FORTRON® 1140L4 | PPS | Glass Reinforced

Description

Fortron 1140L4 is a 40% glass-reinforced grade that is the strongest and toughest product available. 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 electronical 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 distillartion column packings).

Physical properties	Value	Unit	Test Standard
Density	**1650**	kg/m³	ISO 1183
Mold shrinkage - parallel	**0.2 - 0.6**	%	ISO 294-4
Mold shrinkage - normal	**0.4 - 0.6**	%	ISO 294-4
Water absorption (23°C-sat)	**0.02**	%	ISO 62

Mechanical properties	Value	Unit	Test Standard
Tensile modulus (1mm/min)	**14700**	MPa	ISO 527-2/1A
Tensile stress at break (5mm/min)	**195**	MPa	ISO 527-2/1A
Tensile strain at break (5mm/min)	**1.9**	%	ISO 527-2/1A
Flexural modulus (23°C)	**14500**	MPa	ISO 178
Flexural stress @ break	**285**	MPa	ISO 178
Charpy impact strength @ 23°C	**53**	kJ/m²	ISO 179/1eU
Charpy impact strength @ -30°C	**53**	kJ/m²	ISO 179/1eU
Charpy notched impact strength @ 23°C	**10**	kJ/m²	ISO 179/1eA
Charpy notched impact strength @ -30°C	**10**	kJ/m²	ISO 179/1eA
Unnotched impact str (Izod) @ 23°C	**34**	kJ/m²	ISO 180/1U
Notched impact strength (Izod) @ 23°C	**10**	kJ/m²	ISO 180/1A
Notched impact strength (Izod) @-30°C	**10**	kJ/m²	ISO 180/1A
Rockwell hardness	**100**	M-Scale	ISO 2039-2

Thermal properties	Value	Unit	Test Standard
Melting temperature (10°C/min)	**280**	°C	ISO 11357-1,-2,-3
Glass transition temperature (10°C/min)	**90**	°C	ISO 11357-1,-2,-3
DTUL @ 1.8 MPa	**270**	°C	ISO 75-1/-2
DTUL @ 8.0 MPa	**215**	°C	ISO 75-1/-2
Coeff.of linear therm. expansion (parallel)	**0.26**	E-4/°C	ISO 11359-2
Coeff.of linear therm. expansion (normal)	**0.42**	E-4/°C	ISO 11359-2
Limiting oxygen index (LOI)	**47**	%	ISO 4589
Flammability @1.6mm nom. thickn.	**V-0**	class	UL94
thickness tested (1.6)	**1.5**	mm	UL94
Flammability at thickness h	**V-0**	class	UL94
thickness tested (h)	**0.38**	mm	UL94
Flammability 5V at thickness h	**5VA**	class	UL94
thickness tested (5V)	**3**	mm	UL94

Electrical properties	Value	Unit	Test Standard
Relative permittivity - 1 MHz	**4.6**	-	IEC 60250
Dissipation factor - 1 MHz	**62**	E-4	IEC 60250
Volume resistivity	**>1E13**	Ohm*m	IEC 60093
Surface resistivity	**>1E15**	Ohm	IEC 60093

塑料数据专家 www.ponci.com.cn/wxb/ +13538586433 +18816996168

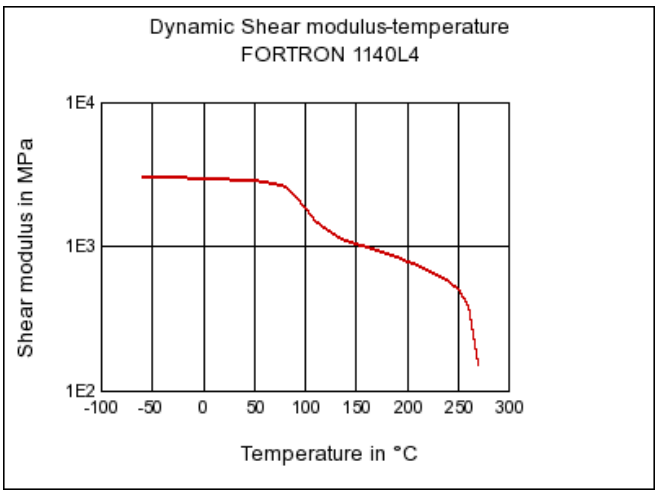
FORTRON® 1140L4 | PPS | Glass Reinforced

Electrical properties	Value	Unit	Test Standard
Electric strength	**28**	kV/mm	IEC 60243-1
Comparative tracking index CTI	**125**	-	IEC 60112

