

FORTRON[®] LM1140L4

Polyphenylene sulfide

Fortron LM1140L4 is a 40% glass-reinforced grade that is the strongest and toughest product available. It is laser markable. It exhibits excellent heat and chemical resistance, good electrical properties and is inherently flame-retardant. The high hardness and rigidity at elevated temperatures allows for good load bearing performance. This product has good weldability due to the modest filler level. Applications made of this grade are electrical components (i.e. bobbins, lamp housings, brush holders) and various other components requiring strength and resistance to aggressive chemicals (i.e. automotive heaters, pumps, valves, fuel rails, microwave oven rings and distillation column packings).

Product information

Resin Identification	PPS-GF40	ISO 1043
Part Marking Code	>PPS-GF40<	ISO 11469

Rheological properties

Moulding shrinkage, parallel	0.3 %	ISO 294-4, 2577
Moulding shrinkage, normal	0.6 %	ISO 294-4, 2577

Typical mechanical properties

Tensile modulus	14700 MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	200 MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	1.9 %	ISO 527-1/-2
Flexural modulus	14500 MPa	ISO 178
Flexural strength	280 MPa	ISO 178
Compressive modulus	15000 MPa	ISO 604
Compressive strength	265 MPa	ISO 604
Charpy impact strength, 23°C	53 kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	53 kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	10 kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	10 kJ/m ²	ISO 179/1eA
Izod notched impact strength, 23°C	10 kJ/m ²	ISO 180/1A
Izod notched impact strength, -30°C	10.0 kJ/m ²	ISO 180/1A
Izod impact strength, 23°C	34 kJ/m ²	ISO 180/1U
Izod impact strength, -30°C	34 kJ/m ²	ISO 180/1U
Hardness, Rockwell, M-scale	100	ISO 2039-2
Poisson's ratio	0.33 ^[C]	

[C]: Calculated

Thermal properties

Melting temperature, 10°C/min	280 °C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	90 °C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	270 °C	ISO 75-1/-2
Temperature of deflection under load, 8 MPa	215 °C	ISO 75-1/-2
Coefficient of linear thermal expansion (CLTE), parallel	26 E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	42 E-6/K	ISO 11359-1/-2
Specific heat capacity of melt	1500 J/(kg K)	ISO 22007-4

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Processing

On injection molding machines with 15-25 D long three-section screws, as are usual in the trade, the FORTRON is processable. A shut-off nozzle is preferred to a free-flow nozzle.

Melt temperature 320-340 degC
Mold wall temperature at least 140 degC

A medium injection rate is normally preferred. All mold cavities must be effectively vented.

Postprocessing

Tool temperature of at least 135 degC is recommended for parts to achieve maximum crystallizable potential.

Pre-Drying

FORTRON 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 $\leq -30^{\circ}\text{C}$. The time between drying and processing should be as short as possible.

