | 0.80 to 1.1 % | 0.80 to 1.1 % | |
| Flow : 0.126 in (3.20 mm) | 0.80 to 1.0 % | 0.80 to 1.0 % | |
| Water Absorption | | | ISO 62 |
| Saturation, 73°F (23°C) | 0.50 % | 0.50 % | |
| Equilibrium, 73°F (23°C), 50% RH | 0.15 % | 0.15 % | |
| Outdoor Suitability | f2 | f2 | UL 746C |
| Mechanical | Nominal Value (English) | Nominal Value (SI) | Test Method |
| Tensile Modulus | | | |
| -- ⁴ | 326000 psi | 2250 MPa | ASTM D638 |
| -- ⁵ | 326000 psi | 2250 MPa | ASTM D638 |
| -- | 297000 psi | 2050 MPa | ISO 527-1/1 |



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| Mechanical | Nominal Value (English) | Nominal Value (SI) | Test Method |
|---|--------------------------|----------------------|--------------------------|
| Tensile Strength | | | |
| Yield ⁶ | 7690 psi | 53.0 MPa | ASTM D638 |
| Yield | 7250 psi | 50.0 MPa | ISO 527-2/50 |
| Break ⁶ | 7400 psi | 51.0 MPa | ASTM D638 |
| Break | 7250 psi | 50.0 MPa | ISO 527-2/50 |
| Tensile Elongation | | | |
| Yield ⁶ | 4.0 % | 4.0 % | ASTM D638 |
| Yield | 4.0 % | 4.0 % | ISO 527-2/50 |
| Break ⁶ | 120 % | 120 % | ASTM D638 |
| Break | 120 % | 120 % | ISO 527-2/50 |
| Flexural Modulus | | | |
| 1.97 in (50.0 mm) Span ⁷ | 294000 psi | 2030 MPa | ASTM D790 |
| -- ⁸ | 290000 psi | 2000 MPa | ISO 178 |
| Flexural Stress | | | |
| -- ^{8,9} | 11600 psi | 80.0 MPa | ISO 178 |
| Yield, 1.97 in (50.0 mm) Span ⁷ | 12200 psi | 84.0 MPa | ASTM D790 |
| Impact | Nominal Value (English) | Nominal Value (SI) | Test Method |
| Charpy Notched Impact Strength¹⁰ (73°F (23°C)) | | | |
| | 26 ft·lb/in ² | 55 kJ/m ² | ISO 179/1eA |
| Notched Izod Impact | | | |
| -40°F (-40°C) | 5.6 ft·lb/in | 300 J/m | ASTM D256 |
| -22°F (-30°C) | 9.9 ft·lb/in | 530 J/m | ASTM D256 |
| 73°F (23°C) | 13 ft·lb/in | 710 J/m | ASTM D256 |
| -22°F (-30°C) ¹¹ | 14 ft·lb/in ² | 30 kJ/m ² | ISO 180/1A |
| 73°F (23°C) ¹¹ | 24 ft·lb/in ² | 50 kJ/m ² | ISO 180/1A |
| Instrumented Dart Impact | | | |
| 73°F (23°C), Total Energy | 531 in·lb | 60.0 J | ASTM D3763 |
| Thermal | Nominal Value (English) | Nominal Value (SI) | Test Method |
| Deflection Temperature Under Load | | | |
| 66 psi (0.45 MPa), Unannealed, 0.252 in (6.40 mm) | 225 °F | 107 °C | ASTM D648 |
| 264 psi (1.8 MPa), Unannealed, 0.126 in (3.20 mm) | 183 °F | 84.0 °C | ASTM D648 |
| 264 psi (1.8 MPa), Unannealed, 0.252 in (6.40 mm) | 210 °F | 99.0 °C | ASTM D648 |
| 264 psi (1.8 MPa), Unannealed, 0.157 in (4.00 mm), 2.52 in (64.0 mm) Span ¹¹ | 167 °F | 75.0 °C | ISO 75-2/af |
| Vicat Softening Temperature | | | |
| -- | 252 °F | 122 °C | ASTM D1525 ¹² |
| -- | 257 °F | 125 °C | ISO 306/B120 |
| -- | 248 °F | 120 °C | ISO 306/B50 |
| CLTE | | | |
| Flow : -40 to 104°F (-40 to 40°C) | 5.3E-5 in/in/°F | 9.5E-5 cm/cm/°C | ASTM E831 ISO 11359-2 |
| Transverse : -40 to 104°F (-40 to 40°C) | 5.0E-5 in/in/°F | 9.0E-5 cm/cm/°C | |
| RTI Elec | 167 °F | 75.0 °C | UL 746B |
| RTI Imp | 167 °F | 75.0 °C | UL 746B |
| RTI Str | 167 °F | 75.0 °C | UL 746B |



