

### CELCON®

Celcon® acetal copolymer grade M25 is a high molecular weight, higher toughness and impact resistance grade primarily used for extrusion and selected injection molding applications. Chemical abbreviation according to ISO 1043-1: POM Please also see Hostaform® C 2521.

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

POM >POM<		ISO 1043 ISO 11469
190	°C	ISO 1133
		ISO 294-4, 2577 ISO 294-4, 2577
62 13 2430 68 3.5 31 2100 1100 250 190 9.1 8.3 6.0 133	MPa % MPa MPa MPa MPa kJ/m <sup>2</sup> kJ/m <sup>2</sup> kJ/m <sup>2</sup> kJ/m <sup>2</sup> kJ/m <sup>2</sup>	ISO 527-1/-2 ISO 527-1/-2 ISO 527-1/-2 ISO 178 ISO 178 ISO 178 ISO 178 ISO 899-1 ISO 899-1 ISO 179/1eU ISO 179/1eU ISO 179/1eU ISO 179/1eA ISO 180/1A ISO 180/1U ISO 180/1U ISO 2039-2
94 150 120	°C °C E-6/K	ISO 11357-1/-3 ISO 75-1/-2 ISO 75-1/-2 ISO 11359-1/-2 ISO 11359-1/-2
	>POM< 2.2 190 2.16 2.2 1.8 2460 62 13 2430 68 3.5 31 2100 1100 250 190 9.1 8.3 6.0 133 6 82 0.38 <sup>[C]</sup> 166 94 150 120	>POM< 2.2 cm <sup>3</sup> /10min 190 °C 2.16 kg 2.2 % 1.8 % 2460 MPa 62 MPa 13 % 2430 MPa 68 MPa 3.5 % 31 MPa 2100 MPa 1100 MPa 1100 MPa 250 kJ/m <sup>2</sup> 190 kJ/m <sup>2</sup> 9.1 kJ/m <sup>2</sup> 8.3 kJ/m <sup>2</sup> 6.0 kJ/m <sup>2</sup> 133 kJ/m <sup>2</sup> 6.kJ/m <sup>2</sup> 82



#### **CELCON®**

Thermal conductivity of melt Specific heat capacity of melt		W/(m K) J/(kg K)	ISO 22007-2 ISO 22007-4
Flammability			
Oxygen index	14.9	%	ISO 4589-1/-2
Electrical properties			
Surface resistivity	1.3E16	Ohm	IEC 62631-3-2
Arc Resistance	240	S	UL 746B
Physical/Other properties			
Humidity absorption, 2mm	0.2	%	Sim. to ISO 62
Water absorption, 2mm	0.75	%	Sim. to ISO 62
Water absorption, Immersion 24h	0.2	%	Sim. to ISO 62
Density	1410	kg/m³	ISO 1183
Injection			
Drying Recommended	no		
Drying Temperature	100	°C	
Drying Time, Dehumidified Dryer	3 - 4	h	
Processing Moisture Content	≤0.2	%	
Melt Temperature Optimum	185		
Min. melt temperature	180		
Max. melt temperature	190	•	
Screw tangential speed	≤0.3		
Mold Temperature Optimum	100		
Min. mould temperature		°C	
Max. mould temperature	120		
Hold pressure range	60 - 120		
Back pressure		MPa	
Ejection temperature	140	-0	

#### **Characteristics**

Additives

Release agent, Bio-based

#### Additional information

Injection molding

#### Preprocessing

Drying is generally not required because Celcon® and Hostaform® acetal copolymers 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 3hours. Desiccant hopper dryers are not required. Maximum water content = 0.35%

#### Processing



CELCON®

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 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 82-93 C (180-200 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 3mm (1/8 in.) may use a cooler (65 C/150 F) mold surface temperature and wall thickness over 6mm (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 hinder weld line formation and produce a hazy surface or a surface with flow lines, pits and other included defects that can hinder part performance.

#### Postprocessing

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

#### 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 on the extruded film. For better uniformity especially when using regrind or material that has been stored in containers open to the atmosphere, recommended drying conditions are 3 Hrs. 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 melt homogeneity. The design should be approximately 35% each for feed and metering sections with the remaining 30% as the transition zone.

Melt temperature: 160-220 C (320-430 F)

#### Postprocessing

Postprocessing conditioning or moisturizing is not required.

Film extrusion



# CELCON® M25 ECO-B

Other extrusion



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### 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

Profile 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 on the extrusion. For better uniformity especially when using regrind or material that has been stored in containers open to the atmosphere, recommended drying conditions are 3 Hrs. at 80 C (180 F). Desiccant hopper dryers are not required. Max. moisture content = 0.035%.

#### 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 melt homogeneity. The design should be approximately 35% each for feed and metering sections with the remaining 30% as the transition zone.

Melt temperature: 180-220 C (360-430 F).

#### Postprocessing



Postprocessing or moisturizing is not required. For thick walled extrusions (>3 mm 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

Sheet extrusion

#### 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 surface defects. For better uniformity in sheet extrusion 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. water 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 (at least 3:1 and preferably 4:1) to assure good melting and uniform melt homogeneity. The screw design should be approximately 35% each for the feed and metering sections with the remaining 30% as the transition zone.