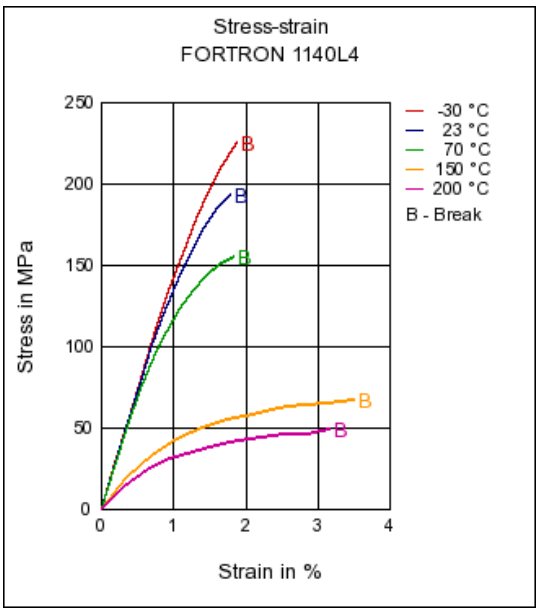
Test specimen production	Value	Unit	Test Standard
Injection molding melt temperature	**310 - 340**	°C	ISO 294
Injection molding mold temperature	**135 - 160**	°C	ISO 294

Rheological Calculation properties	Value	Unit	Test Standard
Specific heat capacity of melt	**1500**	J/(kg K)	Internal

Dynamic Shear modulus-temperature



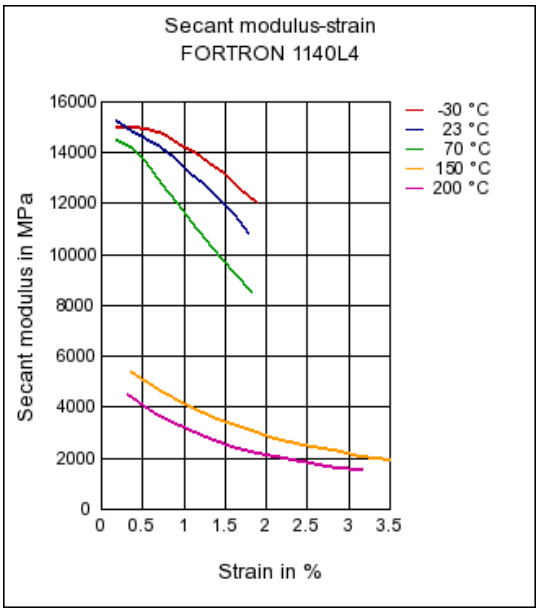
Stress-strain



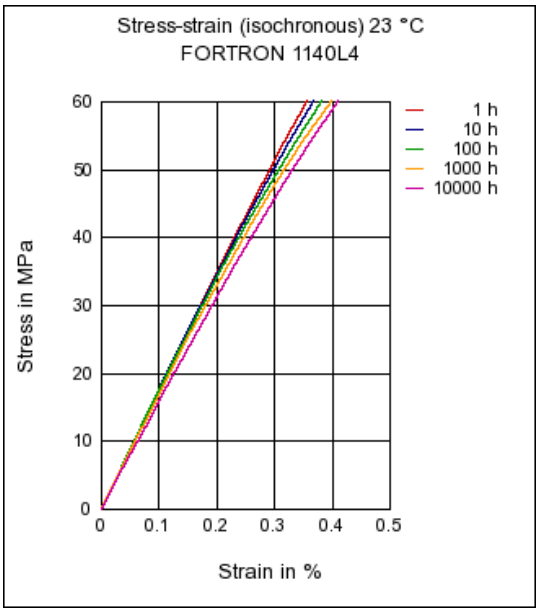
塑料数据专家 www.ponci.com.cn/wxb/ +13538586433 +18816996168

