

Product Data Sheet

Eastman Neostar™ Elastomer FN005

Application/Uses

- Automotive
- Driver and passenger side air bags
- Flexible hinges
- Packaging
- Pricing channels
- Profiles
- Retail pricing fins
- Tubing

Key Attributes

- Environmentally preferred, non-halogenated material
- Excellent chemical resistance
- Exceptional heat resistance and high temperature dimensional stability
- High flexibility without plasticizers
- Solvent bondable

Product Description

Eastman Neostar™ Elastomer FN005 is a tough, clear, durable, general purpose grade copolyester ether. It was designed for use in the profile and automotive markets, but is also used in packaging and tubing applications where toughness and flex-crack resistance are required. Eastman Neostar™ Elastomer FN005 can be used in injection molding and cast film or tubing extrusion applications or in any application that demands strength, durability, and puncture resistance in harsh environments. This copolyester combines toughness, clarity, and flexibility without the addition of plasticizers. Eastman Neostar™ Elastomer FN005 is considered environmentally preferred because of its non-halogenated material composition. The target inherent viscosity of this product is 1.05.

This product has been CRADLE TO CRADLE CERTIFIED^{cm} Silver.

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Typical Properties (Preliminary)

Property ^a	Test ^b Method	Typical Value, Units ^c
Thermal Properties		
Inherent Viscosity	EMN-A-AC-G-V-1	1.05
Flow Rate (Condition 230°C/2.16 kg)	D 1238	20 g/10 min

Crystalline Peak Melting Point (T_m)	D 3418	207°C (405°F)
Crystallization Temperature on Cooling ($T_{c,c}$)	DSC	140°C (284°F)
Glass Transition Temperature (T_g)	DSC	-3°C (27°F)
Specific Heat ^d		
@ 25°C (77°F) - solid	DSC	1.6 kJ/kg·K (0.38 Btu/lb·°F)
@ 100°C (212°F) - solid	DSC	1.8 kJ/kg·K (0.43 Btu/lb·°F)
@ 150°C (302°F) - solid	DSC	2.0 kJ/kg·K (0.48 Btu/lb·°F)
@ 175°C (347°F) - solid	DSC	2.3 kJ/kg·K (0.55 Btu/lb·°F)
@ 200°C (392°F) - transition	DSC	3.1 kJ/kg·K (0.74 Btu/lb·°F)
@ 225°C (437°F) - melt	DSC	2.3 kJ/kg·K (0.55 Btu/lb·°F)
Heat of Fusion	E 793	27 kJ/kg (11.6 Btu/lb)
Thermal Conductivity	C 177	0.19 W/m·K (1.3 Btu·in./h·ft ² ·°F)
Coefficient of Linear Thermal Expansion	D 696	15 x 10 ⁻⁵ /°C (mm/mm·°C) (8 x 10 ⁻⁵ /°F (in./in.·°F))
Brittleness Temperature	D 746	<-75°C (<-103°F)
Vicat Softening Temperature @ 1 kg load	D 1525	170°C (338°F)

Mechanical Properties

Specific Gravity	D 792	1.13
Durometer Hardness		
Shore D Scale	D 2240	55
Shore A Scale	D 2240	95
Tensile Stress @ Break ^e	D 638	20 MPa (2900 psi)
Tensile Stress @ Yield ^f	D 638	14 MPa (2030 psi)
Elongation @ Yield	D 638	30%
Elongation @ Break	D 638	300%
Tensile Modulus	D 638	170 MPa (24650 psi)
Flexural Modulus	D 790	150 MPa (21750 psi)
Tear Strength	D 1004	370 N (84 lbf)
Izod Impact Strength, Notched @ -40°C (-40°F)	D 256	50 J/m (0.94 ft·lbf/in.)
Torsional Modulus Temperature		
@ 240 MPa (35,000 psi)	D 1043	-28°C (-18°F)
@ 930 MPa (135,000 psi)	D 1043	<-70°C (<-94°F)
Water Absorption, 24 h immersion	D 570	0.35%

Film Properties

Thickness of Film Tested		0.13 mm (5 mils)
Refractive Index, n_D	D 542	1.51
Haze	D 1003	1%
Gloss @ 45°	D 2457	80

Regular Transmittance	D 1003	90%
Total Transmittance	D 1003	93%
Tensile Strength @ Yield		
M.D.	D 882	13.7 MPa (2000 psi)
T.D.	D 882	13.5 MPa (2000 psi)
Tensile Strength @ Break		
M.D.	D 882	23.7 MPa (3400 psi)
T.D.	D 882	22.6 MPa (3300 psi)
Elongation @ Yield		
M.D.	D 882	26%
T.D.	D 882	26%
Elongation @ Break		
M.D.	D 882	550%
T.D.	D 882	550%
Tensile Modulus, Tangent		
M.D.	D 882	185 MPa (26800 psi)
T.D.	D 882	179 MPa (26000 psi)
Water Vapor Transmission Rate ^g	F 372	132 g/m ² ·24h (8.5 g/100in. ² ·24h)
Gas Permeability, O ₂ @ 30°C (86°F)	D 1434	841 cm ³ /m ² *24h*atm (54 cm ³ /100in. ² ·24h·atm)
Coefficient of Friction	D 1894	>1

^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.

^d For 200°C (392°F) - transition, apparent specific heat, including the effects of the heat of fusion.

^e D 412, Die C specimens, which are equivalent to ASTM D 638, Type IV specimens. Specimens were 2.0 mm (0.075 in.) thick and were tested using a crosshead speed of 500 mm (20 in.) per min.

^f Injection molded ASTM D 638 Type I specimens, about 3 mm (1/8 in.) thick, were tested using a crosshead speed of 500 mm (20 in.) per min.

^g Test conducted at 38°C (100°F) and 100% relative humidity.

Applications

NEOSTAR elastomers are tough, clear and durable. NEOSTAR elastomer FN005 can be injection molded or extruded. It has a property profile that is suitable for automotive applications such as trim and constant velocity or steering boots. It is suitable for coextrusion as a flexible element in profile extrusions.

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.

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