

TOPAS® Elastomer E-140

Cyclic Olefin Copolymer

Topas Advanced Polymers, Inc.

Message:

Product Description

TOPAS Elastomer E-140, unlike most TOPAS grades, is a semicrystalline cyclic olefin material with flexibility. It is a fairly stiff elastomer which can be extruded and injection molded, and can be blended with other TOPAS grades, other olefin resins and elastomers. For an elastomer, E-140 features high moisture barrier and has excellent clarity in thin sections or films. Secondary Tg of -6°C is relatively insignificant in terms of E-140 properties such as low temperature brittleness. The major Tg is below -90°C, while the melting point is about 84°C.

Selected Applications

High toughness film (as COC blend)

Tubing

Bags

Overmolding

Food packaging

Food contact

Leading Attributes

Toughness, clarity, stiffness, low WVTR, reclaimability

Purity, kink resistance

Purity, olefin compatibility, cold resistance

Adhesion to olefins, purity, soft feel

Not manufactured with BPA, phthalates, or halogens

Broad regulatory compliance

General Information	
Features	Semicrystallization
	High purity
	Moisture proof
	Rigid, good
	Copolymer
	Good flexibility
	Good adhesion
	Kink resistance
	Definition, high
	Good toughness
	Compliance of Food Exposure
	BPA-free
	Halogen-free
Uses	overmolding
	Films
	Bags
	Pipe fittings
	Mixing
	Food packaging

Agency Ratings	DMF 12132
	FDA FCN 1104
	ISO 10993
	USP Class VI
	Europe 10/1/2011 12:00:00 AM

Forms	Particle
Processing Method	Extrusion
	Injection molding

Physical	Nominal Value	Unit	Test Method
Density	0.940	g/cm ³	ISO 1183
Melt Mass-Flow Rate (MFR)			ISO 1133
190°C/2.16 kg	2.7	g/10 min	ISO 1133
260°C/2.16 kg	11	g/10 min	ISO 1133
Melt Volume-Flow Rate (MVR)			ISO 1133
190°C/2.16 kg	3.00	cm ³ /10min	ISO 1133
260°C/2.16 kg	12.0	cm ³ /10min	ISO 1133
Water Absorption (Saturation, 23°C)	0.010	%	ISO 62

Hardness	Nominal Value	Unit	Test Method
Durometer Hardness (Shaw A, 0.127mm)	89		ISO 868

Films	Nominal Value	Unit	Test Method
Film Thickness - Tested	130	µm	
Tensile Modulus			ISO 527-3/1
MD: 130 µm, blown film	50.0	MPa	ISO 527-3/1
TD: 130 µm, blown film	53.0	MPa	ISO 527-3/1
Tensile Stress			ISO 527-3/50
MD: Fracture, 130 µm, blown film	52.0	MPa	ISO 527-3/50
TD: Fracture, 130 µm, blown film	51.0	MPa	ISO 527-3/50
Tensile Elongation			ISO 527-3/50
MD: Fracture, 130 µm, blown film	800	%	ISO 527-3/50
TD: Fracture, 130 µm, blown film	790	%	ISO 527-3/50
Elmendorf Tear Strength			ASTM D1922
MD: 130 µm, blown film	2700	g	ASTM D1922
TD: 130 µm, blown film	3200	g	ASTM D1922
Oxygen Permeability (23°C, 130 µm, blown film, 50% RH)	110	cm ³ ·mm/m ² /atm/24 hr	ASTM D3985

Water Vapor Transmission Rate (130 µm, 23°C, blown film, 85% RH)	0.46	g·mm/m ² /atm/24 hr	DIN 53122
Thermal	Nominal Value	Unit	Test Method
Brittleness Temperature	< -90.0	°C	ISO 974
Vicat Softening Temperature	64.0	°C	ISO 306/B50
Melting Temperature	84.0	°C	Internal method

Electrical	Nominal Value	Unit	Test Method
Dielectric Strength (127 mm)	160	kV/mm	ASTM D149
Dielectric Constant ¹ (0.127 mm, 1.00 GHz)	2.35		ASTM D2520
Dissipation Factor ² (0.127 mm, 1.00 GHz)	2.6E-4		ASTM D2520
Optical	Nominal Value	Unit	Test Method
Gloss (60 °, 127 µm, blown film)	116		ASTM D2457
Haze (127 µm, blown film)	1.3	%	ASTM D1003
Injection	Nominal Value	Unit	
Rear Temperature	270 - 290	°C	
Middle Temperature	270 - 300	°C	
Front Temperature	275 - 300	°C	
Nozzle Temperature	275 - 300	°C	
Processing (Melt) Temp	270 - 300	°C	
Mold Temperature	20.0 - 30.0	°C	
Injection Pressure	50.0 - 150	MPa	
Injection Rate	Moderate-Fast		
Holding Pressure	30.0 - 60.0	MPa	
Back Pressure	< 15.0	MPa	
Screw Speed	50 - 100	rpm	
Injection instructions			
Feed Temperature: <30°C (<86°F)Max. Residence Time: <15 minutes; short interruption to cycle: reduce Tx = 100°C (212°F)Injection Speed: 50 - 150 mm/sec (2.0 - 6.0 in/sec)Nozzle Type: Free Flow			
Extrusion	Nominal Value	Unit	
Feed part of extruder	20 - 60	°C	
Extruder Screw L/D Ratio	> 28:1		
Cylinder Zone 1 Temp.	210 - 220	°C	
Cylinder Zone 2 Temp.	230 - 240	°C	
Cylinder Zone 3 Temp.	230 - 240	°C	
Cylinder Zone 4 Temp.	230 - 240	°C	
Die Temperature	230 - 240	°C	
Extrusion instructions			
Head pressure: P > 140 bar / 2000 psi; Fine screen packs as neededScrew speed: RPM > 50% nominalScrew design: Multi-purpose or barrier screw with mixing section Screw diameter > 60 mm / 2.5 inch			
NOTE			
1.	Method B		
2.	Method B		

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