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| Electrical | Nominal Value (English) | Nominal Value (SI) | Test Method |
|--|-------------------------|--------------------|-------------|
| Arc Resistance ¹³ | PLC 5 | PLC 5 | ASTM D495 |
| Comparative Tracking Index (CTI) | PLC 1 | PLC 1 | UL 746A |
| High Amp Arc Ignition (HAI) ¹⁴ | PLC 0 | PLC 0 | UL 746A |
| High Voltage Arc Resistance to Ignition (HVAR) | PLC 0 | PLC 0 | UL 746A |
| Hot-wire Ignition (HWI) | PLC 3 | PLC 3 | UL 746A |
| Flammability | Nominal Value (English) | Nominal Value (SI) | Test Method |
| Flame Rating (0.06 in (1.5 mm)) | HB | HB | UL 94 |

| Injection | Nominal Value (English) | Nominal Value (SI) |
|------------------------|-------------------------|--------------------|
| Drying Temperature | 230 °F | 110 °C |
| Drying Time | 4.0 to 6.0 hr | 4.0 to 6.0 hr |
| Suggested Max Moisture | 0.020 % | 0.020 % |
| Suggested Shot Size | 50 to 80 % | 50 to 80 % |
| Rear Temperature | 473 to 509 °F | 245 to 265 °C |
| Middle Temperature | 482 to 518 °F | 250 to 270 °C |
| Front Temperature | 491 to 527 °F | 255 to 275 °C |
| Nozzle Temperature | 491 to 518 °F | 255 to 270 °C |
| Processing (Melt) Temp | 500 to 527 °F | 260 to 275 °C |
| Mold Temperature | 149 to 194 °F | 65 to 90 °C |
| Back Pressure | 43.5 to 102 psi | 0.300 to 0.700 MPa |
| Screw Speed | 50 to 80 rpm | 50 to 80 rpm |
| Vent Depth | 5.1E-4 to 7.9E-4 in | 0.013 to 0.020 mm |

