Celanese
The chemistry inside innovation™

CELANEX® 3216

15% glass-fiber reinforced, flame retardant (UL94 V-0) grade, non-exuding
Celanex 3216 is a non-exuding (UL and CSA approved V-0 at 1/32 inch and 5V at 1/8 inch),15% fiberglass reinforced polybutylene terephthalate which has an excellent balance of mechanical properties and processability. It is well suited for electrical connector applications where its UL approved 50% regrind use capability allows maximum use of purchased product.

Product information

Part Marking Code	> PBT-GF15 FR(17) <	ISO 11469

Rheological properties

Melt volume-flow rate	9	cm^3/10min	ISO 1133
Melt mass-flow rate	12	g/10min	ISO 1133
Temperature	250	°C	
Load	2.16	kg	
Melt mass-flow rate, Temperature	250	°C	
Melt mass-flow rate, Load	2.16	kg	
Moulding shrinkage range, parallel	0.5 - 0.7	%	ISO 294-4, 2577
Moulding shrinkage range, normal	0.9 - 1.2	%	ISO 294-4, 2577

Typical mechanical properties

Tensile Modulus	6700	MPa	ISO 527-1/-2
Stress at break, 5mm/min	100	MPa	ISO 527-1/-2
Strain at break, 5mm/min	3	%	ISO 527-1/-2
Flexural Modulus	6000	MPa	ISO 178
Flexural Strength	155	MPa	ISO 178
Charpy impact strength, 23°C	28	kJ/m^2	ISO 179/1eU
Charpy impact strength, -30°C	28	kJ/m^2	ISO 179/1eU
Charpy notched impact strength, 23°C	6	kJ/m^2	ISO 179/1eA
Charpy notched impact strength, -30°C	6	kJ/m^2	ISO 179/1eA
Izod notched impact strength, 23°C	5.5	kJ/m^2	ISO 180/1A
Hardness, Rockwell, M-scale	87		ISO 2039-2
Poisson's ratio	0.41		
Shore D hardness, 15s	82		ISO 48-4 / ISO 868

Thermal properties

Melting temperature, 10°C/min	225	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	60	°C	ISO 11357-1/-3
Temp. of deflection under load, 1.8 MPa	187	°C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	217	°C	ISO 75-1/-2
Temp. of deflection under load, 8 MPa	95	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h, 50N	206	°C	ISO 306
Coeff. of linear therm. expansion, parallel	36	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	100	E-6/K	ISO 11359-1/-2

Celanese
The chemistry inside innovation™

CELANEX® 3216

Flammability

Burning Behav. at thickness h	V-0	class	UL 94
Thickness tested	0.38	mm	UL 94
Burning Behav. 5V at thickness h	5VA	class	UL 94
Thickness tested	3.0	mm	UL 94
Oxygen index	27 - 32	%	ISO 4589-1/-2

Electrical properties

Relative permittivity, 100Hz	3.7		IEC 62631-2-1
Relative permittivity, 1MHz	3.5		IEC 62631-2-1
Dissipation factor, 100Hz	33	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	160	E-4	IEC 62631-2-1
Volume resistivity	1E13	Ohm.m	IEC 62631-3-1
Surface resistivity	1E15	Ohm	IEC 62631-3-2
Electric strength	30	kV/mm	IEC 60243-1
Comparative tracking index	PLC 2	PLC	UL 746A

Other properties

Humidity absorption, 2mm	0.17	%	Sim. to ISO 62
Water absorption, 2mm	0.4	%	Sim. to ISO 62
Density	1540	kg/m³	ISO 1183

VDA Properties

Emission of organic compounds	25	µgC/g	VDA 277

Injection

Drying Temperature	120 - 130	°C
Drying Time, Dehumidified Dryer	4	h
Processing Moisture Content	0.02	%
Max. mould temperature	65 - 93	°C
Injection speed	medium-fast	

