

CELANEX® 2008 | PBT | Unfilled
Description

Celanex 2008 is a general purpose, unreinforced polybutylene terephthalate with a good balance of mechanical properties and processability for use in melt blown applications.

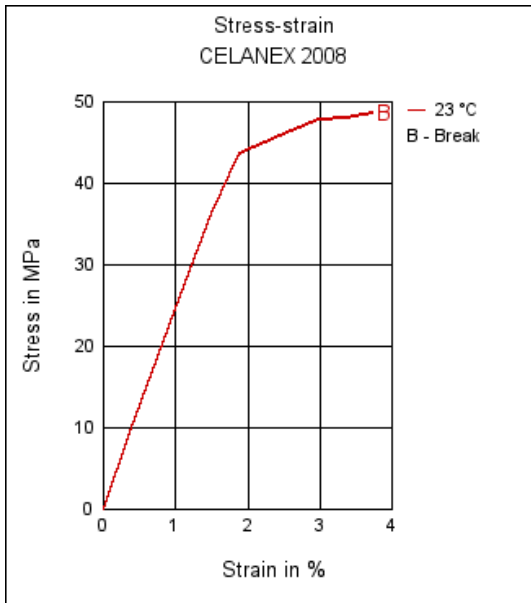
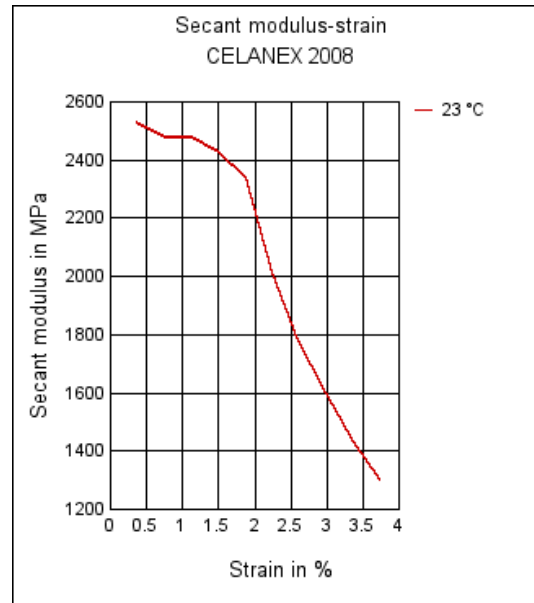
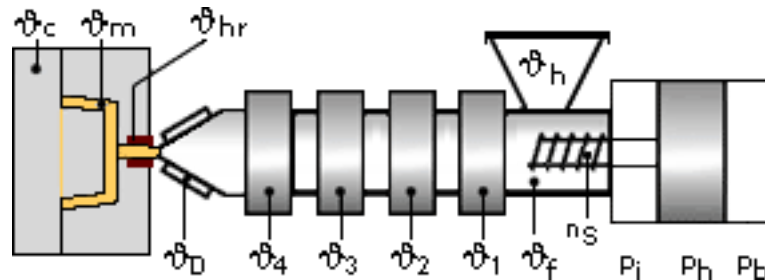
| Physical properties | Value | Unit | Test Standard |
|----------------------------------|----------------|-------------------|---------------|
| Density | 1310 | kg/m ³ | ISO 1183 |
| Mold shrinkage - parallel | 1.8-2.0 | % | ISO 294-4 |
| Mold shrinkage - normal | 1.8-2.0 | % | ISO 294-4 |
| Humidity absorption (23°C/50%RH) | 0.17 | % | ISO 62 |

| Mechanical properties | Value | Unit | Test Standard |
|--|-------------|-------------------|---------------|
| Tensile modulus (1mm/min) | 2600 | MPa | ISO 527-2/1A |
| Tensile stress at break (5mm/min) | 60 | MPa | ISO 527-2/1A |
| Tensile strain at break (5mm/min) | 5 | % | ISO 527-2/1A |
| Tensile stress at break (50mm/min) | 47 | MPa | ISO 527-2/1A |
| Tensile strain at break (50mm/min) | 2 | % | ISO 527-2/1A |
| Flexural modulus (23°C) | 2200 | MPa | ISO 178 |
| Flexural strength (23°C) | 80 | MPa | ISO 178 |
| Charpy impact strength @ 23°C | 38.0 | kJ/m ² | ISO 179/1eU |
| Charpy impact strength @ -30°C | 44.0 | kJ/m ² | ISO 179/1eU |
| Charpy notched impact strength @ 23°C | 2.8 | kJ/m ² | ISO 179/1eA |
| Charpy notched impact strength @ -30°C | 2.1 | kJ/m ² | ISO 179/1eA |
| Notched impact strength (Izod) @ 23°C | 3.1 | kJ/m ² | ISO 180/1A |
| Rockwell hardness | 72 | M-Scale | ISO 2039-2 |

| 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 | 57 | °C | ISO 75-1/-2 |
| DTUL @ 0.45 MPa | 155 | °C | ISO 75-1/-2 |
| Coeff.of linear therm. expansion (parallel) | 1.1 | E-4/°C | ISO 11359-2 |
| Coeff.of linear therm. expansion (normal) | 1 | E-4/°C | ISO 11359-2 |

| Electrical properties | Value | Unit | Test Standard |
|--------------------------------|-----------------|-------|---------------|
| Relative permittivity - 100 Hz | 3.3 | - | IEC 60250 |
| Relative permittivity - 1 MHz | 3.2 | - | IEC 60250 |
| Dissipation factor - 1 MHz | 200 | E-4 | IEC 60250 |
| Volume resistivity | >1E13 | Ohm*m | IEC 60093 |
| Surface resistivity | >1E15 | Ohm | IEC 60093 |
| Electric strength | 15 | kV/mm | IEC 60243-1 |
| Comparative tracking index CTI | 350 | - | IEC 60112 |

| Test specimen production | Value | Unit | Test Standard |
|---------------------------------------|---------------|------|---------------|
| Processing conditions acc. ISO | 7792-2 | - | Internal |
| Injection molding melt temperature | 243 | °C | ISO 294 |
| Injection molding mold temperature | 82 | °C | ISO 294 |
| Injection molding flow front velocity | 300 | mm/s | ISO 294 |
| Injection molding hold pressure | 48 | MPa | ISO 294 |

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Stress-strain

Secant modulus-strain

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 $<-40^{\circ}\text{F}$ (-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

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Temperature:

| | ϑ _{Manifold} | ϑ _{Mold} | ϑ _{Melt} | ϑ _{Nozzle} | ϑ _{Zone4} | ϑ _{Zone3} | ϑ _{Zone2} | ϑ _{Zone1} | ϑ _{Feed} | ϑ _{Hopper} |
|----------|-----------------------|-------------------|-------------------|---------------------|--------------------|--------------------|--------------------|--------------------|-------------------|---------------------|
| 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.

Contact Information

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.com

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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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