Celanese
The chemistry inside innovation™

CELANEX® 2302 GV1/15

CELANEX® PBT

Chemical abbreviation according to ISO 1043-1: PBT Moulding compound ISO 7792- PBT+PET, MGHR, 08-060N, GF15; Polybutylene terephthalate polymer blend with PET, 15 % glass fibre reinforced, injection molded parts with superior gloss. Flammability UL 94 HB minimum thickness 0.85 mm. Recognition by Underwriters Laboratories, USA (UL)

Product information

Resin Identification	(PBT+PET)-GF15	ISO 1043
Part Marking Code	>(PBT+PET)-GF15<	ISO 11469

Rheological properties

Melt volume-flow rate	20	cm^3/10min	ISO 1133
Temperature	509	°F	
Load	4.76	lb	
Viscosity number	2910	in^3/lb	ISO 307, 1628
Molding shrinkage range, parallel	0.4 - 0.6	%	ISO 294-4, 2577
Molding shrinkage range, normal	0.8 - 1	%	ISO 294-4, 2577

Typical mechanical properties

Tensile modulus	899000	psi	ISO 527-1/-2
Tensile stress at break, 5mm/min	16700	psi	ISO 527-1/-2
Tensile strain at break, 5mm/min	3.5	%	ISO 527-1/-2
Flexural strength	23200	psi	ISO 178
Flexural strain at failure	3	%	ISO 178
Tensile creep modulus, 1h	769000	psi	ISO 899-1
Tensile creep modulus, 1000h	624000	psi	ISO 899-1
Charpy impact strength, 23°C	16.6	$ftlb/in^2$	ISO 179/1eU
Charpy impact strength, -30°C	16.6	$ftlb/in^2$	ISO 179/1eU
Charpy notched impact strength, 23°C	3.09	$ftlb/in^2$	ISO 179/1eA
Charpy notched impact strength, -30°C	3.09	$ftlb/in^2$	ISO 179/1eA
Ball indentation hardness, H 961/30	27600	psi	ISO 2039-1

Thermal properties

Melting temperature, 10°C/min	491	°F	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	374	°F	ISO 75-1/-2
Temperature of deflection under load, 8 MPa	149	°F	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	410	°F	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	0.19	E-4/°F	ISO 11359-1/-2
Thermal conductivity of melt	0.15	W/(m K)	ISO 22007-2
Specific heat capacity of melt	1820	J/(kg K)	ISO 22007-4

Flammability

Burning Behav. at 1.5mm nom. thickn.	HB	class	IEC 60695-11-10
Thickness tested	0.0551	in	IEC 60695-11-10
Burning Behav. at thickness h	HB	class	IEC 60695-11-10
Thickness tested	0.0335	in	IEC 60695-11-10
UL recognition	yes		UL 94

CELANEX® 2302 GV1/15

CELANEX® PBT

Oxygen index	19	%	ISO 4589-1/-2

Electrical properties

Relative permittivity, 100Hz	4.1		IEC 62631-2-1
Relative permittivity, 1MHz	4		IEC 62631-2-1
Dissipation factor, 100Hz	12	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	180	E-4	IEC 62631-2-1
Volume resistivity	>1E13	Ohm.m	IEC 62631-3-1
Surface resistivity	>1E15	Ohm	IEC 62631-3-2
Electric strength	711	kV/in	IEC 60243-1
Comparative tracking index	250		IEC 60112

Physical/Other properties

Humidity absorption, 2mm	0.15	%	Sim. to ISO 62
Water absorption, 2mm	0.45	%	Sim. to ISO 62
Density	0.0516	lb/in^3	ISO 1183
Density of melt	76.2	lb/ft^3	

Injection

Drying Recommended	yes	
Drying Temperature	248	°F
Drying Time, Dehumidified Dryer	4	h
Processing Moisture Content	≤0.02	%
Melt Temperature Optimum	500	°F
Min. melt temperature	491	°F
Max. melt temperature	527	°F
Max. screw tangential speed	0.1 - 0.3	m/s
Mold Temperature Optimum	212	°F
Min. mold temperature	194	°F
Max. mold temperature	266	°F
Ejection temperature	424	°F

