

Product Data Sheet

Eastar™ Copolyester DN003, Natural

Application/Uses

- Blood Contact
- Drug Delivery
- Frames
- IV Components
- Medical
- Ophthalmics
- Surgical Instruments

Key Attributes

- Chemical resistance to most medical solvents including lipids and IPA
- Easy to extrude, cut, print, and seal
- Effective barrier properties
- Excellent chemical resistance
- Excellent clarity
- Excellent colorability
- Gamma and E-beam color stability
- Good impact strength
- Good stiffness
- High gloss appearance
- Toughness

Product Description

Eastar™ Copolyester DN003 has been tested for FDA/ISO 10993 and USP Class VI Biological Evaluation testing after Gamma and EtO sterilization. Eastar™ Copolyesters are brilliantly clear polymers that have excellent impact strength, chemical resistance, dimensional stability, and low shrinkage rates. DN003 contains a mold release.

This product has been GREENGUARD INDOOR AIR QUALITY CERTIFIED®.

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Typical Properties

Property ^a	Test ^b Method	Typical Value, Units ^c
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 ³

Mechanical Properties

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 ⁵ 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
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Izod Impact Strength, Notched

@ 23°C (73°F)	D 256	NB
@ 23°C	ISO 180	125 kJ/m ²
@ -40°C (-40°F)	D 256	64 J/m (1.2 ft·lbf/in.)
@ -40°C	ISO 180	7.4 kJ/m ²

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

Thermal Properties

Deflection Temperature

@ 0.455 MPa (66 psi)	D 648	74°C (165°F)
@ 1.82 MPa (264 psi)	D 648	64°C (147°F)
@ 0.45 MPa	ISO 75	74°C
@ 1.80 MPa	ISO 75	65°C

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		0.19 W/m·K (1.3 Btu·in./h·ft ² ·°F)
Specific Heat		
@ 60°C (140°F)	DSC	1.34 kJ/kg·K (0.32 Btu/lb·°F)
@ 240°C (464°F)	DSC	2.05 kJ/kg·K (0.49 Btu/lb·°F)
UL Flammability Classification		
3.2 mm (0.125 in.) specimen	UL 94	94HB
1.6 mm (0.0625 in.) specimen	UL 94	94HB

Typical Processing Conditions

Drying Temperature	71°C (160°F)
Drying Time	6 hrs
Processing Melt Temperature	250-270°C (480-520°F)
Mold Temperature	15-40°C (60-100°F)

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

^b Unless noted otherwise, the test method is ASTM.

^c Units are in SI or US customary units.

General

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

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.

Eastman Medical Disclaimer

It is the responsibility of the medical device manufacturer ("Manufacturer") to determine the suitability of all component parts and raw materials, including any Eastman product, used in its final product in order to ensure safety and compliance with requirements of the United States Food and Drug Administration (FDA) or other international regulatory agencies.

Eastman Chemical Company products have not been designed for nor are they promoted for end uses that would be categorized by either the United States FDA or by the International Standards Organization (ISO) as implant devices. Eastman products are not intended for use in the following applications: (1) in any bodily implant applications for greater than 30 days, based on FDA-Modified ISO-10993, Part 1 "Biological Evaluation of Medical Devices" tests (including any cosmetic, reconstructive or reproductive implant applications); (2) in any cardiac prosthetic device application, regardless of the length of time involved, including, without limitation, pacemaker leads and devices, artificial hearts, heart valves, intra-aortic balloons and control systems, and ventricular bypass assisted devices, or (3) as any critical component in any medical device that supports or sustains human life.

Eastman Chemical Company products offered for the medical market have met selected FDA-Modified ISO-10993, Part 1 "Biological Evaluation of Medical Devices" tests with human tissue contact time of 30 days or less. The tests include: cytotoxicity, sensitization, irritation or intracutaneous reactivity, systemic toxicity (acute), subchronic toxicity (sub-acute), implantation, hemocompatibility. The Manufacturer is responsible for the biological evaluation of the finished medical device.

The suitability of an Eastman Product in a given end-use environment is dependent upon various conditions including, without limitation, chemical compatibility, temperature, part

design, sterilization method, residual stresses, and external loads. It is the responsibility of the Manufacturer to evaluate its final product under actual end-use requirements and to adequately advise and warn purchasers and users thereof.

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