Celanese
The chemistry inside innovation™

IMPET® 2700 GV1/20FC - PET

Description

Polyethylene terephthalate, 20 % glass fiber reinforced, high flowability, excellent gloss, high modulus, for use in food contact applications.

Physical properties	Value	Unit	Test Standard
Density	**1520**	kg/m³	ISO 1183
Molding shrinkage, parallel	**0.3**	%	ISO 294-4, 2577
Molding shrinkage, normal	**0.9**	%	ISO 294-4, 2577
Water absorption, 23°C-sat	**0.45**	%	ISO 62
Humidity absorption, 23°C/50%RH	**0.2**	%	ISO 62

Mechanical properties	Value	Unit	Test Standard
Tensile modulus	**8200**	MPa	ISO 527-2/1A
Tensile stress at break, 5mm/min	**133**	MPa	ISO 527-2/1A
Tensile strain at break, 5mm/min	**2**	%	ISO 527-2/1A
Flexural modulus, 23°C	**8100**	MPa	ISO 178
Flexural strength, 23°C	**173**	MPa	ISO 178
Charpy impact strength, 23°C	**20**	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	**20**	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	**6.8**	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	**6.6**	kJ/m²	ISO 179/1eA
Izod impact notched, 23°C	**7.2**	kJ/m²	ISO 180/1A
Rockwell hardness (M-Scale)	**123**	M-Scale	ISO 2039-2
Ball indentation hardness, 30s	**235**	MPa	ISO 2039-1

Thermal properties	Value	Unit	Test Standard
Melting temperature, 10°C/min	**255**	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	**80**	°C	ISO 11357-1,-2,-3
DTUL at 1.8 MPa	**233**	°C	ISO 75-1, -2
DTUL at 0.45 MPa	**248**	°C	ISO 75-1, -2
DTUL at 8.0 MPa	**80**	°C	ISO 75-1, -2
Vicat softening temperature, 50°C/h 50N	**250**	°C	ISO 306
Coeff. of linear therm expansion, parallel	**0.23**	E-4/°C	ISO 11359-2
Coeff. of linear therm expansion, normal	**0.95**	E-4/°C	ISO 11359-2
Limiting oxygen index (LOI)	**24**	%	ISO 4589-1/-2
Flammability @1.6mm nom. thickn.	**HB**	class	UL 94
thickness tested (1.6)	**1.6**	mm	UL 94
Flammability at thickness h	**HB**	class	UL 94
thickness tested (h)	**0.80**	mm	UL 94

Electrical properties	Value	Unit	Test Standard
Relative permittivity, 100Hz	**4.6**	-	IEC 60250
Relative permittivity, 1MHz	**4.1**	-	IEC 60250
Dissipation factor, 100Hz	**30**	E-4	IEC 60250
Dissipation factor, 1MHz	**190**	E-4	IEC 60250
Volume resistivity	**3E14**	Ohm*m	IEC 60093
Surface resistivity	**>1E14**	Ohm	IEC 60093
Electric strength	**31**	kV/mm	IEC 60243-1
Comparative tracking index	**200**	-	IEC 60112
Arc resistance	**84**	s	Internal

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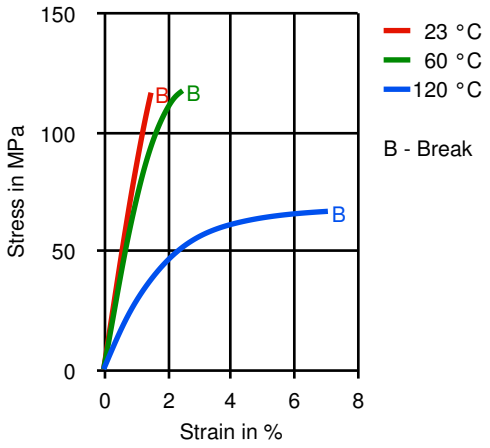
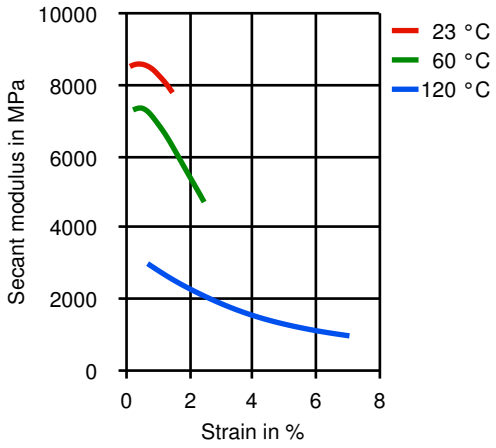
Diagrams

Stress-strain



Secant modulus-strain



Typical injection moulding processing conditions

Pre Drying	Value	Unit	Test Standard
Necessary low maximum residual moisture content	**0.01**	%	-
Drying time	**2 - 4**	h	-
Drying temperature	**120 - 140**	°C	-
Temperature	**Value**	**Unit**	**Test Standard**
Hopper temperature	**20 - 50**	°C	-
Feeding zone temperature	**40 - 60**	°C	-
Zone1 temperature	**260 - 270**	°C	-
Zone2 temperature	**270 - 280**	°C	-
Zone3 temperature	**280 - 290**	°C	-
Zone4 temperature	**280 - 290**	°C	-
Nozzle temperature	**270 - 290**	°C	-
Melt temperature	**270 - 290**	°C	-
Mold temperature	**135 - 145**	°C	-
Hot runner temperature	**270 - 290**	°C	-
Speed	**Value**	**Unit**	**Test Standard**
Injection speed	**fast**	-	-
Screw Speed	**Value**	**Unit**	**Test Standard**
Screw speed diameter, 25mm	**80**	RPM	-
Screw speed diameter, 40mm	**65**	RPM	-
Screw speed diameter, 55mm	**50**	RPM	-

Other text information

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

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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.

Characteristics

Product Categories	Delivery Form
Glass reinforced	Pellets
Processing	**Additives**
Injection molding	Release agent