

IMPET® 2700 GV1/45

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Polyethylene terephthalate, 45 % glass filled, high flowability, excellent gloss, high modulus, very high heat deflection temperature.

Product information

Resin Identification	PET-GF45	ISO 1043
Part Marking Code	>PET-GF45<	ISO 11469

Rheological properties

Viscosity number	70 cm ³ /g	ISO 307, 1628
Moulding shrinkage range, parallel	0.2 - 0.3 %	ISO 294-4, 2577
Moulding shrinkage range, normal	0.6 - 0.8 %	ISO 294-4, 2577

Typical mechanical properties

Tensile modulus	17000 MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	200 MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	1.8 %	ISO 527-1/-2
Flexural modulus	17000 MPa	ISO 178
Flexural strength	240 MPa	ISO 178
Flexural strain at failure	2.5 %	ISO 178
Charpy impact strength, 23°C	35 kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	31 kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	12 kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	13 kJ/m ²	ISO 179/1eA
Izod notched impact strength, 23°C	13 kJ/m ²	ISO 180/1A
Hardness, Rockwell, M-scale	121	ISO 2039-2
Ball indentation hardness, H 961/30	300 MPa	ISO 2039-1
Poisson's ratio	0.33	

Thermal properties

Melting temperature, 10°C/min	250 °C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	72 °C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	228 °C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	252 °C	ISO 75-1/-2
Temperature of deflection under load, 8 MPa	170 °C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	255 °C	ISO 306
Coeff. of linear therm. expansion, parallel	15 E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	100 E-6/K	ISO 11359-1/-2

Flammability

Burning Behav. at 1.5mm nom. thickn.	HB class	IEC 60695-11-10
Thickness tested	1.6 mm	IEC 60695-11-10
Burning Behav. at thickness h	HB class	IEC 60695-11-10
Thickness tested	0.8 mm	IEC 60695-11-10
Oxygen index	26 %	ISO 4589-1/-2

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Electrical properties

Relative permittivity, 100Hz	5.2	IEC 62631-2-1
Relative permittivity, 1MHz	4.5	IEC 62631-2-1
Dissipation factor, 100Hz	30 E-4	IEC 62631-2-1
Dissipation factor, 1MHz	165 E-4	IEC 62631-2-1
Volume resistivity	1E14 Ohm.m	IEC 62631-3-1
Surface resistivity	1E14 Ohm	IEC 62631-3-2
Electric strength	35 kV/mm	IEC 60243-1
Comparative tracking index	175	IEC 60112
Arc Resistance	110 s	UL 746B

Physical/Other properties

Humidity absorption, 2mm	0.15 %	Sim. to ISO 62
Water absorption, 2mm	0.4 %	Sim. to ISO 62
Density	1740 kg/m ³	ISO 1183

Injection

Drying Temperature	140 °C
Drying Time, Dehumidified Dryer	2 - 4 h
Processing Moisture Content	≤0.01 %
Melt Temperature Optimum	280 °C
Min. melt temperature	270 °C
Max. melt temperature	290 °C
Screw tangential speed	≤0.144 m/s
Mold Temperature Optimum	140 °C
Min. mould temperature	135 °C
Max. mould temperature	145 °C
Ejection temperature	184 °C

Characteristics

Additives	Release agent
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Additional information

Injection molding

Preprocessing

To avoid hydrolytic degradation during processing, IMPET resins have to be dried to a moisture level equal to or less than 0,01%. 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

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Melt Temperature 270-290 °C
Mold Temperature 135-145 °C
Maximum Barrel Residence Time *) 5-10 min
Injection Speed fast
Peripheral screw speed max.0,3 m/sec
Back Pressure 10-20 bar
Injection Pressure 600-900 bar
Holding Pressure 300-500 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.

Ticona recommends only externally heated hot runner systems.

*) 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

IMPET 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.

