

CELANEX® 2402MT® ECO-B

unfilled easy flowing nucleated grade, with partially bio-based PBT, for use in medical applications
 Celanex 2402MT ECO-B is an unfilled and nucleated, easy flow PBT grade for injection molding processing.

Celanex 2402MT ECO-B is a special grade developed for medical industry applications and complies with:

- CFR 21 (177.1660) of the Food and Drug Administration (FDA), and
- is listed in the Drug Master File (DMF 10047 (US) / 10033 (EU)) and the Device Master File (MAF 443 (US) / 1078 (EU))
- the corresponding EU and national registry regulatory requirements
- biocompatibility corresponding to USP 23 Class VI/ISO 10993
- low residual monomers
- contains no animal products
- Celanex ECO-B is a PBT with the same properties and performance as standard grades, but produced with sustainability in mind.
- Using a mass-balance approach, 40% of biogenic feedstocks are used to offset the use of fossil-based raw materials and decrease greenhouse gas emissions.
- The process will be audited and certified according to the REDcert mass balance approach.

Product information

Part Marking Code	> PBT <	ISO 11469
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Rheological properties

Melt volume-flow rate	40 cm ³ /10min	ISO 1133
Temperature	250 °C	
Load	2.16 kg	
Moulding shrinkage range, parallel	1.8 - 2.2 %	ISO 294-4, 2577
Moulding shrinkage, normal	2.0 %	ISO 294-4, 2577
Moulding shrinkage range, normal	1.8 - 2.2 %	ISO 294-4, 2577

Typical mechanical properties

Tensile Modulus	2700 MPa	ISO 527-1/-2
Yield stress, 50mm/min	60 MPa	ISO 527-1/-2
Yield strain, 50mm/min	4 %	ISO 527-1/-2
Nominal strain at break	15 %	ISO 527-1/-2
Flexural Modulus	2550 MPa	ISO 178
Flexural Strength	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

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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	60 °C	ISO 75-1/-2
Temp. of deflection under load, 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	110 E-6/K	ISO 11359-1/-2

Flammability

Burning Behav. at thickness h	HB class	UL 94
Thickness tested	0.80 mm	UL 94

Other properties

Humidity absorption, 2mm	0.2 %	Sim. to ISO 62
Water absorption, 2mm	0.45 %	Sim. to ISO 62
Density	1310 kg/m ³	ISO 1183

Injection

Drying Temperature	120 - 130 °C	
Drying Time, Dehumidified Dryer	4 h	
Processing Moisture Content	0.02 %	
Melt Temperature Optimum	250 °C	Internal
Max. mould temperature	70 - 90 °C	
Injection speed	medium-fast	

Characteristics

Additives	Release agent, Biobased
Food contact	FDA 21 CFR

Additional information

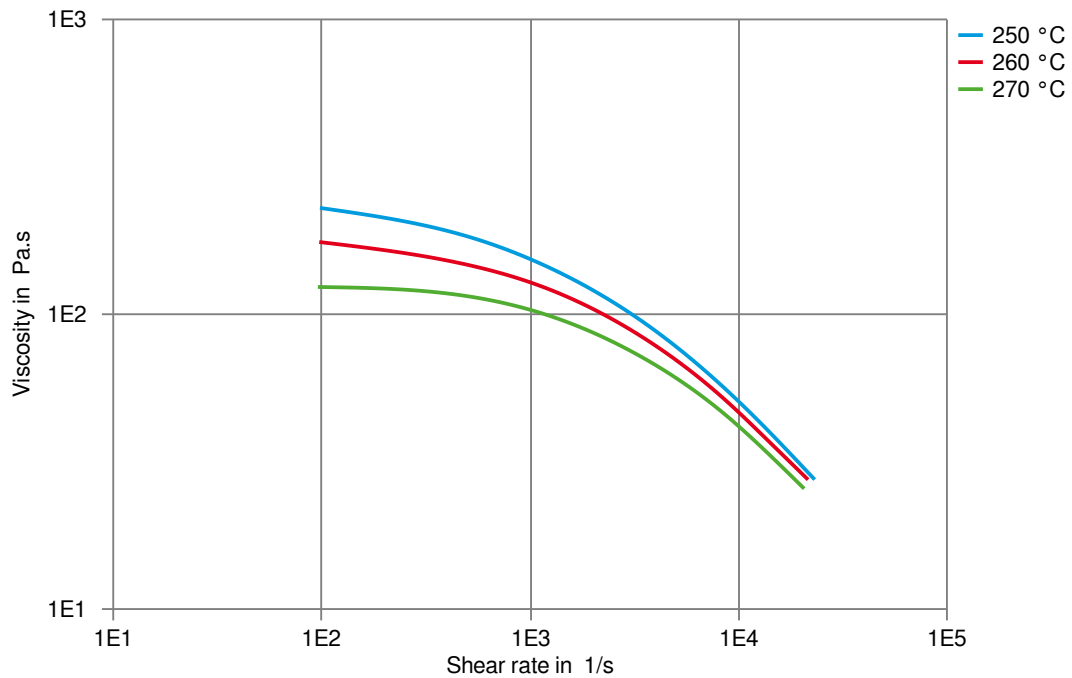
Injection molding	Rear Temperature 450-470(230-240) deg F (deg C)
	Center Temperature 460-480(235-250) deg F (deg C)
	Front Temperature 470-500(240-260) deg F (deg C)
	Nozzle Temperature 480-500(250-260) deg F (deg C)
	Melt Temperature 460-500(235-260) deg F (deg C)
	Mold Temperature 150-200(65-93) deg 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