Storage

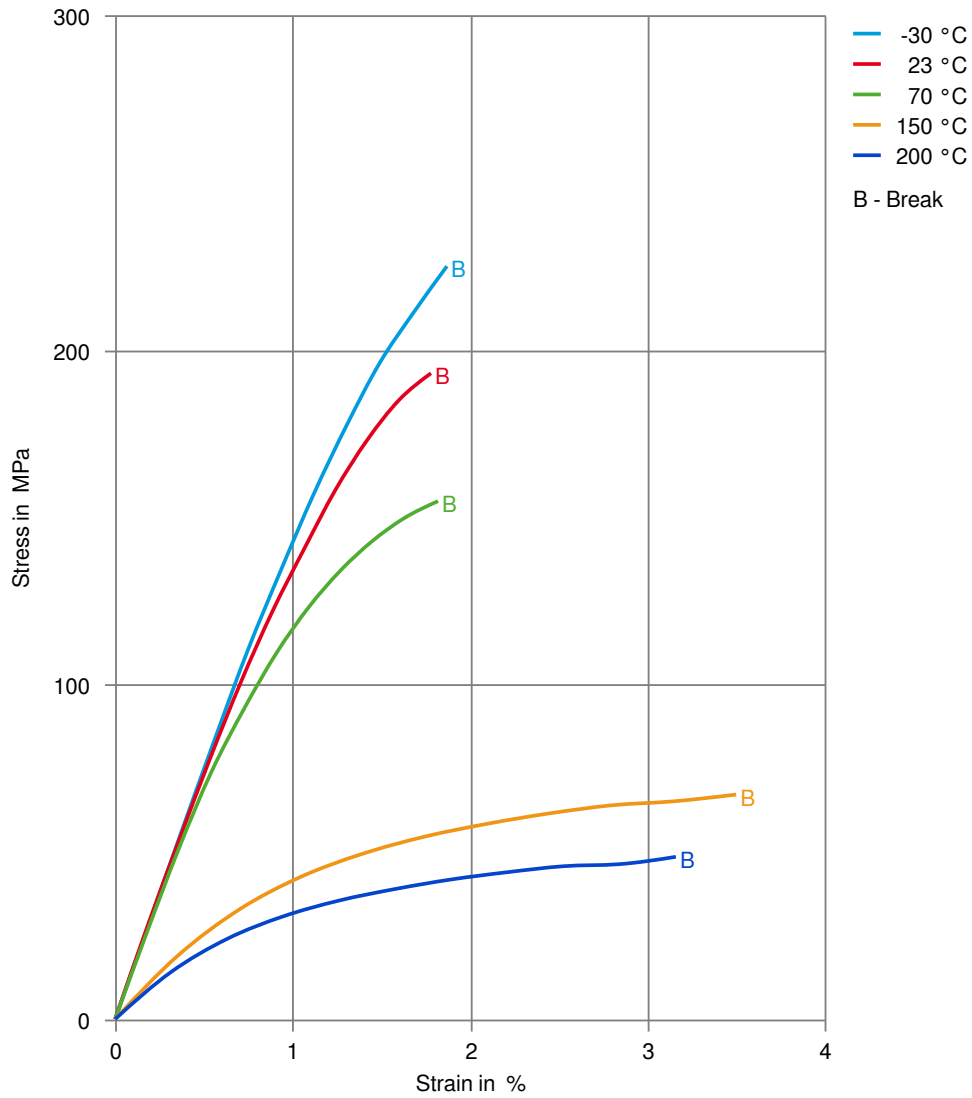
For subsequent storage the material should be stored dry in the dryer until processed ($\leq 60\text{ h}$).