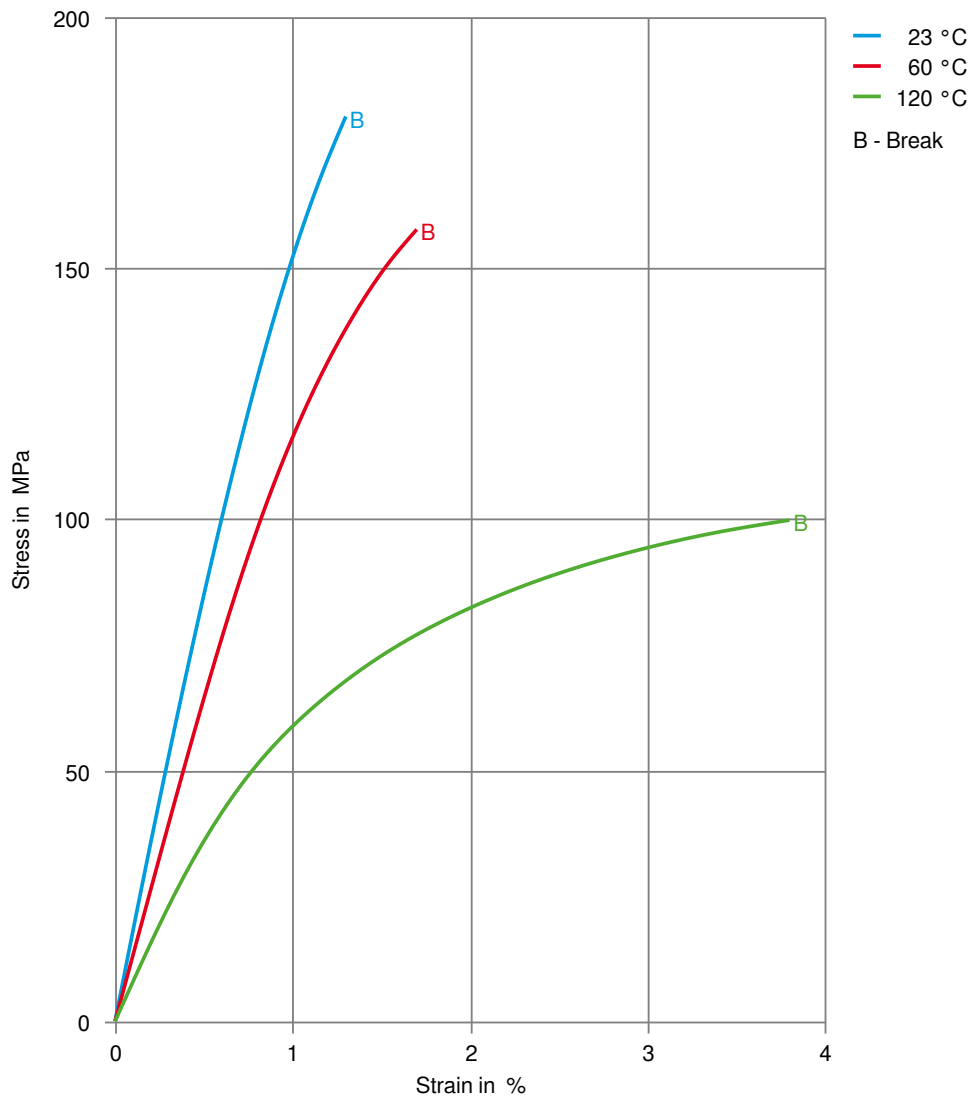
Storage

For subsequent storage of the material in the dryer until processed ($\leq 60\text{ h}$) it is necessary to lower the temperature to 100°C .

