Durable…

Legacy material now standard in many medical devices

materials that belong to the body

Elasthane™

thermoplastic polyether-urethane

a DSM Product

Elasthane™ thermoplastic polyether-urethane (TPU) is a high-strength, aromatic biomedical polymer with an impressive combination of mechanical properties and biological compatibility. This ether-based polymer has been utilized in many commercially available medical devices and technologies, including pacemaker leads and neuro-stimulation devices. **Elasthane**™ TPU is backed by a comprehensive FDA Master File.

Established

- Designed to support long term implantation
- Standard biomaterial for many industry-leading devices
- Comprehensive FDA Master File

Compatibility

- Outstanding hydrolytic stability compared to polyester urethanes
- Good thrombo-resistance when used as a smooth blood-contacting surface

Unique Surface Modification Techniques

- Customizable through the incorporation of SME® technology utilizing surface modifying end groups
- Enables the polymer to be equipped with different end groups such as silicone, fluorocarbon, and/or polyethylene oxide
- Eliminates the need for additional surface processing steps after the device component is fabricated

Elasthane™ TPU Properties

Typical Property	Testing Method	Elasthane™ TPU		
		80A	55D MR	75D
Color		Clear to amber colored pellets		
Hardness, Durometer	ASTM D2240	82A	55D MR	75D
Specific Gravity	ASTM D792	1.12	1.16	1.19
Density, g/cm3	ASTM D792	1.12	1.16	1.19
Tensile Stress				
psi at 50% Elongation	ASTM D1708	1380	1720	NA
psi at 100% Elongation		845	2170	NA
psi at 300% Elongation		527	4890	NA
Ultimate Tensile Strength (psi)	ASTM D1708	6354	7848	8734
Ultimate Elongation (%)	ASTM D1708	603	382	292
Tear Strength, Die 'C', (pli)	ASTM D624	NA	781	NA
Compression Set, %, 22 hrs @ 25˚C	ASTM D395	23	40	NA
Taber Abrasion, 1000 g wt. Wear Index, mg/1000 cycles	ASTM D1044 H-18 wheel	NA	48	NA
Vicat Softening Temp. ˚C ˚F	ASTM D1525	100˚ 212˚	129˚ 264˚	61˚ 141˚
Coefficient of Linear Thermal Expansion x 10-6/˚C x 10-6/˚F	ASTM E831	179.3/˚C 99.6/˚F	152.2/˚C 84.6/˚F	86.4/˚C 48.0/˚F
Approximate Melt Index, g/10 min at 224˚C	ASTM D1238	(1200g) 17	(2160g) 13	(5000g) 37
Flexural Modulus, psi, 1% Secant Modulus	ASTM D790	5220	21,600	289,000
Flexural Stress, psi at 5% Deflection	ASTM D790	225	893	10900
Dielectric strength (V/mil)	ASTM D149	363	385	392
Dielectric Constant, K', at 60 Hz	ASTM D150	6.7	5.2	3.7
Mold Shrinkage, %	ASTM D955 4" Disk	4.5	1.4	1.6
	ASTM D955 Flame Bar	0-2.0	0.5-1.0	0.5-0.8
Optimum Extrusion Conditions ˚F ˚C		340-380 171-197	380-410 194-210	380-430 194-221

Note: Typical physical property values are not to be construed as sales specifications.

Representative Biological Test Results

Biological test	Results
Cytotoxicity	Non-cytotoxic
Hemocompatibility	Non-hemolytic

Tests performed by and data on file at DSM PTG.

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DISCLAIMER

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