

## CELANEX® 2004-2 | PBT | Unfilled

### Description

Celanex 2004-2 is an unfilled polyester that has an excellent combination of flowability and toughness. A typical application for Celanex 2004-2 is electrical connectors containing latches. Celanex 2004-2 contains an internal lubricant.

Physical properties	Value	Unit	Test Standard
Density	1300	kg/m <sup>3</sup>	ISO 1183
Melt volume rate (MVR)	33	cm <sup>3</sup> /10min	ISO 1133
MVR test temperature	250	°C	ISO 1133
MVR test load	2.16	kg	ISO 1133
Mold shrinkage - parallel	1.8-2.0	%	ISO 294-4

Mechanical properties	Value	Unit	Test Standard
Tensile modulus (1mm/min)	2400	MPa	ISO 527-2/1A
Tensile stress at yield (50mm/min)	54	MPa	ISO 527-2/1A
Tensile strain at yield (50mm/min)	8	%	ISO 527-2/1A
Nominal strain at break (50mm/min)	37	%	ISO 527-2/1A
Flexural modulus (23°C)	2300	MPa	ISO 178
Flexural strength (23°C)	69	MPa	ISO 178
Charpy impact strength @ 23°C	218p	kJ/m <sup>2</sup>	ISO 179/1eU
Charpy impact strength @ -30°C	45	kJ/m <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength @ 23°C	4.5	kJ/m <sup>2</sup>	ISO 179/1eA
Charpy notched impact strength @ -30°C	4.5	kJ/m <sup>2</sup>	ISO 179/1eA
Unnotched impact str (Izod) @ 23°C	N	kJ/m <sup>2</sup>	ISO 180/1U
Notched impact strength (Izod) @ 23°C	4.6	kJ/m <sup>2</sup>	ISO 180/1A
Notched impact strength (Izod) @ -30°C	4.6	kJ/m <sup>2</sup>	ISO 180/1A

Thermal properties	Value	Unit	Test Standard
Melting temperature (10°C/min)	225	°C	ISO 11357-1,-2,-3
Glass transition temperature (10°C/min)	60	°C	ISO 11357-1,-2,-3
DTUL @ 1.8 MPa	54	°C	ISO 75-1/-2
DTUL @ 0.45 MPa	166	°C	ISO 75-1/-2
Vicat softening temperature B50 (50°C/h 50N)	175	°C	ISO 306
Coeff.of linear therm. expansion (parallel)	1.1	E-4/°C	ISO 11359-2
Flammability at thickness h	HB	class	UL94
thickness tested (h)	1	mm	UL94

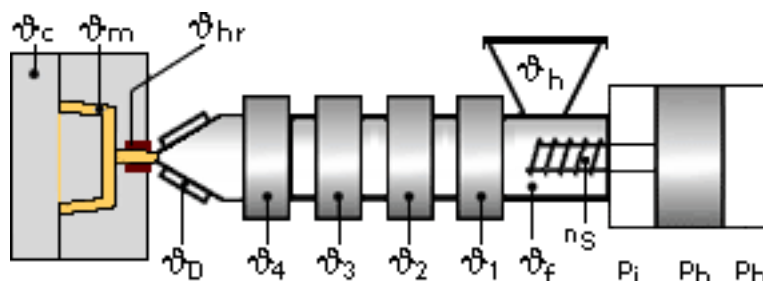
Electrical properties	Value	Unit	Test Standard
Relative permittivity - 100 Hz	3.7	-	IEC 60250
Relative permittivity - 1 MHz	3.5	-	IEC 60250
Dissipation factor - 100 Hz	30	E-4	IEC 60250
Dissipation factor - 1 MHz	210	E-4	IEC 60250
Volume resistivity	>1E13	Ohm*m	IEC 60093
Surface resistivity	>1E15	Ohm	IEC 60093

Test specimen production	Value	Unit	Test Standard
Processing conditions acc. ISO	7792	-	Internal
Injection molding melt temperature	250	°C	ISO 294
Injection molding mold temperature	82	°C	ISO 294

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Test specimen production	Value	Unit	Test Standard
Injection molding flow front velocity	<b>300</b>	mm/s	ISO 294
Injection molding hold pressure	<b>48</b>	MPa	ISO 294

### Typical injection moulding processing conditions



#### Pre Drying:

##### Necessary low maximum residual moisture content: 0.02%

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.

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

#### Drying time: 4 h

#### Drying temperature: 120 - 130 °C

#### Temperature:

	Θ <sub>Manifold</sub>	Θ <sub>Mold</sub>	Θ <sub>Melt</sub>	Θ <sub>Nozzle</sub>	Θ <sub>Zone4</sub>	Θ <sub>Zone3</sub>	Θ <sub>Zone2</sub>	Θ <sub>Zone1</sub>	Θ <sub>Feed</sub>	Θ <sub>Hopper</sub>
min (°C)	250	65	235	250	240	235	235	230	230	20
max (°C)	260	93	260	260	260	250	250	240	240	50

#### Speed:

#### Injection speed: medium-fast

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

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**Contact Information**

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**Americas**

8040 Dixie Highway, Florence, KY 41042 USA

Product Information Service

t: +1-800-833-4882 t: +1-859-372-3244

Customer Service

t: +1-800-526-4960 t: +1-859-372-3214

e: info-engineeredmaterials-am@celanese.com

**Asia**

4560 Jinke Road, Zhang Jiang Hi Tech Park

Shanghai 201203 PRC

Customer Service

t: +86 21 3861 9266 f: +86 21 3861 9599

e: info-engineeredmaterials-asia@celanese.com

**Europa**

Am Unisys-Park 1, 65843 Sulzbach, Germany

Product Information Service

t: +(00)-800-86427-531 t: +49-(0)-69-45009-1011

e: info-engineeredmaterials-eu@celanese.co

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Properties of molded parts can be influenced by a wide variety of factors including, but not limited to, material selection, additives, part design, processing conditions and environmental exposure. Any determination of the suitability of a particular material and part design for any use contemplated by the users and the manner of such use is the sole responsibility of the users, who must assure themselves that the material as subsequently processed meets the needs of their particular product or use.

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