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Santoprene™ 103-40

Thermoplastic Vulcanizate

Product Description

A hard, black, versatile thermoplastic vulcanizate (TPV) in the thermoplastic elastomer (TPE) family. This material combines good physical properties and chemical resistance for use in a wide range of applications. This grade of Santoprene TPV is shear-dependent and can be processed on conventional thermoplastics equipment for injection molding, extrusion, blow molding, thermoforming or vacuum forming. It is polyolefin based and recyclable within the manufacturing stream.

Key Features

- UL listed: file #QMFZ2.E80017, Plastics - Component; file #QMFZ8.E80017, Plastics Certified For Canada - Component.
- Although not NSF certified, this product has a Material Supplier Form on file with NSF to facilitate its evaluation for use in applications requiring NSF certification.
- Excellent ozone resistance.

General

Availability [1]	▪ Africa & Middle East ▪ Asia Pacific	▪ Europe ▪ Latin America	▪ North America
Applications	▪ Automotive - Air Induction System Ducts ▪ Automotive - Boots and Bellows for Steering and Suspension ▪ Automotive - Plugs, Bumpers, Grommets, Clips		
Uses	▪ Appliance Components ▪ Automotive Applications ▪ Automotive Under the Hood	▪ Consumer Applications ▪ Diaphragms ▪ Electrical Parts	▪ Living Hinges ▪ Tubing
Agency Ratings	▪ UL QMFZ2	▪ UL QMFZ8	
RoHS Compliance	▪ RoHS Compliant		
Automotive Specifications	▪ CHRYSLER MS-AR-100 FGN ▪ FORD WSD-M2D441-A	▪ GM GMP.E/P.006 ▪ GM GMW15813 Type 9	
UL File Number	▪ E80017		
Color	▪ Black		
Form(s)	▪ Pellets		
Processing Method	▪ Blow Molding ▪ Coextrusion ▪ Extrusion ▪ Extrusion Blow Molding	▪ Injection Blow Molding ▪ Injection Molding ▪ Multi Injection Molding ▪ Profile Extrusion	▪ Sheet Extrusion ▪ Thermoforming ▪ Vacuum Forming
Revision Date	▪ 06/20/2014		

Physical	Typical Value (English)	Typical Value (SI)	Test Based On
Density / Specific Gravity	0.950	0.950	ASTM D792
Density	0.950 g/cm³	0.950 g/cm³	ISO 1183
Detergent Resistance	f3	f3	UL 749
Detergent Resistance	f4	f4	UL 2157

Hardness	Typical Value (English)	Typical Value (SI)	Test Based On
Shore Hardness			ISO 868
Shore D, 15 sec, 73°F (23°C)	41	41	

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Elastomers	Typical Value (English)		Typical Value (SI)		Test Based On
Tensile Stress at 100% - Across Flow (73°F (23°C))	1310	psi	9.00	MPa	ASTM D412
Tensile Stress at 100% - Across Flow (73°F (23°C))	1310	psi	9.00	MPa	ISO 37
Tensile Strength at Break - Across Flow (73°F (23°C))	3000	psi	20.7	MPa	ASTM D412
Tensile Stress at Break - Across Flow (73°F (23°C))	3000	psi	20.7	MPa	ISO 37
Elongation at Break - Across Flow (73°F (23°C))	610	%	610	%	ASTM D412
Tensile Strain at Break - Across Flow (73°F (23°C))	610	%	610	%	ISO 37
Tear Strength - Across Flow (73°F (23°C), Die C)	383	lbf/in	67.0	kN/m	ASTM D624
Tear Strength - Across Flow					ISO 34-1
73°F (23°C), Method Bb, Angle (Nicked)	380	lbf/in	67	kN/m	
Compression Set					ASTM D395B
158°F (70°C), 22 hr, Type 1	54	%	54	%	
257°F (125°C), 70 hr, Type 1	61	%	61	%	
Compression Set					ISO 815
158°F (70°C), 22 hr, Type A	54	%	54	%	
257°F (125°C), 70 hr, Type A	61	%	61	%	

Thermal	Typical Value (English)		Typical Value (SI)		Test Based On
Brittleness Temperature	-62	°F	-52	°C	ASTM D746
Brittleness Temperature	-62	°F	-52	°C	ISO 812
RTI Elec	185	°F	85.0	°C	UL 746
RTI Str	185	°F	85.0	°C	UL 746