Processing Notes

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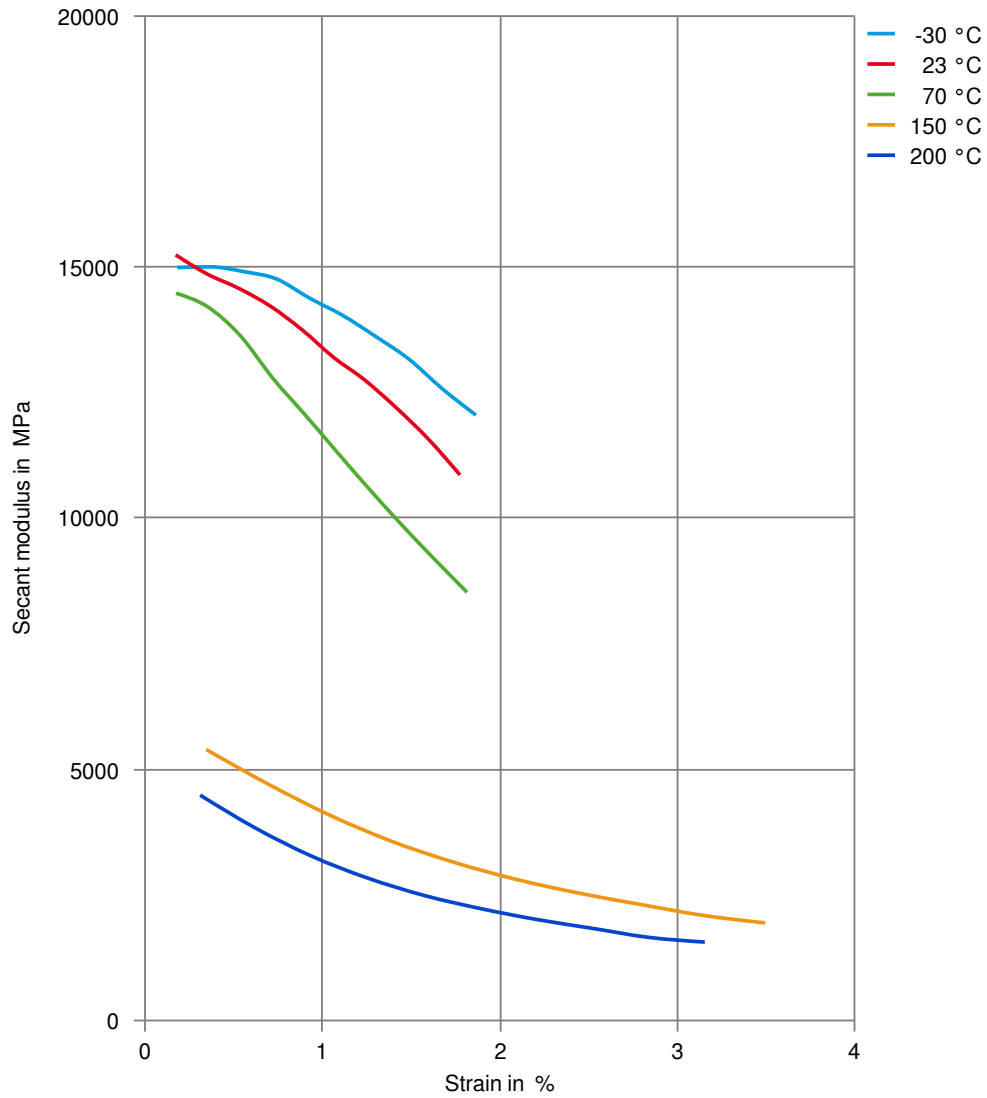
Stress-strain