Automotive

OEM	STANDARD	ADDITIONAL INFORMATION
Bosch	N28 BN08-GF009	Natural
Bosch	N28 BN08-GF009	Black

Characteristics

Processing	Injection Molding
Additives	Release agent
Special characteristics	Heat stabilized or stable to heat, High Gloss

CELANEX® 2302 GV1/15

CELANEX® PBT

Additional information

Injection molding

Preprocessing

To avoid hydrolytic degradation during processing, CELANEX resins have to be dried to a moisture level equal to or less than 0,02%. The drying should be done in a dry-air dryer (dew point < -30°C) with a temperature of 120 to 140 °C and a drying time of 2 to 4 hours. In case of longer residence times in the dry-air dryer, the temperature should be reduced to 100°C.
The time between drying and processing should be kept as short as possible. The processing machine feed hopper should be closed during the processing operation.

Processing

Melt Temperature 265-275 °C
Mold Temperature *) 90-100 °C
Maximum Barrel Residence Time **) 5-10 min
Injection Speed fast
Peripheral screw speed max.0,3 m/sec
Back Pressure 10-30 bar
Injection Pressure 600-1000 bar
Holding Pressure 400-800 bar
Nozzle Design open design preferred

Injection speed, injection pressure and holding pressure have to be optimized to the individual article geometry. To avoid material degradation during processing low back pressure and minimum screw speed have to be used. Overheating of the material has to be avoided.

Celanese recommends only externally heated hot runner systems.

*) For moulded parts with especially high requirements to the surface quality or dimensional stability, a mold temperature of up to 110 °C can be advantageous.

**) If the cylinder temperatures are higher than the recommended maximum temperatures, the max. residence time in the barrel has to be reduced.

Processing Notes

Pre-Drying

CELANEX should in principle be predried. Because of the necessary low maximum residual moisture content the use of dry air dryers is recommended. The dew point should be =< - 30° C. The time between drying and processing should be as short as possible.

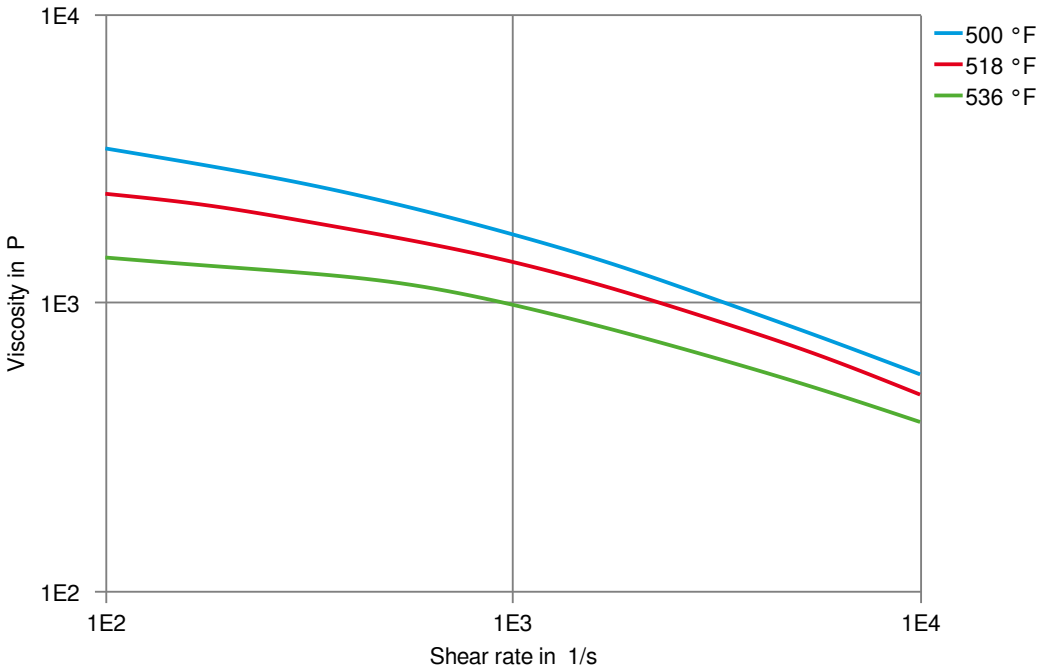
Storage

For subsequent storage of the material in the dryer until processed (<= 60 h) it is necessary to lower the temperature to 100° C.

