





Celcon[®] M90

Ticona - Acetal (POM) Copolymer

Unit System: English**View****Datasheet** **Shown Below**

ASTM Data Sheet	
ISO Data Sheet	--
CAMPUS [®] Data Sheet	

Actions

Product Sourcing	
E-mail a Datasheet	

General Information**Product 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.

General	Å
Material Status	∞ Commercial: Active
Availability	∞ North America
Test Standards Available	∞ ASTM ∞ ISO 10350
Features	∞ Copolymer Å ∞ Dimensional Stability, Good ∞ Moldability, Good ∞ General Purpose ∞ Toughness, Good ∞ Gloss, High ∞ Viscosity, Medium
Uses	∞ Bearings Å ∞ Knobs ∞ Cams ∞ Pump Parts ∞ Gears ∞ Springs ∞ Housings ∞ Valves/Valve Parts
Forms	∞ Pellets
Processing Method	∞ Extrusion ∞ Injection Molding
Multi-Point Data	∞ Creep Modulus vs. Time (ISO 11403-1) Å ∞ Isothermal Stress vs. Strain (ISO 11403-1) ∞ Isochronous Stress vs. Strain (ISO 11403-1) ∞ Secant Modulus vs. Strain (ISO 11403-1)

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ASTM and ISO Properties¹

Physical	Nominal Value	Unit	Test Method
Density -Specific Gravity	1.41	sp gr 23/23Å°C	ASTM D792
Melt Mass-Flow Rate (MFR) (190Å°C/2.16 kg)	9.00	g/10 min	ASTM D1238
Mold Shrink, Linear-Flow	0.022	in/in	ASTM D955
Mold Shrink, Linear-Trans	0.018	in/in	ASTM D955
Water Absorption @ 24 hrs	0.22	%	ASTM D570
Water Absorption @ Sat.	0.80	%	ASTM D570
Water Absorption @ Equil (50% RH, 73 Å°F)	0.10	%	ASTM D570
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus	410000	psi	ASTM D638
Tensile Strength @ Yield	Å	Å	ASTM D638
(-40 Å°F)	13700	psi	Å
(73 Å°F)	8800	psi	Å
(160 Å°F)	5000	psi	Å
Tensile Elongation @ Brk	Å	Å	ASTM D638
(-40 Å°F)	20	%	Å
(73 Å°F)	60	%	Å
(160 Å°F)	250	%	Å
Flexural Modulus	Å	Å	ASTM D790
(73 Å°F)	375000	psi	Å
(160 Å°F)	180000	psi	Å
(220 Å°F)	100000	psi	Å
Flexural Strength @ Break	13000	psi	ASTM D790

Compressive Strength		16000 psi	ASTM D695
Shear Strength	Å	Å	ASTM D732
(73 Å°F)		7700 psi	Å
(120 Å°F)		6700 psi	Å
(160 Å°F)		5700 psi	Å
Coef. of Friction	Å	Å	ASTM D1894
(vs. Itself - Static)		0.35 Å	Å
(vs. Metal - Static)		0.15 Å	Å
Taber Abrasion Resistance	Å	Å	ASTM D1044
(1000 Cycles) Å ²		14.0 mg	Å
(1000 Cycles) Å ³		6.00 mg	Å
(1000 Cycles) Å ⁴		3.00 mg	Å
Fatigue Limit		3300 psi	ASTM D671
Impact		Nominal Value Unit	Test Method
Notched Izod Impact	Å	Å	ASTM D256
(-40 Å°F)		1.00 ft-lb/in	Å
(73 Å°F)		1.30 ft-lb/in	Å
Unnotched Izod Impact		20.0 ft-lb/in	ASTM D256
Tensile Impact Strength (73 Å°F)		70.0 ft-lb/inÅ ²	ASTM D1822
Hardness		Nominal Value Unit	Test Method
Rockwell Hardness (M-Scale)		80 Å	ASTM D785
Thermal		Nominal Value Unit	Test Method
DTUL @66psi - Unannealed		316 Å°F	ASTM D648
DTUL @264psi - Unannealed		230 Å°F	ASTM D648
Glass Transition Temp		-58.0 Å°F	ASTM E1356
Vicat Softening Point		324 Å°F	ASTM D1525
Melting Point		329 Å°F	Å
CLTE, Flow		0.000047 in/in/Å°F	ASTM D696
Specific Heat		0.350 Btu/lb/Å°F	ASTM C351
Thermal Conductivity		1.6 Btu-in/hr/ftÅ ² /Å°F	ASTM C177
Electrical		Nominal Value Unit	Test Method
Surface Resistivity		1.3E+16 ohms	ASTM D257
Volume Resistivity		1.0E+14 ohm-cm	ASTM D257
Dielectric Strength		500 V/mil	ASTM D149
Dielectric Constant	Å	Å	ASTM D150
(100 Hz)		3.700 Å	Å
(10000 Hz)		3.700 Å	Å
(1E+9 Hz)		3.700 Å	Å
(0.0400 in, 1000 Hz)		3.700 Å	Å
(0.0400 in, 1E+6 Hz)		3.700 Å	Å
Dissipation Factor	Å	Å	ASTM D150
(100 Hz)		0.0010 Å	Å
(10000 Hz)		0.0015 Å	Å
(0.0400 in, 1000 Hz)		0.0010 Å	Å
(0.0400 in, 1E+6 Hz)		0.0060 Å	Å
Arc Resistance		240 sec	ASTM D495
Flammability		Nominal Value Unit	Test Method
Flame Rating - UL	Å	Å	UL 94
(0.0280 in, ALL)		HB Å	Å
(0.0618 in, ALL)		HB Å	Å
(0.0618 in, NC)		HB Å	Å
(0.120 in, ALL)		HB Å	Å
(0.240 in, ALL)		HB Å	Å
Limiting Oxygen Index		14 %	ASTM D2863
UL 746		Nominal Value Unit	Test Method
Rel Temp Indx Mech w/olmp	Å	Å	UL 746
(0.0579 in)		194 Å°F	Å
(0.120 in)		212 Å°F	Å
(0.240 in)		212 Å°F	Å
Rel Temp Indx Mech w/Imp	Å	Å	UL 746
(0.0579 in)		194 Å°F	Å
(0.120 in)		194 Å°F	Å
(0.240 in)		194 Å°F	Å

