Celanese
The chemistry inside innovation™

IMPET® 2700 GV1/20

20% glass-fiber reinforced grade
Polyethylene terephthalate, 20 % glass fibre reinforced, high flowability, excellent gloss, high modulus

Rheological properties

Viscosity number	70	cm^3/g	ISO 307, 1157, 1628
Moulding shrinkage, parallel	0.2 - 0.4	%	ISO 294-4, 2577
Moulding shrinkage, normal	0.8 - 1.0	%	ISO 294-4, 2577

Typical mechanical properties

Tensile Modulus	8200	MPa	ISO 527-1/-2
Stress at break, 5mm/min	133	MPa	ISO 527-1/-2
Strain at break, 5mm/min	2	%	ISO 527-1/-2
Flexural Modulus	8100	MPa	ISO 178
Flexural Strength	173	MPa	ISO 178
Charpy impact strength, 23°C	20	kJ/m^2	ISO 179/1eU
Charpy impact strength, -30°C	20	kJ/m^2	ISO 179/1eU
Charpy notched impact strength, 23°C	6.8	kJ/m^2	ISO 179/1eA
Charpy notched impact strength, -30°C	6.6	kJ/m^2	ISO 179/1eA
Izod notched impact strength, 23°C	7.2	kJ/m^2	ISO 180/1A
Hardness, Rockwell, M-scale	123		ISO 2039-2
Ball indentation hardness, H 358/30	235	MPa	ISO 2039-1

Thermal properties

Melting temperature, 10°C/min	255	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	80	°C	ISO 11357-1/-3
Temp. of deflection under load, 1.8 MPa	233	°C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	248	°C	ISO 75-1/-2
Temp. of deflection under load, 8 MPa	80	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h, 50N	250	°C	ISO 306

Flammability

Burning Behav. at 1.5mm nom. thickn.	HB	class	UL 94
Thickness tested	1.6	mm	UL 94
Burning Behav. at thickness h	HB	class	UL 94
Thickness tested	0.80	mm	UL 94
Oxygen index	24	%	ISO 4589-1/-2

Electrical properties

Relative permittivity, 100Hz	4.6		IEC 62631-2-1
Relative permittivity, 1MHz	4.1		IEC 62631-2-1
Dissipation factor, 100Hz	30	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	190	E-4	IEC 62631-2-1
Volume resistivity	3E14	Ohm.m	IEC 62631-3-1

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Surface resistivity	>1E14	Ohm	IEC 62631-3-2
Electric strength	31	kV/mm	IEC 60243-1
Comparative tracking index	PLC 3	PLC	UL 746A
Arc Resistance	84	s	Internal

Other properties

Humidity absorption, 2mm	0.2	%	Sim. to ISO 62
Water absorption, 2mm	0.45	%	Sim. to ISO 62
Density	1520	kg/m³	ISO 1183

Injection

Drying Temperature	120 - 140	°C
Drying Time, Dehumidified Dryer	2 - 4	h
Processing Moisture Content	0.01	%
Screw tangential speed	0.1 - 0.14	m/s
Max. mould temperature	135 - 145	°C
Injection speed	fast	

Characteristics

Additives	Release agent

Additional information

Injection molding

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.

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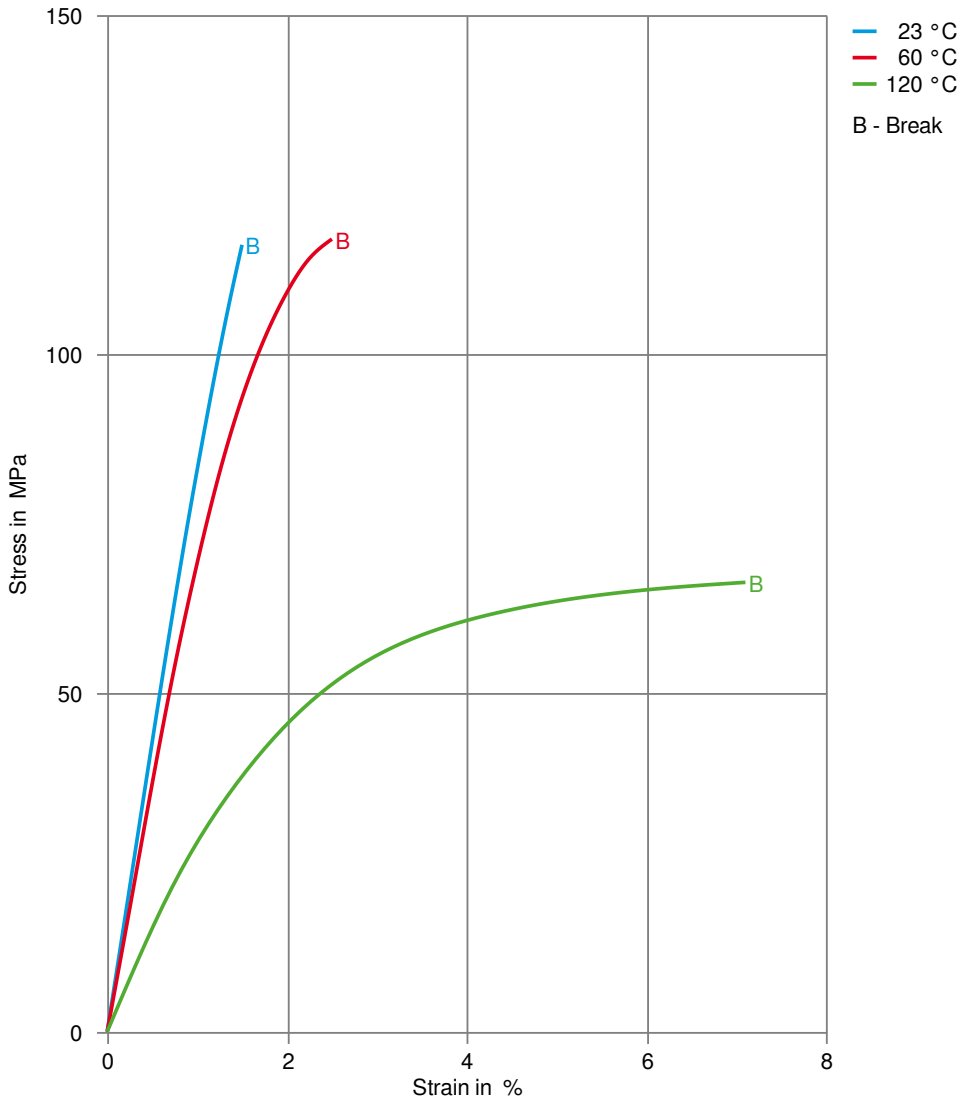
Stress-strain



