

DSM Biomedical CarboSil® 10 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.

Order this product through the following link:

http://www.lookpolymers.com/polymer_DSM-Biomedical-CarboSil-10-90A-Biocompatible-Silicone-Polycarbonate-Urethane-nbspdiscontinued-.php

Physical Properties	Metric	English	Comments
Density	1.18 g/cc	0.0426 lb/in ³	ASTM D792
Linear Mold Shrinkage	0.011 cm/cm	0.011 in/in	4.0" disk; ASTM D955

Mechanical Properties	Metric	English	Comments
Hardness, Shore A	90	90	
Tensile Strength, Ultimate	39.9 MPa	5790 psi	ASTM D1708
Tensile Strength, Yield	7.20 MPa @Strain 50.0 %	1040 psi @Strain 50.0 %	ASTM D1708
Elongation at Break	420 %	420 %	ASTM D1708
Flexural Yield Strength	2.00 MPa	290 psi	5% deflection; ASTM D-790
Flexural Modulus	0.0414 GPa	6.00 ksi	1% secant; ASTM D-790
Tear Strength	94.7 kN/m	540 pli	Die "C"; ASTM D624
Taber Abrasion, mg/1000 Cycles	20	20	H-18 wheel; ASTM D-1044
Compression Set	26 %	26 %	22 hrs @ 25°C; ASTM D395

Thermal Properties	Metric	English	Comments
CTE, linear	170 $\mu\text{m}/\text{m}\cdot^{\circ}\text{C}$	94.2 $\mu\text{in}/\text{in}\cdot^{\circ}\text{F}$	ASTM E831
	@Temperature 20.0 $^{\circ}\text{C}$	@Temperature 68.0 $^{\circ}\text{F}$	
Vicat Softening Point	84.0 $^{\circ}\text{C}$	183 $^{\circ}\text{F}$	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	4.7	4.7	ASTM D150
	@Frequency 60 Hz	@Frequency 60 Hz	
Dielectric Strength	19.7 kV/mm	500 kV/in	ASTM D149

Processing Properties	Metric	English	Comments
Processing Temperature	185 - 200 $^{\circ}\text{C}$	365 - 392 $^{\circ}\text{F}$	Extrusion
Drying Temperature	82.0 - 104 $^{\circ}\text{C}$	180 - 219 $^{\circ}\text{F}$	
Dry Time	4 - 6 hour	4 - 6 hour	to moisture < 0.01%

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