Eastar™ 6763

Eastman Chemical Company - Copolyester

Thursday, October 10, 2019

General Information

Product Description

Meets ISO 10993 and/or USP Class VI biocompatibility requirement; Food Contact Status compliant.

Eastar™ Copolyester 6763 is a clear, amorphous material that can be molded and extruded with ease. Its excellent performance properties include clarity, toughness, good melt strength, no dusting, no stress whitening, good heat sealability, easy cutting and thermoforming. Eastar™ Copolyester 6763 may be colored using color concentrates, dry colors, or liquid colorants. Eastar™ Copolyester 6763 can be safely sterilized with proper ethylene oxide, radiation, or electron beam methods without property loss or color shift. It is well suited for a variety of applications including, medical packaging, cosmetics and personal care packaging, food and beverage packaging, and display & signs.

In medical applications Eastar™ coplyester 6763 provides:

- Superior, long-term clarity provides easy identification of instruments
- Excellent puncture resistance and impact toughness ensure package integrity
- Excellent ability to be subjected to several methods of sterilization, providing flexibility and security to the device manufacturer
- Excellent optical and physical property stability post sterilization
- Good melt strength offers wide processing latitude and ease in thermoforming

The production and trimming of rigid medical trays made from sheet of Eastar™ copolyester 6763 results in little or no dust or particulates. After the thermoformed trays are made, they are put in polybags. The polybags of trays are then placed in protective boxes for storage or shipment. As long as the polybags in the protective boxes are intact and no outside contamination is evident, the thermoformer or medical device manufacturer should not need to clean the tray prior to packaging a device and sealing the package. If contamination is found on the medical trays and cleaning is required, use a lint-free towel. Blowing the tray out with filtered, deionized, non-lubricated air is also acceptable, assuming this does not stir up dust from the surrounding area. Using alcohol, which could cause crazing, or water, which would not evaporate, is not recommended.

This product has been GREENGUARD INDOOR AIR QUALITY CERTIFIED

The GREENGUARD INDOOR AIR QUALITY CERTIFIED Mark is a registered certification mark used under license through the GREENGUARD Environmental Institute (GEI). GEI is an industry-independent, non-profit organization that oversees the GREENGUARD Certification Program. The GREENGUARD Certification Program is an industry independent, third-party testing program for low-emitting products and materials for indoor environments. For more information about GEI and to obtain printable certificates for Eastman™ Copolyesters, visit www.greenguard.org. Choose Eastman Chemical Company under the Manufacturer category and click search to display a list of our products.

This product has been CRADLE TO CRADLE CERTIFIED Silver.

The CRADLE TO CRADLE CERTIFIED Mark is a registered certification mark used under license through McDonough Braungart Design Chemistry (MBDC). MBDC is a global sustainability consulting and product certification firm. The CRADLE TO CRADLE framework moves beyond the traditional goal of reducing the negative impacts of commerce (‘eco-efficiency'), to a new paradigm of increasing its positive impacts (‘eco-effectiveness'). At its core, Cradle to Cradle design perceives the safe and productive processes of nature's ‘biological metabolism' as a model for developing a ‘technical metabolism' flow of industrial materials. Product components can be designed for continuous recovery and reutilization as biological and technical nutrients within these metabolisms. For more information about MBDC and to obtain printable certificates for Eastman Copolyesters, visit www.mbdc.com. Choose Eastman Chemical Company under Company Name in C2C Certified products to display a list of our products.

General

Material Status	• Commercial: Active		
Regional Availability	• Africa & Middle East • Asia Pacific	• Europe • Latin America	• North America
Features	• Amorphous • E-beam Sterilizable • Food Contact Acceptable • Good Colorability	• Good Melt Strength • Good Sterilizability • Good Toughness • High Clarity	• Puncture Resistant • Radiation Sterilizable

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General			
Uses	• Containers • Cosmetic Packaging • Electrical/Electronic Applications • Film • Food Packaging • Furniture	• Labware • Laminates • Medical Packaging • Medical/Healthcare Applications • Packaging • Sheet	• Shrink Wrap • Sporting Goods • Thin-walled Packaging • Toys • Writing Instruments
Agency Ratings	• ISO 10993	• USP Class VI	
Appearance	• Clear/Transparent		
Forms	• Pellets		
Processing Method	• Film Extrusion	• Sheet Extrusion	

ASTM & ISO Properties [1]

