# CELANEX® 4016

PBT — Celanese

## Product Texts

Non-exuding, unfilled, flame retardant polybutylene terephthalate which has an excellent balance of mechanical properties and processability. Celanex 4016 is well suited for applications requiring improved toughness.

| | |
|---|---|
| Flammability at thickness h (0.85 mm) | V-0 |

| Processing/Physical Characteristics | Value | Unit | Test Standard |
|---|---|---|---|
| **ISO Data** | | | |
| [C] Melt volume-flow rate, MVR | **4.9** | cm³/10min | ISO 1133 |
| Temperature | **250** | °C | - |
| Load | **2.16** | kg | - |
| [C] Molding shrinkage, parallel | **1.8** | % | ISO 294-4, 2577 |
| [C] Molding shrinkage, normal | **1.8** | % | ISO 294-4, 2577 |

[C]: CAMPUS

| Mechanical properties | Value | Unit | Test Standard |
|---|---|---|---|
| **ISO Data** | | | |
| [C] Tensile Modulus | **2800** | MPa | ISO 527 |
| [C] Yield stress | **55** | MPa | ISO 527 |
| [C] Yield strain | **3.7** | % | ISO 527 |
| [C] Nominal strain at break | **38** | % | ISO 527 |
| [C] Charpy impact strength, +23°C | **245** | kJ/m² | ISO 179/1eU |
| [C] Charpy impact strength, -30°C | **105** | kJ/m² | ISO 179/1eU |
| [C] Charpy notched impact strength, +23°C | **8.1** | kJ/m² | ISO 179/1eA |
| [C] Charpy notched impact strength, -30°C | **8.1** | kJ/m² | ISO 179/1eA |
| [C] Shore D hardness | **80** | - | ISO 7619-1 |

[C]: CAMPUS

| Thermal properties | Value | Unit | Test Standard |
|---|---|---|---|
| **ISO Data** | | | |
| [C] Melting temperature, 10°C/min | **225** | °C | ISO 11357-1/-3 |
| [C] Glass transition temperature, 10°C/min | **48** | °C | ISO 11357-1/-2 |
| [C] Temp. of deflection under load, 1.80 MPa | **62** | °C | ISO 75-1/-2 |
| [C] Temp. of deflection under load, 0.45 MPa | **159** | °C | ISO 75-1/-2 |
| [C] Coeff. of linear therm. expansion, parallel | **100** | E-6/K | ISO 11359-1/-2 |
| [C] Coeff. of linear therm. expansion, normal | **100** | E-6/K | ISO 11359-1/-2 |
| [C] Burning Behav. at thickness h | **V-0** | class | IEC 60695-11-10 |
| Thickness tested | **0.8** | mm | - |
| [C] Oxygen index | **30** | % | ISO 4589-1/-2 |

[C]: CAMPUS

| Electrical properties | Value | Unit | Test Standard |
|---|---|---|---|
| **ISO Data** | | | |
| [C] Relative permittivity, 100Hz | **3.1** | - | IEC 62631-2-1 |
| [C] Relative permittivity, 1MHz | **3.1** | - | IEC 62631-2-1 |
| [C] Dissipation factor, 1MHz | **200** | E-4 | IEC 62631-2-1 |
| [C] Volume resistivity | **1E13** | Ohm*m | IEC 62631-3-1 |
| [C] Surface resistivity | **1E15** | Ohm | IEC 62631-3-2 |
| [C] Electric strength | **50** | kV/mm | IEC 60243-1 |

[C]: CAMPUS

| Other properties | Value | Unit | Test Standard |
|---|---|---|---|
| [C] Water absorption | **0.08** | % | Sim. to ISO 62 |
| [C] Humidity absorption | **0.16** | % | Sim. to ISO 62 |
| [C] Density | **1450** | kg/m³ | ISO 1183 |

[C]: CAMPUS

| Processing Recommendation Injection Molding | Value | Unit | Test Standard |
|---|---|---|---|
| Pre-drying - Temperature | **121** | °C | - |
| Pre-drying - Time | **4** | h | - |
| Processing humidity | **≤0.02** | % | - |
| Melt temperature | **235 - 255** | °C | - |
| Mold temperature | **65 - 93** | °C | - |

## Characteristics

**Processing**
Injection Molding

**Special Characteristics**
Flame retardant

**Delivery form**
Pellets

**Regional Availability**
North America, Europe, Asia Pacific, South and Central America, Near East/Africa

## Other text information

**Injection molding**
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..
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.