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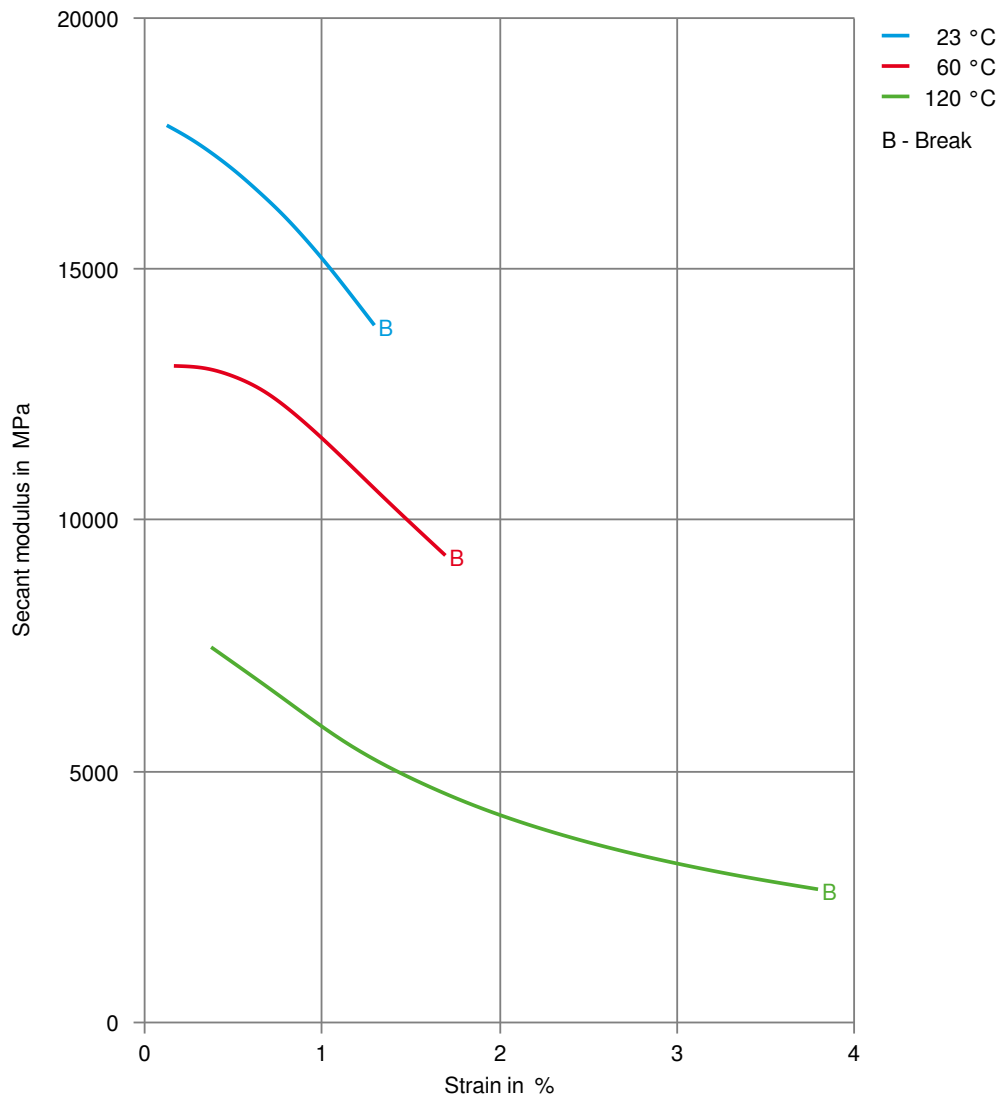
Stress-strain



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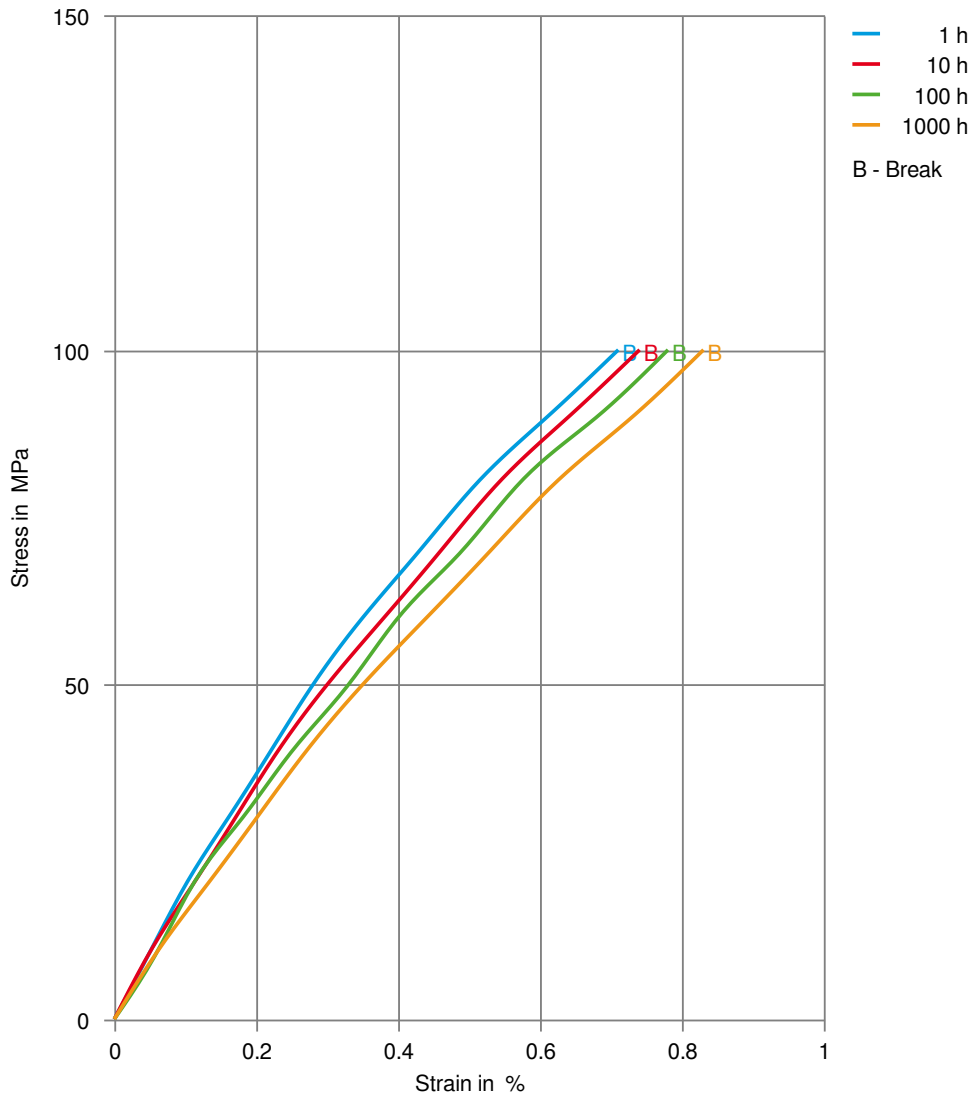
Secant modulus-strain