Physical	Typical Value (English)		Typical Value (SI)		Test Method
Density / Specific Gravity					
--	1.27		1.27		ASTM D792
73°F (23°C)	1.27	g/cm³	1.27	g/cm³	ISO 1183/D
--	1.27	g/cm³	1.27	g/cm³	ASTM D1505
Water Absorption (24 hr, 73°F (23°C))	0.13	%	0.13	%	ASTM D570 ISO 62
Mechanical	**Typical Value (English)**		**Typical Value (SI)**		**Test Method**
Tensile Modulus (73°F (23°C))	305000	psi	2100	MPa	ASTM D638 ISO 527-2
Tensile Strength					ASTM D638 ISO 527-2
Yield, 73°F (23°C)	7250	psi	50.0	MPa	
Break, 73°F (23°C)	4060	psi	28.0	MPa	
Tensile Elongation					
Break, 73°F (23°C)	130	%	130	%	ASTM D638
Break, 73°F (23°C)	100	%	100	%	ISO 527-2
Flexural Modulus					
73°F (23°C)	305000	psi	2100	MPa	ASTM D790
73°F (23°C)	290000	psi	2000	MPa	ISO 178
Flexural Stress					
73°F (23°C)	9860	psi	68.0	MPa	ISO 178
Yield, 73°F (23°C)	10200	psi	70.0	MPa	ASTM D790
Tear Resistance					ASTM D2582
MD : 73°F (23°C), 9.8 mil (250.0 µm)	93	N	93	N	
TD : 73°F (23°C), 9.8 mil (250.0 µm)	93	N	93	N	
Films	**Typical Value (English)**		**Typical Value (SI)**		**Test Method**
Film Thickness - Tested	10	mil	250	µm	
Secant Modulus					ASTM D882
MD : 9.8 mil (250 µm)	276000	psi	1900	MPa	
TD : 9.8 mil (250 µm)	276000	psi	1900	MPa	
Tensile Strength					ASTM D882
MD : Yield, 9.8 mil (250 µm)	7540	psi	52.0	MPa	
TD : Yield, 9.8 mil (250 µm)	7540	psi	52.0	MPa	
MD : Break, 9.8 mil (250 µm)	8560	psi	59.0	MPa	
TD : Break, 9.8 mil (250 µm)	7980	psi	55.0	MPa	

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Films	Typical Value	(English)	Typical Value	(SI)	Test Method
Tensile Elongation					ASTM D882
MD : Yield, 9.8 mil (250 µm)	4.0	%	4.0	%	
TD : Yield, 9.8 mil (250 µm)	4.0	%	4.0	%	
MD : Break, 9.8 mil (250 µm)	400	%	400	%	
TD : Break, 9.8 mil (250 µm)	400	%	400	%	
Dart Drop Impact [2]					ASTM D1709A
0°F (-18°C), 9.8 mil (250 µm)	500	g	500	g	
73°F (23°C), 9.8 mil (250 µm)	400	g	400	g	
Elmendorf Tear Strength					ASTM D1922
MD : 9.8 mil (250 µm)	1400	g	1400	g	
TD : 9.8 mil (250 µm)	1700	g	1700	g	
Trouser Tear Resistance [3]					ISO 6383-1
MD	206	lbf/in	36.0	N/mm	
TD	206	lbf/in	36.0	N/mm	
Oxygen Permeability					ASTM D3985
73°F (23°C), 9.8 mil (250 µm), 50% RH	25	$cm^3 \cdot mil/100in^2/atm/24\ hr$	10	$cm^3 \cdot mm/m^2/atm/24\ hr$	
Water Vapor Transmission Rate					ASTM F1249
100°F (38°C), 100% RH, 9.8 mil (250 µm)	0.45	$g/100\ in^2/24\ hr$	7.0	$g/m^2/24\ hr$	
Carbon Dioxide Permeability					ASTM D1434
73°F (23°C), 9.8 mil (250.0 µm)	120	$cm^3 \cdot mil/100in^2/atm/24\ hr$	49	$cm^3 \cdot mm/m^2/atm/24\ hr$	
Tear Propagation Resistance [4]					ASTM D1938
MD : 73°F (23°C), 9.8 mil (250.0 µm)	210	lbf/in	36	kN/m	
TD : 73°F (23°C), 9.8 mil (250.0 µm)	210	lbf/in	36	kN/m	

Impact	Typical Value	(English)	Typical Value	(SI)	Test Method
Notched Izod Impact					
-40°F (-40°C)	0.69	ft·lb/in	37	J/m	ASTM D256
73°F (23°C)	1.9	ft·lb/in	100	J/m	ASTM D256
-40°F (-40°C)	2.0	$ft \cdot lb/in^2$	4.2	kJ/m^2	ISO 180/1A
73°F (23°C)	3.0	$ft \cdot lb/in^2$	6.2	kJ/m^2	ISO 180/1A
Unnotched Izod Impact					
-40°F (-40°C), 0.126 in (3.20 mm)	No Break		No Break		ASTM D4218
-22°F (-30°C), 0.126 in (3.20 mm)	No Break		No Break		ASTM D4218
-4°F (-20°C), 0.126 in (3.20 mm)	No Break		No Break		ASTM D4218
73°F (23°C), 0.126 in (3.20 mm)	No Break		No Break		ASTM D4218
-40°F (-40°C) [5]	No Break		No Break		ISO 180/1U
-22°F (-30°C) [5]	No Break		No Break		ISO 180/1U
-4°F (-20°C) [5]	No Break		No Break		ISO 180/1U
73°F (23°C) [5]	No Break		No Break		ISO 180/1U

