DSM Biomedical CarboSil® 40 90A Biocompatible Silicone Polycarbonate Urethane (discontinued **)

Category : Polymer , Thermoplastic , Elastomer, TPE , Polyurethane, TP , Silicone Polyurethane, Polycarbonate Based , Silicone, Thermoplastic

Material Notes:

Combines the biocompatibility and biostability of conventional silicone elastomers with the processability and toughness of thermoplastic urethane elastomers. Noncytotoxic and nonhemolytic. Low-Energy Silicone Surface; Outstanding Oxidative Stability; Hydrophobic; High Tensile Strength; Optically Clear.PurSil[™] silicone-polyetherurethane and CarboSil[™] silicone-polycarbonateurethane are true thermoplastic copolymers containing silicone in the soft segment. These high-strength thermoplastic elastomers are prepared through a multi-step bulk synthesis where polydimethylsiloxane (PSX) is incorporated into the polymer soft segment with polytetramethyleneoxide (PTMO) (PurSil) or an aliphatic, hydroxyl-terminated polycarbonate (CarboSil). The hard segment consists of an aromatic diisocyanate, MDI, with a low molecular weight glycol chain extender. The copolymer chains are then terminated with silicone (or other) Surface-Modifying End Groups[™]. Aliphatic (AL) versions of these materials, with a hard segment synthesized from an aliphatic diisocyanate, are also available.PurSil and CarboSil can be melt fabricated by conventional extrusion, injection molding, or compression molding techniques. Rod, pellet, and tubing extruded from these materials displays an excellent surface finish and low gel content. In addition, these materials are heat-sealable, readily blended with fillers, and easily post-formed.Information provided by the manufacturer, Polymer Technology Group.

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http://www.lookpolymers.com/polymer_DSM-Biomedical-CarboSil-40-90A-Biocompatible-Silicone-Polycarbonate-Urethane-nbspdiscontinued-.php

Physical Properties	Metric	English	Comments
Density	1.14 g/cc	0.0412 lb/in ³	ASTM D792
Linear Mold Shrinkage	0.012 cm/cm	0.012 in/in	4.0" disk; ASTM D955

Mechanical Properties	Metric	English	Comments
Hardness, Shore A	90	90	
Tensile Strength, Ultimate	29.6 MPa	4290 psi	ASTM D1708
Tensile Strength, Yield	7.40 MPa	1070 psi	ASTM D1708
	@Strain 50.0 %	@Strain 50.0 %	
Elongation at Break	530 %	530 %	ASTM D1708
Flexural Yield Strength	1.90 MPa	276 psi	5% deflection; ASTM D-790
Flexural Modulus	0.0395 GPa	5.73 ksi	1% secant; ASTM D-790
Tear Strength	82.4 kN/m	470 pli	Die "C"; ASTM D624
Taber Abrasion, mg/1000 Cycles	144	144	H-18 wheel; ASTM D-1044
Compression Set	33 %	33 %	22 hrs @ 25°C; ASTM D395

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Thermal Properties	Metric	English	Comments
CTE, linear	181.2 μm/m-°C	100.7 µin/in-°F	ASTM E831
	@Temperature 20.0 °C	@Temperature 68.0 °F	
Vicat Softening Point	67.0 °C	153 °F	ASTM D1525

Optical Properties	Metric	English	Comments
Transmission, Visible	80 %	80 %	Manufacturer notes 'clear' but doesn't quantify

Electrical Properties	Metric	English	Comments
Dielectric Constant	4.5	4.5	ASTM D150
	@Frequency 60 Hz	@Frequency 60 Hz	
Dielectric Strength	19.3 kV/mm	490 kV/in	ASTM D149

Processing Properties	Metric	English	Comments
Processing Temperature	185 - 200 °C	365 - 392 °F	Extrusion
Drying Temperature	82.0 - 104 °C	180 - 219 °F	
Dry Time	4 - 6 hour	4 - 6 hour	to moisture < 0.01%

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