

## CELCON® M25 | POM | Unfilled

### Description

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.

Physical properties	Value	Unit	Test Standard
Density	<b>1410</b>	kg/m <sup>3</sup>	ISO 1183
Melt volume rate (MVR)	<b>2.2</b>	cm <sup>3</sup> /10min	ISO 1133
MVR test temperature	<b>190</b>	°C	ISO 1133
MVR test load	<b>2.16</b>	kg	ISO 1133
Mold shrinkage - parallel	<b>2.2</b>	%	ISO 294-4
Mold shrinkage - normal	<b>1.8</b>	%	ISO 294-4
Water absorption (23°C-sat)	<b>0.75</b>	%	ISO 62
Humidity absorption (23°C/50%RH)	<b>0.2</b>	%	ISO 62

Mechanical properties	Value	Unit	Test Standard
Tensile modulus (1mm/min)	<b>2460</b>	MPa	ISO 527-2/1A
Tensile stress at yield (50mm/min)	<b>63</b>	MPa	ISO 527-2/1A
Tensile strain at yield (50mm/min)	<b>12</b>	%	ISO 527-2/1A
Tensile creep modulus (1h)	<b>2100</b>	MPa	ISO 899-1
Tensile creep modulus (1000h)	<b>1100</b>	MPa	ISO 899-1
Flexural modulus (23°C)	<b>2430</b>	MPa	ISO 178
Flexural strength (23°C)	<b>68</b>	MPa	ISO 178
Charpy impact strength @ 23°C	<b>250.0P</b>	kJ/m <sup>2</sup>	ISO 179/1eU
Charpy impact strength @ -30°C	<b>190.0</b>	kJ/m <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength @ 23°C	<b>9.1</b>	kJ/m <sup>2</sup>	ISO 179/1eA
Notched impact strength (Izod) @ 23°C	<b>8.3</b>	kJ/m <sup>2</sup>	ISO 180/1A

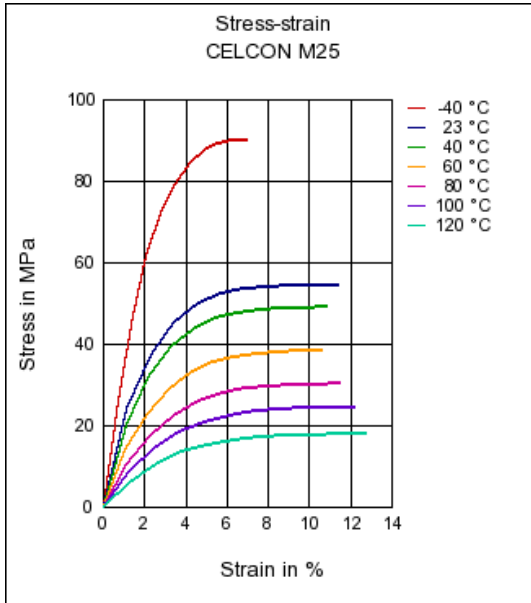
Thermal properties	Value	Unit	Test Standard
Melting temperature (10°C/min)	<b>166</b>	°C	ISO 11357-1,-2,-3
DTUL @ 1.8 MPa	<b>94</b>	°C	ISO 75-1/-2
Vicat softening temperature B50 (50°C/h 50N)	<b>161</b>	°C	ISO 306
Coeff.of linear therm. expansion (parallel)	<b>1.2</b>	E-4/°C	ISO 11359-2
Coeff.of linear therm. expansion (normal)	<b>1.2</b>	E-4/°C	ISO 11359-2

Test specimen production	Value	Unit	Test Standard
Processing conditions acc. ISO	<b>9988-2</b>	-	Internal
Injection molding melt temperature	<b>205</b>	°C	ISO 294
Injection molding mold temperature	<b>90</b>	°C	ISO 294
Injection molding flow front velocity	<b>140</b>	mm/s	ISO 294
Injection molding hold pressure	<b>86</b>	MPa	ISO 294

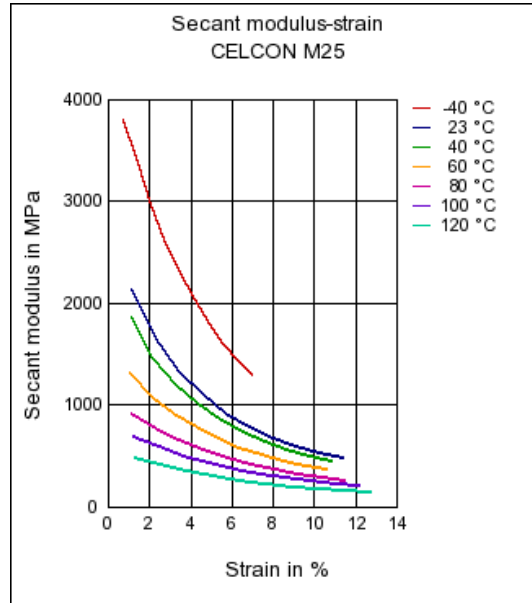
Rheological Calculation properties	Value	Unit	Test Standard
Density of melt	<b>1200</b>	kg/m <sup>3</sup>	Internal
Thermal conductivity of melt	<b>0.155</b>	W/(m K)	Internal
Specific heat capacity of melt	<b>2210</b>	J/(kg K)	Internal
Ejection temperature	<b>165</b>	°C	Internal

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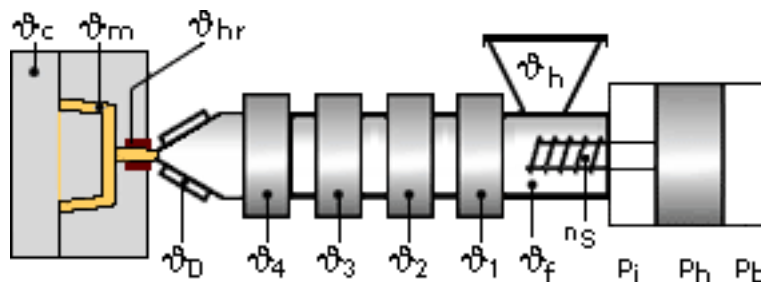
**Stress-strain**



**Secant modulus-strain**



**Typical injection moulding processing conditions**



Maximum residual moisture content: %

**Processing Temperatures:**

	$v_{\text{Cavity}}$	$v_{\text{Melt}}$	$v_{\text{Hot Runner}}$	$v_{\text{Die}}$	$v_4$	$v_3$	$v_2$	$v_1$	$v_{\text{Feeding}}$	$v_{\text{Hopper}}$
min (°C)	77	182	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
max (°C)	93	199	N/A	198	193	188	182	176	N/A	N/A

**Processing Pressures:**

	Injection Pressure	Holding Pressure	Back Pressure
min (bar)	600	600	0
max (bar)	1200	1200	5

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### Injection speed:

#### Screw speed:

Screw diameter (mm)	25	40	55
Screw speed (rpm)	150	100	70

### Pre-drying conditions:

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.

**Drying time: 3 h**

**Drying temperature: 80 - 100 °C**

### Special information:

No special information available.

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

## Film Extrusion

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)

## Other Extrusion

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 180-230 C (355-450F)

## Profile Extrusion

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: 180-230 C (360-450 F).

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### Sheet Extrusion

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).

### Blow Molding

Consult product information services.

### Calendering

Consult product information services.

### Compression Molding

Consult product information services.

### Contact Information

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### General Disclaimer

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. Colorants or other additives may cause significant variations in data values.

Properties of molded 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. 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.

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