FORTRON® 1140L4 | PPS | Glass Reinforced

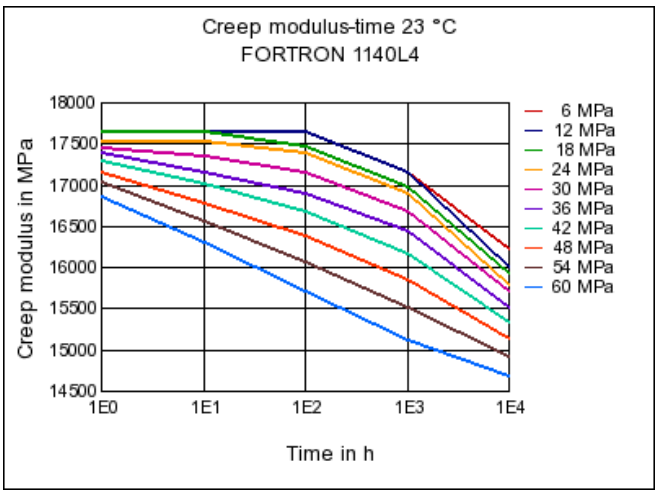
Secant modulus-strain



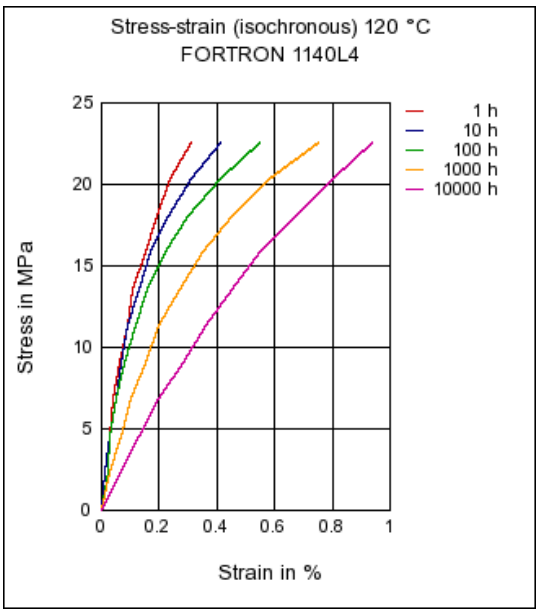
Stress-strain (isochronous)



Creep modulus-time



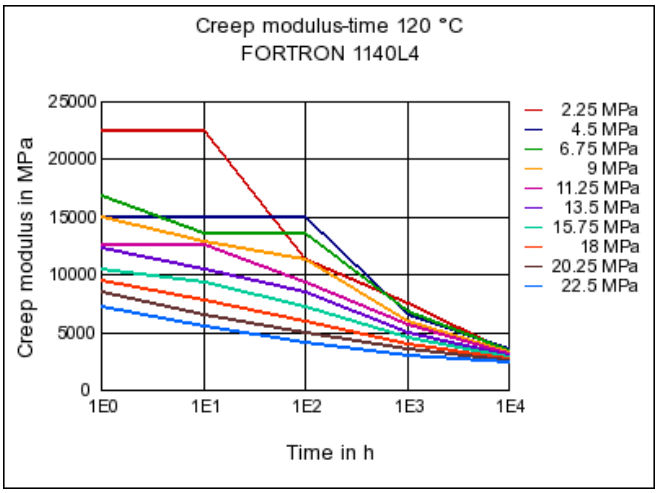
Stress-strain (isochronous)



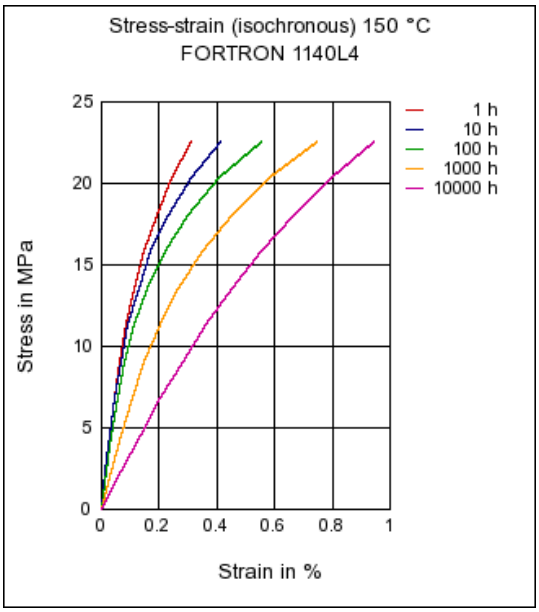
塑料数据专家 www.ponci.com.cn/wxb/ +13538586433 +18816996168