Injection Notes

- Drying Time (Cumulative): 8 hr

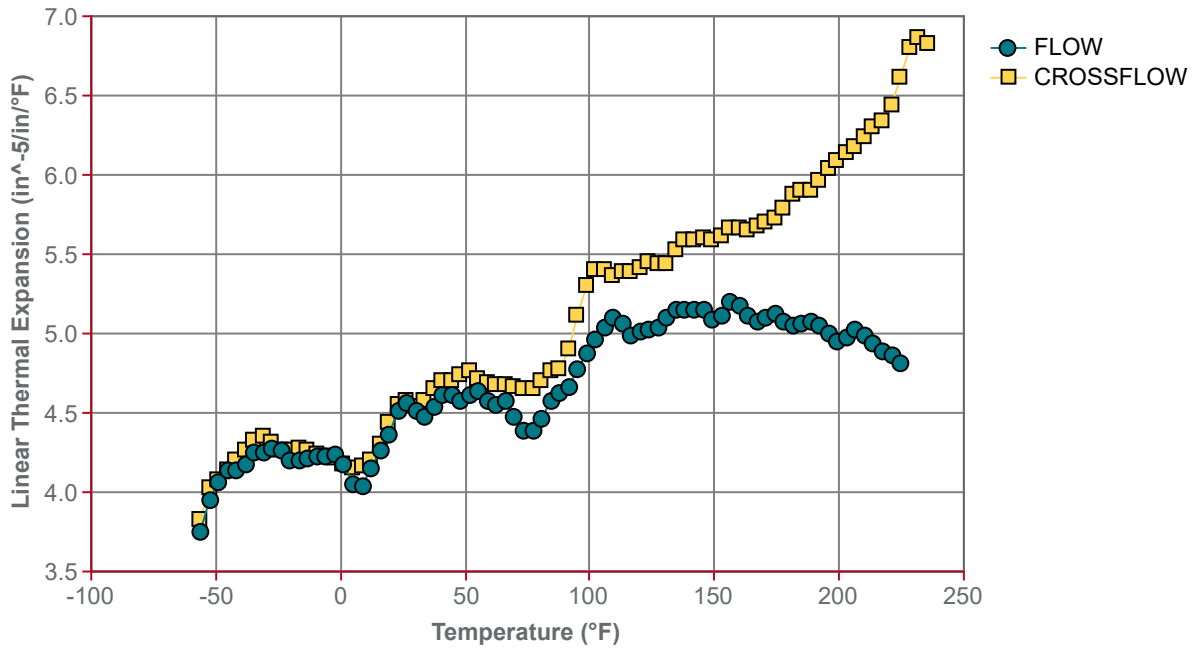
Extrusion Notes

Sheet Extrusion Parameters

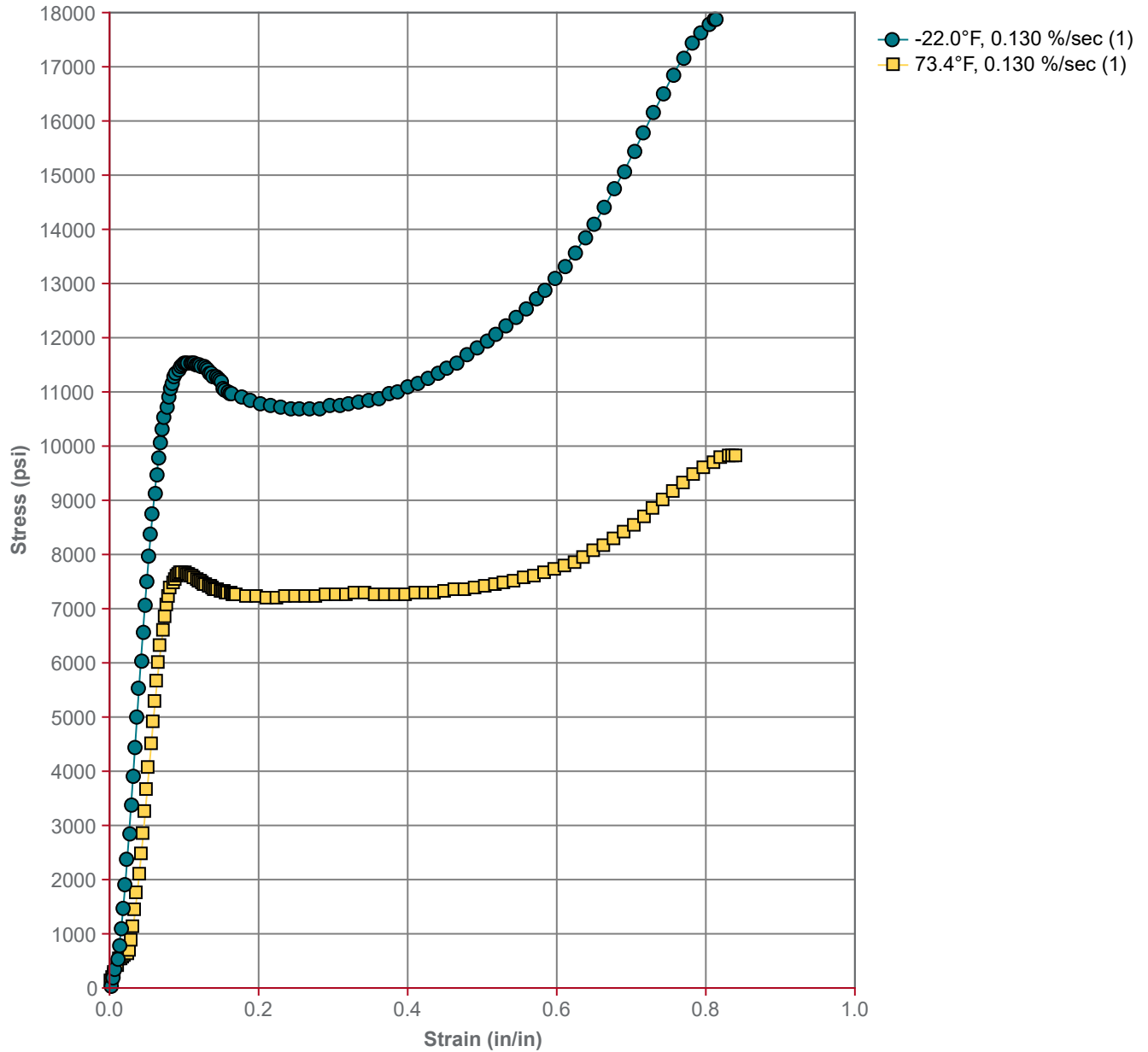
- Drying Temperature: 110 to 115°C
- Drying Time: 4 to 6 hr
- Drying Time (Cumulative): 8 hr
- Maximum Moisture Content: 0 to 0.02%
- Barrel - Zone 1 Temperature: 170 to 205°C
- Barrel - Zone 2 Temperature: 195 to 255°C
- Barrel - Zone 3 Temperature: 205 to 280°C
- Barrel - Zone 4 Temperature: 205 to 280°C
- Adapter Temperature: 225 to 280°C
- Die Temperature: 230 to 280°C
- Melt Temperature: 245 to 275°C
- Roll Stack Temperature - Top: 70 to 80°C
- Roll Stack Temperature - Middle: 75 to 80°C
- Roll Stack Temperature - Bottom: 80 to 95°C



Coefficient of Thermal Expansion vs. Temperature (ASTM E831)



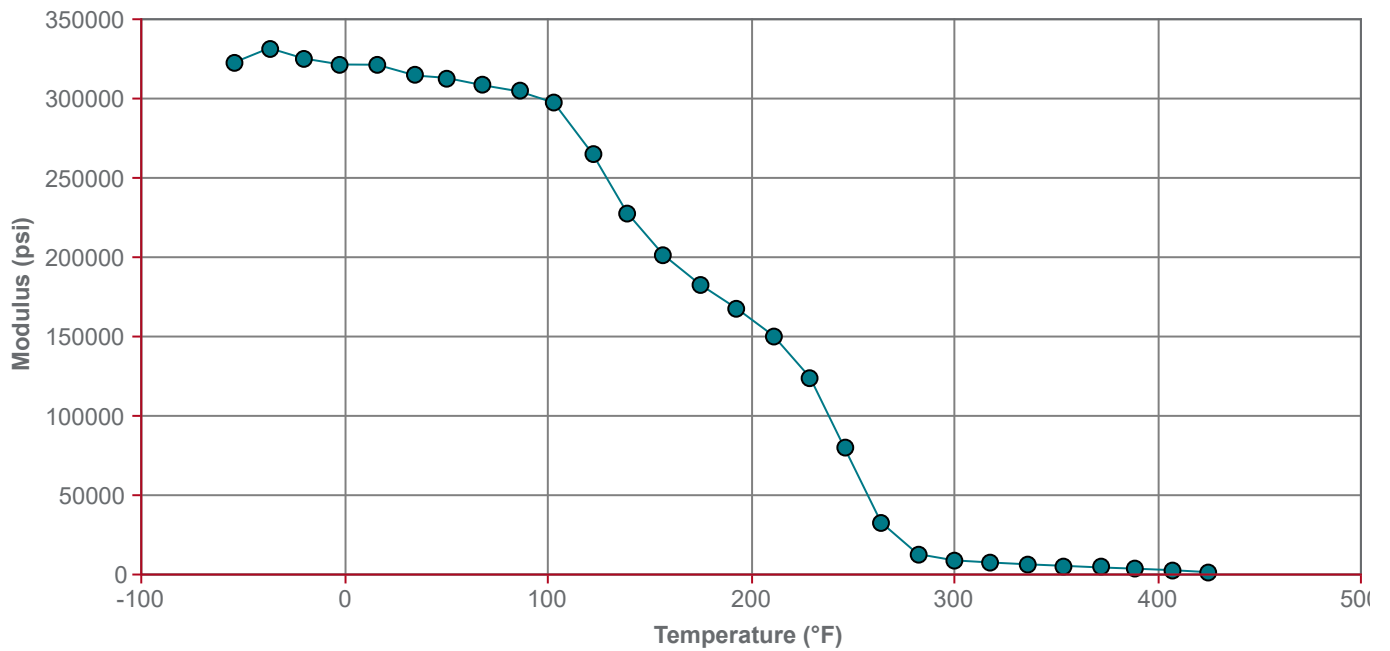
Compressive Stress vs. Strain (ASTM D6641)