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Polyphenylene sulfide

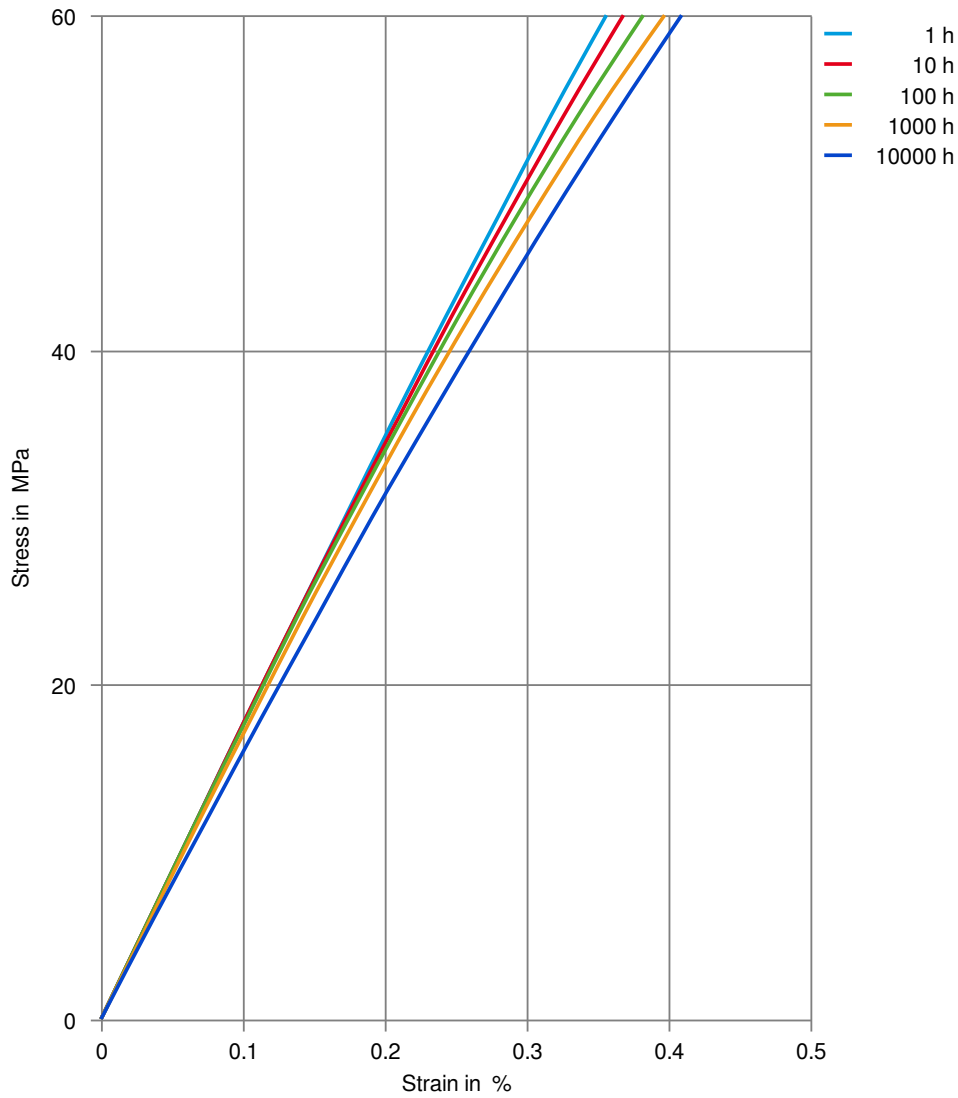
Secant modulus-strain



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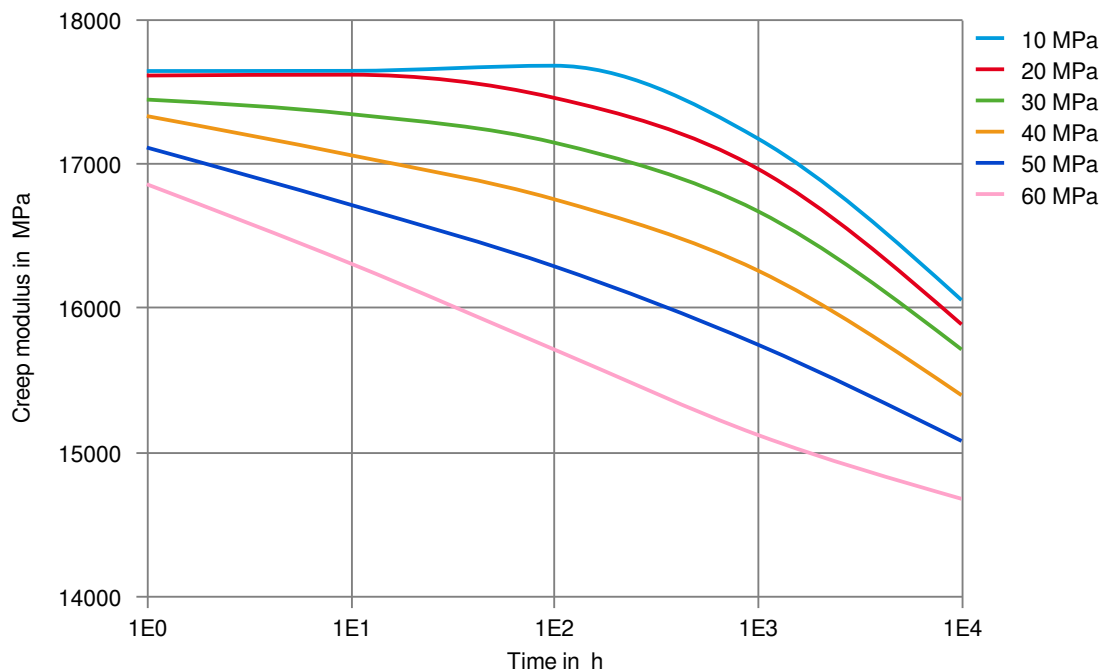
Stress-strain (isochronous) 23°C



