

CELCON®

Celcon® GC25T is a 25% glass fiber coupled acetal copolymer grade. It offers higher strength than 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.

Product information Resin Identification Part Marking Code	POM-GF25 >POM-GF25<		ISO 1043 ISO 11469
Rheological properties			
Moulding shrinkage, parallel Moulding shrinkage, normal	0.7 1.5		ISO 294-4, 2577 ISO 294-4, 2577
Typical mechanical properties			
Tensile modulus Tensile stress at break, 5mm/min Tensile strain at break, 5mm/min Flexural modulus Flexural strength Compressive strength Compressive strength, 23°C Charpy impact strength, -30°C Charpy notched impact strength, 23°C Charpy notched impact strength, -30°C Izod notched impact strength, 23°C Poisson's ratio	125 2.7 8500 190 181 67 50 55 8.7 7.2	MPa MPa % MPa MPa MPa kJ/m ² kJ/m ² kJ/m ² kJ/m ²	ISO 527-1/-2 ISO 527-1/-2 ISO 527-1/-2 ISO 178 ISO 178 ISO 604 ISO 604 ISO 179/1eU ISO 179/1eU ISO 179/1eA ISO 179/1eA ISO 180/1A
Thermal properties			
Melting temperature, 10°C/min Temperature of deflection under load, 1.8 MPa Coefficient of linear thermal expansion (CLTE), parallel Coefficient of linear thermal expansion (CLTE), normal			ISO 11357-1/-3 ISO 75-1/-2 ISO 11359-1/-2 ISO 11359-1/-2
Physical/Other properties			
Humidity absorption, 2mm Water absorption, 2mm Density	0.2 0.8 1580		Sim. to ISO 62 Sim. to ISO 62 ISO 1183



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Injection

Drying Recommended	no
Drying Temperature	100 °C
Drying Time, Dehumidified Dryer	3-4 h
Processing Moisture Content	≤0.2 %
Melt Temperature Optimum	190 °C
Min. melt temperature	180 °C
Max. melt temperature	200 °C
Screw tangential speed	≤0.3 m/s
Mold Temperature Optimum	105 °C
Min. mould temperature	90 °C
Max. mould temperature	120 °C
Hold pressure range	60 - 120 MPa
Back pressure	2 MPa

Characteristics

Processing	Injection Moulding, Extrusion, Other Extrusion
Delivery form	Pellets
Sustainability	Bio-Content

Additional information

Injection molding

Preprocessing

Drying is generally not required because Celcon materials are not hydroscopic 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%.

Processing

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 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

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hazy surface or a surface with flow lines, pits and other included defects.

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.

Other extrusion

Preprocessing

Drying is generally not required because Celcon materials are not hydroscopic nor are they degraded by moisture during processing. Excessive moisture can cause surface defects. For better uniformity especially when using regrind or material that has been stored in containers open to the atmosphere, recommended drying is 3 hours at 80 C (180 F). Desiccant hopper dryers are not required. Max. moisture content = 0.35%

Processing

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.

Melt temperature 180-220 C (355-430F)

Postprocessing

Postprocessing conditioning or moisturizing are not required. For thick walled sections (>3mm or 1/8 in.), annealing is recommended to reduce internal stresses.

Annealing temperature: 130-140 C (265-285 F)

Annealing time: 10 min/mm thickness

Processing Notes

Pre-Drying

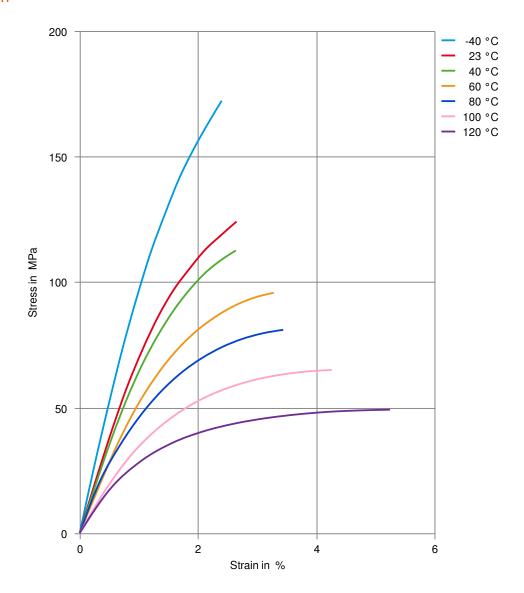
Drying is not normally required. If material has come in contact with moisture through improper storage or handling or through regrind use, drying may be necessary to prevent splay and odor problems.





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Stress-strain

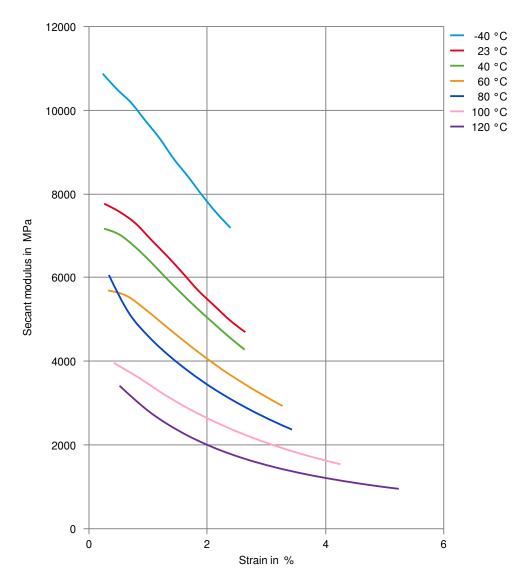






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Secant modulus-strain







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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

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).

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