Celanese
The chemistry inside innovation™

CELANEX® 2003HR

CELANEX® PBT

Celanex 2003HR is an unfilled polybutylene terephthalate which has an excellent hydrolysis resistance, mechanical properties and processability

Product information

Resin Identification	PBT		ISO 1043
Part Marking Code	>PBT<		ISO 11469

Rheological properties

Melt mass-flow rate	44	g/10min	ISO 1133
Melt mass-flow rate, Temperature	482	°F	
Melt mass-flow rate, Load	4.76	lb	
Molding shrinkage range, parallel	1.8 - 2	%	ISO 294-4, 2577
Molding shrinkage range, normal	1.8 - 2	%	ISO 294-4, 2577

Typical mechanical properties

Shore D hardness, 15s	78		ISO 48-4 / ISO 868
Tensile modulus	392000	psi	ISO 527-1/-2
Tensile stress at yield, 50mm/min	8700	psi	ISO 527-1/-2
Tensile strain at yield, 50mm/min	4	%	ISO 527-1/-2
Tensile stress at break, 50mm/min	7980	psi	ISO 527-1/-2
Nominal strain at break	40	%	ISO 527-1/-2
Tensile strain at break, 50mm/min	25	%	ISO 527-1/-2
Flexural modulus	370000	psi	ISO 178
Flexural strength	11600	psi	ISO 178
Charpy impact strength, 23°C	52.8	ftlb/in²	ISO 179/1eU
Charpy impact strength, -30°C	16.6	ftlb/in²	ISO 179/1eU
Charpy notched impact strength, 23°C	2.05	ftlb/in²	ISO 179/1eA
Charpy notched impact strength, -30°C	2.05	ftlb/in²	ISO 179/1eA
Izod notched impact strength, 23°C	1.9	ftlb/in²	ISO 180/1A
Izod impact strength, 23°C	14.7	ftlb/in²	ISO 180/1U
Izod impact strength, -30°C	15.7	ftlb/in²	ISO 180/1U

Thermal properties

Melting temperature, 10°C/min	437	°F	ISO 11357-1/-3
Glass transition temperature, 10°C/min	113	°F	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	131	°F	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	302	°F	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	374	°F	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	0.67	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	0.611	E-4/°F	ISO 11359-1/-2

Electrical properties

Relative permittivity, 1000Hz	3.1		IEC 62631-2-1
Relative permittivity, 1MHz	3.2		IEC 62631-2-1
Dissipation factor, 1MHz	200	E-4	IEC 62631-2-1
Volume resistivity	>1E13	Ohm.m	IEC 62631-3-1

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Surface resistivity	>1E15	Ohm	IEC 62631-3-2
Electric strength	381	kV/in	IEC 60243-1
Comparative tracking index	600		IEC 60112

Physical/Other properties

Humidity absorption, 2mm	0.2	%	Sim. to ISO 62
Density	0.0473	lb/in³	ISO 1183

Injection

Drying Recommended	yes	
Drying Temperature	248	°F
Drying Time, Dehumidified Dryer	4	h
Processing Moisture Content	≤0.02	%
Melt Temperature Optimum	482	°F
Min. melt temperature	464	°F
Max. melt temperature	500	°F
Max. screw tangential speed	0.1 - 0.3	m/s
Mold Temperature Optimum	176	°F
Min. mold temperature	140	°F
Max. mold temperature	266	°F

Automotive

OEM	STANDARD	ADDITIONAL INFORMATION
Stellantis - Chrysler	MS.50103 / CPN-5253	Black

Characteristics

Processing	Injection Molding
Special characteristics	Hydrolysis resistant

Additional information

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.

Processing

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

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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 25% clean and dry regrind may be used.

Processing Notes

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.

Storage

For subsequent storage of the material in the dryer until processed (<= 60 h) it is necessary to lower the temperature to 100° C.

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