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Polyphenylene sulfide

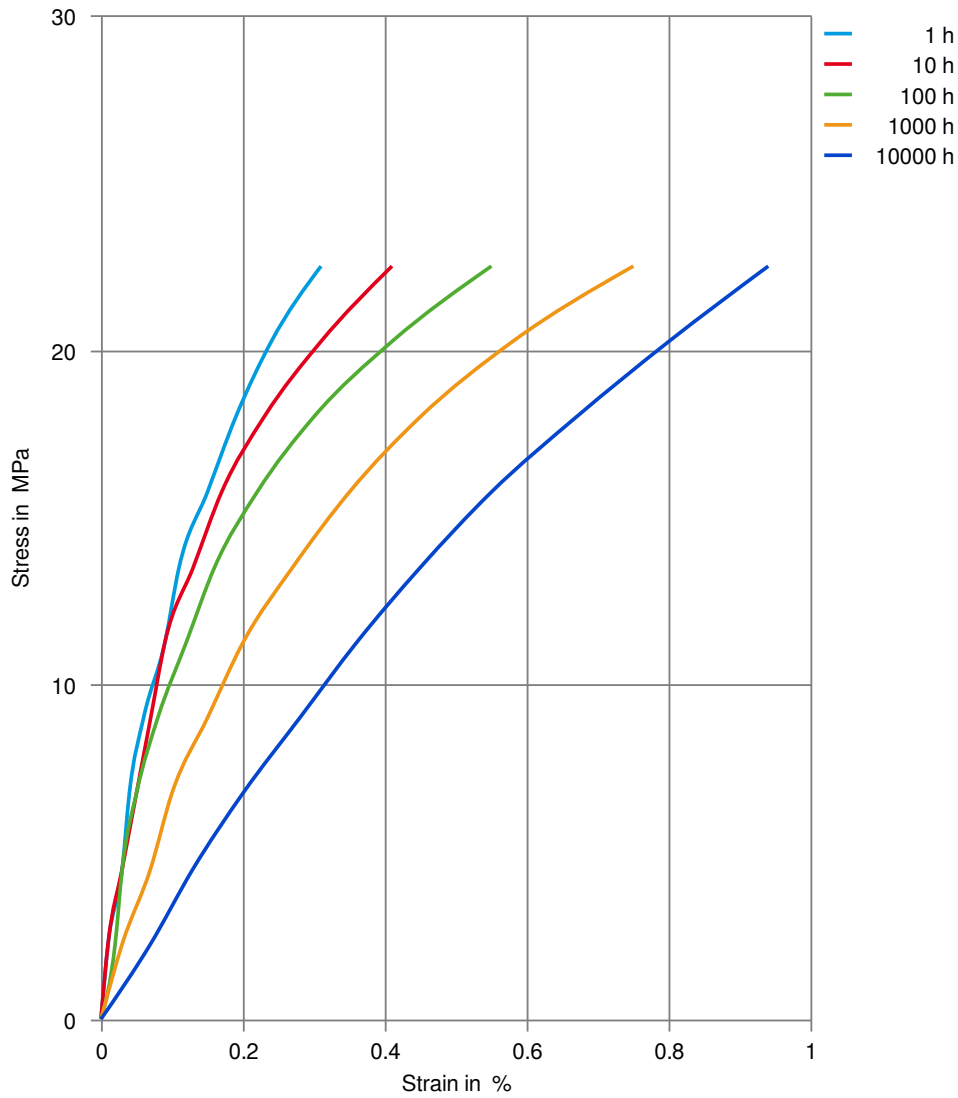
Creep modulus-time 23°C



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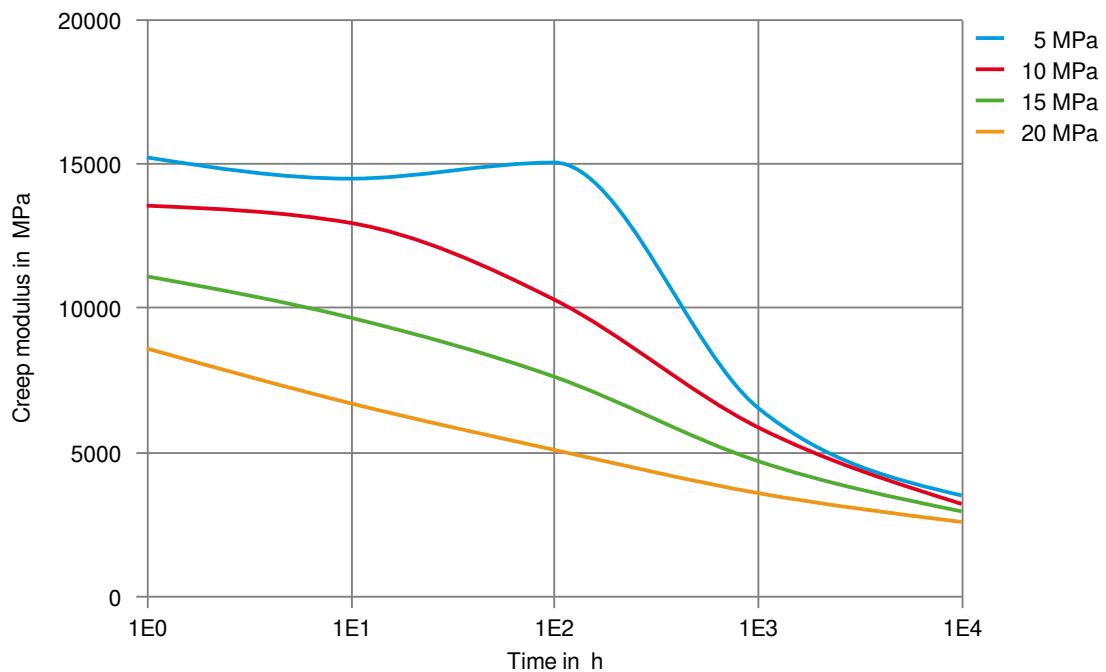
Stress-strain (isochronous) 120°C



