Eastman™ 1223

Copolyester

Eastman Chemical Company

Message:

Eastman™ copolyester 1223 is a clear, amorphous material. Because of its clarity, toughness and good melt strength at processing temperatures, it is useful in a variety of processing techniques including film and sheet extrusion. Eastman™ Copolyester 1223 may be colored using color concentrates, dry colors or liquid colorants.

General Information	
Features	Amorphous
	E-beam Sterilizable
	Ethylene Oxide Sterilizable
	Good Melt Strength
	Good Toughness
	High Clarity
	Radiation Sterilizable
Uses	Consumer Applications
	Containers
	Decorative Displays
	Film
	Food Packaging
	Furniture
	Industrial Applications
	Laminates
	Packaging
	Shrink Wrap
	Sporting Goods
	Toys
	Writing Instruments
Appearance	Clear/Transparent

Physical	Nominal Value	Unit	Test Method
Specific Gravity			
--	1.27	g/cm³	ASTM D792, ASTM D1505
23°C	1.27	g/cm³	ISO 1183/D
Water Absorption (23°C, 24 hr)	0.13	%	ASTM D570, ISO 62

Hardness	Nominal Value	Unit	Test Method
Rockwell Hardness			
R-Scale, 23°C	106		ASTM D785
R-Scale, 23°C	109		ISO 2039-2

Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus (23°C)	2100	MPa	ASTM D638, ISO 527-2
Tensile Strength			ASTM D638, ISO 527-2
Yield, 23°C	50.0	MPa	
Break, 23°C	28.0	MPa	
Tensile Elongation			
Break, 23°C	130	%	ASTM D638
Break, 23°C	100	%	ISO 527-2
Flexural Modulus			
23°C	2100	MPa	ASTM D790
23°C	2000	MPa	ISO 178
Flexural Stress			
23°C	68.0	MPa	ISO 178
Yield, 23°C	70.0	MPa	ASTM D790
Films	**Nominal Value**	**Unit**	**Test Method**
Film Thickness - Tested	250	µm	
Secant Modulus			ASTM D882
MD : 250 µm	1900	MPa	
TD : 250 µm	1900	MPa	
Tensile Strength			ASTM D882
MD : Yield,250 µm	52.0	MPa	
TD : Yield,250 µm	52.0	MPa	
MD : Break, 250 µm	59.0	MPa	
TD : Break, 250 µm	55.0	MPa	
Tensile Elongation			ASTM D882
MD : Yield, 250 µm	4.0	%	
TD : Yield, 250 µm	4.0	%	
MD : Break, 250 µm	400	%	
TD : Break, 250 µm	400	%	
Dart Drop Impact [1]			ASTM D1709A
-18°C, 250 µm	500	g	
23°C, 250 µm	400	g	
Elmendorf Tear Strength			ASTM D1922
MD : 250 µm	14	N	
TD : 250 µm	17	N	
Trouser Tear Resistance [2]			ISO 6383-1
MD : 250 µm	36.0	N/mm	
TD : 250 µm	36.0	N/mm	
Oxygen Permeability (23°C, 250 µm, 50% RH)	10	$cm^3 \cdot mm/m^2/atm/24\ hr$	ASTM D3985
Water Vapor Transmission Rate (38°C, 100% RH, 250 µm)	7.0	$g/m^2/24\ hr$	ASTM F1249

Carbon Dioxide Permeability (23°C, 250.0 µm)	49	$cm^3 \cdot mm/m^2/atm/24\ hr$	ASTM D1434
PPT Tear Resistance			ASTM D2582
MD : 23°C, 250 mm	93	N	
TD : 23°C, 250 mm	93	N	
Tear Propagation Resistance			ASTM D1938
Split Tear Method, MD : 23°C, 250 mm	36	kN/m	
Split Tear Method, TD : 23°C, 250 mm	36	kN/m	
Impact	**Nominal Value**	**Unit**	**Test Method**
Notched Izod Impact			
-40°C	37	J/m	ASTM D256
23°C	100	J/m	ASTM D256
-40°C	4.2	kJ/m^2	ISO 180/1A
23°C	6.2	kJ/m^2	ISO 180/1A
Unnotched Izod Impact			
-40°C, 3.20 mm	No Break		ASTM D4812
-30°C, 3.20 mm	No Break		ASTM D4812
-20°C, 3.20 mm	No Break		ASTM D4812
23°C, 3.20 mm	No Break		ASTM D4812
-40°C [3]	No Break		ISO 180/1U
-30°C [4]	No Break		ISO 180/1U
-20°C [5]	No Break		ISO 180/1U
23°C [6]	No Break		ISO 180/1U
Instrumented Dart Impact			
-40°C, 2.50 mm, Energy @ Max. Load	41.0	J	ASTM D3763
-40°C, 3.20 mm, Energy @ Max. Load	50.0	J	ASTM D3763
23°C, 2.50 mm, Energy @ Max. Load	28.0	J	ASTM D3763
23°C, 3.20 mm, Energy @ Max. Load	33.0	J	ASTM D3763
-40°C, 2.50 mm, Energy to Peak Force	35.0	J	ISO 6603-2
-40°C, 3.20 mm, Energy to Peak Force	36.0	J	ISO 6603-2
23°C, 2.50 mm, Energy to Peak Force	40.0	J	ISO 6603-2
23°C, 3.20 mm, Energy to Peak Force	44.0	J	ISO 6603-2
Thermal	**Nominal Value**	**Unit**	**Test Method**
Deflection Temperature Under Load			ASTM D648
0.45 MPa, Unannealed	70.0	°C	
1.8 MPa, Unannealed	64.0	°C	
Glass Transition Temperature	80.0	°C	DSC
Vicat Softening Temperature	85.0	°C	ASTM D1525
CLTE - Flow (-30 to 40°C)	5.1E-5	cm/cm/°C	ASTM D696
Specific Heat			DSC
60°C	1300	J/kg/°C	
100°C	1760	J/kg/°C	

150°C	1880	J/kg/°C	
200°C	1970	J/kg/°C	
250°C	2050	J/kg/°C	
Thermal Conductivity (23°C)	0.21	W/m/K	ASTM C177
Electrical	**Nominal Value**	**Unit**	**Test Method**
Surface Resistivity	1.0E+16	ohms	ASTM D257
Volume Resistivity (23°C)	1.0E+15	ohms·cm	ASTM D257
Dielectric Strength [7] (23°C)	16	kV/mm	ASTM D149
Dielectric Constant			ASTM D150
23°C, 1 kHz	2.60		
23°C, 1 MHz	2.40		
Dissipation Factor			ASTM D150
23°C, 1 kHz	5.0E-3		
23°C, 1 MHz	0.020		
Arc Resistance	158	sec	ASTM D495
Optical	**Nominal Value**	**Unit**	**Test Method**
Gloss (45°, 250 µm)	108		ASTM D2457
Transmittance			ASTM D1003
Regular, 250 µm	89.0	%	
Total, 250 µm	91.0	%	
Haze (250 µm)	0.80	%	ASTM D1003

NOTE	
1.	12.7 mm dia. head, 127 mm dia. clamp, 600 mm drop
2.	200 mm/min
3.	4 mm
4.	4 mm
5.	4 mm
6.	4 mm
7.	500 V/sec, Method A (Short-Time)

Recommended distributors for this material

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