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CELANEX® PBT

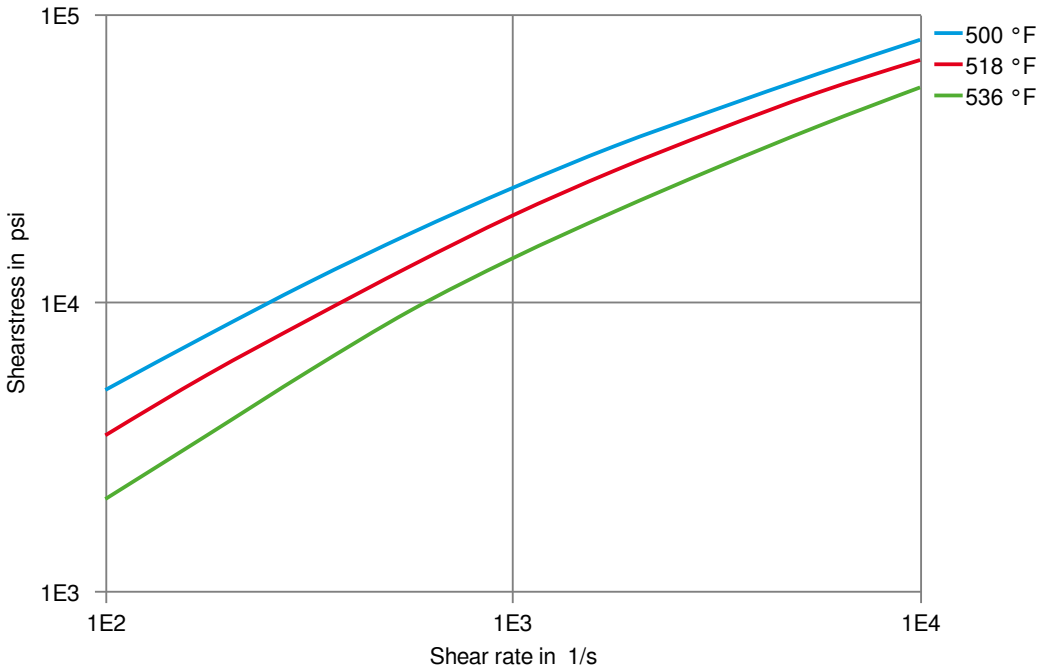
Viscosity-shear rate



CELANEX® 2302 GV1/15

CELANEX® PBT