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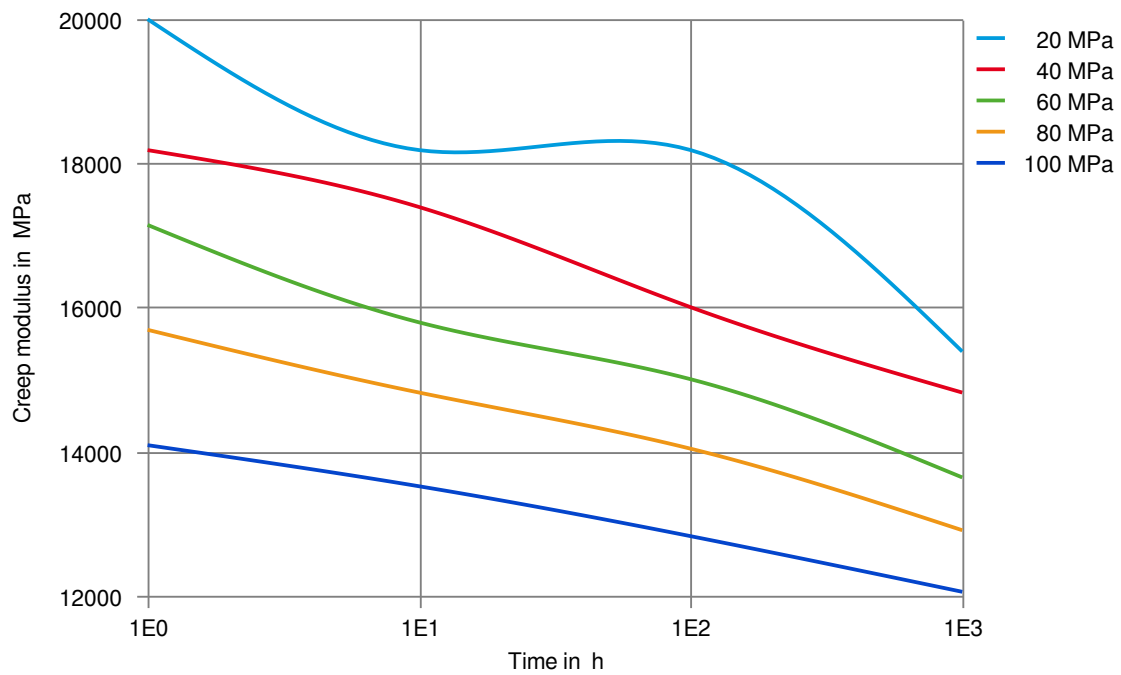
Stress-strain (isochronous) 23°C