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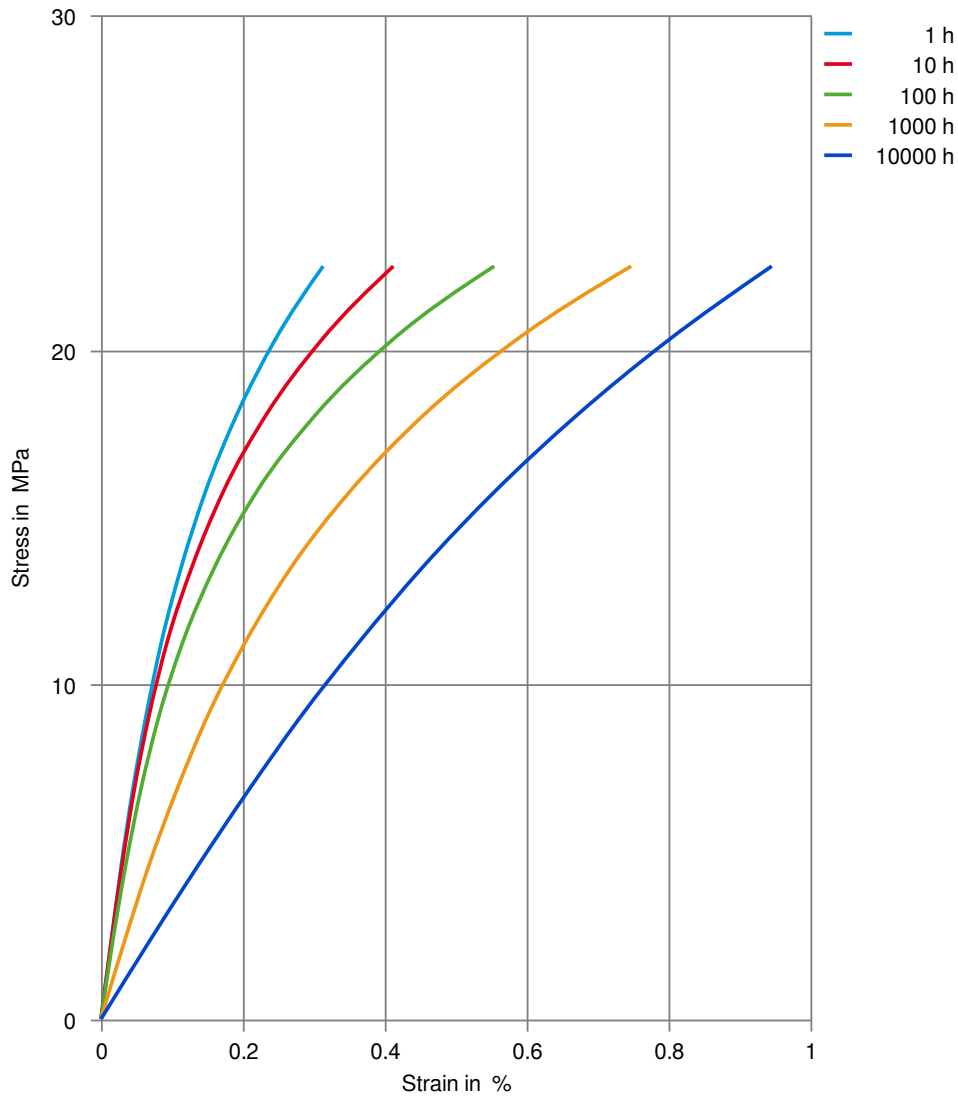
Creep modulus-time 120°C