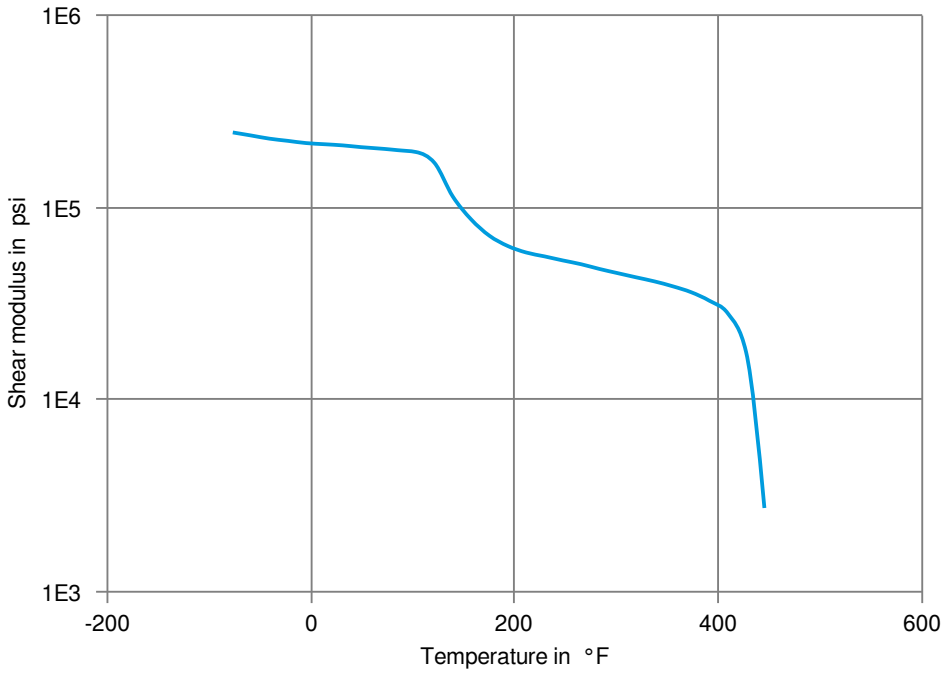
Shearstress-shear rate



CELANEX® 2302 GV1/15

CELANEX® PBT

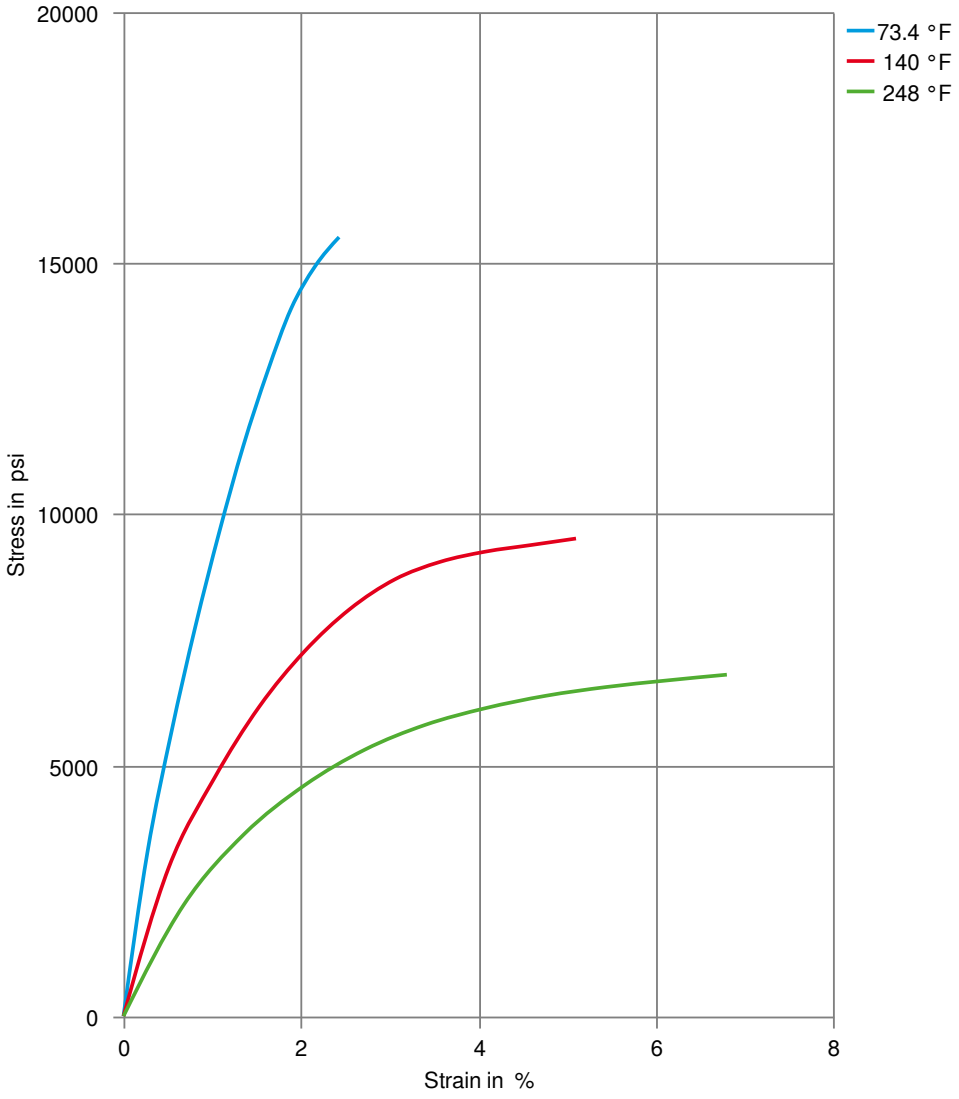
Dynamic Shear modulus-temperature