Characteristics

Additives	Flame retardant

Additional information

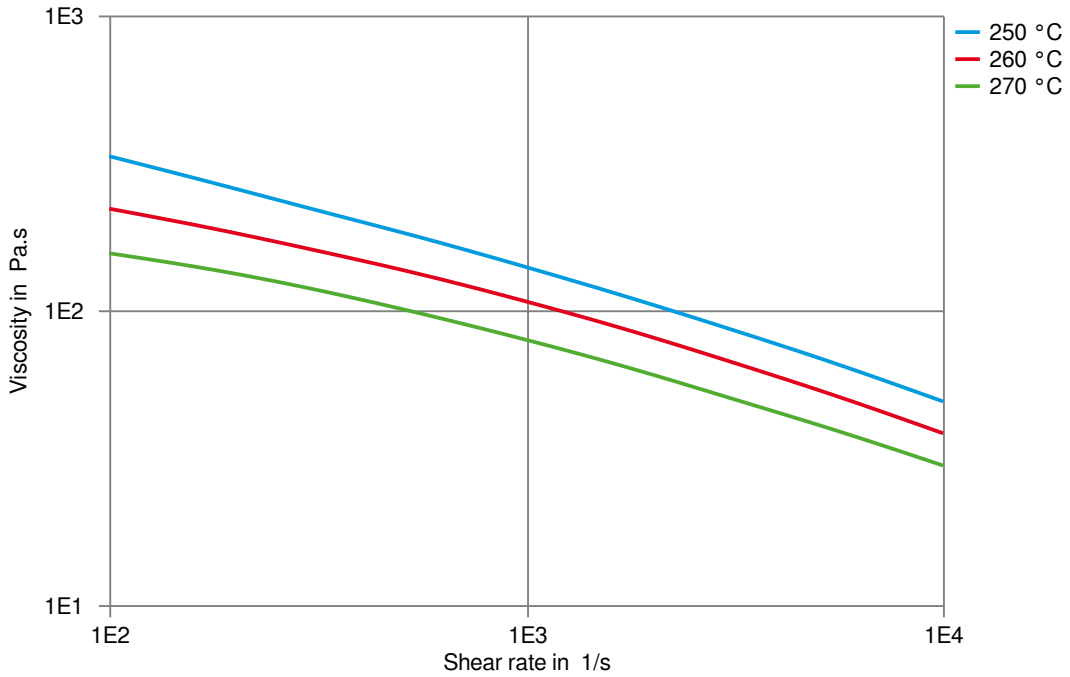
Injection molding	Rear Temperature 450-470 (230-240) deg F (deg C) Center Temperature 460-480 (235-250) deg F (deg C) Front Temperature 470-490 (240-255) deg F (deg C) Nozzle Temperature 480-490 (250-255) deg F (deg C) Melt Temperature 460-490 (235-255) deg F (deg C) Mold Temperature 150-200 (65-93) deg F (deg C) Back Pressure 0-50 psi

CELANEX® 3216

Screw Speed Medium
Injection Speed Fast

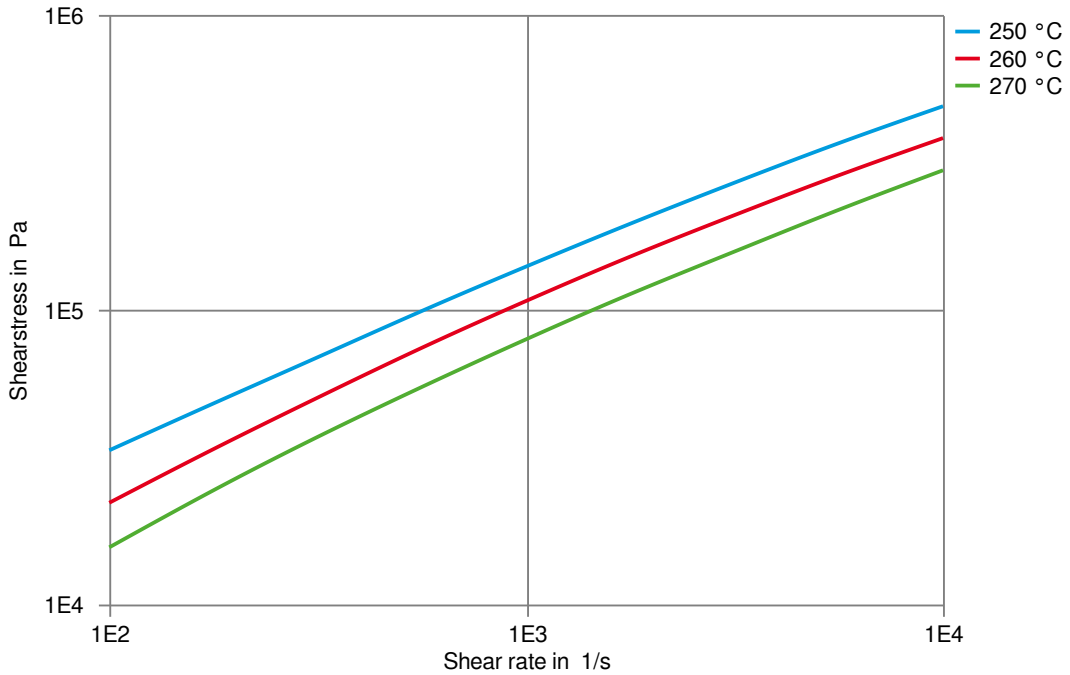
Injection speed, injection pressure and holding pressure have to be optimized to the individual article geometry. To avoid material degradation during processing low back pressure and minimum screw speed have to be used. Overheating of the material has to be avoided, in particular for flame retardant grades. Up to 50% clean and dry regrind may be used for the '16 series' flame retardant grades.

