Lubrizol

Product Guide

Isoplast® 2500 Series

Type: Medical grade aromatic Engineering Thermoplastic Polyurethanes (ETPUs).

Features: This product class combines the toughness, strength, impact resistance and dimensional stability of amorphous resins with the chemical resistance of crystalline materials. Due to its excellent chemical resistance and toughness, Isoplast may be used to replace polycarbonate where stress cracking is an issue such as in medical device hubs and fittings. Lubrizol maintains a Master File (MAF) with the United States Food and Drug Administration (FDA) for this product series. The products below are not produced using animal-derived raw materials.

Process: Injection Molding, Extrusion (excluding glass-filled grade)

			ISOPLAST 2530 NAT R1	ISOPLAST 2531 NAT	ISOPLAST 2510 NAT	ISOPLAST 2540 LGF NAT R1
		FEATURES	Medical Grade Biocompatibility Tested	Medical Grade, Biocompatibility Tested	Impact Modified, Medical Grade, Biocompatibility Tested	Long Glass Fiber Filled 40%, Medical Grade, Biocompatibility Tested
		APPEARANCE	Transparent	Transparent	Opaque Natural (off-white)	Opaque Natural (off-white)
Property	**Test Method**	**Units**	**Typical Values**			
Physical						
Water Absorption	ASTM D570 24hrs, 23C°	%	0.1	0.2	0.1	N/A
Specific Gravity	ASTM D792	g/cm^3	1.21	1.20	1.19	1.50
Mechanical						
Rockwell Hardness	ASTM D785	R Scale	120	124	110	N/A
Tensile Strength at Yield	ASTM D638	MPa	65	70	50	165
Tensile Strength at Break	ASTM D638	MPa	67	60	60	165
Tensile Modulus	ASTM D638	MPa	2,200	2,300	1,700	11,000
Elongation at Yield	ASTM D638	%	6	7	6	3
Elongation at Break	ASTM D638	%	250	150	250	3
Flexural Strength	ASTM D790	MPa	84	94	70	250
Flexural Modulus	ASTM D790	MPa	2,100	2,200	1,700	10,000
Izod Impact Strength 23C°	ASTM D256 3.2mm notch	J/m	65	65	1100	330

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Property	**Test Method**	**Units**	**Typical Values**			
Thermal						
Vicat Temperature	ASTM D1525	˚C	100	110	90	170
Coefficient of Linear Thermal Expansion	ASTM D696	$K^{-1} \times 10^{-5}$	7	7	9	2
Heat Deflection Temperature Under Load						
HDT/B (0.46MPa), unannealed	ASTM D648	˚C	80	90	70	125
HDT/B (0.46MPa), annealed			85	100	75	140
HDT/A (1.8MPa), unannealed			70	77	65	85
HDT/A (1.8MPa), annealed			80	90	70	110
Optical Properties						
Light Transmission	ASTM D1003	%	>90	90	OPAQUE	OPAQUE
Processing Information*						
Maximum Allowable Moisture Content		%	0.02	0.02	0.02	0.02
Recommended Drying Temperature		˚C	85 - 91	93 - 110	85 - 91	85 - 91
Typical Drying Time		Hours	6 - 12	6 - 12	6 - 12	6 - 12
Recommended Melt Temperature		˚C	232 - 249	233 - 249	221 - 243	238 - 260
Recommended Mold Temperature		˚C	66 - 82	66 - 93	66 - 82	66 - 88
Mold Shrink	ASTM D955	%	0.4 - 0.6	0.2 - 0.4	0.3 - 0.6	0.1 - 0.3

* Typical starting process conditions. Actual process conditions depend on processing equipment and end use. User should consider mold safe conditions when utilizing provided mold shrinkage information

This technical data sheet provides typical expected values based on internal Lubrizol testing of limited sample size. This technical data sheet does not constitute product specifications. This information should not be used to establish engineering or manufacturing guidelines, and users should confirm values with their own testing.

Handling and Processing Considerations: Properties of all thermoplastic polyurethane products in the molten state are adversely affected by moisture. For best results, always dry the material at the recommended drying temperatures in a machine mounted dehumidifying dryer (a desiccant dryer delivering air at 1 liter/sec/ kg at -40°C dew point (1 cfm/lb at -40°F dew point)). A dehumidifying dryer hopper or one-shot loader is also recommended. Depending on the applied processing technique, the maximum moisture level should be 0.020% (200ppm). Never exceed 500°F (260°C) melt temperature.

Isoplast® 2500 Series TPU can be processed on conventional molding or extrusion equipment. Please refer to Lubrizol's processing guide(s) for more information regarding proper drying, equipment, and process design. Further guidance is available at our online resource hub or by contacting our technical solutions team.

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