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CELANEX® PBT

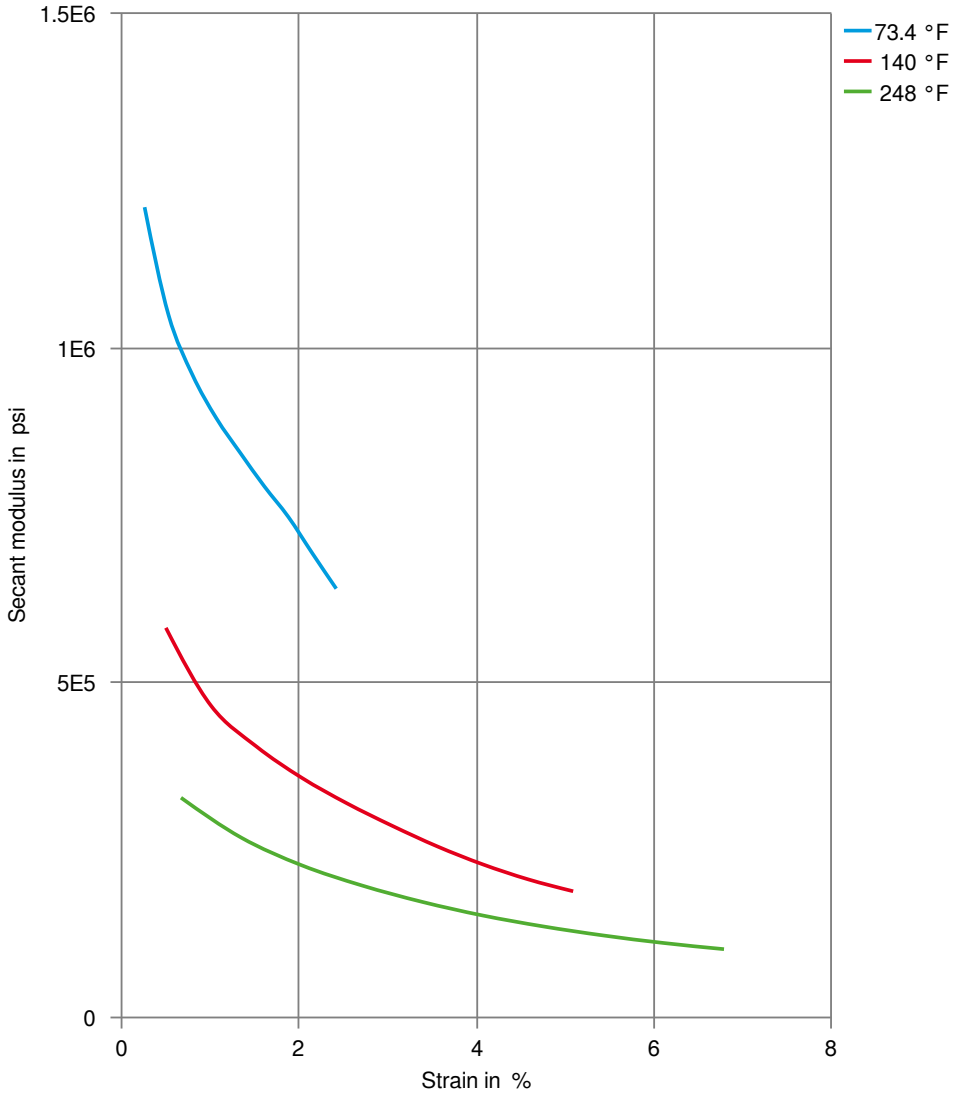
Stress-strain



CELANEX® 2302 GV1/15

CELANEX® PBT

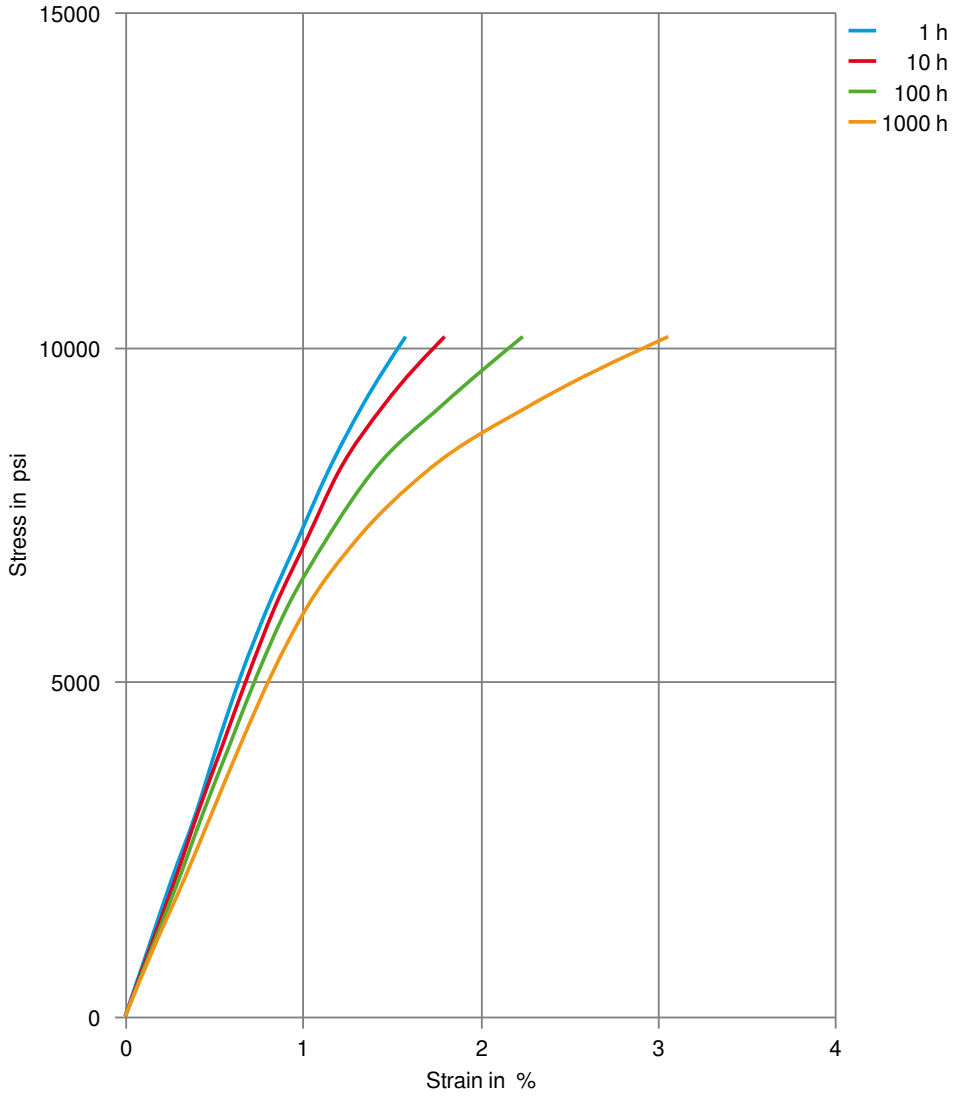