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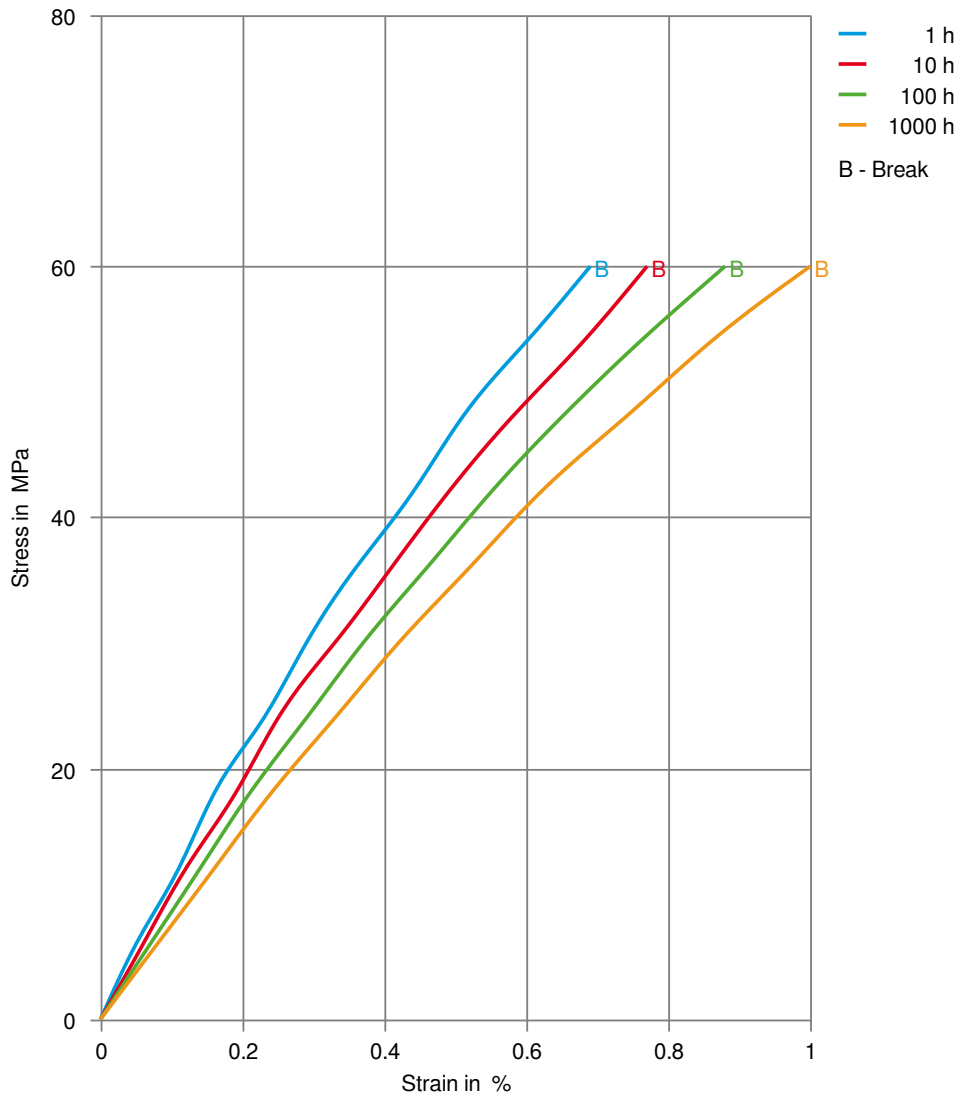
Creep modulus-time 23°C



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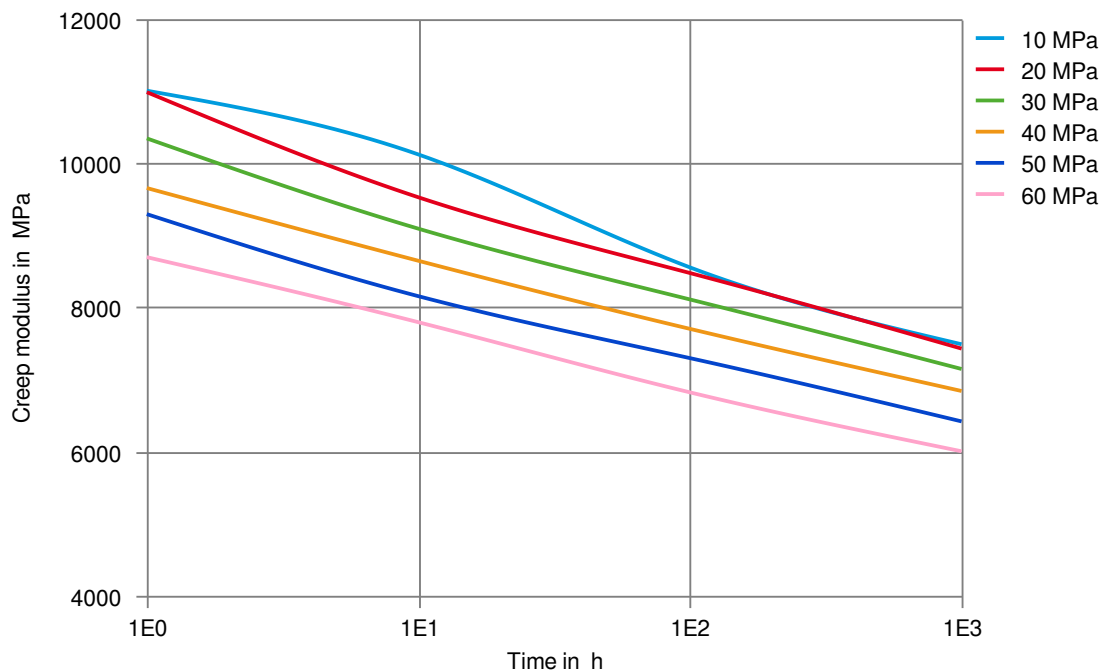
Stress-strain (isochronous) 60°C



