

# CELCON® LM90Z

Laser markable, UV resistant to sunlight and artificial lighting

Celcon® LM90Z is a UV stable, nominal 9 melt flow acetal copolymer which is capable of being permanently marked by a laser. It gives protection against property and color deterioration in applications where significant UV exposure is anticipated from sunlight or artificial lighting. Parts molded from Celcon® LM90Z can be lasermarked with barcodes, identification numbers, designs, 2-D symbology, etc.

## Rheological properties

Melt volume-flow rate	8 cm <sup>3</sup> /10min	ISO 1133
Temperature	190 °C	
Load	2.16 kg	

## Typical mechanical properties

Tensile Modulus	2700 MPa	ISO 527-1/-2
Yield stress, 50mm/min	63 MPa	ISO 527-1/-2
Yield strain, 50mm/min	9 %	ISO 527-1/-2
Flexural Modulus	2670 MPa	ISO 178
Charpy notched impact strength, 23°C	4.7 kJ/m <sup>2</sup>	ISO 179/1eA
Izod notched impact strength, 23°C	5.2 kJ/m <sup>2</sup>	ISO 180/1A
Poisson's ratio	0.426	

## Thermal properties

Melting temperature, 10°C/min	167 °C	ISO 11357-1/-3
Temp. of deflection under load, 1.8 MPa	95 °C	ISO 75-1/-2
Vicat softening temperature, 50°C/h, 50N	161 °C	ISO 306
Coeff. of linear therm. expansion, parallel	100 E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	110 E-6/K	ISO 11359-1/-2

## Other properties

Humidity absorption, 2mm	0.2 %	Sim. to ISO 62
Water absorption, 2mm	0.75 %	Sim. to ISO 62
Density	1410 kg/m <sup>3</sup>	ISO 1183

## Injection

Drying Temperature	100 - 120 °C
Drying Time, Dehumidified Dryer	3 - 4 h
Max. mould temperature	80 - 120 °C
Back pressure	4 MPa
Injection speed	slow-medium

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## 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 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.

## 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® and Hostaform® acetal copolymers 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 3 hours. Desiccant hopper dryers are not required. Maximum water content = 0.35%

## Injection molding 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.

## Other Approvals

### Other Approvals

OEM	Specification	Additional Information
Toyota		Color approved