Celanese
The chemistry inside innovation™

COOLPOLY® E5101 - PPS

Description

CoolPoly E5101 is a thermally and electrically conductive PPS based grade with good flammability properties.
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. The E series is electrically conductive and provides inherent EMI/RFI shielding characteristics.

Physical properties	Value	Unit	Test Standard
Density	**107**	lb/ft^3	ISO 1183
Water absorption, 23°C-sat	**0.05**	%	Sim. to ISO 62

Mechanical properties	Value	Unit	Test Standard
Tensile modulus	**1.68E6**	psi	ISO 527-1, -2
Tensile stress at break, 5mm/min	**6380**	psi	ISO 527-1, -2
Tensile strain at break, 5mm/min	**0.43**	%	ISO 527-1, -2
Flexural modulus, 23°C	**1.89E6**	psi	ISO 178
Flexural strength, 23°C	**11000**	psi	ISO 178
Charpy impact strength, 23°C	**1.66**	ft-lb/in^2	ISO 179/1eU

Thermal properties	Value	Unit	Test Standard
Melting temperature, 10°C/min	**536**	°F	ISO 11357-1/-3
DTUL at 1.8 MPa	**478**	°F	ISO 75-1, -2
DTUL at 0.45 MPa	**534**	°F	ISO 75-1, -2
Flammability at thickness h	**V-0**	class	UL 94
thickness tested (h)	**0.0394**	in	UL 94
CLTE below Tg, parallel	**0.0611**	E-4/°F	ISO 11359-2
Start Temp	**-40**	°F	ISO 11359-2
End Temp	**194**	°F	ISO 11359-2
CLTE above Tg, parallel	**0.106**	E-4/°F	ISO 11359-2
Start Temp	**194**	°F	ISO 11359-2
End Temp	**302**	°F	ISO 11359-2
CLTE below Tg, normal	**0.117**	E-4/°F	ISO 11359-2
Start Temp	**-40**	°F	ISO 11359-2
End Temp	**194**	°F	ISO 11359-2
CLTE above Tg, normal	**0.244**	E-4/°F	ISO 11359-2
Start Temp	**194**	°F	ISO 11359-2
End Temp	**302**	°F	ISO 11359-2
Thermal conductivity, flow	**20**	W/(m K)	ASTM E1461
Thermal conductivity, crossflow	**15**	W/(m K)	ASTM E1461
Thermal conductivity, thruplane	**3.5**	W/(m K)	ASTM E1461

Electrical properties	Value	Unit	Test Standard
Volume resistivity, 23°C	**0.0017**	Ohm*m	IEC 62631-3-1

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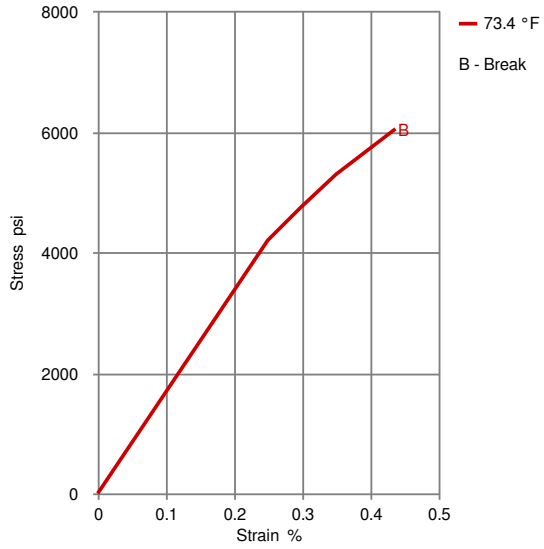
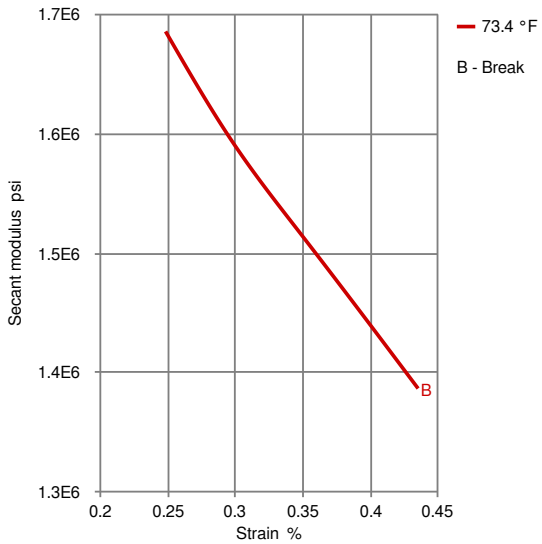
Diagrams

Stress-strain



Secant modulus-strain



Typical injection moulding processing conditions

Pre Drying	Value	Unit
Drying time	**4 - 6**	h
Drying temperature	**241 - 259**	°F

Temperature	Value	Unit
Feeding zone temperature	**104 - 117**	°F
Zone1 temperature	**585**	°F
Zone2 temperature	**615**	°F
Zone3 temperature	**621**	°F
Nozzle temperature	**610**	°F
Melt temperature	**619 - 630**	°F
Mold temperature	**275 - 356**	°F

Characteristics

Special Characteristics	Anti-static, Electrically conductive, Electrostatic dissipation, Flame retardant, Light weighting, Thermally conductive
Processing	Injection molding