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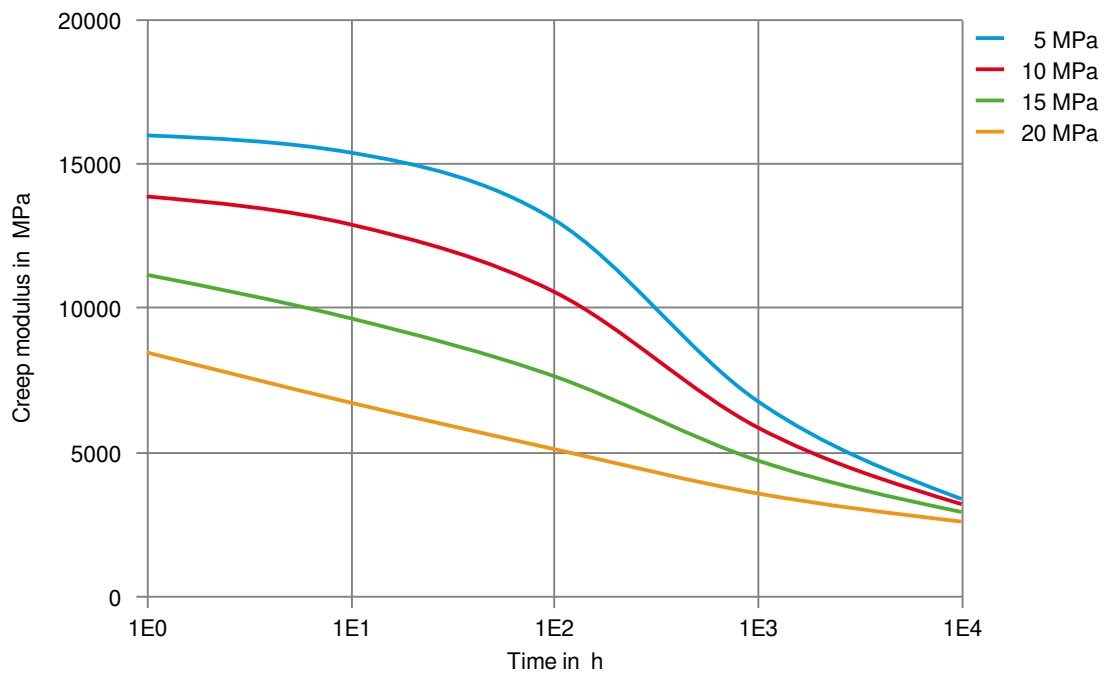
Stress-strain (isochronous) 150°C