Secant modulus-strain



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CELANEX® PBT

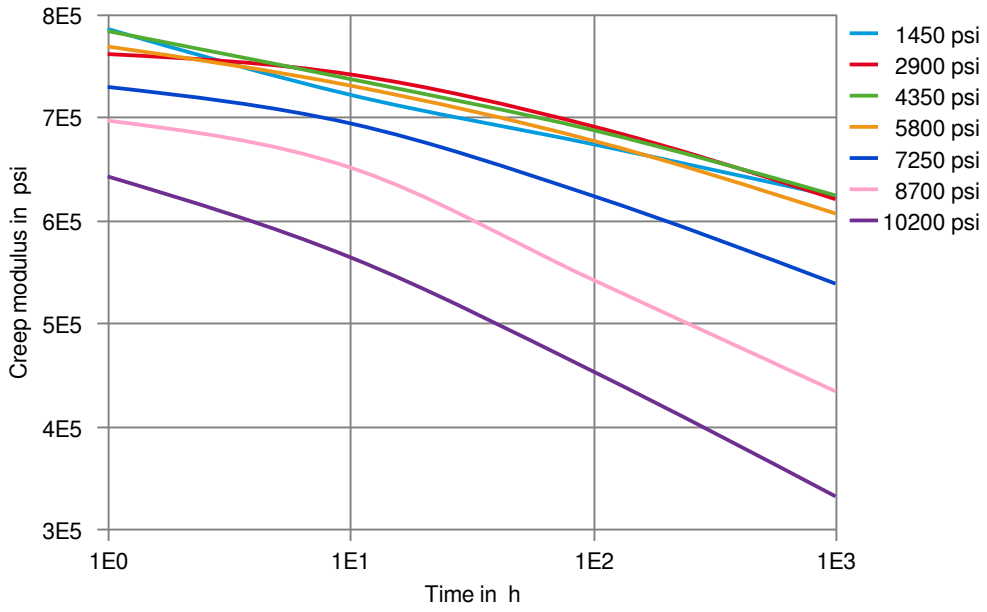
Stress-strain (isochronous) 73.4 °F



