

DSM Biomedical Elasthane™ 55D Thermoplastic Polyether Polyurethane (TPU)

Categories: [Polymer](#); [Thermoplastic](#); [Polyurethane](#); [TP](#); [Thermoplastic Polyurethane \(TPUR\)](#); [Polyether Grade](#)

Material Notes: A high tensile strength, aromatic biomedical polymer with an exceptional combination of mechanical properties plus biological compatibility Elasthane™ TPU exhibits outstanding hydrolytic stability.

Widely Used This polyether-based polymer is designed to support long-term implantation and has been used in many commercially available medical devices including cardiovascular, neurostimulation and orthopedic implants.


Tailor Made Elasthane™ TPU can be enhanced with SME® technology to incorporate end groups that can address the needs of specific device applications. This eliminates the need for additional surface processing steps after the device component is fabricated.

Summary of Product Benefits

- Excellent mechanical properties and abrasion resistance
- Hydrolytically stable
- Biocompatible
- Adaptable with SME® technology
- Established FDA Master File

Information provided by DSM Biomedical.

Vendors: No vendors are listed for this material. Please [click here](#) if you are a supplier and would like information on how to add your listing to this material.

Physical Properties	Metric	English	Comments
Specific Gravity	1.16 g/cc	1.16 g/cc	ASTM D792
Linear Mold Shrinkage	0.014 cm/cm	0.014 in/in	4 inch disk; ASTM D955
Linear Mold Shrinkage, Transverse	0.0050 - 0.010 cm/cm	0.0050 - 0.010 in/in	Flame Bar; ASTM D955
Melt Flow	13 g/10 min @Load 2.16 kg, Temperature 224 °C	13 g/10 min @Load 4.76 lb, Temperature 435 °F	ASTM D1238
Mechanical Properties	Metric	English	Comments
Hardness, Shore D	55	55	ASTM D2240
Tensile Strength, Ultimate	54.11 MPa	7848 psi	ASTM D1708
Tensile Stress 	11.9 MPa @Strain 50.0 %	1720 psi @Strain 50.0 %	ASTM D1708
	15.0 MPa @Strain 100 %	2170 psi @Strain 100 %	ASTM D1708
	33.7 MPa @Strain 300 %	4890 psi @Strain 300 %	ASTM D1708
Elongation at Break	382 %	382 %	ASTM D1708
Flexural Strength	6.16 MPa	893 psi	at 5% deflection; ASTM D790
Flexural Modulus, 1% Secant	149 MPa	21600 psi	ASTM D790
Tear Strength	137 kN/m	781 pli	Die 'C'; ASTM D624
Taber Abrasion, mg/1000 Cycles	48	48	H-18 Wheel; ASTM D1044
Compression Set	40 % @Temperature 25.0 °C	40 % @Temperature 77.0 °F	22 hours; ASTM D395
Electrical Properties	Metric	English	Comments
Dielectric Constant	5.2 @Frequency 60 Hz	5.2 @Frequency 60 Hz	ASTM D150
Dielectric Strength	15.2 kV/mm	385 kV/in	ASTM D149
Thermal Properties	Metric	English	Comments
CTE, linear	152.2 µm/m-°C @Temperature 20.0 °C	84.56 µin/in-°F @Temperature 68.0 °F	ASTM E-831
Vicat Softening Point	129 °C	264 °F	ASTM D1525
Processing Properties	Metric	English	Comments
Processing Temperature	194 - 210 °C	381 - 410 °F	Optimum Extrusion Conditions
Descriptive Properties			
Color		Clear to Amber pellets	
Cytotoxicity		Non-cytotoxic	
Hemocompatibility		Non-hemolytic	

Some of the values displayed above may have been converted from their original units and/or rounded in order to display the information in a consistent format. Users requiring more precise data for scientific or engineering calculations can click on the property value to see the original value as well as raw conversions to equivalent units. We advise that you only use the original value or one of its raw conversions in your calculations to minimize rounding error. We also ask that you refer to MatWeb's [terms of use](#) regarding this information. [Click here](#) to view all the property values for this datasheet as they were originally entered into MatWeb.