Product Data Sheet

Eastman Cadence™ Copolyester GS1

Application/Uses

- Appliance films
- Architectural laminates
- Automotive films
- Bags
- Calendering
- Decorative laminates
- Electronic laminates
- Floor coverings
- Furniture/Furniture trim
- Labels
- Outdoor films
- Packaging
- Printable films
- Shrink film
- Transaction cards
- Transportation laminates
- Wall coverings

Product Description

Eastman Cadence™ GS1 is Eastman's original copolyester for film calendering. Calendered films made of Eastman Cadence™ copolyesters are non-crystallizing, are halogen-free, offer wide calendering and thermoforming windows and have good low-temperature toughness. They are cooperative in secondary operations such as solvent-bonding, lamination, decoration, cold-forming, punching/cutting and embossment.

Eastman Cadence™ resins require no pre-drying or additional stabilizers.

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^{cm} Silver.

The CRADLE TO CRADLE CERTIFIED^{cm} 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.

Typical Properties (Preliminary)

Property[a]	Test[b] Method	Typical Value, Units[c]
General Properties		
Density	D 1505	1.28 g/cm^3
Oxygen Index	D 2863	23.5%
Water Absorption, 24 h immersion	D 570	0.16%
Electrical Properties		
Dielectric Constant		
1 kHz	D 150	2.88
1 MHz	D 150	2.68
Dissipation Factor		
1 kHz	D 150	0.022
1 MHz	D 150	0.021
Arc Resistance	D 495	131 sec
Volume Resistivity	D 257	3.87 x 10^{16} ohm·cm
Surface Resistivity	D 257	1.19 x 10^{16} ohms/square
Dielectric Strength, Short Time, 500 V/sec rate-of-rise	D 149	14.6 kV/mm (371 V/mil)
Thermal Properties		
Deflection Temperature		
@ 0.455 MPa (66 psi)	D 648	70°C (158°F)
@ 1.82 MPa (264 psi)	D 648	62°C (144°F)
Vicat Softening Temperature	D 1525	81°C (178°F)
Coefficient of Linear Thermal Expansion @ -30°C to 30°C (-22°F to 86°F)	D 696	7.66 x 10-5 /°C (mm/mm·°C) (4.26 x 10-5 /°F (in./in.·°F))
Specific Heat		
@ 60°C (140°F)	DSC	1.3 kJ/kg·K (0.31 Btu/lb·°F)
@ 100°C (212°F)	DSC	1.7 kJ/kg·K (0.41 Btu/lb·°F)
@ 150°C (302°F)	DSC	1.8 kJ/kg·K (0.44 Btu/lb·°F)
@ 200°C (392°F)	DSC	2.0 kJ/kg·K (0.47 Btu/lb·°F)
@ 250°C (482°F)	DSC	2.1 kJ/kg·K (0.49 Btu/lb·°F)
Glass Transition Temperature (T_g)	DSC	81°C (178°F)
Film Properties		

Inherent Viscosity [d]	EMN-A-AC-G-V-1	0.71
Thickness of Film Tested	D 374	170 microns (7 mils)
Density	D 1505	1.27 g/cm^3
Haze	D 1003	2.7%
Gloss @ 60°	D 2457	107
Total Transmittance	D 1003 Modified	90%
Water Vapor Transmission Rate [e]	F 372	7 g/m^2·24h (0.5 g/100in.^{2}·24h)
Gas Permeability, O_2	D 3985	7 cm^3·mm/m^2·24h·atm (18 cm^3·mil/100in.^{2}·24h·atm)
Elmendorf Tear Resistance		
M.D.	D 1922	7.1 N (730 gf)
T.D.	D 1922	8.8 N (896 gf)
Tensile Strength @ Yield		
M.D.	D 882	49 MPa (7100 psi)
T.D.	D 882	49 MPa (7100 psi)
Tensile Strength @ Break		
M.D.	D 882	63 MPa (9100 psi)
T.D.	D 882	46 MPa (6700 psi)
Elongation @ Yield		
M.D.	D 882	5%
T.D.	D 882	5%
Elongation @ Break		
M.D.	D 882	420%
T.D.	D 882	300%
Tensile Modulus		
M.D.	D 882	1600 MPa (2.3 x 10^5 psi)
T.D.	D 882	1600 MPa (2.3 x 10^5 psi)
Impact Resistance (Puncture), Energy @ Max. Load		
@ 23°C (73°F)	D 3763	1.6 J (1.2 ft·lbf)
@ 0°C (32°F)	D 3763	1.2 J (0.9 ft·lbf)
@ -20°C (-4°F)	D 3763	0.7 J (0.5 ft·lbf)

[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] *The inherent viscosity of pellets is typically 0.75.*

[e] *Test conducted at 38°C (100°F) and 100% relative humidity.*

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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