Product Data Sheet

Eastar™ Copolyester MN211, Natural

Application/Uses

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

Key Attributes

- Chemical resistance to most medical solvents including lipids and IPA
- Gamma and E-beam color stability

Product Description

Eastar™ Copolyester MN211 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. MN211 contains a mold release.

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.

Typical Properties (Preliminary)

Property[a]	Test[b] Method	Typical Value, Units[c]
Specific Gravity	D 792	1.27
Water Absorption, 24 h immersion	D 570	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.)
Drying Temperature		71°C (160°F)
Drying Time		4-6 hrs
Processing Melt Temperature		249-271°C (480-520°F)
Mold Temperature		16-38°C (60-100°F)
Thermal Properties		
Deflection Temperature @ 0.455 MPa (66 psi)	D 648	70°C (158°F)

@ 1.82 MPa (264 psi)	D 648	63°C (145°F)
Vicat Softening Temperature	D 1525	85°C (185°F)
Thermal Conductivity		0.19 W/m·K (1.3 Btu·in./h·ft^2·°F)
Specific Heat		
@ 60°C (140°F)	D 2766	1.3 kJ/kg·K (0.31 Btu/lb·°F)
@ 240°C (464°F)	D 2766	2.01 kJ/kg·K (0.48 Btu/lb·°F)
Mechanical Properties		
Tensile Stress @ Break	D 638	28 MPa (4100 psi)
Tensile Stress @ Yield	D 638	50 MPa (7300 psi)
Elongation @ Break	D 638	110%
Elongation @ Yield	D 638	4.3%
Flexural Strength	D 790	70 MPa (10200 psi)
Flexural Modulus	D 790	2100 MPa (300000 psi)
Rockwell Hardness, R Scale	D 785	106
Izod Impact Strength, Notched		
@ 23°C (73°F)	D 256	101 J/m (1.9 ft·lbf/in.)
@ -40°C (-40°F)	D 256	37 J/m (0.7 ft·lbf/in.)
Impact Strength, Unnotched		
@ 23°C (73°F)	D 4812	NB
@ -40°C (-40°F)	D 4812	NB
Optical Properties		
Haze	D 1003	0.3%
Regular Transmittance	D 1003	88%
Total Transmittance	D 1003	91%

[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.*

Comments

Properties reported here are based on limited testing. Eastman makes no representation that the material in any particular shipment will conform exactly 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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