Melt temperature 180-190 C (355-375 F).

#### Postprocessing

Postprocessing conditioning or moisturizing is 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 wall thickness

Blow molding

Preprocessing

Consult product information services.

#### Processing

Consult product information services.

#### Postprocessing

Consult product information services.

Calandering

Preprocessing



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Consult product information services.

#### Processing

Consult product information services.

#### Postprocessing

Preprocessing

Consult product information services.

Compression molding

Consult product information services.

#### Processing

Consult product information services.

#### Postprocessing

Consult product information services.

**Processing Notes** 

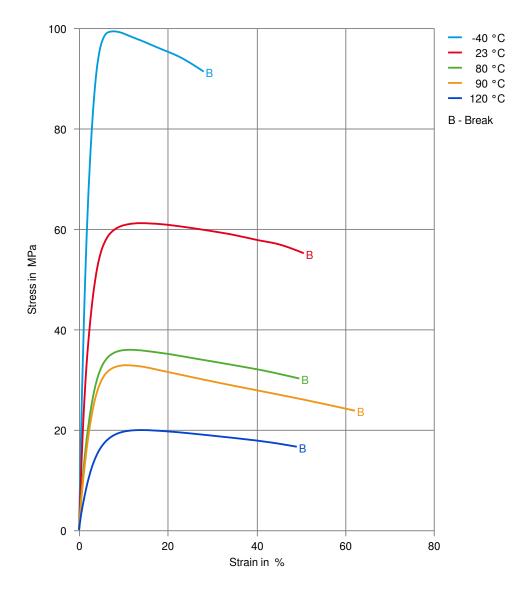
#### Pre-Drying

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.



### CELCON®

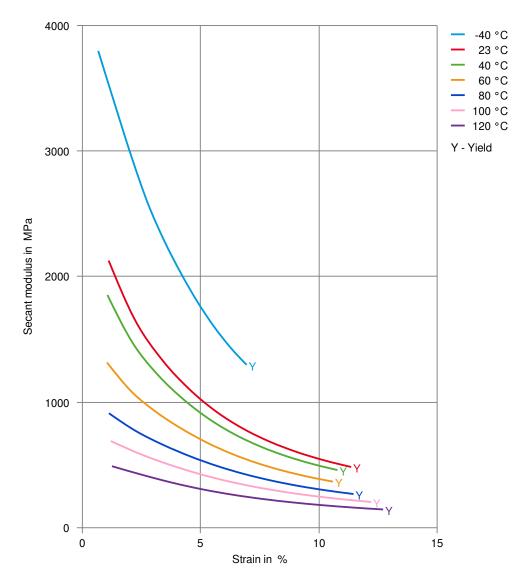
#### Stress-strain





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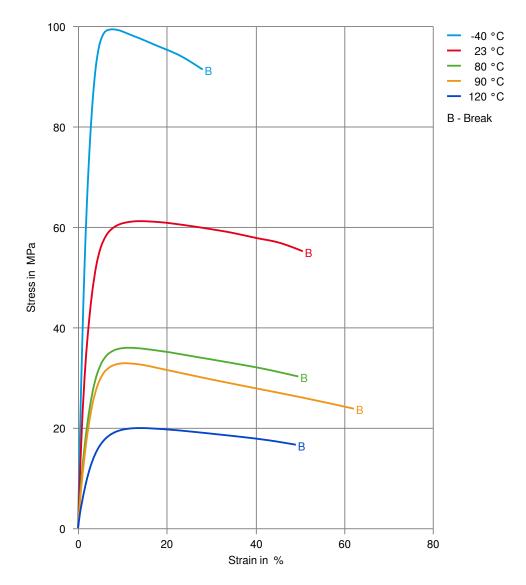
#### Secant modulus-strain





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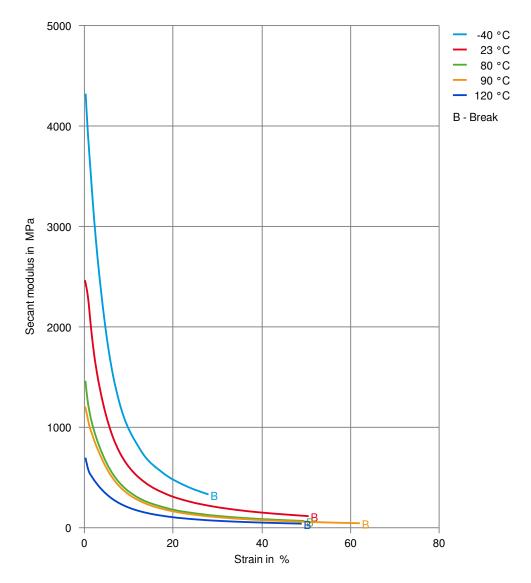
#### Stress-strain, 50mm/min





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#### Secant modulus-strain, 50mm/min



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