

CELANEX® 2500FC - PBT

Description

Celanex 2500FC is a general purpose, unreinforced polybutylene terephthalate with a good balance of mechanical properties and processability for use in food contact applications. Celanex 2500FC is a medium to high flow material that contains an internal lubricant and nucleant.

Physical properties	Value	Unit	Test Standard
Density	1310	kg/m ³	ISO 1183
Melt volume rate, MVR	40	cm ³ /10min	ISO 1133
MVR temperature	250	°C	ISO 1133
MVR load	2.16	kg	ISO 1133
Molding shrinkage, parallel	1.8 - 2.2	%	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	2700	MPa	ISO 527-2/1A
Tensile stress at yield, 50mm/min	60	MPa	ISO 527-2/1A
Tensile strain at yield, 50mm/min	4	%	ISO 527-2/1A
Tensile nominal strain at break, 50mm/min	15	%	ISO 527-2/1A
Tensile stress at break, 50mm/min	60	MPa	ISO 527-2/1A
Tensile creep modulus, 1h	2400	MPa	ISO 899-1
Tensile creep modulus, 1000h	1600	MPa	ISO 899-1
Flexural strength, 23°C	90	MPa	ISO 178
Flexural stress at 3.5% strain	80	MPa	ISO 178
Charpy impact strength, 23°C	135	kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	130	kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	5	kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	4.5	kJ/m ²	ISO 179/1eA
Ball indentation hardness, 30s	145	MPa	ISO 2039-1

Thermal properties	Value	Unit	Test Standard
Melting temperature, 10°C/min	225	°C	ISO 11357-1/-3
DTUL at 1.8 MPa	60	°C	ISO 75-1, -2
DTUL at 0.45 MPa	160	°C	ISO 75-1, -2
Vicat softening temperature, 50°C/h 50N	190	°C	ISO 306
Coeff. of linear therm expansion, parallel	1.1	E-4/°C	ISO 11359-2
Limiting oxygen index (LOI)	22	%	ISO 4589-1/-2
Flammability @1.6mm nom. thickn.	HB	class	UL 94
thickness tested (1.6)	1.5	mm	UL 94
UL recognition (1.6)	UL	-	UL 94
Flammability at thickness h	HB	class	UL 94
thickness tested (h)	1.00	mm	UL 94
UL recognition (h)	UL	-	UL 94

Electrical properties	Value	Unit	Test Standard
Relative permittivity, 100Hz	3.9	-	IEC 60250
Relative permittivity, 1MHz	3.8	-	IEC 60250
Dissipation factor, 100Hz	13	E-4	IEC 60250
Dissipation factor, 1MHz	200	E-4	IEC 60250
Volume resistivity	>1E13	Ohm*m	IEC 60093
Surface resistivity	>1E15	Ohm	IEC 60093
Electric strength	23	kV/mm	IEC 60243-1
Comparative tracking index	600	-	IEC 60112

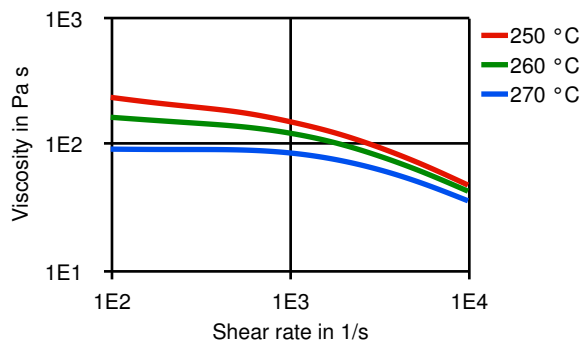
Rheological calculation properties	Value	Unit	Test Standard
Density of melt	1110	kg/m ³	Internal
Thermal conductivity of melt	0.133	W/(m K)	Internal

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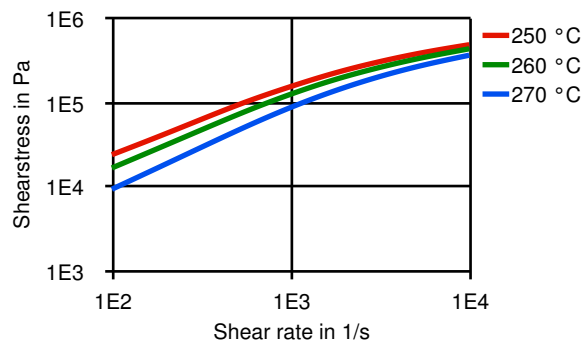
Spec. heat capacity melt	1920	J/(kg K)	Internal
Ejection temperature	219	°C	Internal

