CELANEX® 2302 GV1/15 | PBT | Glass Reinforced

Description

Chemical abbreviation according to ISO 1043-1: PBT
Moulding compound ISO 7792- PBT/PET, MGHR, 08-060N, GF15

Polybutylene terephthalate, polymer blend, 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)

Physical properties	Value	Unit	Test Standard
Density	**1430**	kg/m³	ISO 1183
Melt volume rate (MVR)	**21**	cm³/10min	ISO 1133
MVR test temperature	**265**	°C	ISO 1133
MVR test load	**2.16**	kg	ISO 1133
Humidity absorption (23°C/50%RH)	**0.15**	%	ISO 62

Mechanical properties	Value	Unit	Test Standard
Tensile modulus (1mm/min)	**6100**	MPa	ISO 527-2/1A
Tensile stress at break (5mm/min)	**110**	MPa	ISO 527-2/1A
Tensile strain at break (5mm/min)	**3**	%	ISO 527-2/1A
Tensile creep modulus (1h)	**5300**	MPa	ISO 899-1
Tensile creep modulus (1000h)	**4300**	MPa	ISO 899-1
Flexural strength (23°C)	**160**	MPa	ISO 178
Charpy impact strength @ 23°C	**35**	kJ/m²	ISO 179/1eU
Charpy impact strength @ -30°C	**35**	kJ/m²	ISO 179/1eU
Charpy notched impact strength @ 23°C	**6.5**	kJ/m²	ISO 179/1eA
Charpy notched impact strength @ -30°C	**6.5**	kJ/m²	ISO 179/1eA

Thermal properties	Value	Unit	Test Standard
Melting temperature (10°C/min)	**255**	°C	ISO 11357-1,-2,-3
DTUL @ 1.8 MPa	**190**	°C	ISO 75-1/-2
DTUL @ 8.0 MPa	**65**	°C	ISO 75-1/-2
Vicat softening temperature B50 (50°C/h 50N)	**210**	°C	ISO 306
Coeff.of linear therm. expansion (parallel)	**0.35**	E-4/°C	ISO 11359-2
Limiting oxygen index (LOI)	**19**	%	ISO 4589
Flammability @1.6mm nom. thickn.	**HB**	class	UL94
thickness tested (1.6)	**1.4**	mm	UL94
UL recognition (1.6)	**UL**	-	UL94
Flammability at thickness h	**HB**	class	UL94
thickness tested (h)	**0.85**	mm	UL94
UL recognition (h)	**UL**	-	UL94

Electrical properties	Value	Unit	Test Standard
Relative permittivity - 100 Hz	**4.1**	-	IEC 60250
Relative permittivity - 1 MHz	**4**	-	IEC 60250
Dissipation factor - 100 Hz	**12**	E-4	IEC 60250
Dissipation factor - 1 MHz	**180**	E-4	IEC 60250

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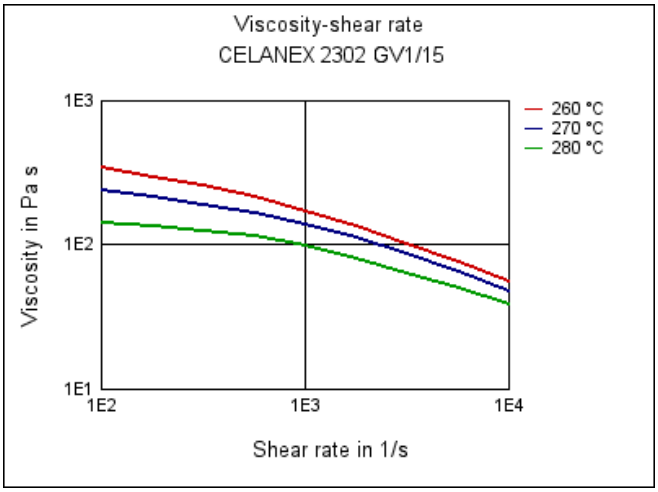
Electrical properties	Value	Unit	Test Standard
Volume resistivity	**>1E13**	Ohm*m	IEC 60093
Surface resistivity	**>1E15**	Ohm	IEC 60093
Electric strength	**28**	kV/mm	IEC 60243-1
Comparative tracking index CTI	**250**	-	IEC 60112

