

Styrolux® 684D

Styrene Butadiene Block Copolymer

INEOS Styrolution Group GmbH

Message:

Styrolux® 684D is a clear styrene-butadiene copolymer (SBC) used in injection molding for parts with enhanced toughness as well as in sheet and film extrusion and blow molding. Parts made of Styrolux 684D reveal excellent printability.

General Information			
UL YellowCard		E108538-100840255	
Features	Block Copolymer		
	Excellent Printability		
	Good Toughness		
	High Clarity		
	Moisture Permeability		
Uses	Blow Molding Applications		
	Containers		
	Cups		
	Film		
	Food Packaging		
	Lids		
	Sheet		
	Toys		
Appearance		Clear/Transparent	
Forms		Pellets	
Processing Method	Blow Molding		
	Film Extrusion		
	Injection Molding		
	Sheet Extrusion		
Multi-Point Data	Creep Modulus vs. Time (ISO 11403-1)		
	Isochronous Stress vs. Strain (ISO 11403-1)		
	Viscosity vs. Shear Rate (ISO 11403-2)		
Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.01	g/cm³	ASTM D792, ISO 1183
Melt Mass-Flow Rate (MFR) (200°C/5.0 kg)	11	g/10 min	ASTM D1238
Melt Volume-Flow Rate (MVR) (200°C/5.0 kg)	11.0	cm³/10min	ISO 1133
Molding Shrinkage			

Flow	0.65	%	ASTM D955
--	0.30 to 1.0	%	ISO 294-4
Water Absorption (Saturation, 23°C)	0.070	%	ASTM D570, ISO 62
Hardness	Nominal Value	Unit	Test Method
Durometer Hardness (Shore D)	68		ASTM D2240, ISO 868
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus			
--	1310	MPa	ASTM D638
--	1500	MPa	ISO 527-2
Tensile Strength (Yield, 23°C)	26.0	MPa	ASTM D638, ISO 527-2
Tensile Strain			
Yield, 23°C	2.3	%	ISO 527-2
Break, 23°C	250	%	ASTM D638
Nominal Tensile Strain at Break (23°C)	160	%	ISO 527-2
Tensile Creep Modulus			ISO 899-1
1 hr	1300	MPa	
1000 hr	790	MPa	
Flexural Modulus			
--	1170	MPa	ASTM D790
--	1700	MPa	ISO 178
Flexural Strength			
--	31.0	MPa	ASTM D790
--	40.0	MPa	ISO 178
Films	Nominal Value	Unit	Test Method
Elastic Modulus - MD	1320	MPa	ASTM D882
Elastic Modulus - TD	1180	MPa	ASTM D882
Tensile Elongation			ASTM D882
MD : Break	260	%	
TD : Break	100	%	
Elmendorf Tear Strength			ASTM D1922
MD	250	g	
TD	240	g	
Oxygen Transmission Rate (23°C, 0% RH)	120000	cm ³ /m ² /24 hr	ASTM D3985
Water Vapor Transmission Rate ¹ (23°C)	700	g/m ² /24 hr	ASTM F1249
Impact	Nominal Value	Unit	Test Method
Charpy Notched Impact Strength (23°C)	4.0	kJ/m ²	ISO 179
Charpy Unnotched Impact Strength (23°C)	No Break		ISO 179
Notched Izod Impact			
23°C	43	J/m	ASTM D256
-30°C	3.0	kJ/m ²	ISO 180/A
23°C	4.0	kJ/m ²	ISO 180/A
Instrumented Dart Impact			ASTM D3763

Peak force	11.0	J	
Total energy	22.1	J	
Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load			
0.45 MPa, Unannealed	76.7	°C	ASTM D648
0.45 MPa, Annealed	75.0	°C	ISO 75-2/B
1.8 MPa, Unannealed	70.0	°C	ASTM D648
1.8 MPa, Annealed	65.0	°C	ISO 75-2/A
Vicat Softening Temperature			
--	85.6	°C	ASTM D1525 ²
--	83.0	°C	ISO 306/A50
--	59.0	°C	ISO 306/B50
CLTE - Flow			
--	1.3E-4	cm/cm/°C	ASTM D696
--	6.0E-5 to 9.0E-5	cm/cm/°C	ISO 11359-2
Electrical	Nominal Value	Unit	Test Method
Surface Resistivity			
--	> 1.0E+14	ohms	ASTM D257
--	1.0E+15	ohms	IEC 60093
Volume Resistivity	> 1.0E+15	ohms·cm	ASTM D257, IEC 60093
Dielectric Constant			
1.00 mm, 1 MHz	2.50		ASTM D150
100 Hz	2.50		IEC 60250
Dissipation Factor			IEC 60250
100 Hz	3.0E-4		
1 MHz	8.0E-4		
Comparative Tracking Index	600	V	IEC 60112
Optical	Nominal Value	Unit	Test Method
Refractive Index ³	1.575		ASTM D542, ISO 489
Transmittance (550 nm)	90.0	%	ASTM D1003
Haze	1.5	%	ASTM D1003
Injection	Nominal Value	Unit	
Processing (Melt) Temp	180 to 250	°C	
Mold Temperature	30.0 to 50.0	°C	
NOTE			
1.	0% to 85% RH gradient		
2.	Rate B (120°C/h), Loading 1 (10 N)		
3.	Sodium D Line		

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