Rel Temp Indx Elect	Å	Å	UL 746
(0.0579 in)		221 Å°F	Å
(0.120 in)		221 Å°F	Å
(0.240 in)		221 Å°F	Å

Additional Properties

The test methods for Mold Shrinkage, Water and Humidity Absorption, Glass Transition Temperature, Taber Abrasion, Thermal Conductivity, and Limiting Oxygen Index were unspecified.

Compressive Stress, ASTM D695, 1% Def.: 4,500 psi
 Compressive Stress, ASTM D695, 10% Def.: 16,000 psi
 Loss Factor, ASTM D150, 100 Hz: 0.0050
 Loss Factor, ASTM D150, 1 kHz: 0.0050
 Loss Factor, ASTM D150, 10 kHz: 0.0050
 Loss Factor, ASTM D150, 1 MHz: 0.0240
 Flow Temperature, ASTM D569: 345Å°F
 Reverse Notched Izod Impact Strength, ISO 180-1C, 23Å°C: 130 KJ/mÅ²
 Reverse Notched Izod Impact Strength, ISO 180-1C, -30Å°C: 100 KJ/mÅ²

Rheological properties	Nominal Value	Unit	Test Method
Melt volume-flow rate (190Å°C/2.16 kg)	0.519	inÅ³/10min	ISO 1133
Molding shrinkage (parallel)	2.2	%	ISO 2577
Molding shrinkage (normal)	2.0	%	ISO 2577

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CAMPUSÅ® PropertiesÅ⁵

Mechanical properties 23Å°C/50%r.h.	Nominal Value	Unit	Test Method
Tensile modulus	403000	psi	ISO 527-1, -2
Yield stress	9570	psi	ISO 527-1, -2
Yield strain	9.0	%	ISO 527-1, -2
Nominal strain at break	23.0	%	ISO 527-1, -2
Tensile creep modulus (1h)	355000	psi	ISO 899-1
Tensile creep modulus (1000h)	196000	psi	ISO 899-1
Charpy notched impact strength (+23Å°C)	2.76	ft-lb/inÅ²	ISO 179 /1eA
Charpy notched impact strength (-30Å°C)	2.86	ft-lb/inÅ²	ISO 179 /1eA

Thermal properties	Nominal Value	Unit	Test Method
Melting temperature (10Å°C/min)	329	Å°F	ISO 11357-1, -3
Temp. of deflection under load (1.80 MPa)	212	Å°F	ISO 75-1, -2
Vicat softening temperature (50Å°C/h 50N)	304	Å°F	ISO 306
Coeff. of linear therm. expansion (parallel)	0.000067	in/in/Å°F	ISO 11359-1, -2
Coeff. of linear therm. expansion (normal)	0.000067	in/in/Å°F	ISO 11359-1, -2

Other properties	Nominal Value	Unit	Test Method
Water absorption	0.65	%	ISO 62
Humidity absorption	0.20	%	ISO 62
Density	0.0509	lb/inÅ³	ISO 1183

Test specimen production	Nominal Value	Unit	Test Method
Processing conditions acc. ISO	ISO 9988-2	Å	Å
Injection Molding, melt temperature	401	Å°F	ISO 294
Injection Molding, mold temperature	194	Å°F	ISO 10724
Injection Molding, injection velocity	8	in/sec	ISO 294
Injection Molding, pressure at hold	12500	psi	ISO 294

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Processing Information

Injection	Nominal Value	Unit
Drying Temperature	180	Å°F
Drying Time	3.0	hr
Suggested Max Re grind	25	%
Rear Temperature	340	Å°F
Middle Temperature	360	Å°F
Front Temperature	370	Å°F
Nozzle Temperature	380	Å°F
Processing (Melt) Temp	360 to 390	Å°F
Mold Temperature	170 to 200	Å°F
Injection Pressure	14500 to 20000	psi
Holding Pressure	13000 to 20000	psi
Back Pressure	0.00 to 50.0	psi
Screw Speed	20 to 40	rpm
Clamp Tonnage	3.0 to 5.0	tons/inÅ²

Cushion	0.125 to 0.250 in
Screw L/D Ratio	16.0:1.0 to 24.0:1.0 Å

Blow Molding Notes

PREPROCESSING

Consult product information services.

PROCESSING

Consult product information services.

POSTPROCESSING

Consult product information services.

Calendering Notes

PREPROCESSING

Consult product information services.

PROCESSING

Consult product information services.

POSTPROCESSING

Consult product information services.

Compression Molding Notes

PREPROCESSING

Consult product information services.

PROCESSING

Consult product information services.

POSTPROCESSING

Consult product information services.

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Notes

- 1 Typical properties: these are not to be construed as specifications.
- 2 CS-17 Wheel
- 3 CS-17F Wheel
- 4 CS-18 Wheel
- 5 Typical properties: these are not to be construed as specifications. Additional CAMPUSÅ® data and disclaimer information may be found on CAMPUSÅ® Data Sheet.

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