

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

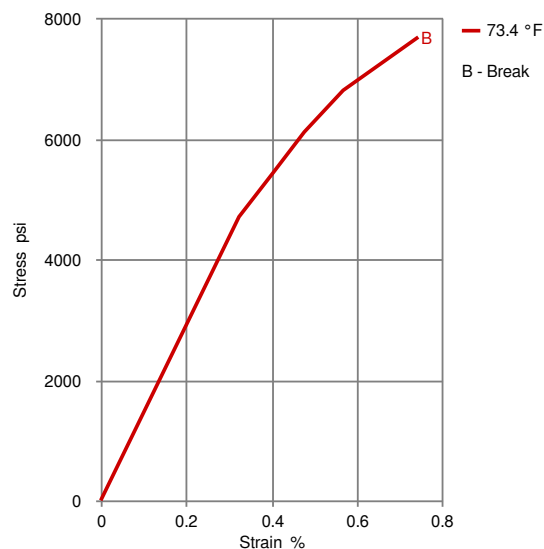
Mechanical properties	Value	Unit	Test Standard
Tensile modulus	1.45E6	psi	ISO 527-1, -2
Tensile stress at break, 5mm/min	7540	psi	ISO 527-1, -2
Tensile strain at break, 5mm/min	0.8	%	ISO 527-1, -2
Flexural modulus, 23°C	1.74E6	psi	ISO 178
Flexural strength, 23°C	13100	psi	ISO 178
Flexural strain at break	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

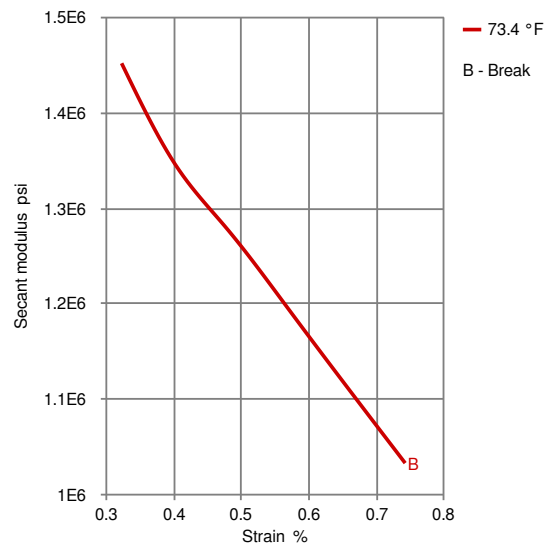
Electrical properties	Value	Unit	Test Standard
Volume resistivity, 23°C	<1	Ohm·m	IEC 62631-3-1
Surface resistivity, 23°C	<600	Ohm	IEC 62631-3-2
EMI shielding effectiveness, 1GHz	30.6	dB	ASTM D4935

Diagrams

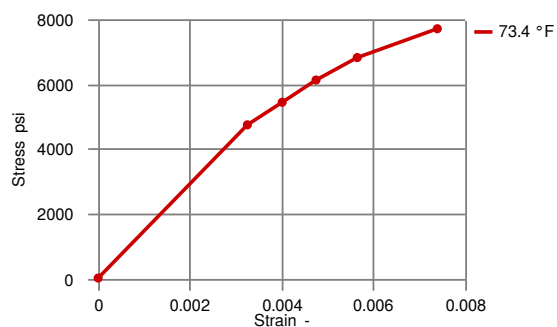
Stress-strain



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
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Processing	Injection molding
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General Disclaimer

NOTICE TO USERS: Values shown are based on testing of laboratory test specimens and represent data that fall within the standard range of properties for natural material. These values alone do not represent a sufficient basis for any part design and are not intended for use in establishing maximum, minimum, or ranges of values for specification purposes. Colorants or other additives may cause significant variations in data values. Properties of molded parts can be influenced by a wide variety of factors including, but not limited to, material selection, additives, part design, processing conditions and environmental exposure. Any determination of the suitability of a particular material and part design for any use contemplated by the users and the manner of such use is the sole responsibility of the users, who must assure themselves that the material as subsequently processed meets the needs of their particular product or use. To the best of our knowledge, the information contained in this publication is accurate; however, we do not assume any liability whatsoever for the accuracy and completeness of such information. The information contained in this publication should not be construed as a promise or guarantee of specific properties of our products. It is the sole responsibility of the users to investigate whether any existing patents are infringed by the use of the materials mentioned in this publication. Moreover, there is a need to reduce human exposure to many materials to the lowest practical limits in view of possible adverse effects. To the extent that any hazards may have been mentioned in this publication, we neither suggest nor guarantee that such hazards are the only ones that exist. We recommend that persons intending to rely on any recommendation or to use any equipment, processing technique or material mentioned in this publication should satisfy themselves that they can meet all applicable safety and health standards. We strongly recommend that users seek and adhere to the manufacturer's current instructions for handling each material they use, and entrust the handling of such material to adequately trained personnel only. Please call the telephone numbers listed for additional technical information. Call Customer Services for the appropriate Materials Safety Data Sheets (MSDS) before attempting to process our products. The products mentioned herein are not intended for use in medical or dental implants.