Electrical	Typical Value (English)		Typical Value (SI)		Test Based On
Dielectric Strength					ASTM D149
73°F (23°C), 0.0787 in (2.00 mm)	800	V/mil	32	kV/mm	
Dielectric Constant					ASTM D150
73°F (23°C), 0.0780 in (1.98 mm)	2.60		2.60		
Dielectric Constant					IEC 60250
73°F (23°C), 0.0780 in (1.98 mm)	2.60		2.60		
Comparative Tracking Index (CTI)	PLC 0		PLC 0		UL 746
High Amp Arc Ignition (HAI)	PLC 0		PLC 0		UL 746
High Voltage Arc Resistance to Ignition (HVAR)	PLC 5		PLC 5		UL 746
High Voltage Arc Tracking Rate (HVTR)	PLC 1		PLC 1		UL 746
Hot-wire Ignition (HWI)					UL 746
0.04 in (1.0 mm)	PLC 4		PLC 4		
0.06 in (1.5 mm)	PLC 3		PLC 3		
0.12 in (3.0 mm)	PLC 2		PLC 2		

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Injection	Typical Value (English)		Typical Value (SI)	
Drying Temperature	180	°F	82	°C
Drying Time	3.0	hr	3.0	hr
Suggested Max Moisture	0.080	%	0.080	%
Suggested Max Regrind	20	%	20	%
Rear Temperature	380	°F	193	°C
Middle Temperature	390	°F	199	°C
Front Temperature	400	°F	204	°C
Nozzle Temperature	410 to 460	°F	210 to 238	°C
Processing (Melt) Temp	420 to 450	°F	216 to 232	°C
Mold Temperature	50 to 125	°F	10 to 52	°C
Injection Rate	Fast		Fast	
Back Pressure	50.0 to 100	psi	0.345 to 0.689	MPa
Screw Speed	100 to 200	rpm	100 to 200	rpm
Clamp Tonnage	3.0 to 5.0	tons/in^2	41 to 69	MPa
Cushion	0.125 to 0.250	in	3.18 to 6.35	mm
Screw L/D Ratio	16.0:1.0 to 20.0:1.0		16.0:1.0 to 20.0:1.0	
Screw Compression Ratio	2.0:1.0 to 2.5:1.0		2.0:1.0 to 2.5:1.0	
Vent Depth	1.0E-3	in	0.025	mm

Injection Notes

Santoprene TPV is incompatible with acetal and PVC. For more information regarding processing and mold design, please consult our Injection Molding Guide.

Extrusion	Typical Value (English)		Typical Value (SI)	
Drying Temperature	180	°F	82	°C
Drying Time	3.0	hr	3.0	hr
Melt Temperature	410	°F	210	°C
Die Temperature	420	°F	216	°C
Back Pressure	725 to 2900	psi	5.00 to 20.0	MPa

Extrusion Notes

Santoprene TPV is incompatible with acetal and PVC. For more information regarding processing and die design, please consult our Extrusion Guide.

Aging	Typical Value (English)		Typical Value (SI)		Test Based On
Change in Tensile Strength in Air					ASTM D573
302°F (150°C), 168 hr	-11	%	-11	%	
Change in Tensile Strength in Air					ISO 188
302°F (150°C), 168 hr	-11	%	-11	%	
Change in Ultimate Elongation in Air					ASTM D573
302°F (150°C), 168 hr	-15	%	-15	%	
Change in Tensile Strain at Break in Air					ISO 188
302°F (150°C), 168 hr	-15	%	-15	%	
Change in Durometer Hardness in Air					ASTM D573
Shore D, 302°F (150°C), 168 hr	4.0		4.0		
Change in Shore Hardness in Air					ISO 188
Shore D, 302°F (150°C), 168 hr	4.0		4.0		

Flammability	Typical Value (English)		Typical Value (SI)		Test Based On
Flame Rating					UL 94
0.04 in (1.0 mm)	HB		HB		
0.06 in (1.5 mm)	HB		HB		
0.12 in (3.0 mm)	HB		HB		

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Additional Information

Where applicable, test results based on fan gated, injection molded plaques.

Tensile strength, elongation and tensile stress are measured across the flow direction - ISO type 1, ASTM die C.

Compression set at 25% deflection.

All products purchased directly from an ExxonMobil affiliate in Europe are REACH compliant. For products not imported into Europe by ExxonMobil, customers should assess their legal responsibilities under REACH.

Legal Statement

This product, including the product name, shall not be used or tested in any medical application without the prior written acknowledgement of ExxonMobil Chemical as to the intended use. For detailed Product Stewardship information, please contact Customer Service.

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Processing Statement

Desiccant drying for 3 hours at 80°C (180°F) is recommended. Santoprene TPV has a wide temperature processing window from 175 to 230°C (350 to 450°F) and is incompatible with acetal and PVC. For more information, please consult our Safety Data Sheet, Injection Molding Guide and Extrusion Guide.

Notes

Typical properties: these are not to be construed as specifications.

[1] Product may not be available in one or more countries in the identified Availability regions. Please contact your Sales Representative for complete Country Availability.

For additional technical, sales and order assistance: www.exxonmobilchemical.com/ContactUs

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