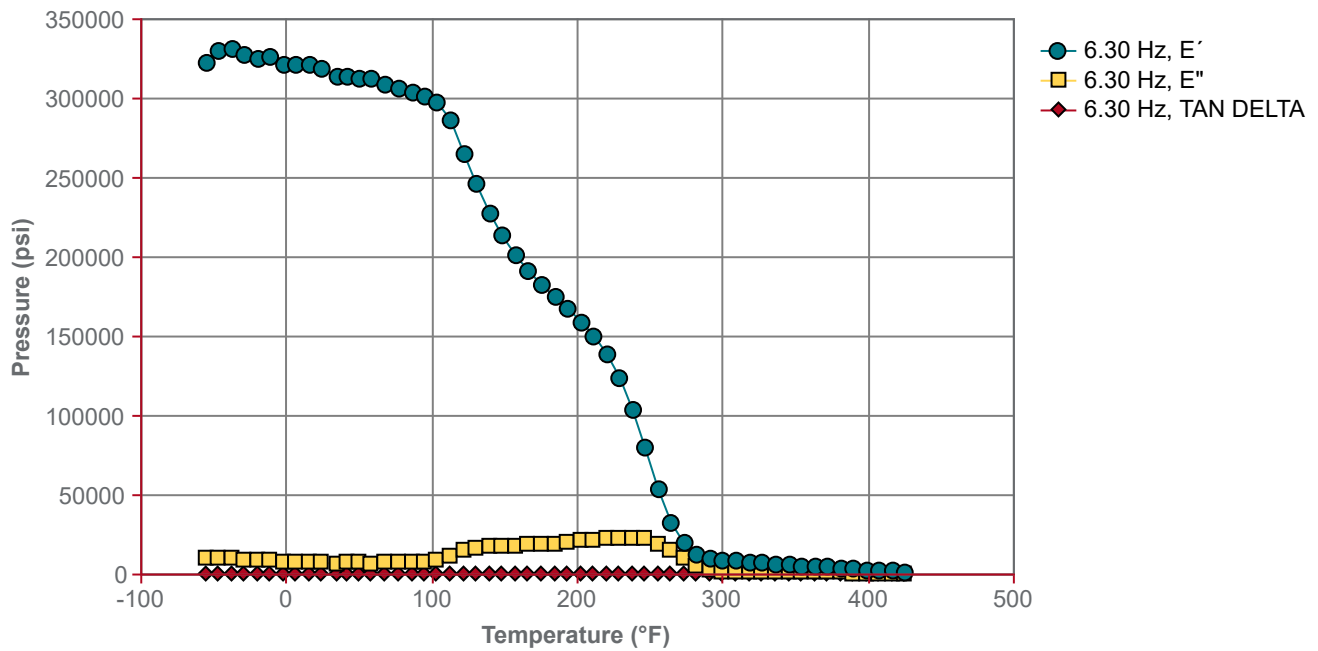
Data Notes
(1) - .02"/MIN



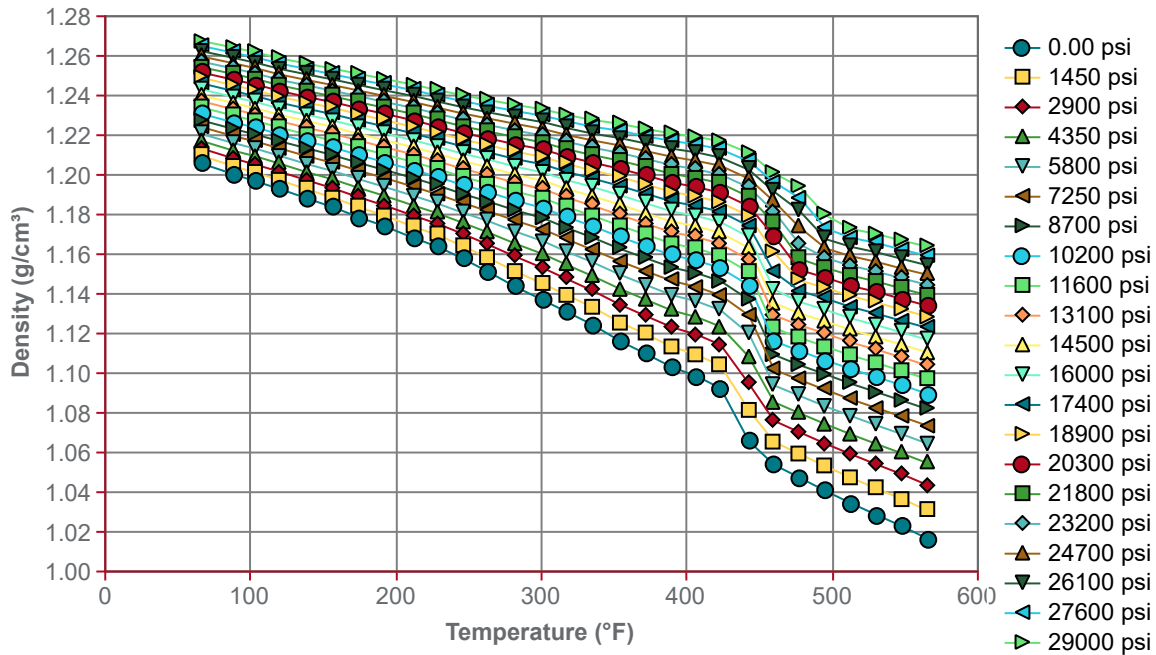
Elastic Modulus vs. Temperature (ASTM D4065)