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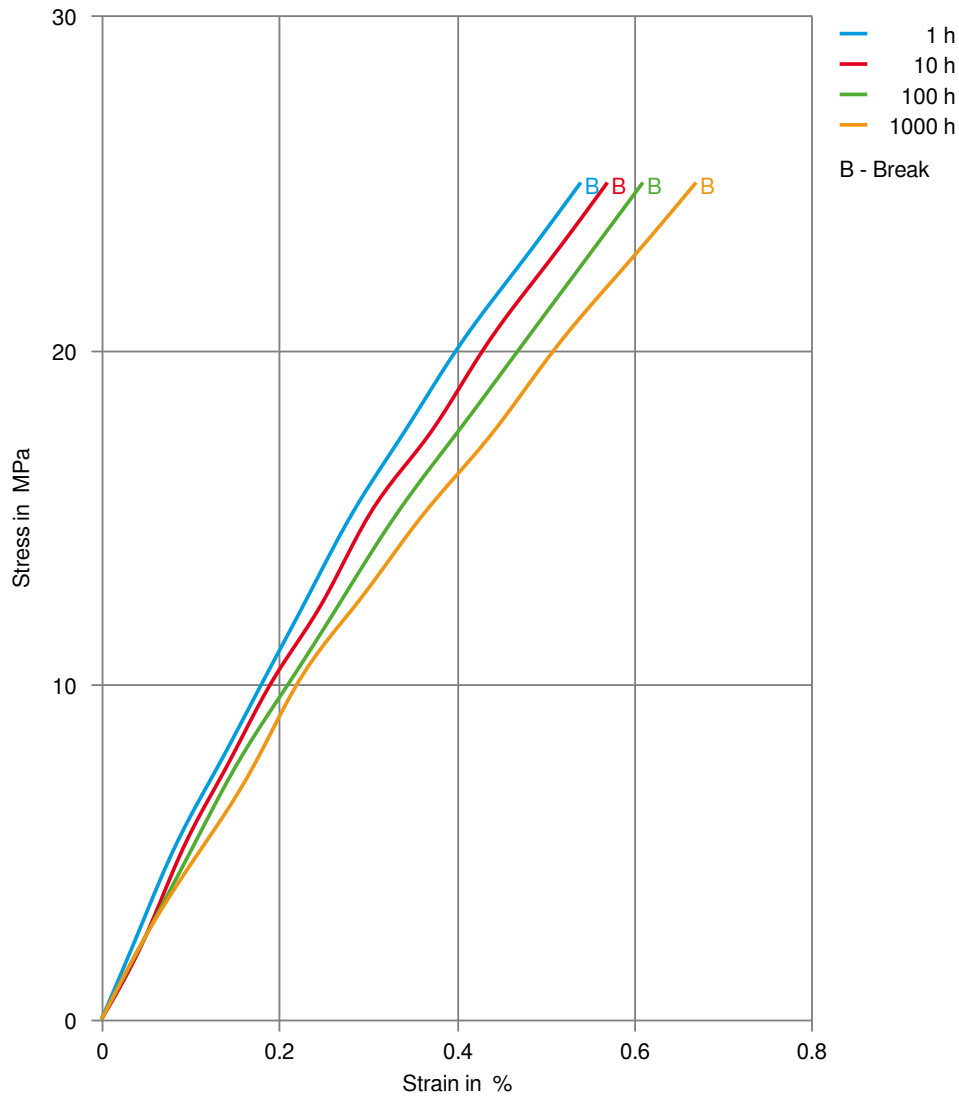
Creep modulus-time 60°C