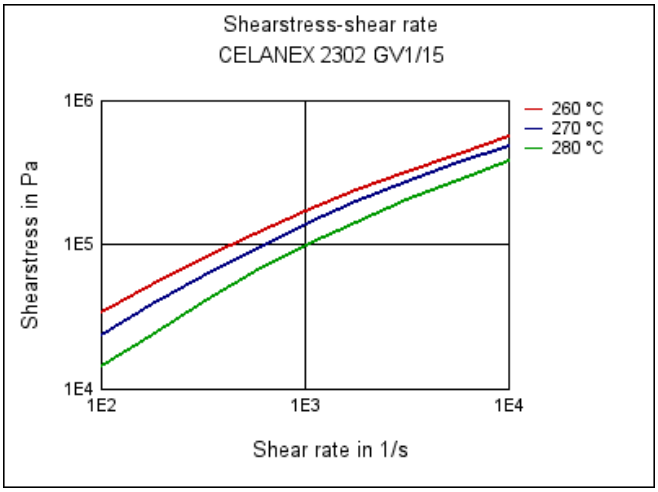
Test specimen production	Value	Unit	Test Standard
Processing conditions acc. ISO	**7792**	-	Internal
Injection molding melt temperature	**270**	°C	ISO 294
Injection molding mold temperature	**90**	°C	ISO 294
Injection molding flow front velocity	**200**	mm/s	ISO 294
Injection molding hold pressure	**70**	MPa	ISO 294

Rheological Calculation properties	Value	Unit	Test Standard
Density of melt	**1220**	kg/m³	Internal
Thermal conductivity of melt	**0.15**	W/(m K)	Internal
Specific heat capacity of melt	**1820**	J/(kg K)	Internal
Ejection temperature	**218**	°C	Internal

Viscosity-shear rate



Shearstress-shear rate



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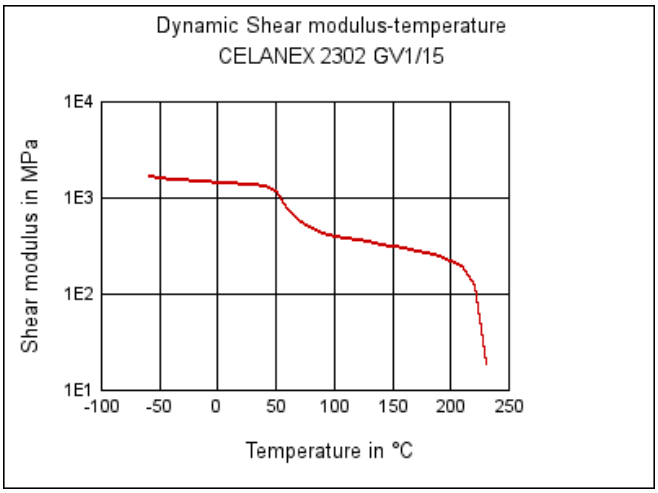
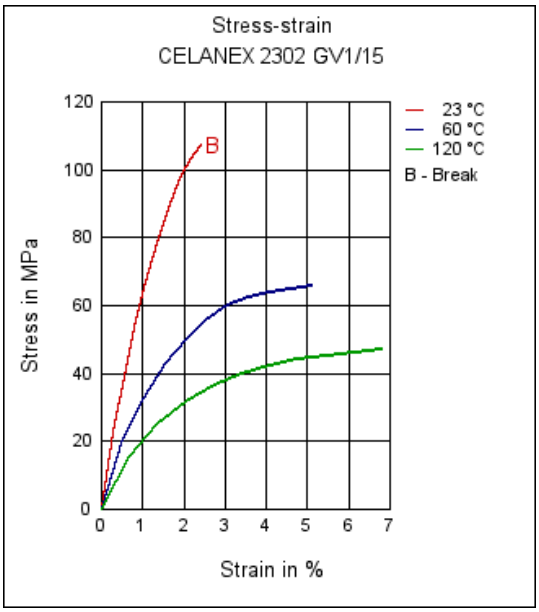
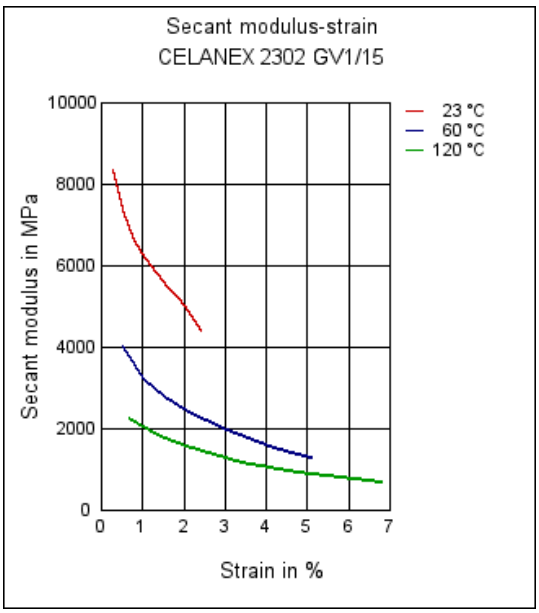
Dynamic Shear modulus-temperature