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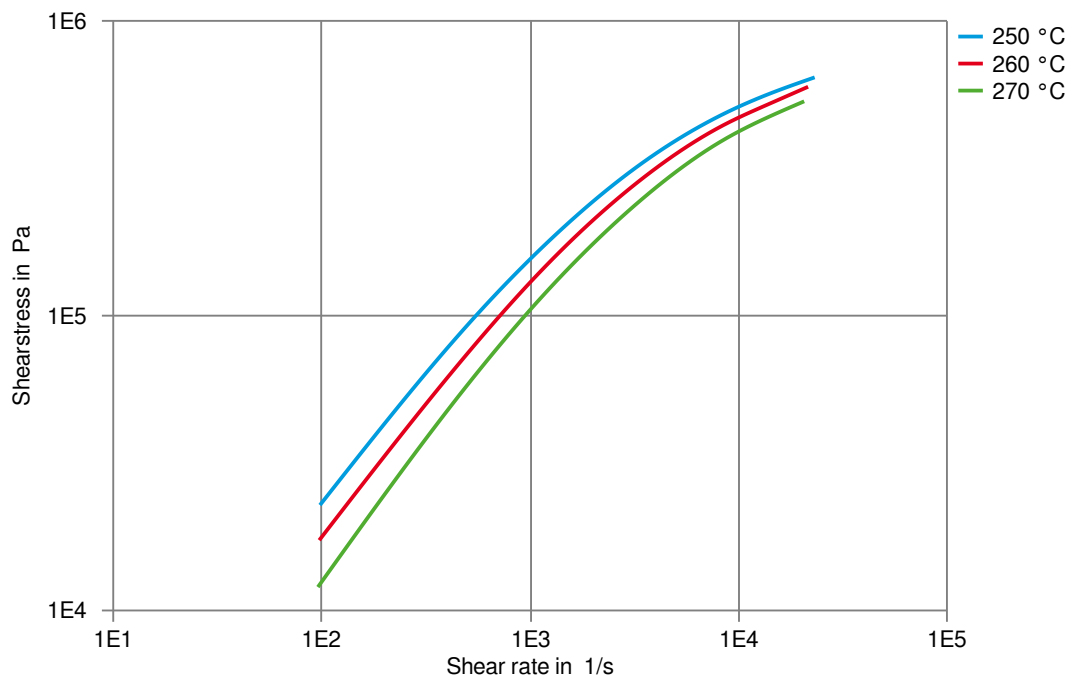
the material has to be avoided, in particular for flame retardant grades. Up to 25% clean and dry regrind may be used.