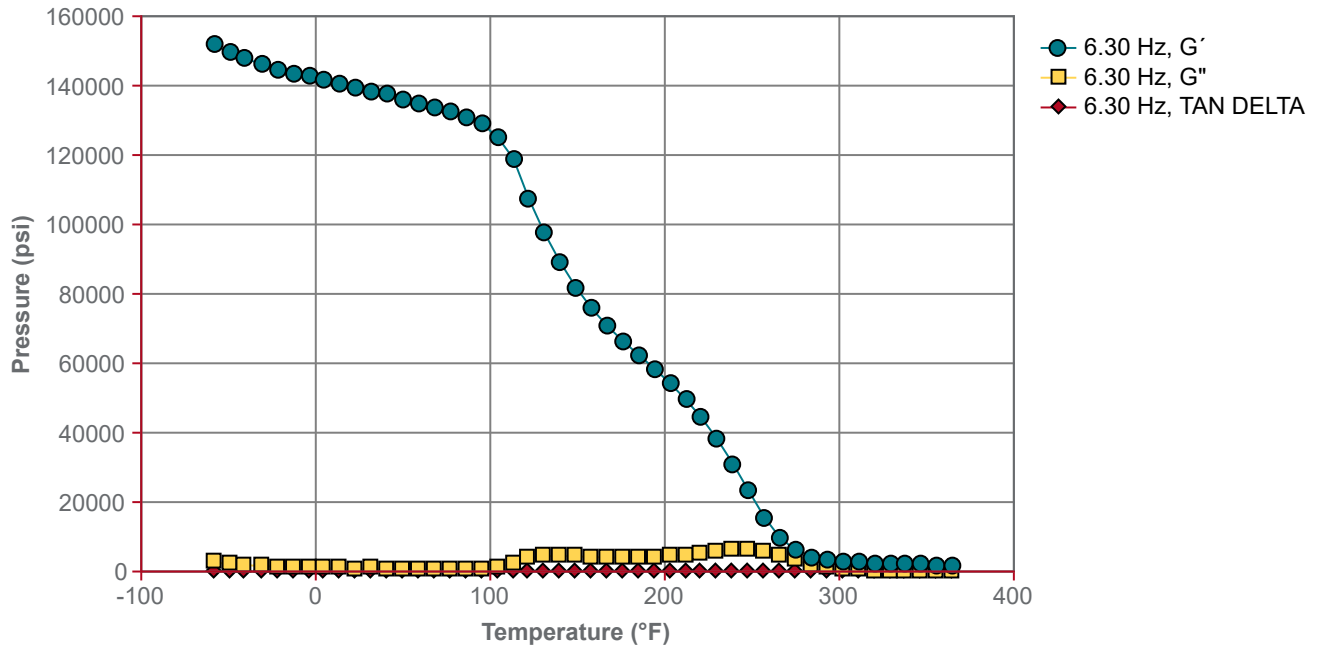
Flexural DMA (ASTM D5023)



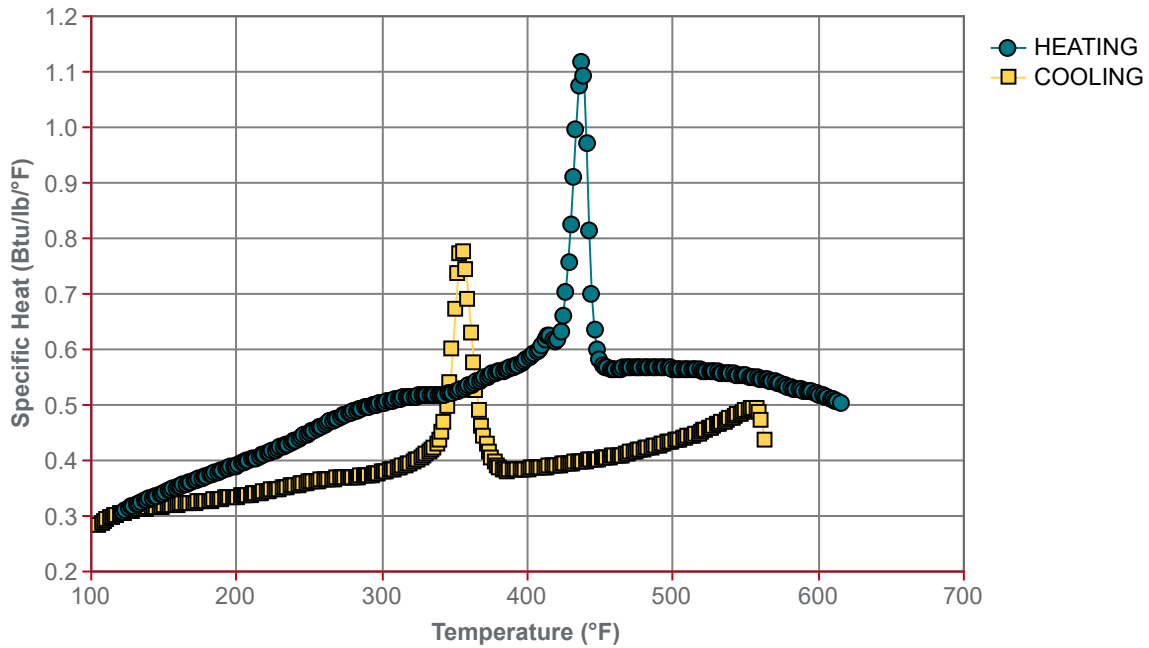
Specific Volume vs. Temperature (PVT)