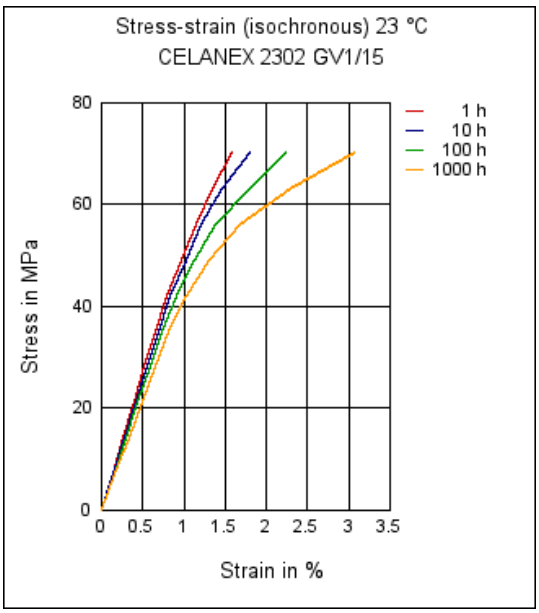
Stress-strain



Secant modulus-strain



Stress-strain (isochronous)



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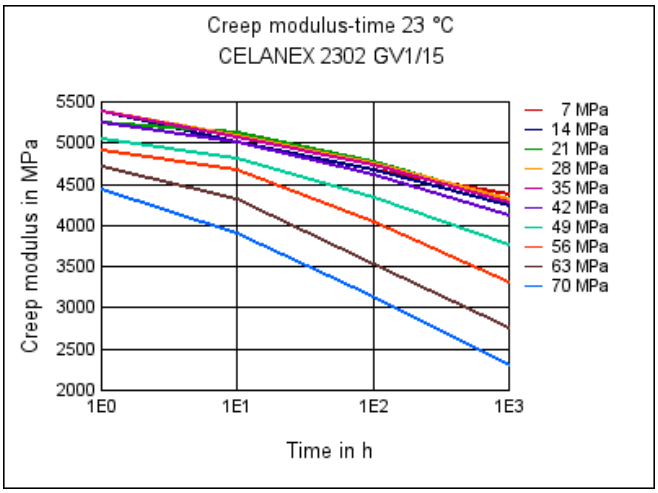
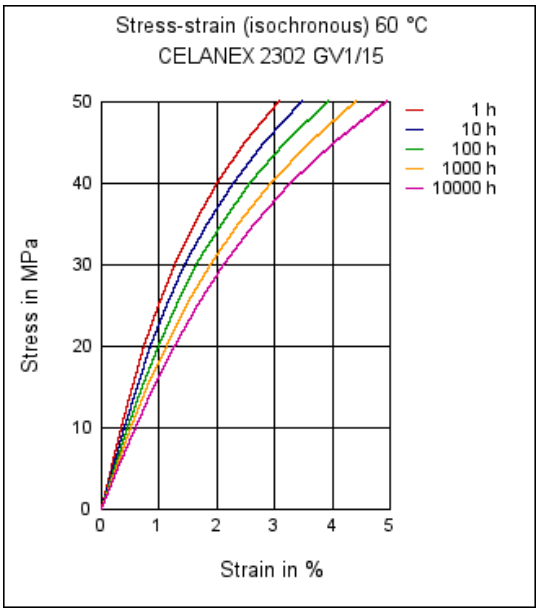
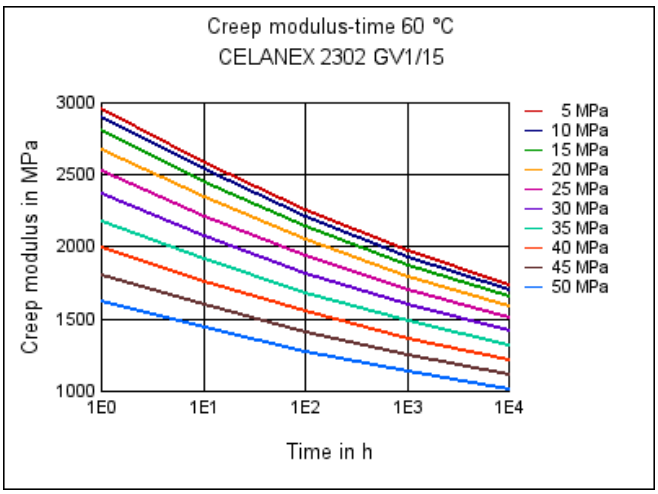
Creep modulus-time



Stress-strain (isochronous)



Creep modulus-time



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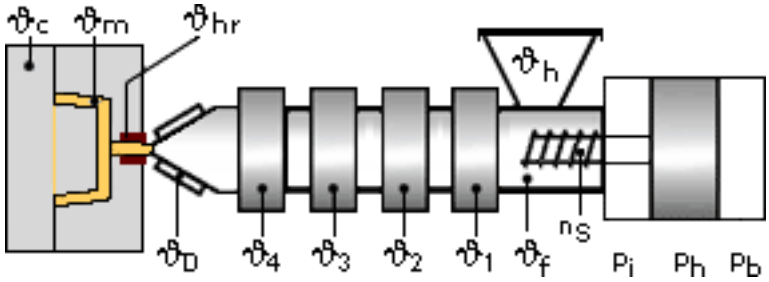
Typical injection moulding processing conditions



Pre Drying:

Necessary low maximum residual moisture content: 0.02%

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.

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

Drying time: 2 - 4 h

Drying temperature: 120 - 140 °C

Temperature:

	ϑ Manifold	ϑ Mold	ϑ Melt	ϑ Nozzle	ϑ Zone4	ϑ Zone3	ϑ Zone2	ϑ Zone1	ϑ Feed	ϑ Hopper
min (°C)	265	90	265	265	260	260	250	250	190	20
max (°C)	275	100	275	275	270	270	260	260	200	50

Speed:

Injection speed: fast

Screw speed

Screw diameter (mm)	16	25	40	55	75
Screw speed (RPM)	-	90	75	60	-

Injection Molding

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.

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Ticona 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.

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