

CELCON® GC25T ECO-B

25% glass fibers, coupled for improved stiffness, high strength, improved fuel resistance

Celcon® GC25T is a 25% glass fiber coupled acetal copolymer grade. It offers higher strength than the standard Celcon® GC25A. Celcon® GC25T is also exceptionally resistant to fuel. It offers excellent resistance to transportation fuels especially oxygenated fuels. Chemical abbreviation according to ISO 1043-1: POM

ECO-B: Celcon® ECO-B is a POM-Copolymer with the same properties and performance as standard grades but produced with sustainability in mind. Using a mass-balance approach, biogenic feedstocks are used to offset the use of fossil-based raw materials and decrease greenhouse gas emissions. The process is audited and certified according to the ISCC Plus mass balance approach.

Rheological properties

Moulding shrinkage, parallel	0.7 %	ISO 294-4, 2577
Moulding shrinkage, normal	1.5 %	ISO 294-4, 2577

Typical mechanical properties

Tensile Modulus	8700 MPa	ISO 527-1/-2
Stress at break, 5mm/min	125 MPa	ISO 527-1/-2
Strain at break, 5mm/min	2.7 %	ISO 527-1/-2
Flexural Modulus	8500 MPa	ISO 178
Flexural Strength	190 MPa	ISO 178
Compressive stress at 1% strain	67 MPa	ISO 604
Charpy impact strength, 23°C	50 kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	55 kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	8.7 kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	7.2 kJ/m ²	ISO 179/1eA
Izod notched impact strength, 23°C	8 kJ/m ²	ISO 180/1A
Poisson's ratio	0.41	

Thermal properties

Melting temperature, 10°C/min	165 °C	ISO 11357-1/-3
Temp. of deflection under load, 1.8 MPa	161 °C	ISO 75-1/-2
Vicat softening temperature, 50°C/h, 50N	161 °C	ISO 306
Coeff. of linear therm. expansion, parallel	27 E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	125 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	1580 kg/m ³	ISO 1183

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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

Characteristics

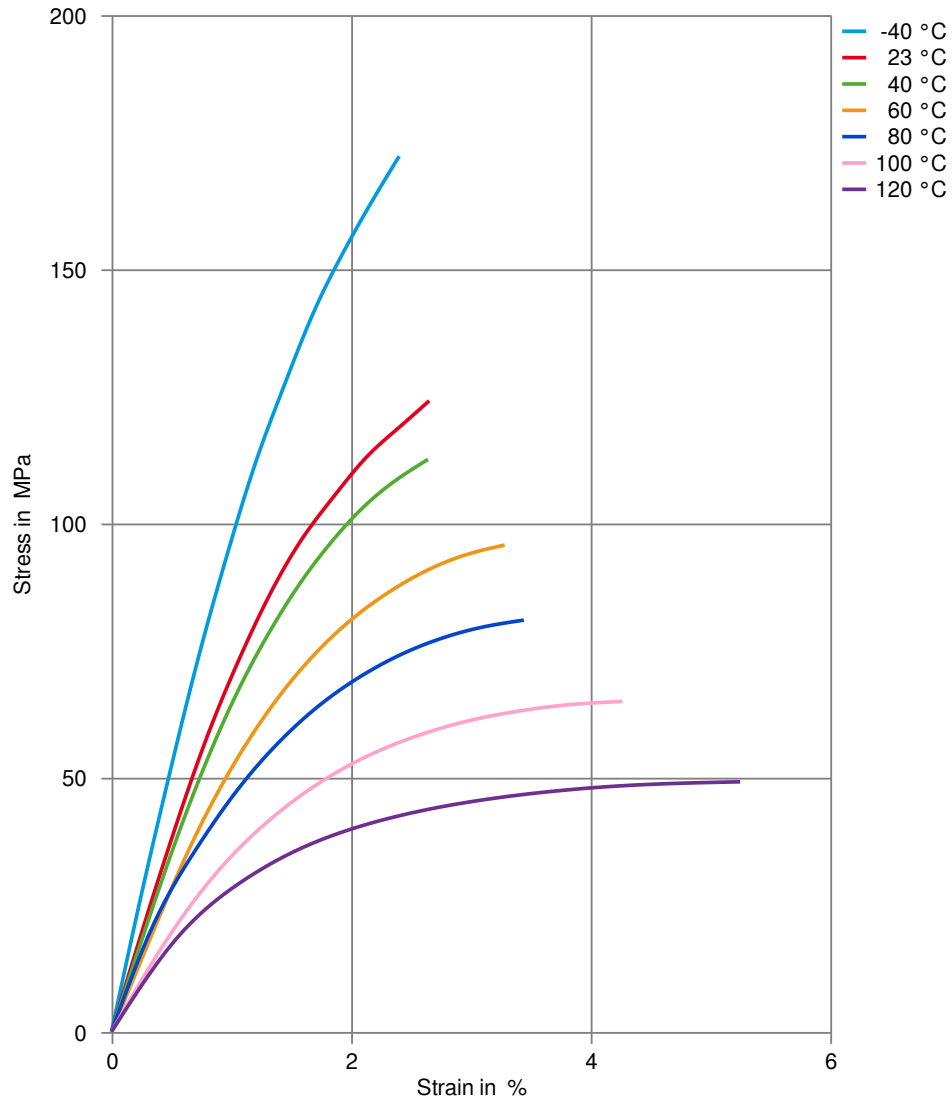
Additives	Biobased
Food contact	FDA 21 CFR