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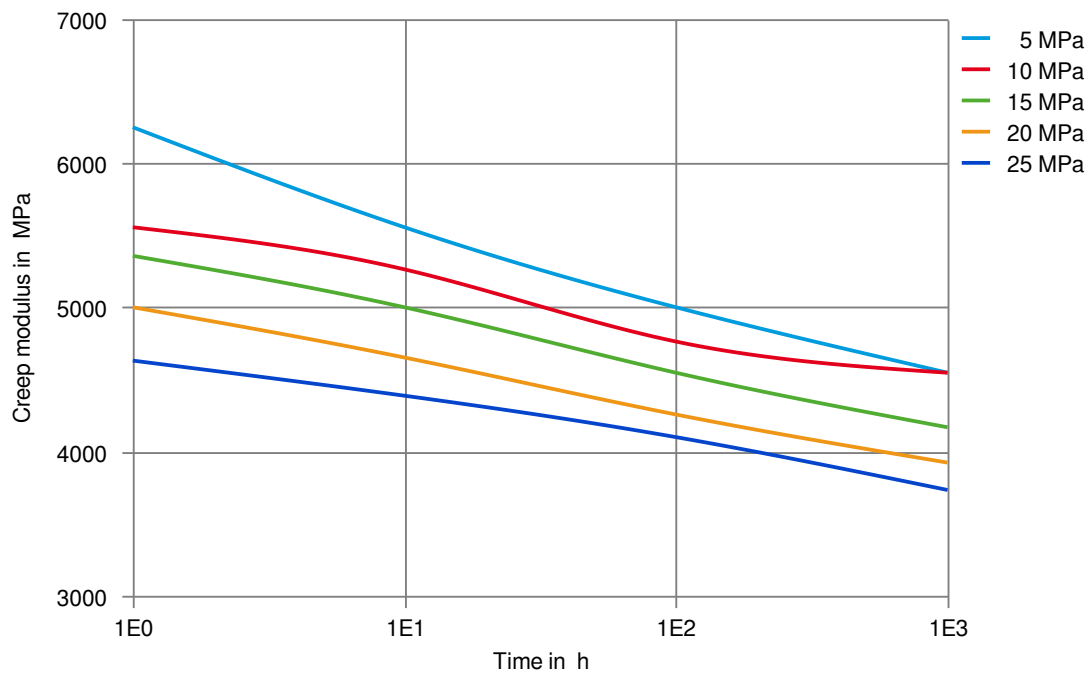
Stress-strain (isochronous) 120°C



