Product Data Sheet

DuraStar™ Polymer DS2000, Natural

Application/Uses

- Toys/Sporting goods
- Writing instruments

Key Attributes

- Excellent clarity
- Excellent flow
- Fast drying times
- Good chemical resistance
- Outstanding impact resistance
- Quick cycle times

Product Description

Durastar™ DS2000 polymer has excellent appearance and is nearly water-clear. Its most outstanding features are toughness, chemical resistance, and excellent processing characteristics. DS2000 has very good toughness as shown by Izod impact resistance. Exposure to aromatic oils often causes crazing or actual fracture of many polymer resins, but DS2000 maintains its physical properties when exposed to these oils, and its appearance is virtually unchanged. Easy to process, it flows readily and fills intricate molds. Under existing United States Food and Drug Administration (FDA) regulations, Durastar™ DS2000 may be used in food contact articles which comply with the specifications and conditions of use in 21 CFR 177.1240.

Typical Properties

Property[a]	Test[b] Method	Typical Value, Units[c]
General Properties		
Specific Gravity	D 792	1.2
Density	ISO 1183	1.19 g/cm^3
Mold Shrinkage Parallel to Flow, 3.2-mm (0.125-in.) thickness	D 955	0.002-0.006 mm/mm (0.002-0.006 in./in.)
Mechanical Properties		
Tensile Stress @ Yield	D 638	46 MPa (6700 psi)
Tensile Stress @ Break	D 638	53 MPa (7700 psi)
Elongation @ Yield	D 638	5%
Elongation @ Break	D 638	310%
Flexural Modulus	D 790	1900 MPa (2.75 x 10^5 psi)
Flexural Yield Strength	D 790	67 MPa (9700 psi)
Rockwell Hardness, R Scale	D 785	105

Izod Impact Strength, Notched		
@ 23°C (73°F)	D 256	370 J/m (7 ft·lbf/in.)
@ -40°C (-40°F)	D 256	60 J/m (1.1 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)	D 3763	45 J (33 ft·lbf)
@ -40°C (-40°F)	D 3763	48 J (35 ft·lbf)

Mechanical Properties (ISO Method)		
Tensile Stress @ Yield	ISO 527	47 MPa
Tensile Stress @ Break	ISO 527	49 MPa
Elongation @ Yield	ISO 527	4%
Elongation @ Break	ISO 527	210%
Flexural Modulus	ISO 178	1750 MPa
Flexural Strength	ISO 178	64 MPa
Izod Impact Strength, Notched		
@ 23°C	ISO 180	29.6 kJ/m^2
@ -40°C	ISO 180	6.3 kJ/m^2
Impact Resistance (Puncture), Energy @ Max. Load		
@ 23°C	ISO 6603-2	71 J
@ -40°C	ISO 6603-2	55 J

Thermal Properties		
Deflection Temperature		
@ 0.455 MPa (66 psi)	D 648	73°C (164°F)
@ 1.82 MPa (264 psi)	D 648	65°C (149°F)
UL Flammability Classification [d] 1.5 mm specimen	UL 94	94HB

Thermal Properties (ISO Method)		
Deflection Temperature		
@ 0.455 MPa (66 psi)	ISO 75	73°C
@ 1.82 MPa (264 psi)	ISO 75	66°C

Optical Properties		
Haze	D 1003	0.3%
Regular Transmittance	D 1003	89%
Total Transmittance	D 1003	91%

Typical Processing Conditions		
Drying Temperature		70°C (160°F)

Drying Time	3 hrs
Processing Melt Temperature	250-290°C (480-550°F)
Mold Temperature	15-30°C (60-80°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.*

[d] *For color CL*

Comments

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

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