Additional information

Injection molding	<p>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.</p> <p>Melt temperature: preferred range 182-199 C (360-390 F) Melt temperature 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.</p>
Other extrusion	<p>Standard extruders with a length to diameter ratio of at least 20:1 are recommended. The screw should be a high compression ratio of at least 3:1 and preferably 4:1 to assure good melting and uniform melt homogeneity. The design should be approximately 35% each for the feed and metering sections with the remaining 30% as transition zone.</p> <p>Melt temperature 180-220 C (355-430F)</p>

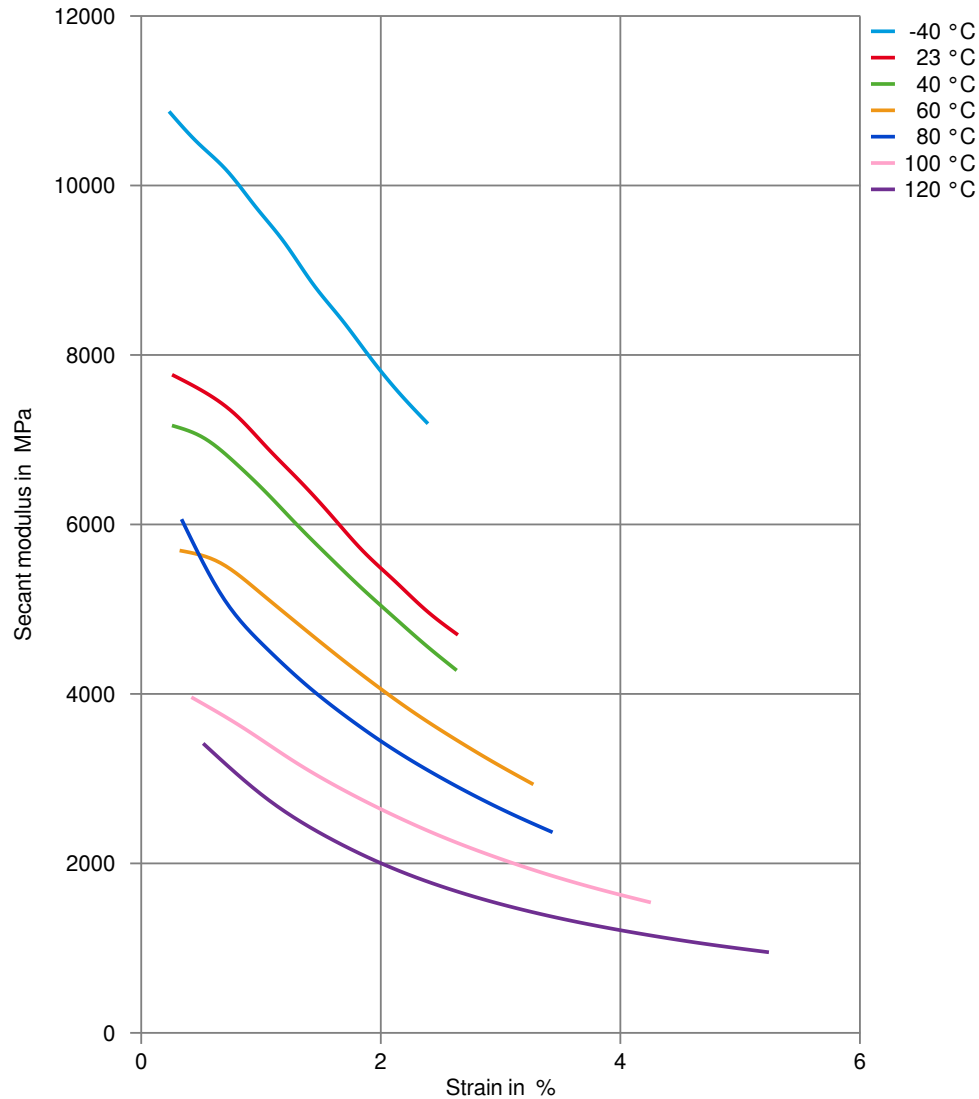
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Stress-strain



