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Celcon® M25
Ticona - Acetal (POM) Copolymer

Wednesday, February 28, 2007

General Information

Product 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.

General

Material Status	• Commercial: Active	
Availability	• North America	
Test Standards Available	• ASTM • ISO • ISO 10350	
Features	• Copolymer • Flow, Low • Impact Resistance, Good	• Molecular Wt., High • Toughness, Good
Forms	• Pellets	
Processing Method	• Blow Molding • Calendering • Compression Molding • Extrusion	• Extrusion, Film • Extrusion, Profile • Extrusion, Sheet • Injection Molding
Multi-Point Data	• Isothermal Stress vs. Strain (ISO 11403-1)	

ASTM and ISO Properties [1]

Physical	Nominal Value	Unit	Test Method
Density -Specific Gravity	1.41	sp gr 23/23°C	ASTM D792
Melt Mass-Flow Rate (MFR)	2.5	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

Mechanical	Nominal Value	Unit	Test Method
Tensile Strength @ Yield			ASTM D638
(-40 °F)	13700	psi	
(73 °F)	8800	psi	
(160 °F)	5000	psi	
Flexural Modulus			ASTM D790
(73 °F)	375000	psi	
(160 °F)	180000	psi	
(220 °F)	100000	psi	
Flexural Modulus (73 °F)	352000	psi	ISO 178
Flexural Strength (73 °F)	9860	psi	ISO 178

Impact	Nominal Value	Unit	Test Method
Notched Izod Impact			ASTM D256
(-40 °F)	1.20	ft·lb/in	
(73 °F)	1.50	ft·lb/in	
Notched Izod Impact Strength (73 °F) [2]	3.95	ft·lb/in²	ISO 180

Thermal	Nominal Value	Unit	Test Method
DTUL @264psi - Unannealed	230	°F	ASTM D648
Melting Point	329	°F	

Electrical	Nominal Value	Unit	Test Method
Volume Resistivity	1.0E+14	ohm·cm	ASTM D257

ISO 10350 Properties [3]

Rheological properties	Nominal Value	Unit	Test Method
Melt volume-flow rate (190°C/2.16 kg)	0.134	in³/10min	ISO 1133
Molding shrinkage (parallel)	2.2	%	ISO 2577
Molding shrinkage (normal)	1.8	%	ISO 2577

Mechanical properties 23°C/50%r.h.	Nominal Value	Unit	Test Method
Tensile modulus	357000	psi	ISO 527-1, -2
Tensile creep modulus (1h)	305000	psi	ISO 899-1
Tensile creep modulus (1000h)	160000	psi	ISO 899-1
Charpy impact strength (+23°C)	119	ft·lb/in²	ISO 179 /1eU
Charpy impact strength (-30°C)	90.4	ft·lb/in²	ISO 179 /1eU
Charpy notched impact strength (+23°C)	4.33	ft·lb/in²	ISO 179 /1eA

Thermal properties	Nominal Value	Unit	Test Method
Melting temperature (10°C/min)	331	°F	ISO 11357-1, -3
Temp. of deflection under load (1.80 MPa)	201	°F	ISO 75-1, -2
Vicat softening temperature (50°C/h 50N)	322	°F	ISO 306
Coeff.of linear therm. expansion (parallel)	0.000067	in/in/°F	ISO 11359-1, -2
Coeff.of linear therm. expansion (normal)	0.000067	in/in/°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/in³	ISO 1183

Test specimen production	Nominal Value	Unit	Test Method
Processing conditions acc. ISO	• 9988 • ISO 7792-2		
Injection Molding, melt temperature	401	°F	ISO 294
Injection Molding, mold temperature	194	°F	ISO 10724
Injection Molding, injection velocity	6	in/sec	ISO 294
Injection Molding, pressure at hold	12500	psi	ISO 294

Processing Information

Injection	Nominal Value	Unit
Processing (Melt) Temp	360 to 390	°F
Mold Temperature	180 to 199	°F
Back Pressure	50.0	psi
Screw Compression Ratio	3.0:1.0 to 4.0:1.0	

Extrusion	Nominal Value	Unit
Melt Temperature	355 to 450	°F

Extrusion Notes

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.
Film Extrusion Melt Temperature: 320 to 430°F
Profile Extrusion Melt Temperature: 360 to 450°F
Sheet Extrusion Melt Temperature: 355 to 375°F

Notes

[1] Typical properties: these are not to be construed as specifications.

[2] Type 1, Notch A

[3] Typical properties: these are not to be construed as specifications. Additional ISO 10350 data and disclaimer information may be found on ISO 10350 Data Sheet.

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