

# Technical Data Sheet

## Estar™ Copolyester MN004

### Product Description

Estar™ Copolyesters are brilliantly clear polymers that have excellent impact strength, chemical resistance, dimensional stability, and low shrinkage rates. Estar™ MN004 contains a mold release.

This product has been GREENGUARD INDOOR AIR QUALITY CERTIFIED®.

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### Typical Properties

Property <sup>a</sup>	Test Method <sup>b</sup>	Typical Value, Units <sup>c</sup>
<b>General</b>		
Specific Gravity	D 792	1.23
Water Absorption, 24 h immersion	D 570	0.13 %
	ISO 62	0.13 %
Mold Shrinkage		
Parallel to Flow, 3.2-mm (0.125-in.) thickness	D 955	0.002-0.005 mm/mm (0.002-0.005 in./in.)
Density	ISO 1183	1.23 g/cm <sup>3</sup>
<b>Mechanical Properties</b>		
Tensile Stress @ Yield	D 638	45 MPa (6500 psi)
	ISO 527	46 MPa
Tensile Stress @ Break	D 638	52 MPa (7600 psi)
	ISO 527	47 MPa
Elongation @ Yield	D 638	5 %
	ISO 527	4.4 %
Elongation @ Break	D 638	330 %
	ISO 527	230 %
Flexural Modulus	D 790	1800 MPa (2.6 x 10 <sup>5</sup> psi)
	ISO 178	1800 MPa
Flexural Yield Strength	D 790	66 MPa (9600 psi)
	ISO 178	63 MPa
Rockwell Hardness, R Scale	D 785	105
Izod Impact Strength, Notched		
@ 23°C	ISO 180	125 kJ/m <sup>2</sup>
@ 23°C (73°F)	D 256	NB
@ -40°C	ISO 180	7.4 kJ/m <sup>2</sup>
@ -40°C (-40°F)	D 256	64 J/m (1.2 ft·lbf/in.)
Impact Strength, Unnotched		
@ 23°C (73°F)	D 4812	NB
@ -40°C (-40°F)	D 4812	NB

Impact Resistance (Puncture), Energy @ Max. Load		
@ 23°C (73°F)	ISO 6603-2	14 J
@ -40°C (-40°F)	ISO 6603-2	16 J
<b>Optical Properties</b>		
Haze	D 1003	<1.0 %
Regular Transmittance	D 1003	87 %
Total Transmittance	D 1003	89 %
<b>Thermal Properties</b>		
Deflection Temperature		
@ 0.45 MPa	ISO 75	74 °C
@ 0.455 MPa (66 psi)	D 648	74 °C (165 °F)
@ 1.80 MPa	ISO 75	65 °C
@ 1.82 MPa (264 psi)	D 648	64 °C (147 °F)
Vicat Softening Temperature		
@ 1 kg load	D 1525	88 °C (190 °F)
@ 1 kg load	ISO 306	88 °C
@ 5 kg load	ISO 306	79 °C
Thermal Conductivity	C 177	0.19 W/m·K (1.3 Btu·in./h·ft <sup>2</sup> ·°F)
Specific Heat		
@ 240°C (464°F)	DSC	2.05 kJ/kg·K (0.49 Btu/lb·°F)
@ 60°C (140°F)	DSC	1.34 kJ/kg·K (0.32 Btu/lb·°F)
UL Flammability Classification		
1.6 mm (0.0625 in.) specimen	UL 94	94HB
3.2 mm (0.125 in.) specimen	UL 94	94HB
<b>Typical Processing Conditions</b>		
Drying Temperature		75 °C (165 °F)
Drying Time		6 hrs
Processing Melt Temperature		250-270 °C (480-520 °F)
Mold Temperature		15-40 °C (60-100 °F)

<sup>a</sup>Unless noted otherwise, all tests are run at 23°C (73°F) and 50% relative humidity.

<sup>b</sup>Unless noted otherwise, the test method is ASTM.

<sup>c</sup>Units are in SI or US customary units.

## Comments

Properties reported here are typical of average lots. Eastman makes no representation that the material in any particular shipment will conform to the values given.

## General

All ISO tests are run @ 4-mm thickness with the exception of Impact Resistance, which is run @ 2-mm thickness.

## Eastman Medical Disclaimer

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