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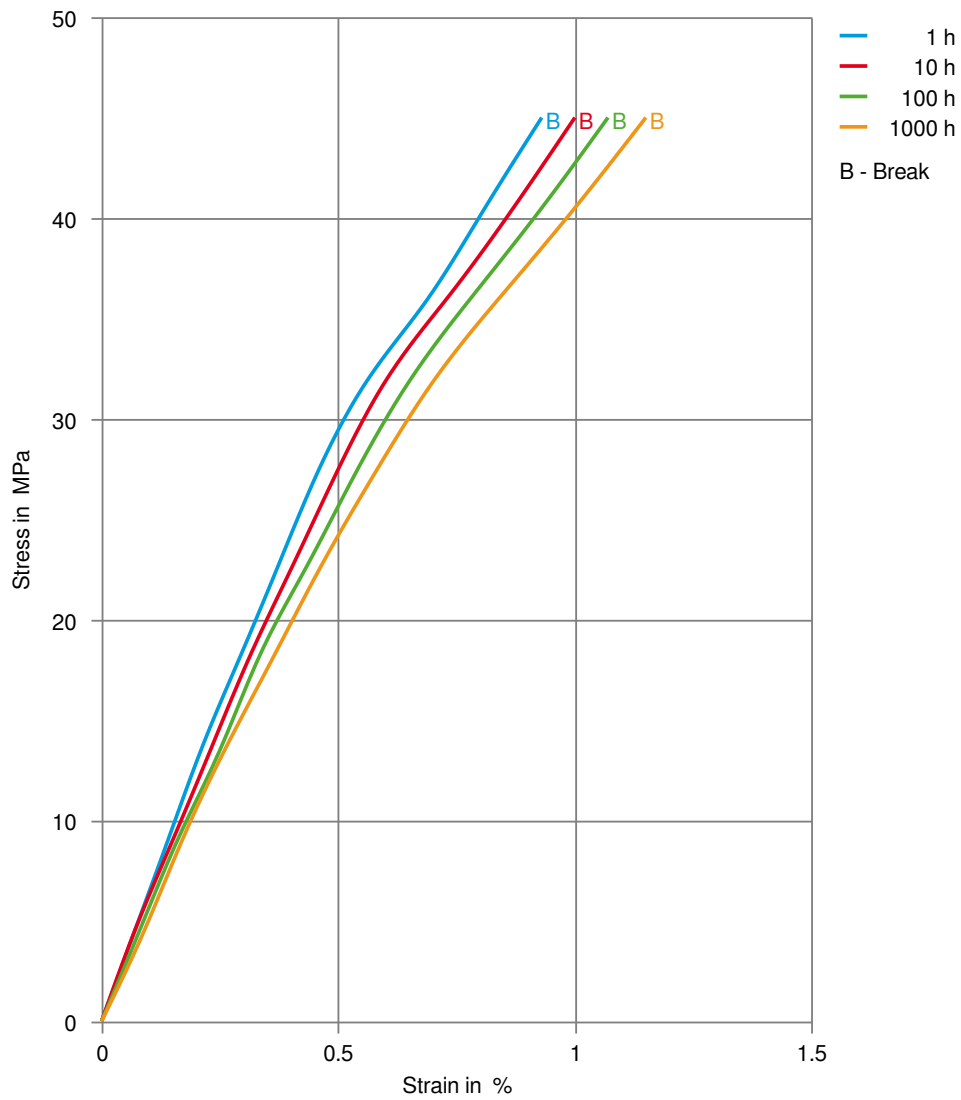
Creep modulus-time 120°C



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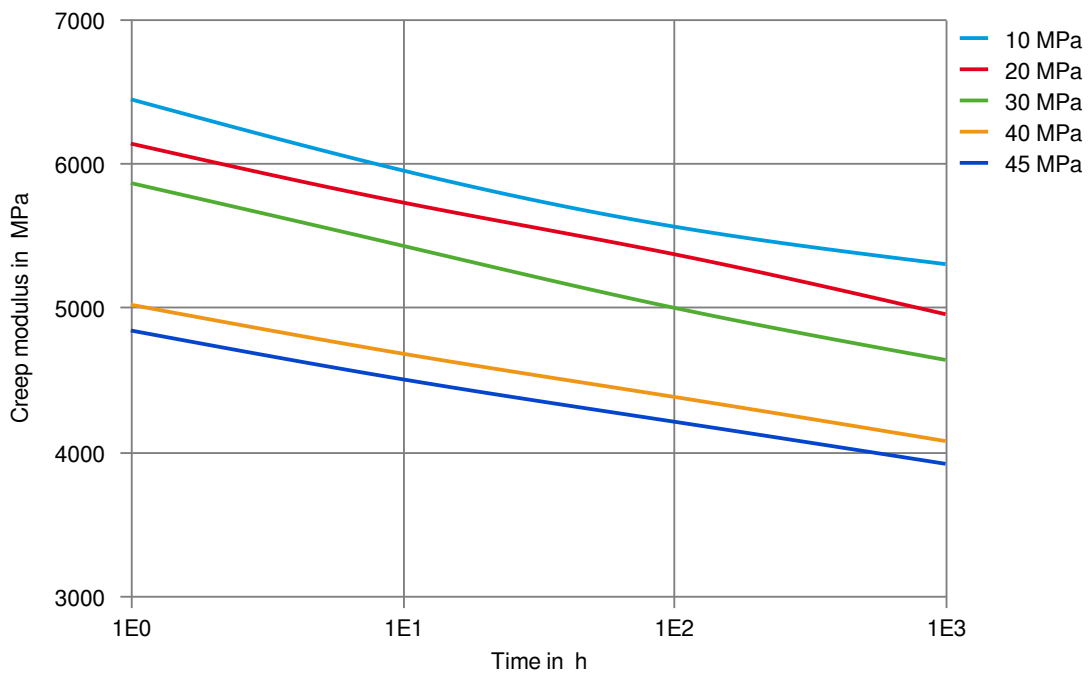
Stress-strain (isochronous) 90°C



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Creep modulus-time 90°C



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Specific volume-temperature (pvT)