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Impact	Typical Value (English)		Typical Value (SI)		Test Method
Instrumented Dart Impact					
-40°F (-40°C), 0.0984 in (2.50 mm), Energy at Peak Load	363	in·lb	41.0	J	ASTM D3763
-40°F (-40°C), 0.126 in (3.20 mm), Energy at Peak Load	443	in·lb	50.0	J	ASTM D3763
73°F (23°C), 0.0984 in (2.50 mm), Energy at Peak Load	248	in·lb	28.0	J	ASTM D3763
73°F (23°C), 0.126 in (3.20 mm), Energy at Peak Load	292	in·lb	33.0	J	ASTM D3763
-40°F (-40°C), 0.0984 in (2.50 mm), Energy to Peak Force [6, 7]	25.8	ft·lb	35.0	J	ISO 6603-2
-40°F (-40°C), 0.126 in (3.20 mm), Energy to Peak Force [6, 7]	26.6	ft·lb	36.0	J	ISO 6603-2
73°F (23°C), 0.0984 in (2.50 mm), Energy to Peak Force [6, 7]	29.5	ft·lb	40.0	J	ISO 6603-2
73°F (23°C), 0.126 in (3.20 mm), Energy to Peak Force [6, 7]	32.5	ft·lb	44.0	J	ISO 6603-2
Hardness	**Typical Value (English)**		**Typical Value (SI)**		**Test Method**
Rockwell Hardness					
R-Scale, 73°F (23°C)	106		106		ASTM D785
R-Scale, 73°F (23°C)	109		109		ISO 2039-2
Thermal	**Typical Value (English)**		**Typical Value (SI)**		**Test Method**
Deflection Temperature Under Load					ASTM D648
66 psi (0.45 MPa), Unannealed	158	°F	70.0	°C	
264 psi (1.8 MPa), Unannealed	147	°F	64.0	°C	
Glass Transition Temperature	176	°F	80.0	°C	DSC
Vicat Softening Temperature	185	°F	85.0	°C	ASTM D1525
CLTE - Flow (-22 to 104°F (-30 to 40°C))	2.8E-5	in/in/°F	5.1E-5	cm/cm/°C	ASTM D696
Specific Heat					DSC
140°F (60°C)	0.311	Btu/lb/°F	1300	J/kg/°C	
212°F (100°C)	0.421	Btu/lb/°F	1760	J/kg/°C	
302°F (150°C)	0.449	Btu/lb/°F	1880	J/kg/°C	
392°F (200°C)	0.471	Btu/lb/°F	1970	J/kg/°C	
482°F (250°C)	0.490	Btu/lb/°F	2050	J/kg/°C	
Thermal Conductivity (73°F (23°C))	1.5	Btu·in/hr/ft²/°F	0.21	W/m/K	ASTM C177
Electrical	**Typical Value (English)**		**Typical Value (SI)**		**Test Method**
Dielectric Strength [8]					ASTM D149
73°F (23°C), Method A (Short-Time)	410	V/mil	16	kV/mm	
Dielectric Constant					ASTM D150
73°F (23°C), 1 kHz	2.60		2.60		
73°F (23°C), 1 MHz	2.40		2.40		
Dissipation Factor					ASTM D150
73°F (23°C), 1 kHz	5.0E-3		5.0E-3		
73°F (23°C), 1 MHz	0.020		0.020		
Arc Resistance	158	sec	158	sec	ASTM D495

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Optical	Typical Value (English)	Typical Value (SI)	Test Method
Gloss (45°, 9.84 mil (250 µm))	108	108	ASTM D2457
Transmittance			ASTM D1003
Regular, 9.84 mil (250 µm)	89.0 %	89.0 %	
Total, 9.84 mil (250 µm)	91.0 %	91.0 %	
Clarity (9.84 mil (250 µm))	85.0	85.0	ASTM D1746
Haze (9.84 mil (250 µm))	0.800 %	0.800 %	ASTM D1003

Notes

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

[2] 12.7 mm dia. head, 127 mm dia. clamp, 600 mm drop

[3] 7.9 in/min (200 mm/min)

[4] Split Tear Method, 254 mm/min

[5] 4 mm

[6] 13.5 ft/sec (4.1 m/sec), 0.79 in (20 mm) Striker Diameter

[7] 40 mm support and clamp diameter

[8] 500 V/sec