Diagrams

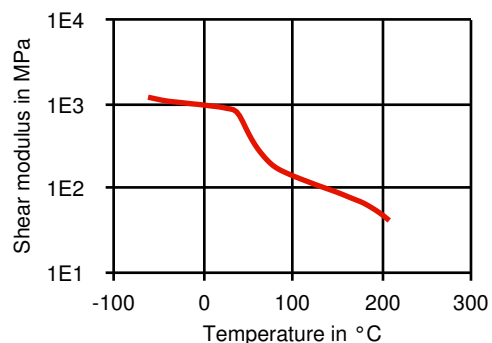
Viscosity-shear rate



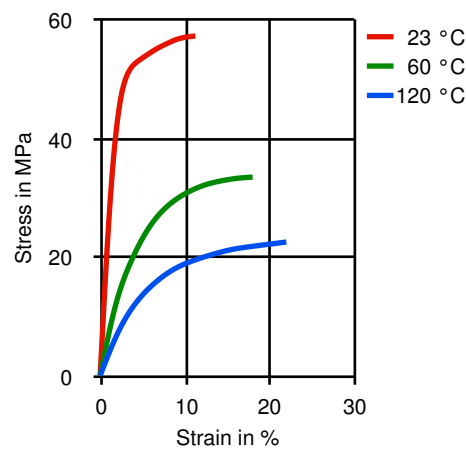
Shearstress-shear rate



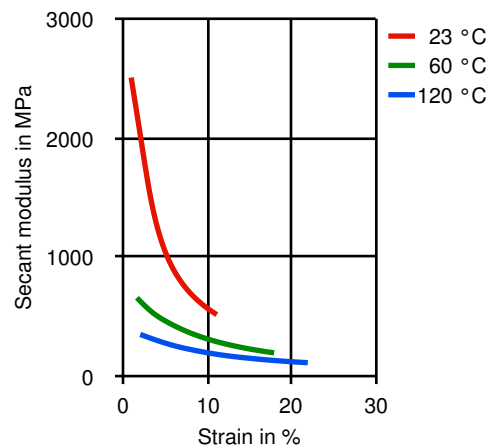
Dynamic Shear modulus-temperature



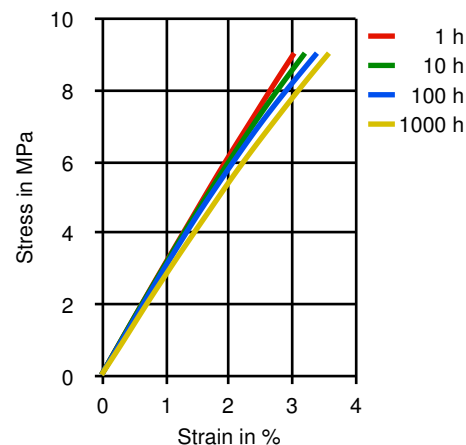
Stress-strain



Secant modulus-strain

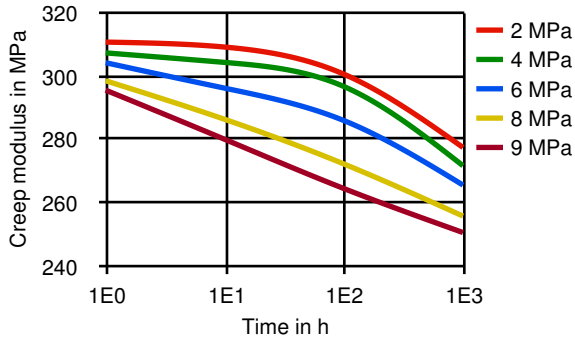


Stress-strain (Isochronous) 100 °C

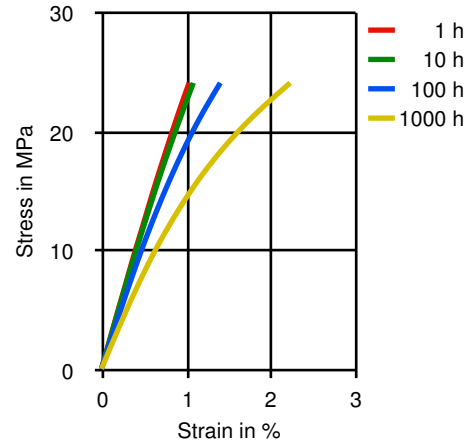


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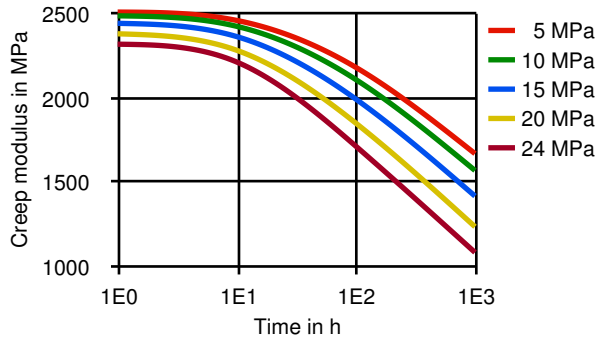
Creep modulus-time 100 °C



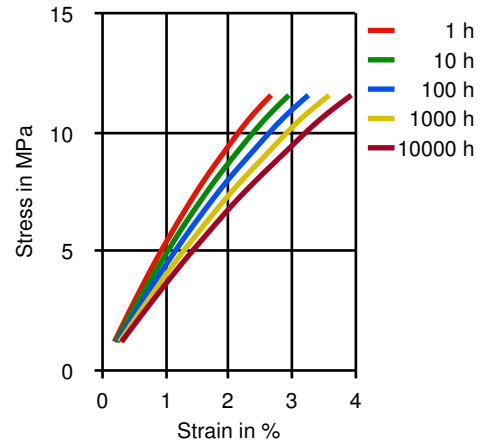
Stress-strain (isochronous) 23 °C



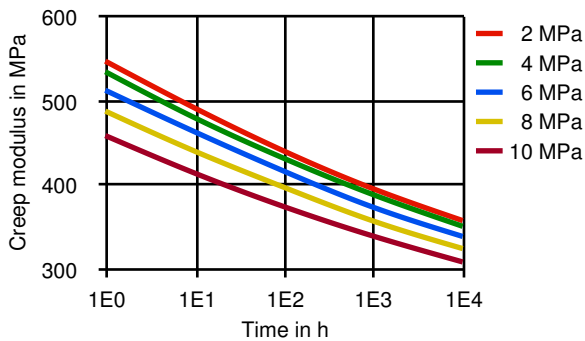
Creep modulus-time 23 °C



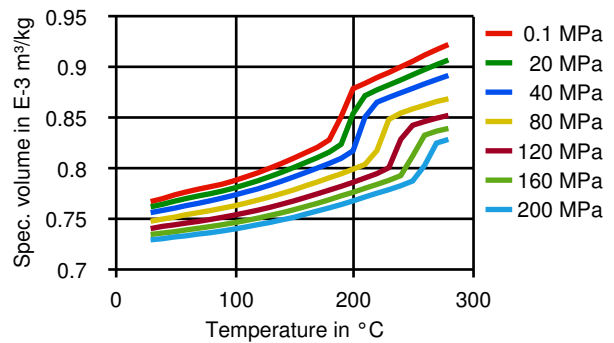
Stress-strain (isochronous) 60 °C



Creep modulus-time 60 °C



Moldflow Specific volume-temperature (pvT)



Typical injection moulding processing conditions

Pre Drying		Value	Unit	Test Standard
Necessary low maximum residual moisture content		0.02	%	-
Drying time		2 - 4	h	-
Drying temperature		120 - 140	°C	-
Temperature		Value	Unit	Test Standard
Hopper temperature		20 - 50	°C	-
Feeding zone temperature		190 - 200	°C	-
Zone1 temperature		240 - 250	°C	-

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Zone2 temperature	240 - 250	°C	-
Zone3 temperature	245 - 255	°C	-
Zone4 temperature	245 - 255	°C	-
Nozzle temperature	250 - 260	°C	-
Melt temperature	250 - 260	°C	-
Mold temperature	75 - 85	°C	-
Hot runner temperature	250 - 260	°C	-
Speed	Value	Unit	Test Standard
Injection speed	fast	-	-

Other text information

Pre-drying

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 $\leq -30^{\circ}\text{C}$. 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 250-260 °C
Mold Temperature 75-85 °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. For grades containing flame retardants, a maximum temperature of 265°C should not be exceeded.

Celanese 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

Unfilled

Additives

Release agent

Processing

Injection molding

Regional Availability

Europe

Delivery Form

Pellets