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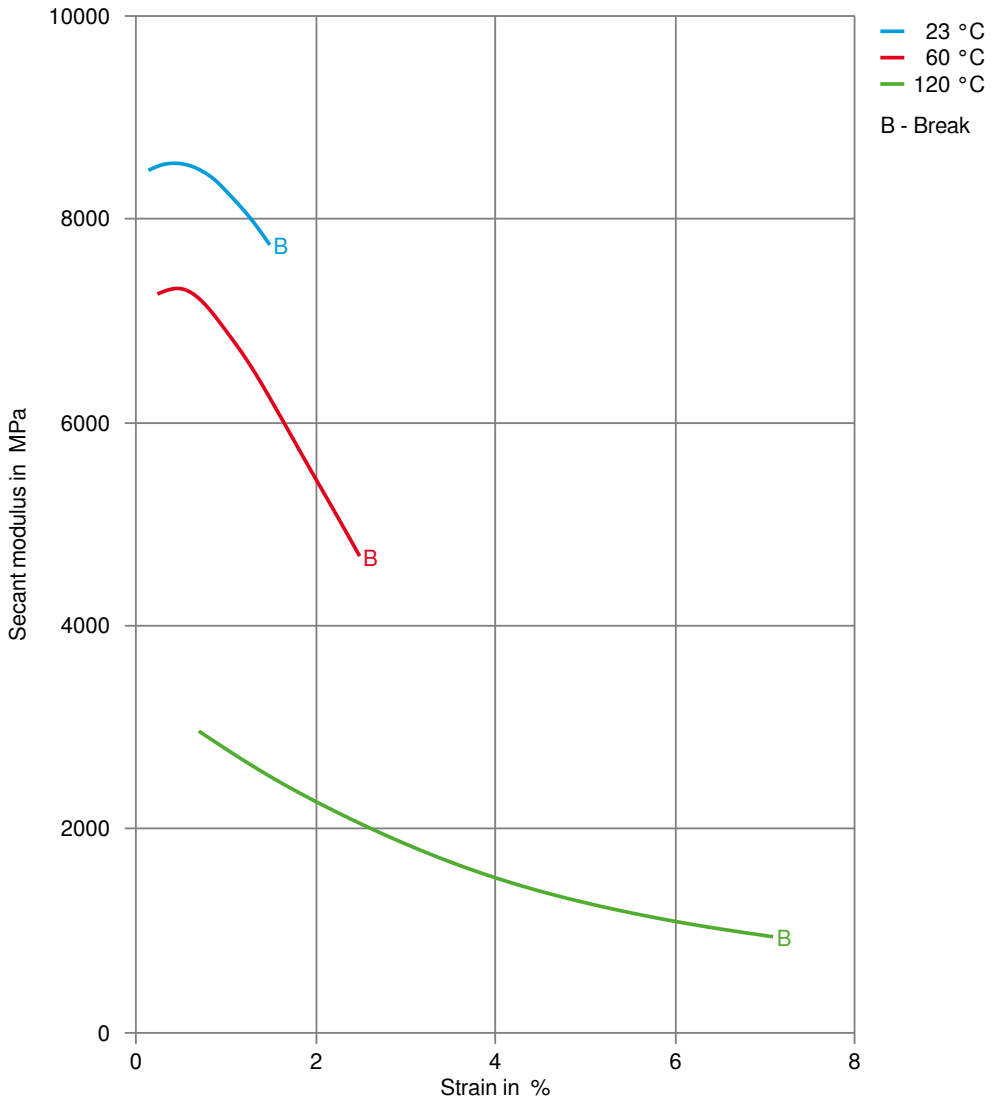
Secant modulus-strain



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Processing Texts

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 =< - 30° C. The time between drying and processing should be as short as possible.
Longer pre-drying times/storage	For subsequent storage of the material in the dryer until processed (<= 60 h) it is necessary to lower the temperature to 100° C.
Injection molding	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.
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.