Viscosity-shear rate



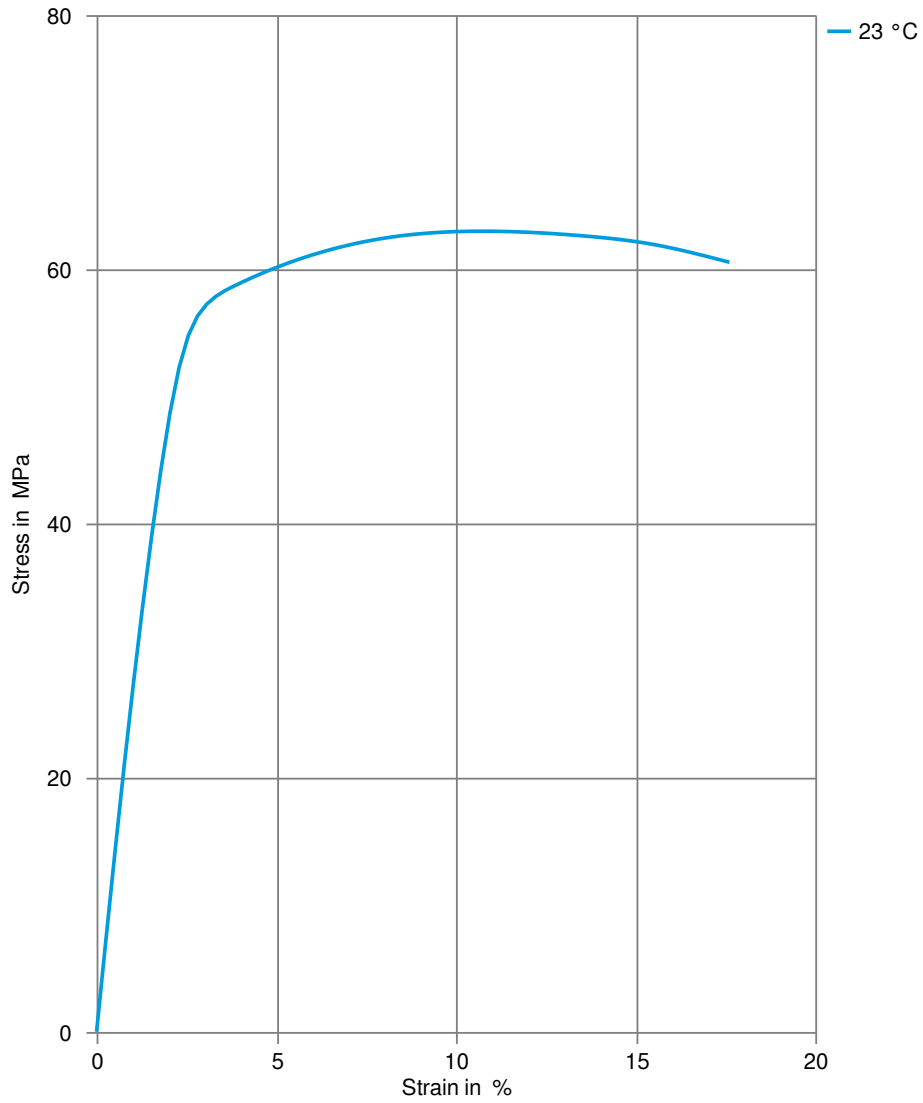
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Shearstress-shear rate



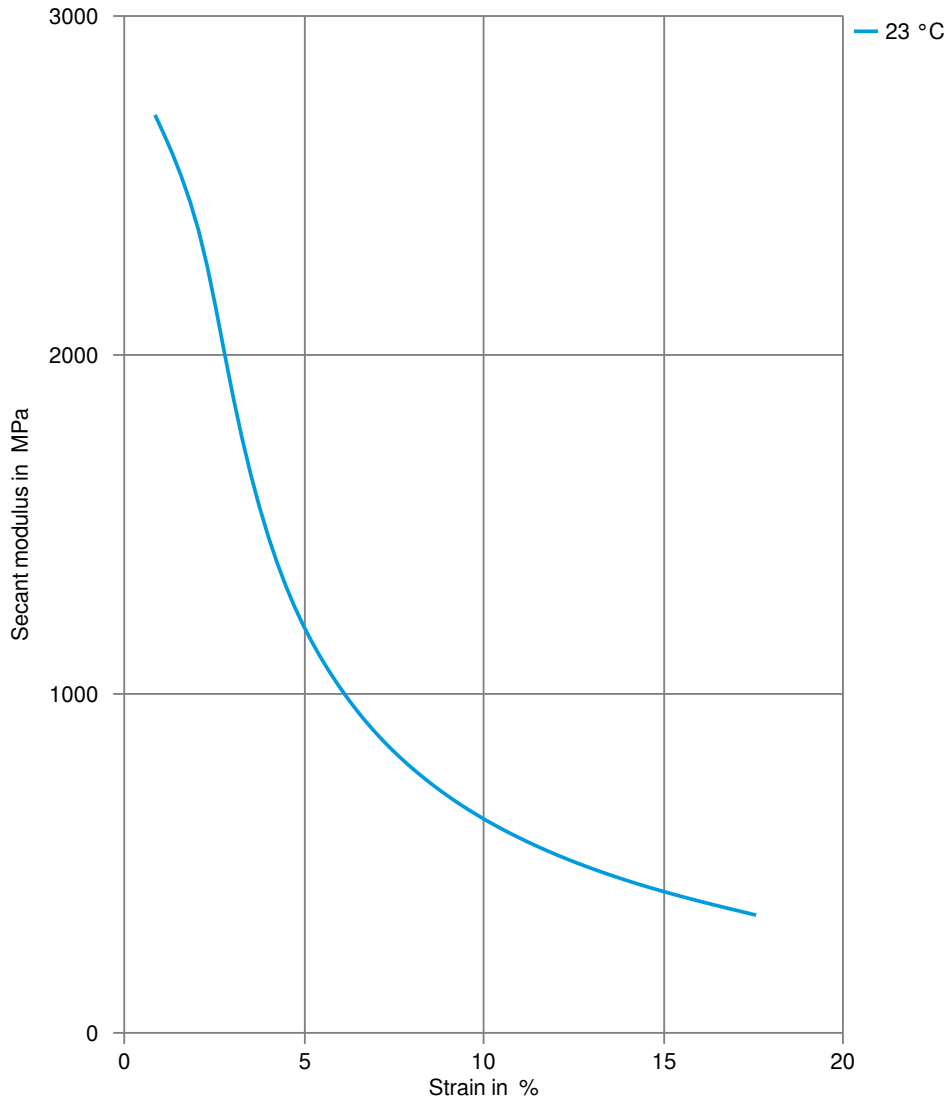
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Stress-strain