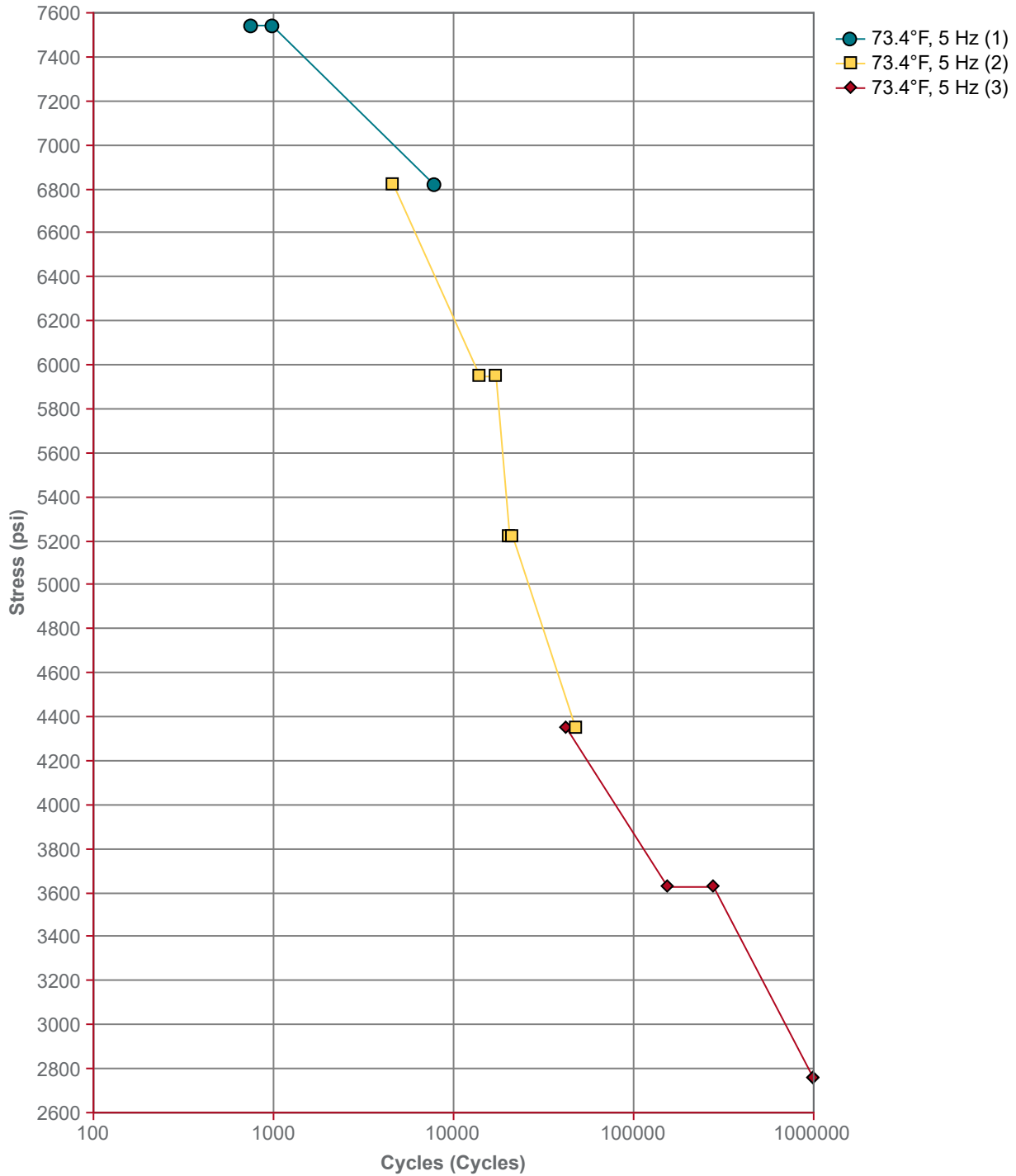
Shear DMA (ASTM D4065)



Specific Heat vs. Temperature (ASTM E1269)



