Celanese
The chemistry inside innovation™

CELCON® M15HP

Low flow, high strength and stiffness, improved impact
Celcon® acetal copolymer grade M15HP is a creep resistant, high viscosity polymer providing optimum performance in general purpose injection molding. This grade provides overall excellent performance in applications requiring high stiffness.
Chemical abbreviation according to ISO 1043-1: POM

Rheological properties

Melt volume-flow rate	1.3	cm^3/10min	ISO 1133
Temperature	190	°C	
Load	2.16	kg	
Moulding shrinkage range, parallel	2.3	%	ISO 294-4, 2577
Moulding shrinkage range, normal	1.9	%	ISO 294-4, 2577

Typical mechanical properties

Tensile Modulus	2800	MPa	ISO 527-1/-2
Yield stress, 50mm/min	68	MPa	ISO 527-1/-2
Yield strain, 50mm/min	16	%	ISO 527-1/-2
Flexural Modulus	2750	MPa	ISO 178
Compressive stress at 1% strain	29	MPa	ISO 604
Charpy impact strength, 23°C	280	kJ/m^2	ISO 179/1eU
Charpy impact strength, -30°C	220	kJ/m^2	ISO 179/1eU
Charpy notched impact strength, 23°C	11	kJ/m^2	ISO 179/1eA
Charpy notched impact strength, -30°C	8.5	kJ/m^2	ISO 179/1eA
Izod notched impact strength, 23°C	9.5	kJ/m^2	ISO 180/1A
Hardness, Rockwell, M-scale	84		ISO 2039-2
Poisson's ratio	0.401		

Thermal properties

Melting temperature, 10°C/min	173	°C	ISO 11357-1/-3
Temp. of deflection under load, 1.8 MPa	101	°C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	158	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h, 50N	166	°C	ISO 306
Vicat softening temperature, 50°C/h 10N	167	°C	ISO 306
Coeff. of linear therm. expansion, parallel	110	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	120	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^3	ISO 1183
Density of melt	1160	kg/m^3	Internal

CELCON® M15HP

Injection

Drying Temperature	100 - 120	°C	
Drying Time, Dehumidified Dryer	3 - 4	h	
Melt Temperature Optimum	200	°C	Internal
Max. mould temperature	90 - 120	°C	
Back pressure	4	MPa	
Injection speed	slow		

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 with a 2:1 compression ratio) can result in unmelted particles and poor thermal 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 205-220 C (400-430 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.). Wall thickness greater than 3 mm (1/8 in.) may use a cooler (82 C/180 F) mold surface temperature and wall thickness over 6 mm (1/4 in.) may use a cold mold surface temperature as low as 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)
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).
Blow molding	Consult product information services.
Calandering	Consult product information services.

CELCON® M15HP

Consult product information services.

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.
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 with a 2:1 compression ratio) can result in unmelted particles and poor thermal 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 205-220 C (400-430 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.). Wall thickness greater than 3 mm (1/8 in.) may use a cooler (82 C/180 F) mold surface temperature and wall thickness over 6 mm (1/4 in.) may use a cold mold surface temperature as low as 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.
Injection molding Preprocessing	Drying is generally not required because Celcon® and Hostaform® acetal copolymer 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%.
Injection molding 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 Approvals

Other Approvals

OEM	Specification	Additional Information
Stellantis - Chrysler	CPN 4155	Natural
Ford	WSK-M4D635-A1	Natural & Black
Toyota	TSM5515G-1A	