

CELCON® M90™ - POM
Description

Celcon acetal copolymer grade M90™ is a medium viscosity polymer providing optimum performance in general purpose injection molding and extrusion of thin walled tubing and thin gauge film. This grade provides overall excellent performance in many applications. Chemical abbreviation according to ISO 1043-1: POM Please also see Hostaform® C 9021.

Physical properties	Value	Unit	Test Standard
Density	1410	kg/m ³	ISO 1183
Melt volume rate, MVR	8	cm ³ /10min	ISO 1133
MVR temperature	190	°C	ISO 1133
MVR load	2.16	kg	ISO 1133
Molding shrinkage, parallel	2.0	%	ISO 294-4, 2577
Molding shrinkage, normal	1.9	%	ISO 294-4, 2577
Water absorption, 23°C-sat	0.75	%	ISO 62
Humidity absorption, 23°C/50%RH	0.2	%	ISO 62

Mechanical properties	Value	Unit	Test Standard
Tensile modulus	2760	MPa	ISO 527-2/1A
Tensile stress at yield, 50mm/min	65	MPa	ISO 527-2/1A
Tensile strain at yield, 50mm/min	10	%	ISO 527-2/1A
Tensile creep modulus, 1h	2450	MPa	ISO 899-1
Tensile creep modulus, 1000h	1350	MPa	ISO 899-1
Flexural modulus, 23°C	2550	MPa	ISO 178
Flexural stress at 3.5% strain	73	MPa	ISO 178
Charpy impact strength, 23°C	188	kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	181	kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	6	kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	6	kJ/m ²	ISO 179/1eA
Izod impact notched, 23°C	5.7	kJ/m ²	ISO 180/1A
Izod impact notched, -30°C	5.5	kJ/m ²	ISO 180/1A
Compressive stress at 1% strain	26	MPa	ISO 604
Compressive stress at 6% strain	88	MPa	ISO 604

Thermal properties	Value	Unit	Test Standard
Melting temperature, 10°C/min	166	°C	ISO 11357-1/-3
DTUL at 1.8 MPa	101	°C	ISO 75-1, -2
DTUL at 0.45 MPa	158	°C	ISO 75-1, -2
Vicat softening temperature, 50°C/h 50N	161	°C	ISO 306
Coeff. of linear therm expansion, parallel	1.2	E-4/°C	ISO 11359-2
Coeff. of linear therm expansion, normal	1.2	E-4/°C	ISO 11359-2

Electrical properties	Value	Unit	Test Standard
Volume resistivity	8E12	Ohm*m	IEC 60093
Surface resistivity	3E16	Ohm	IEC 60093

Test specimen production	Value	Unit	Test Standard
Processing conditions acc. ISO	9988-2	-	Internal
Injection Molding, melt temperature	205	°C	ISO 294
Injection Molding, mold temperature	90	°C	ISO 294
Injection Molding, injection velocity	200	mm/s	ISO 294
Injection Molding, pressure at hold	86	MPa	ISO 294

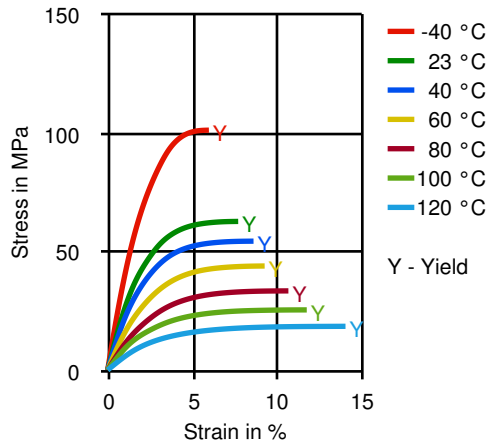
Rheological calculation properties	Value	Unit	Test Standard
Density of melt	1200	kg/m ³	Internal
Thermal conductivity of melt	0.155	W/(m K)	Internal
Spec. heat capacity melt	2210	J/(kg K)	Internal

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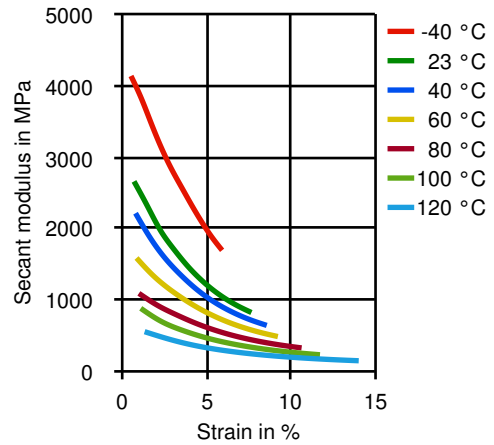
Eff. thermal diffusivity	4.85E-8	m ² /s	Internal
Ejection temperature	140	°C	Internal