Tensile Fatigue



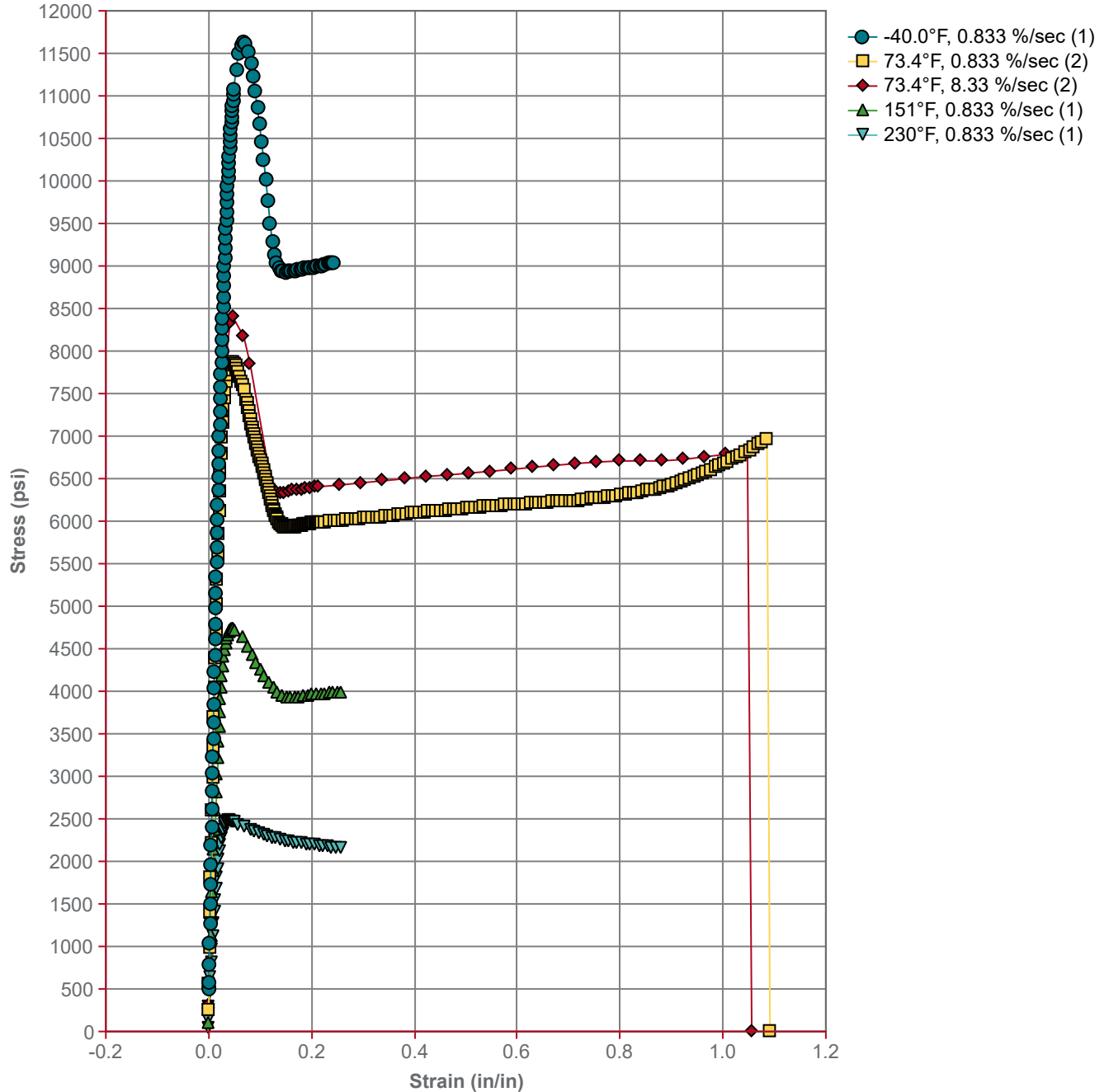
Data Notes

(1) - Series 1

(2) - Series 2



Tensile Stress vs. Strain (ASTM D638)