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CELANEX® PBT

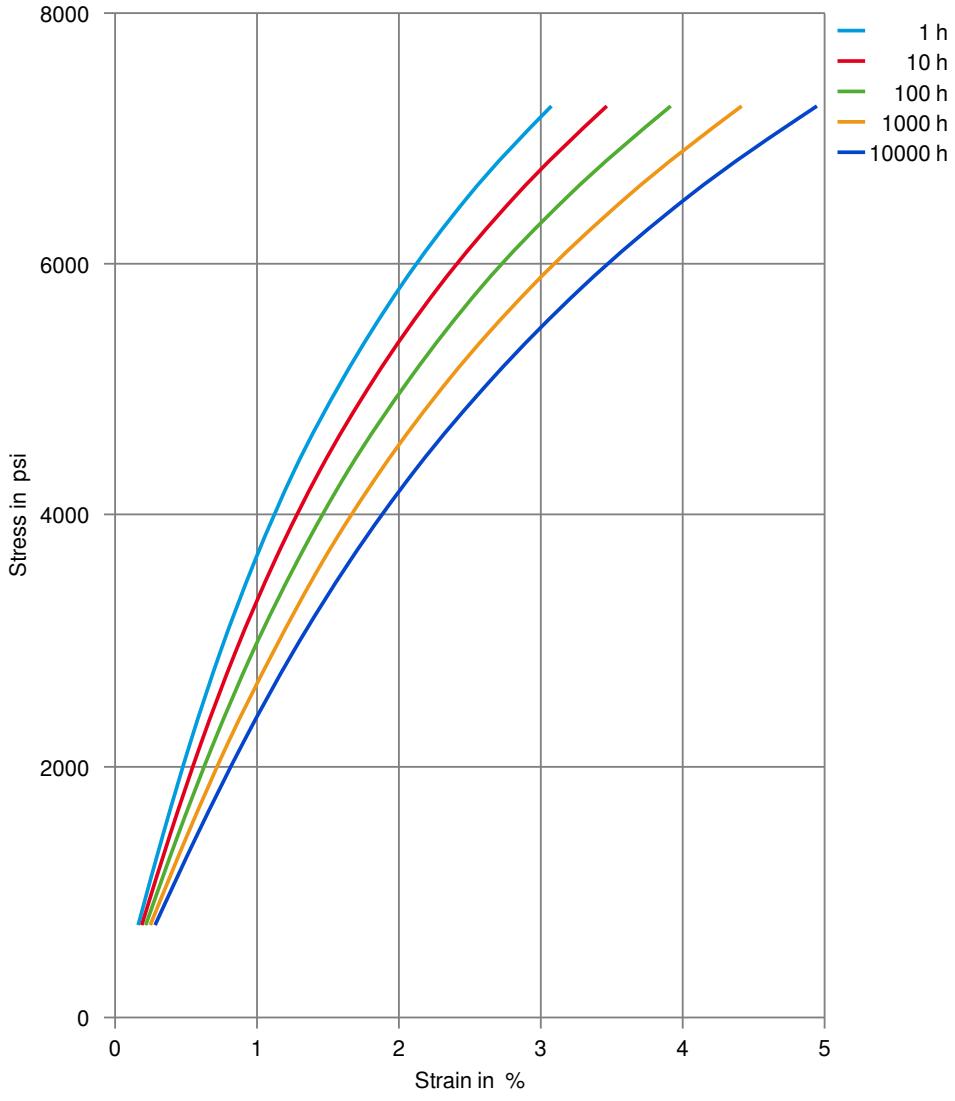
Creep modulus-time 73.4 °F



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