Viscosity-shear rate



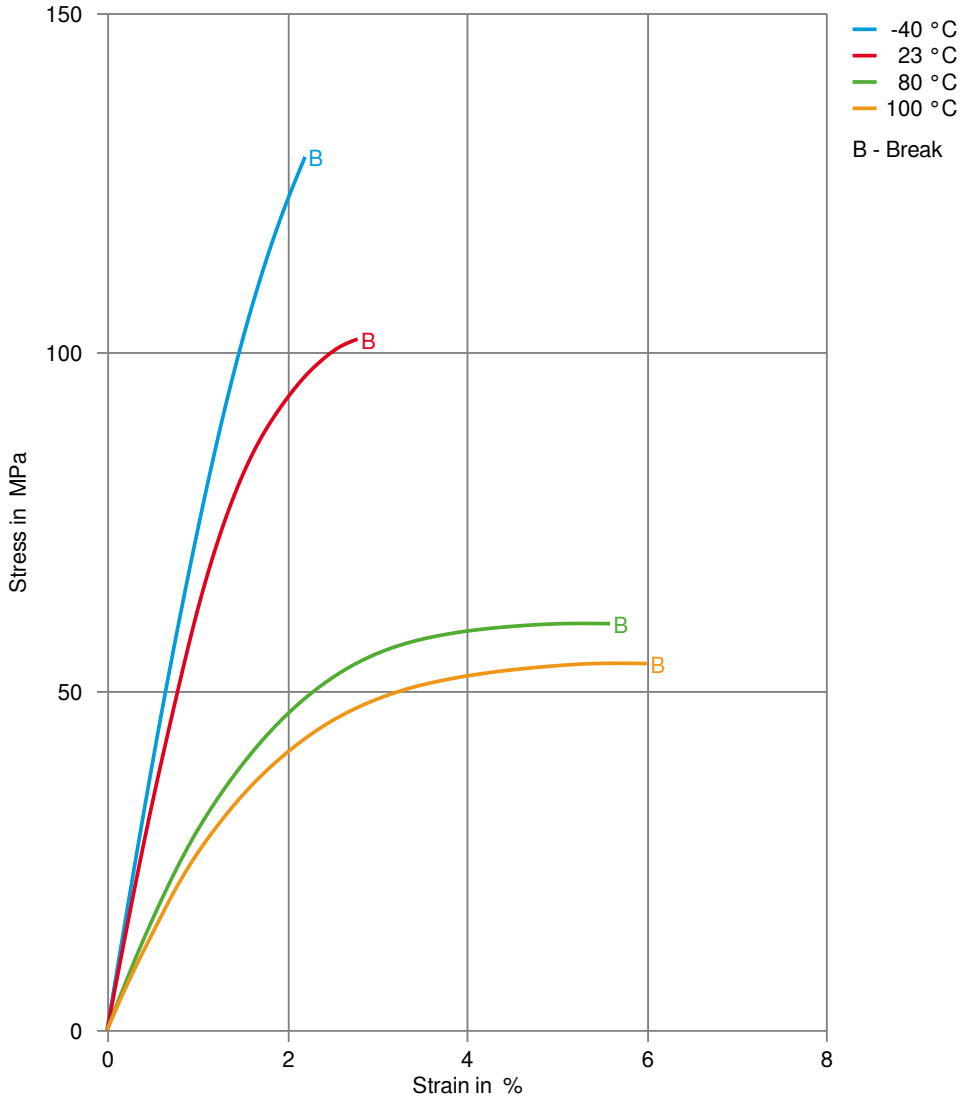
CELANEX® 3216

Shearstress-shear rate



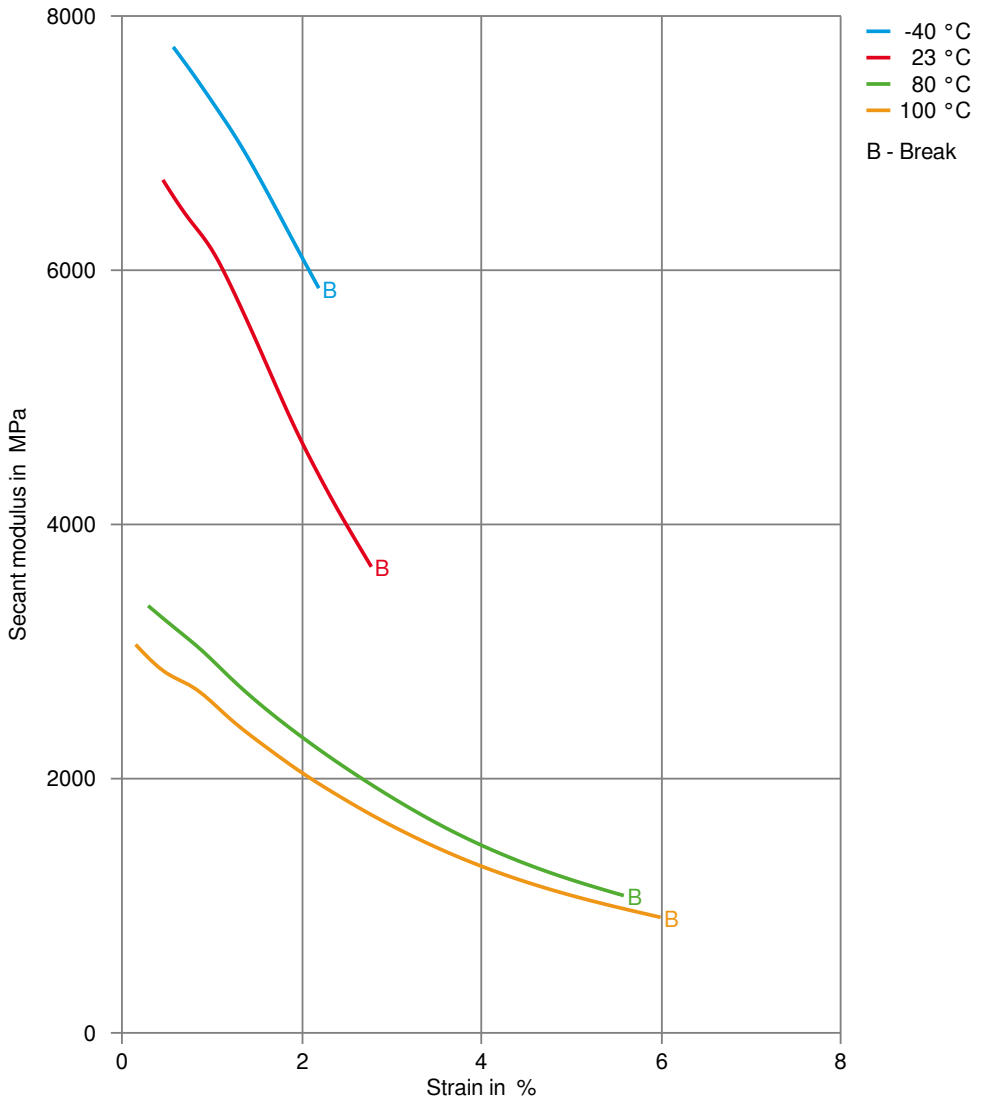
CELANEX® 3216

Stress-strain



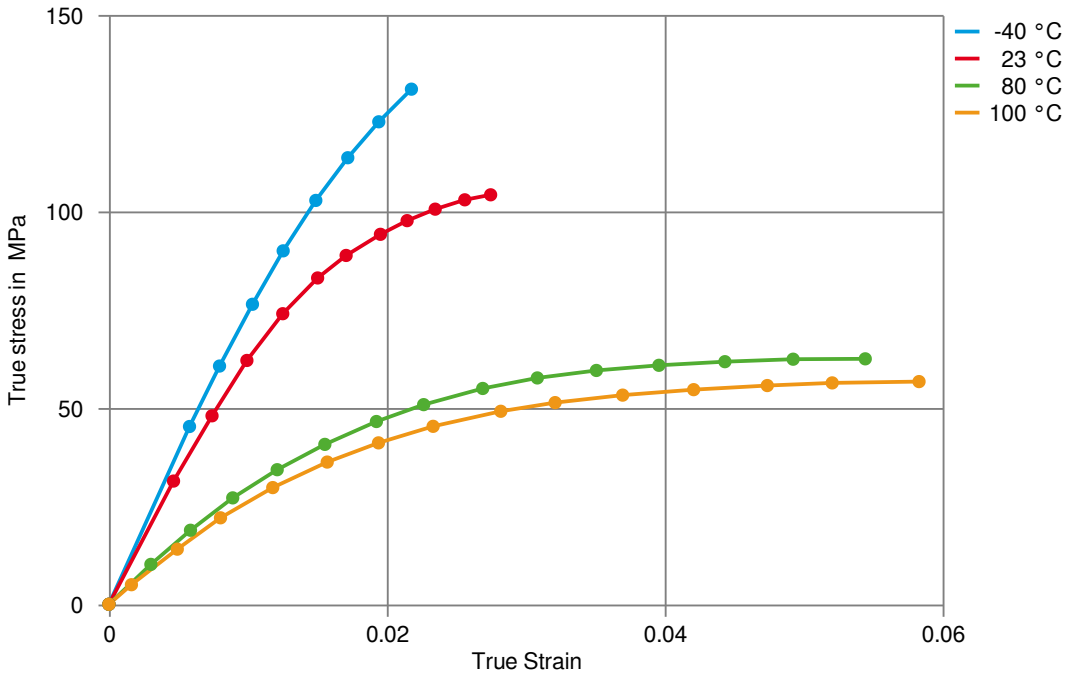
CELANEX® 3216

Secant modulus-strain



CELANEX® 3216

True stress-strain



Celanese
The chemistry inside innovation™

CELANEX® 3216

Processing Texts

Pre-drying	To avoid hydrolytic degradation during processing, CELANEX resins have to be dried to a moisture level equal to or less than 0.02%. Drying should be done in a dehumidifying hopper dryer capable of dewpoints <-40°F (-40°C) at 250°F (121°C) for 4 hours.
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	Rear Temperature 450-470 (230-240) deg F (deg C) Center Temperature 460-480 (235-250) deg F (deg C) Front Temperature 470-490 (240-255) deg F (deg C) Nozzle Temperature 480-490 (250-255) deg F (deg C) Melt Temperature 460-490 (235-255) deg F (deg C) Mold Temperature 150-200 (65-93) deg F (deg C) Back Pressure 0-50 psi Screw Speed Medium Injection Speed Fast 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, in particular for flame retardant grades. Up to 50% clean and dry regrind may be used for the '16 series' flame retardant grades.
Injection molding Preprocessing	To avoid hydrolytic degradation during processing, CELANEX resins have to be dried to a moisture level equal to or less than 0.02%. Drying should be done in a dehumidifying hopper dryer capable of dewpoints <-30°F (-34°C) at 250°F (121°C) for 4 hours..

Other Approvals

Other Approvals

OEM	Specification	Additional Information
Li Auto	Q/LiA5310038	2021 (V2)