FORTRON® 1140L4 | PPS | Glass Reinforced

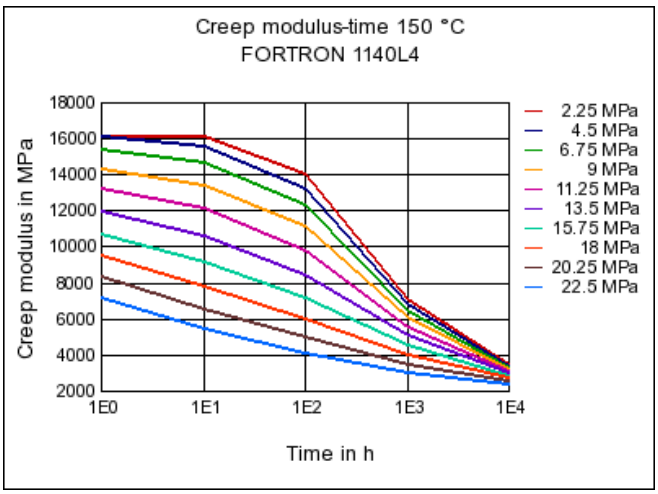
Creep modulus-time



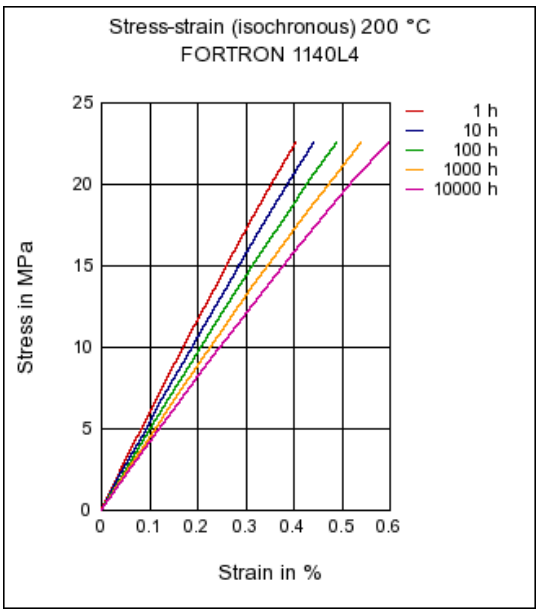
Stress-strain (isochronous)



Creep modulus-time



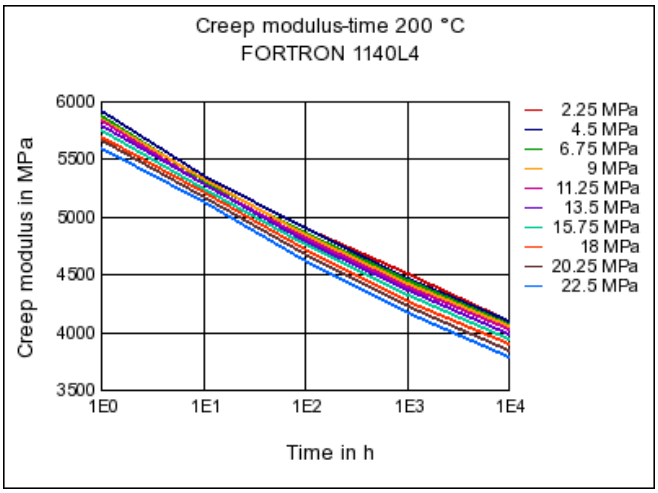
Stress-strain (isochronous)



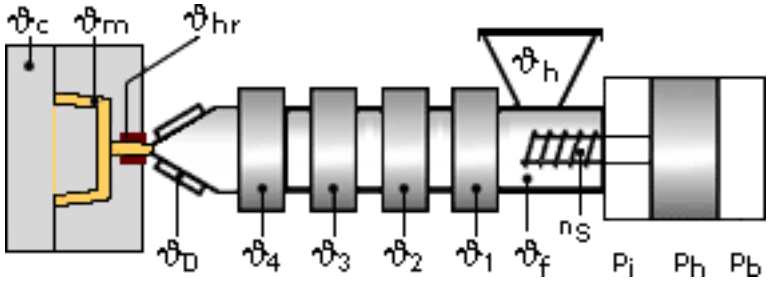
塑料数据专家 www.ponci.com.cn/wxb/ +13538586433 +18816996168

FORTRON® 1140L4 | PPS | Glass Reinforced

Creep modulus-time



Typical injection moulding processing conditions



Pre Drying:

Necessary low maximum residual moisture content: 0.02%

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 =< - 30° C. The time between drying and processing should be as short as possible.

For subsequent storage the material should be stored dry in the dryer until processed (<= 60 h).

Drying time: 3 - 4 h

Drying temperature: 130 - 140 °C

Temperature:

	ϑManifold	ϑMold	ϑMelt	ϑNozzle	ϑZone4	ϑZone3	ϑZone2	ϑZone1	ϑFeed	ϑHopper
min (°C)	330	140	330	310	330	330	310	290	60	20
max (°C)	340	160	340	330	340	340	320	300	80	30

塑料数据专家 www.ponci.com.cn/wxb/ +13538586433 +18816996168

FORTRON® 1140L4 | PPS | Glass Reinforced

Pressure:

	Inj press	Hold press	Back pressure
min (bar)	500	300	0
max (bar)	1000	700	30

Speed:

Injection speed: fast

Screw speed

Screw diameter (mm)	16	25	40	55	75
Screw speed (RPM)	-	120	75	50	-

Injection Molding

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.

塑料数据专家 www.ponci.com.cn/wxb/ +13538586433 +18816996168