

CELCON® GC15

15% glass fibers, coupled for improved stiffness

Celcon® GC15 is an acetal copolymer grade utilizing a nominal 15 wt. % glass fiber to increase stiffness and strength.

Chemical abbreviation according to ISO 1043-1: POM

Rheological properties

| | | |
|------------------------------------|-------|-----------------|
| Moulding shrinkage range, parallel | 0.5 % | ISO 294-4, 2577 |
| Moulding shrinkage range, normal | 0.9 % | ISO 294-4, 2577 |

Typical mechanical properties

| | | |
|--------------------------------------|-----------------------|--------------|
| Tensile Modulus | 5950 MPa | ISO 527-1/-2 |
| Stress at break, 5mm/min | 91 MPa | ISO 527-1/-2 |
| Strain at break, 5mm/min | 2.5 % | ISO 527-1/-2 |
| Flexural Modulus | 5850 MPa | ISO 178 |
| Charpy notched impact strength, 23°C | 4.9 kJ/m ² | ISO 179/1eA |
| Izod notched impact strength, 23°C | 5.3 kJ/m ² | ISO 180/1A |

Thermal properties

| | | |
|---|-----------|----------------|
| Melting temperature, 10°C/min | 166 °C | ISO 11357-1/-3 |
| Temp. of deflection under load, 1.8 MPa | 159 °C | ISO 75-1/-2 |
| Vicat softening temperature, 50°C/h, 50N | 161 °C | ISO 306 |
| Coeff. of linear therm. expansion, parallel | 46 E-6/K | ISO 11359-1/-2 |
| Coeff. of linear therm. expansion, normal | 100 E-6/K | ISO 11359-1/-2 |

Other properties

| | | |
|--------------------------|------------------------|----------------|
| Humidity absorption, 2mm | 0.2 % | Sim. to ISO 62 |
| Water absorption, 2mm | 0.8 % | Sim. to ISO 62 |
| Density | 1500 kg/m ³ | ISO 1183 |

Injection

| | |
|---------------------------------|--------------|
| Drying Temperature | 100 - 120 °C |
| Drying Time, Dehumidified Dryer | 3 - 4 h |
| Max. mould temperature | 90 - 120 °C |
| Back pressure | 2 MPa |
| Injection speed | slow |

Additional information

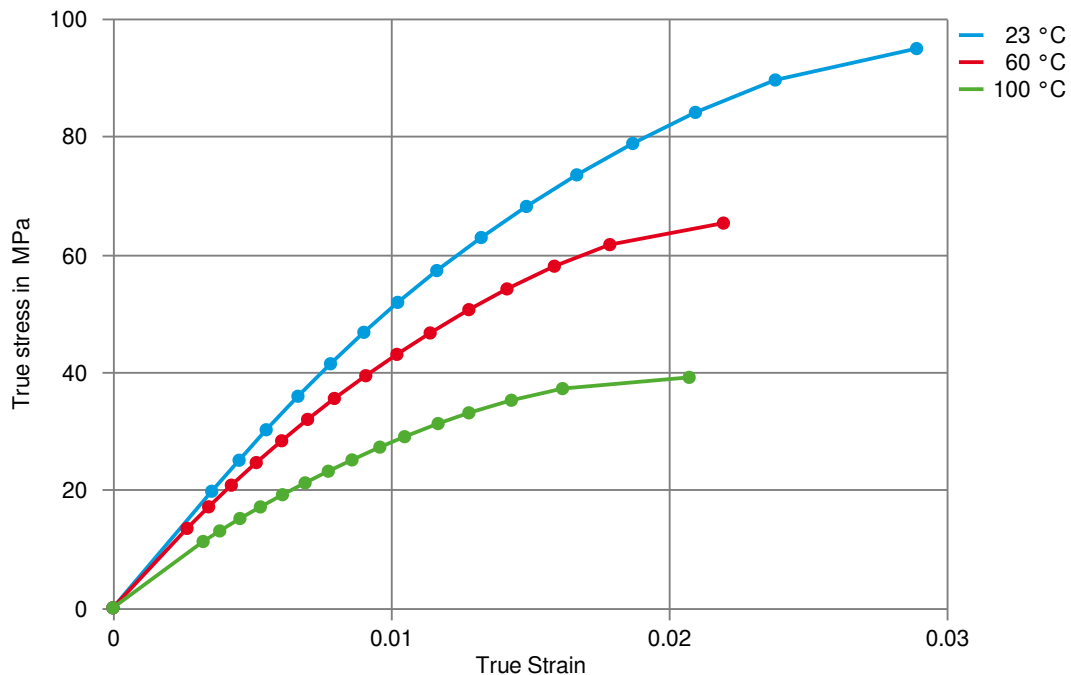
| | |
|-------------------|---|
| Injection molding | Standard reciprocating screw injection molding machines with a high compression screw (minimum 3:1 and preferably 4:1) and low back pressure (0.35 Mpa/50 PSI) are favored. Using a low compression screw (i.e.- general purpose 2:1 compression ratio) can result in unmelted particles and poor melt homogeneity. Using a high back pressure to make up for a low compression ratio may lead to excessive shear heating and deterioration of the Celcon material. |
|-------------------|---|

Melt temperature: preferred range 182-199 C (360-390 F) Melt temperature

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should never exceed 230 C (450 F). Mold surface temperature: preferred range 93-121 C (200-250 F) especially with wall thickness less than 1.5 mm (0.060 in.). May require mold temperature as high as 120 C (250 F) to reproduce mold surface or to assure minimal molded in stress. Wall thickness greater than 3 mm (1/8 in.) may use a cooler (65 C/150 F) mold surface temperature and wall thickness over 6 mm (1/4 in.) may use a cold mold surface down to 25 C (80 F). In general, mold surface temperatures lower than 82 C (180 F) may produce a hazy surface or a surface with flow lines, pits and other included defects.

True stress-strain



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Processing Texts

Pre-drying

Drying is not normally required. If material has come in contact with moisture through improper storage or handling or through regrind use, drying may be necessary to prevent splay and odor problems.

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Injection molding Preprocessing

Drying is generally not required because Celcon materials are not hygroscopic nor are they degraded by moisture during processing. Excessive moisture can lead to splay (silver streaking) in molded parts. For better uniformity in molding especially when using regrind or material that has been stored in containers open to the atmosphere, recommended drying conditions are 80 C (180 F) for three hours. Desiccant hopper dryers are not required. Max. water content = 0.35%.

Injection molding Postprocessing

Postprocessing conditioning and moisturizing not required. It may be necessary to fixture large or complicated parts with varying wall thickness to prevent warpage while cooling to ambient temperature.
