



# CELANEX® 3300HR

# **CELANEX® PBT**

Celanex 3300HR is a 30% glass reinforced polybutylene terephthalate which has excellent hydrolysis resistance, mechanical properties and processability

#### Product information

| Resin Identification Part Marking Code | PBT-GF30<br>>PBT-GF30< | ISO 1043<br>ISO 11469 |
|--|------------------------|-----------------------|
| Rheological properties                 |                        |                       |
| Melt mass-flow rate                    | 17 g/10min             | ISO 1133              |
| Melt mass-flow rate, Temperature       | 250 °C                 |                       |
| Melt mass-flow rate, Load              | 2.16 kg                |                       |
| Moulding shrinkage range, parallel     | 0.3 - 0.7 %            | ISO 294-4, 2577       |
| Moulding shrinkage range, normal       | 0.7 - 1.1 %            | ISO 294-4, 2577       |
|  |                        |                       |

# Typical mechanical properties

| Tensile modulus                       | 9200                | MPa               | ISO 527-1/-2 |
|---------------------------------------|---------------------|-------------------|--------------|
| Tensile stress at break, 5mm/min      | 140                 | MPa               | ISO 527-1/-2 |
| Tensile strain at break, 5mm/min      | 2.7                 | %                 | ISO 527-1/-2 |
| Flexural modulus                      | 9200                | MPa               | ISO 178      |
| Flexural strength                     | 210                 | MPa               | ISO 178      |
| Charpy impact strength, 23°C          | 46                  | kJ/m <sup>2</sup> | ISO 179/1eU  |
| Charpy impact strength, -30°C         | 45                  | kJ/m²             | ISO 179/1eU  |
| Charpy notched impact strength, 23°C  | 8.5                 | kJ/m²             | ISO 179/1eA  |
| Charpy notched impact strength, -30°C | 8.5                 | kJ/m <sup>2</sup> | ISO 179/1eA  |
| Izod notched impact strength, 23°C    | 12                  | kJ/m²             | ISO 180/1A   |
| Izod impact strength, 23°C            |                     | kJ/m²             | ISO 180/1U   |
| Poisson's ratio                       | 0.34 <sup>[C]</sup> |                   |              |
| [C]: Calculated                       |                     |                   |              |

### 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 |
| Temperature of deflection under load, 1.8 MPa  | 205 °C    | ISO 75-1/-2    |
| Temperature of deflection under load, 0.45 MPa   | 225 °C    | ISO 75-1/-2    |
| Vicat softening temperature, 50°C/h 50N  | 220 °C    | ISO 306        |
| Coefficient of linear thermal expansion  | 25 E-6/K  | ISO 11359-1/-2 |
| (CLTE), parallel   |           |                |
| Coefficient of linear thermal expansion (CLTE),  | 100 E-6/K | ISO 11359-1/-2 |
| normal   |           |                |
| The analysis is a second of the second of th |           |                |

#### **Electrical properties**

| • •                          |             |               |
|------------------------------|-------------|---------------|
| Relative permittivity, 100Hz | 4.5         | IEC 62631-2-1 |
| Relative permittivity, 1MHz  | 4.1         | IEC 62631-2-1 |
| Dissipation factor, 100Hz    | 22 E-4      | IEC 62631-2-1 |
| Dissipation factor, 1MHz     | 160 E-4     | IEC 62631-2-1 |
| Volume resistivity           | >1E13 Ohm.m | IEC 62631-3-1 |
| Surface resistivity          | >1E15 Ohm   | IEC 62631-3-2 |
| Electric strength            | 31 kV/mm    | IEC 60243-1   |
|                              |             |               |

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Comparative tracking index 425 IEC 60112

### Physical/Other properties

Humidity absorption, 2mm 0.17 % Sim. to ISO 62
Density 1530 kg/m³ ISO 1183

### Injection

| Drying Recommended              | yes       |     |
|---------------------------------|-----------|-----|
| Drying Temperature              | 120       | °C  |
| Drying Time, Dehumidified Dryer | 4         | h   |
| Processing Moisture Content     | ≤0.02     | %   |
| Melt Temperature Optimum        | 250       | °C  |
| Min. melt temperature           | 240       | °C  |
| Max. melt temperature           | 260       | °C  |
| Screw tangential speed          | 0.1 - 0.3 | m/s |
| Mold Temperature Optimum        | 80        | °C  |
| Min. mould temperature          | 60        | °C  |
| Max. mould temperature          | 130       | °C  |

#### Characteristics

Processing Injection Moulding

Delivery form Pellets

Special characteristics Hydrolysis resistant

#### Additional information

Injection molding Preprocessing

## reprocessing

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

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.

**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 ( $\leq$  60 h) it is necessary to lower the temperature to 100 ° C.

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