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Secant modulus-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.

Chemical Media Resistance

Standard Fuels

- ✓ ISO 1817 Liquid 1 - E5, 60°C
- ✓ ISO 1817 Liquid 2 - M15E4, 60°C
- ✓ ISO 1817 Liquid 3 - M3E7, 60°C
- ✓ ISO 1817 Liquid 4 - M15, 60°C
- ✓ Standard fuel without alcohol (pref. ISO 1817 Liquid C), 23°C
- ✓ Standard fuel with alcohol (pref. ISO 1817 Liquid 4), 23°C

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Symbols used:

- ✓ possibly resistant
Defined as: Supplier has sufficient indication that contact with chemical can be potentially accepted under the intended use conditions and expected service life. Criteria for assessment have to be indicated (e.g. surface aspect, volume change, property change).
- ✗ not recommended - see explanation
Defined as: Not recommended for general use. However, short-term exposure under certain restricted conditions could be acceptable (e.g. fast cleaning with thorough rinsing, spills, wiping, vapor exposure).

NOTICE TO USERS: Values shown are based on testing of laboratory test specimens and represent data that fall within the standard range of properties for natural material. These values alone do not represent a sufficient basis for any part design and are not intended for use in establishing maximum, minimum, or ranges of values for specification purposes. Colourants or other additives may cause significant variations in data values. Properties of moulded 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. Other than those products expressly identified as medical grade (including by MT® product designation or otherwise), Celanese's products are not intended for use in medical or dental implants. Regardless of any such product designation, 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. To the best of our knowledge, the information contained in this publication is accurate; however, we do not assume any liability whatsoever for the accuracy and completeness of such information. The information contained in this publication should not be construed as a promise or guarantee of specific properties of our products. It is the sole responsibility of the users to investigate whether any existing patents are infringed by the use of the materials mentioned in this publication. Moreover, there is a need to reduce human exposure to many materials to the lowest practical limits in view of possible adverse effects. To the extent that any hazards may have been mentioned in this publication, we neither suggest nor guarantee that such hazards are the only ones that exist. We recommend that persons intending to rely on any recommendation or to use any equipment, processing technique or material mentioned in this publication should satisfy themselves that they can meet all applicable safety and health standards. We strongly recommend that users seek and adhere to the manufacturer's current instructions for handling each material they use, and entrust the handling of such material to adequately trained personnel only. Please call the telephone numbers listed for additional technical information. Call Customer Services for the appropriate Materials Safety Data Sheets (MSDS) before attempting to process our products.

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