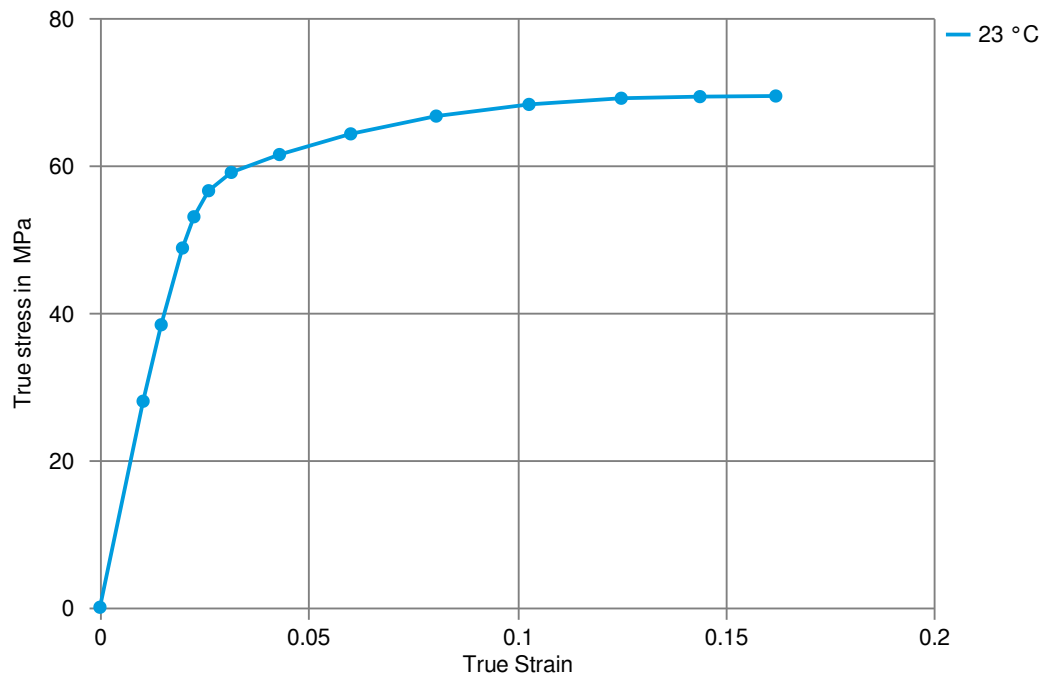
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Secant modulus-strain



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True stress-strain



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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 (120°C) for min. 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	<p>Rear Temperature 450-470(230-240) deg F (deg C) Center Temperature 460-480(235-250) deg F (deg C) Front Temperature 470-500(240-260) deg F (deg C) Nozzle Temperature 480-500(250-260) deg F (deg C) Melt Temperature 460-500(235-260) 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</p> <p>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 25% clean and dry regrind may be used.</p>
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