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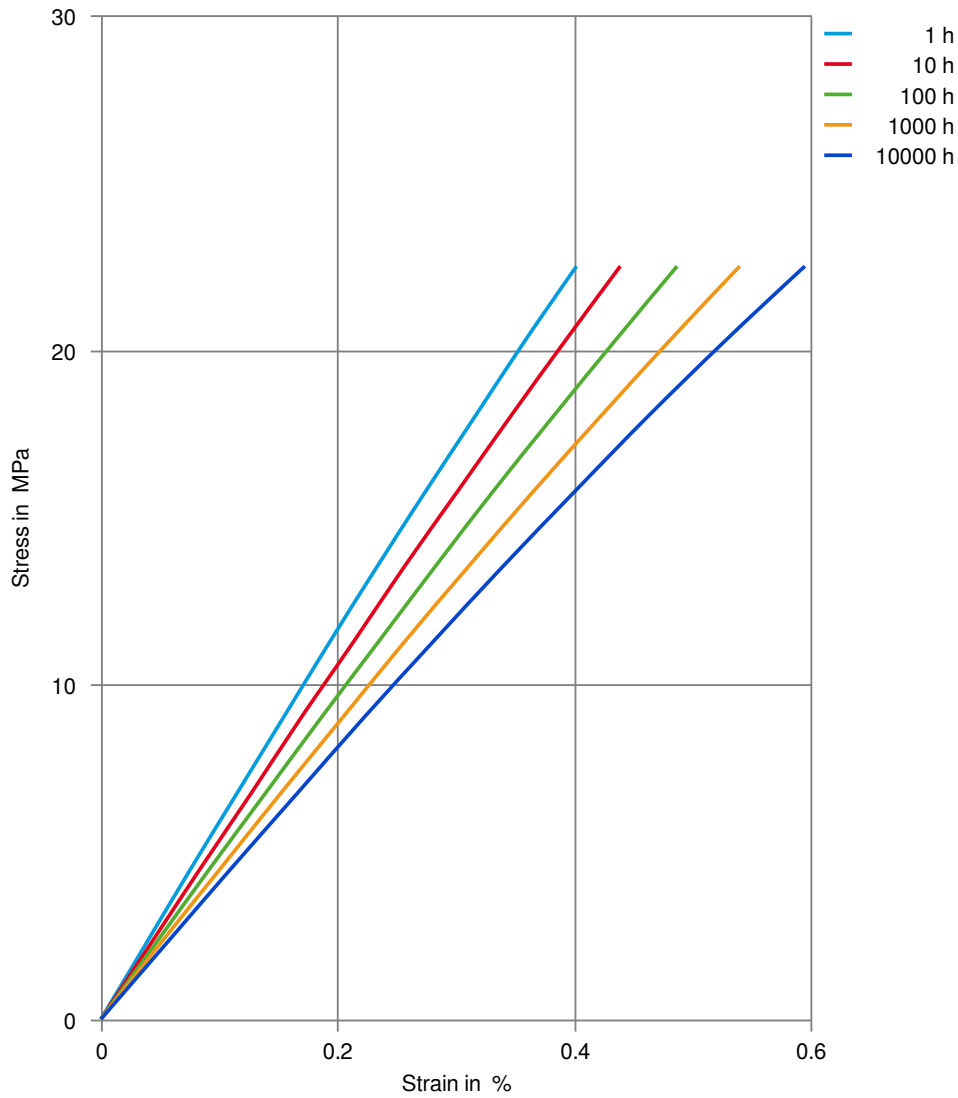
Creep modulus-time 150°C



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Stress-strain (isochronous) 200°C



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Creep modulus-time 200°C