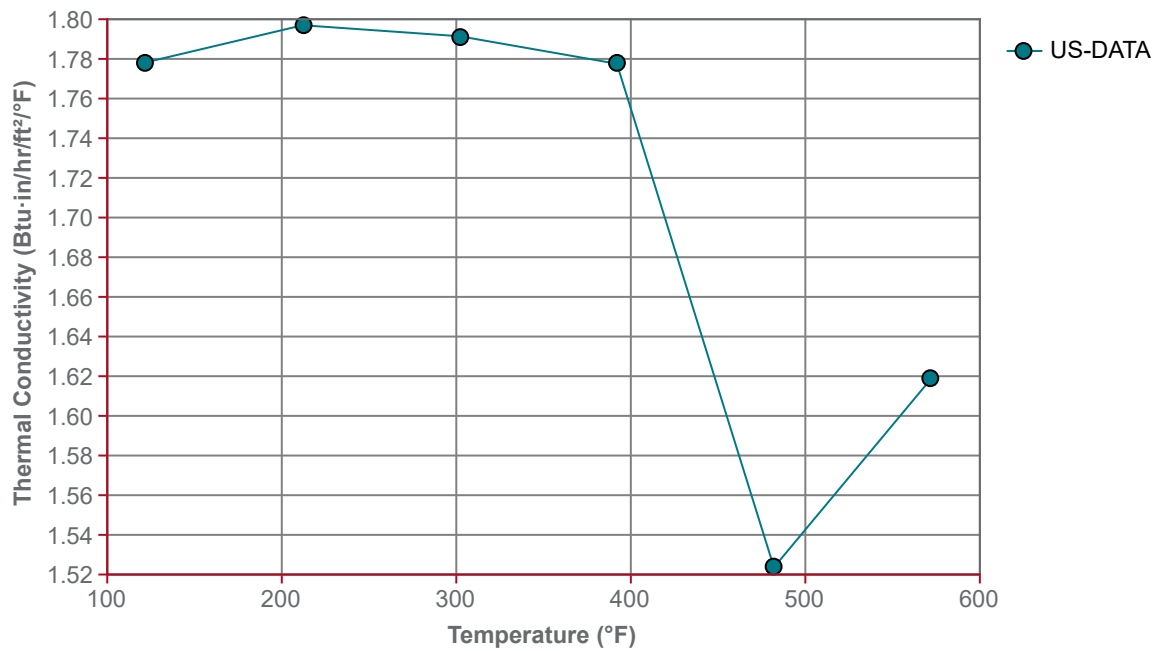


Data Notes

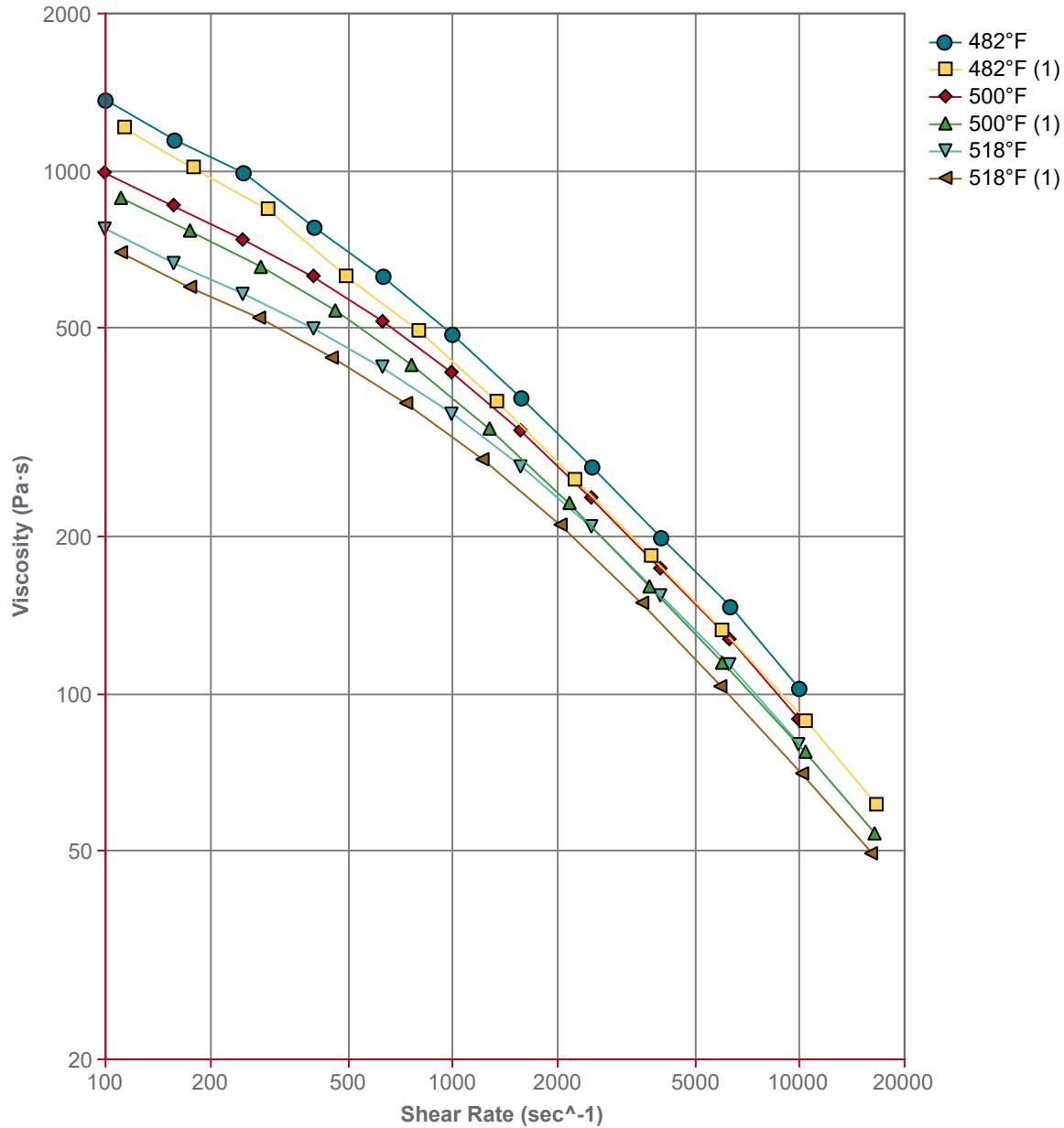
- (1) - STOPPED
- (2) - BREAK



Thermal Conductivity vs. Temperature (ASTM E1530)



Viscosity vs. Shear Rate (ASTM D3835)



Data Notes
(1) - Rab. Corrected Data



Notes

¹ 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.

² Typical properties: these are not to be construed as specifications.

³ Tensile Bar

⁴ 0.20 in/min (5.0 mm/min)

⁵ 2.0 in/min (50 mm/min)

⁶ Type I, 2.0 in/min (50 mm/min)

⁷ 0.051 in/min (1.3 mm/min)

⁸ 0.079 in/min (2.0 mm/min)

⁹ at Yield

¹⁰ 80*10*4 sp=62mm

¹¹ 80*10*4 mm

¹² Rate A (50°C/h), Loading 2 (50 N)

¹³ Tungsten Electrode

¹⁴ Surface



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