Diagrams

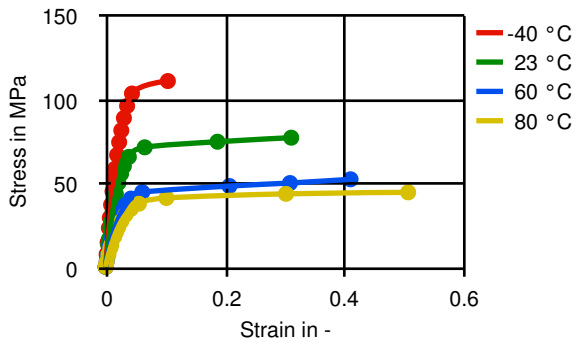
Stress-strain



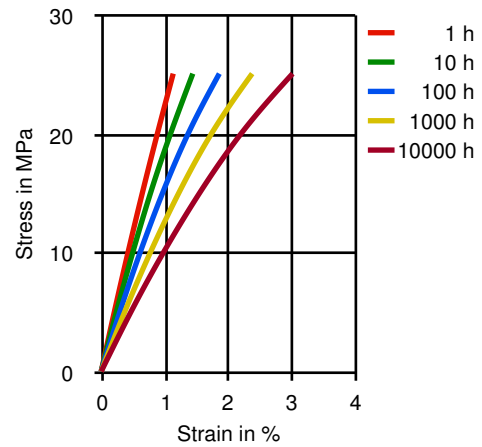
Secant modulus-strain



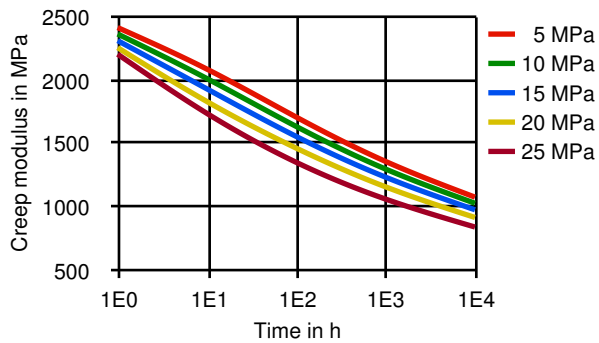
True Stress-strain



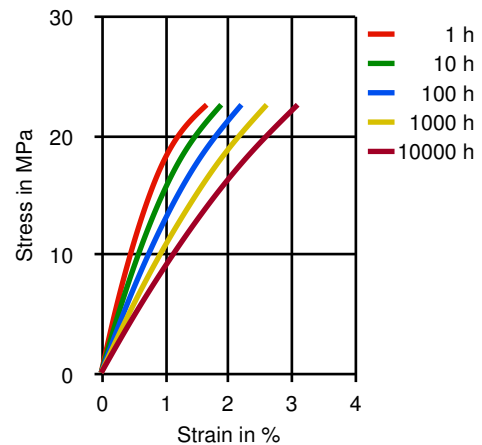
Stress-strain (isochronous) 23 °C



Creep modulus-time 23 °C

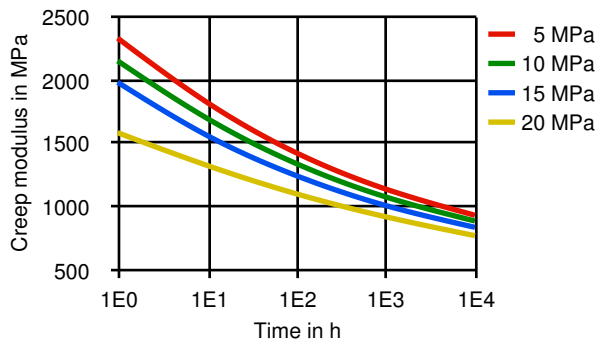


Stress-strain (isochronous) 40 °C



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Creep modulus-time 40 °C



Typical injection moulding processing conditions

	Value	Unit	Test Standard
Pre Drying			
Drying time	3 - 4	h	-
Drying temperature	100 - 120	°C	-
Temperature			
Zone1 temperature	170 - 180	°C	-
Zone2 temperature	180 - 190	°C	-
Zone3 temperature	180 - 190	°C	-
Zone4 temperature	190 - 200	°C	-
Die temperature	190 - 200	°C	-
Melt temperature	180 - 200	°C	-
Cavity temperature	80 - 120	°C	-
Hot runner temperature	180 - 200	°C	-
Pressure			
Back pressure max.	40	bar	-
Speed			
Injection speed	slow-medium	-	-
Other			
Flow temperature	174	°C	Internal

Other text information

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.

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.

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.

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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 180-220 C (355-430F)

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

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.

Calandring

Consult product information services.

Compression molding

Consult product information services.

Characteristics

Product Categories

Unfilled

Delivery Form

Pellets

Processing

Blow molding, Calandring, Film extrusion, Injection molding, Other extrusion, Sheet extrusion

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General Disclaimer

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