Celanese
The chemistry inside innovation™

COOLPOLY® E3629 - PA6

Description

CoolPoly E series of thermally conductive plastics transfers heat, a characteristic previously unavailable in injection molding grade polymers. CoolPoly is lightweight, netshape moldable and allows design freedom in applications previously restricted to metals. This grade is UV stable for exterior automotive applications as well as interior. It has good impact characteristics and high thermal conductivity.

Physical properties	Value	Unit	Test Standard
Density	**99.9**	lb/ft^3	ISO 1183
Molding shrinkage, parallel (flow)	**0.3 - 0.4**	%	ISO 294-4, 2577
Molding shrinkage, transverse normal	**0.4 - 0.5**	%	ISO 294-4, 2577

Mechanical properties	Value	Unit	Test Standard
Tensile modulus	**1.45E6**	psi	ISO 527-1, -2
Tensile stress at break, 5mm/min	**7540**	psi	ISO 527-1, -2
Tensile strain at break, 5mm/min	**0.8**	%	ISO 527-1, -2
Flexural modulus, 23°C	**1.74E6**	psi	ISO 178
Flexural strength, 23°C	**13100**	psi	ISO 178
Flexural strain at break	**1.1**	%	ISO 178
Charpy impact strength, 23°C	**3.81**	ft-lb/in^2	ISO 179/1eU
Charpy notched impact strength, 23°C	**1.9**	ft-lb/in^2	ISO 179/1eA

Thermal properties	Value	Unit	Test Standard
DTUL at 1.8 MPa	**401**	°F	ISO 75-1, -2
Coeff. of linear therm expansion, parallel	**0.122**	E-4/°F	ISO 11359-2
Coeff. of linear therm expansion, normal	**0.35**	E-4/°F	ISO 11359-2
Thermal conductivity, flow	**18**	W/(m K)	ASTM E1461
Thermal conductivity, thruplane	**4**	W/(m K)	ASTM E1461
Specific heat	**0.455**	BTU/(lb·F)	ASTM E1461

Electrical properties	Value	Unit	Test Standard
Volume resistivity, 23°C	**<1**	Ohm*m	IEC 62631-3-1
Surface resistivity, 23°C	**<600**	Ohm	IEC 62631-3-2
EMI shielding effectiveness, 1GHz	**30.6**	dB	ASTM D4935

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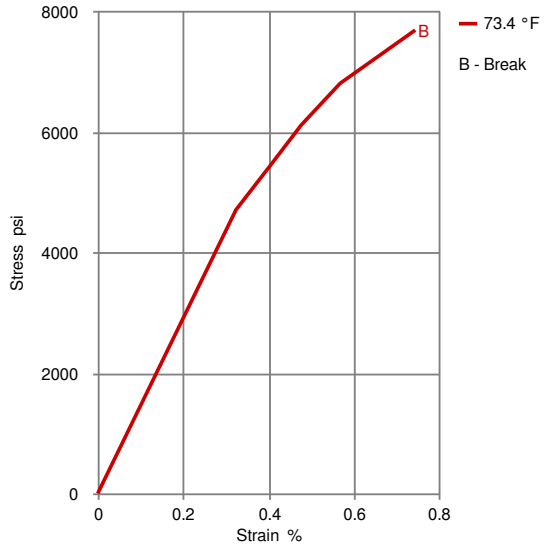
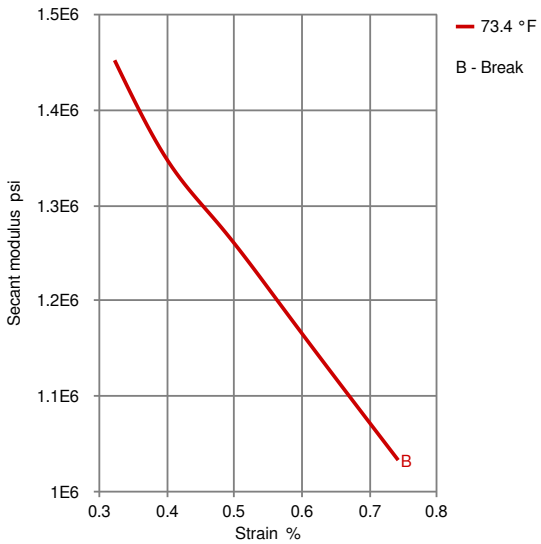
Diagrams

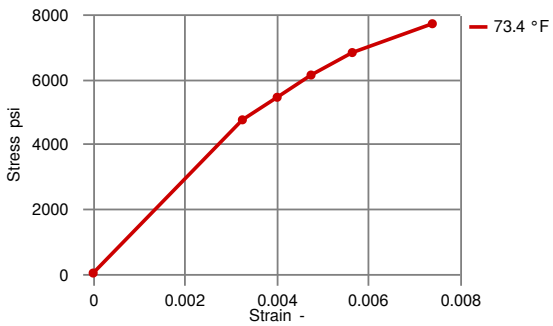
Stress-strain



Secant modulus-strain



True Stress-strain



no yield point at 23 °C

Typical injection moulding processing conditions

Pre Drying	Value	Unit
Drying time	**2 - 4**	h
Drying temperature	**176**	°F

Temperature	Value	Unit
Feeding zone temperature	**122**	°F
Zone1 temperature	**518**	°F
Zone2 temperature	**527**	°F
Zone3 temperature	**536**	°F
Zone4 temperature	**545**	°F
Nozzle temperature	**554**	°F

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Melt temperature	**536 - 554**	°F
Mold temperature	**203 - 275**	°F

Pressure	Value	Unit
Back pressure max.	**35**	bar

Speed	Value
Injection speed	**medium-fast**

Other text information

Injection molding

A low compression screw (2.5:1 or less) is recommended. Large reverse taper nozzle is suggested. Raise nozzle temps at startup until process stabilizes than bring back down to typical value. Material is moisture sensitive.

Characteristics

Special Characteristics	Light weighting, Thermally conductive, UV resistant
Processing	Injection molding

General Disclaimer