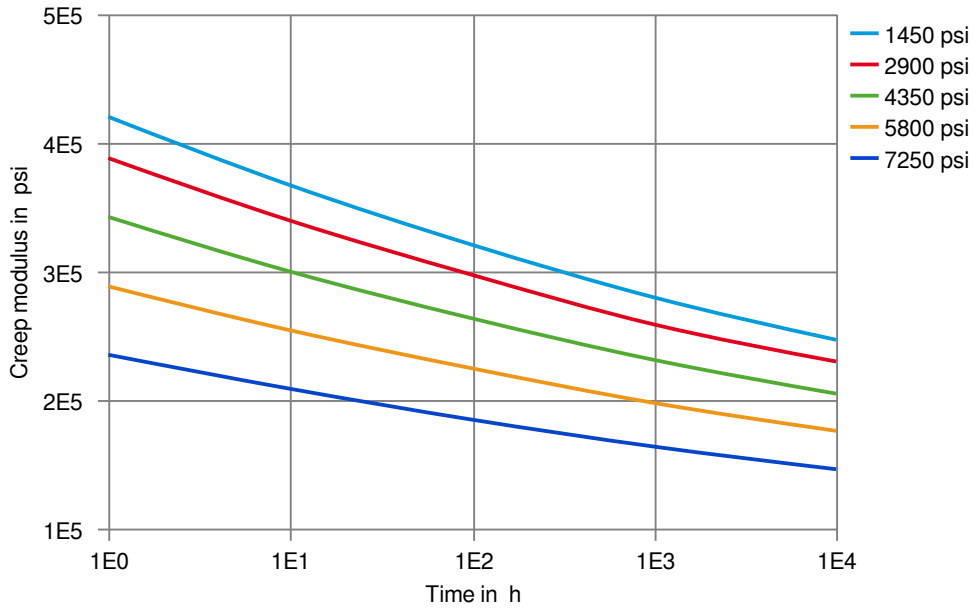
Stress-strain (isochronous) 140 °F



CELANEX® 2302 GV1/15

CELANEX® PBT

Creep modulus-time 140 °F



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