

# Santoprene™ 103-50

## Thermoplastic Vulcanizate

Product Description	Key Features
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 completely recyclable.	<ul style="list-style-type: none"> <li>UL listed: file #QMFZ2.E80017, Plastics - Component; file #QMFZ8.E80017, Plastics Certified For Canada - Component.</li> <li>Excellent ozone resistance.</li> <li>EU and China RoHS compliant.</li> </ul>

General			
Availability <sup>1</sup>	<ul style="list-style-type: none"> <li>Africa &amp; Middle East</li> <li>Asia Pacific</li> </ul>	<ul style="list-style-type: none"> <li>Europe</li> <li>Latin America</li> </ul>	<ul style="list-style-type: none"> <li>North America</li> <li>South America</li> </ul>
Applications	<ul style="list-style-type: none"> <li>Automotive - Air Induction System Ducts</li> </ul>	<ul style="list-style-type: none"> <li>Automotive - Plugs, Bumpers, Grommets, Clips</li> </ul>	
Uses	<ul style="list-style-type: none"> <li>Appliance Components</li> <li>Automotive Applications</li> <li>Automotive Under the Hood</li> </ul>	<ul style="list-style-type: none"> <li>Consumer Applications</li> <li>Diaphragms</li> <li>Electrical Parts</li> </ul>	<ul style="list-style-type: none"> <li>Living Hinges</li> <li>Tubing</li> </ul>
Agency Ratings	<ul style="list-style-type: none"> <li>EU Annex XVII of Regulation (EC) No 1907/2006</li> </ul>	<ul style="list-style-type: none"> <li>UL QMFZ2</li> </ul>	<ul style="list-style-type: none"> <li>UL QMFZ8</li> </ul>
RoHS Compliance	<ul style="list-style-type: none"> <li>RoHS Compliant</li> </ul>		
Automotive Specifications	<ul style="list-style-type: none"> <li>CHRYSLER MS-AR100 GGN</li> </ul>	<ul style="list-style-type: none"> <li>GM GMP.E/P.007</li> </ul>	
UL File Number	<ul style="list-style-type: none"> <li>E80017</li> </ul>		
Color	<ul style="list-style-type: none"> <li>Black</li> </ul>		
Form(s)	<ul style="list-style-type: none"> <li>Pellets</li> </ul>		
Processing Method	<ul style="list-style-type: none"> <li>Blow Molding</li> <li>Coextrusion</li> <li>Extrusion</li> <li>Extrusion Blow Molding</li> </ul>	<ul style="list-style-type: none"> <li>Injection Blow Molding</li> <li>Injection Molding</li> <li>Multi Injection Molding</li> <li>Profile Extrusion</li> </ul>	<ul style="list-style-type: none"> <li>Sheet Extrusion</li> <li>Thermoforming</li> <li>Vacuum Forming</li> </ul>
Revision Date	<ul style="list-style-type: none"> <li>11/16/2011</li> </ul>		

Physical	Typical Value (English)	Typical Value (SI)	Test Based On
Specific Gravity	0.950	0.950	ASTM D792
Density	0.950 g/cm <sup>3</sup>	0.950 g/cm <sup>3</sup>	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), 0.0787 in (2.00 mm)	51	51	

Mechanical	Typical Value (English)	Typical Value (SI)	Test Based On
Tensile Strength at Yield - Across Flow (73°F (23°C))	1740 psi	12.0 MPa	ASTM D638
Tensile Stress at Yield - Across Flow (73°F (23°C))	1740 psi	12.0 MPa	ISO 527-2

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

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<b>Mechanical</b>	<b>Typical Value (English)</b>	<b>Typical Value (SI)</b>	<b>Test Based On</b>
Elongation at Yield - Across Flow (73°F (23°C))	31 %	31 %	ASTM D638
Tensile Strain at Yield - Across Flow (73°F (23°C))	31 %	31 %	ISO 527-2
<b>Elastomers</b>			
Tear Strength - Across Flow (73°F (23°C), Die C)	497 lbf/in	87.0 kN/m	ASTM D624
Tear Strength - Across Flow (73°F (23°C), Method Bb, Angle (Nicked))	500 lbf/in	87 kN/m	ISO 34-1
Compression Set (158°F (70°C), 22.0 hr, Type 1)	59 %	59 %	ASTM D395B
Compression Set (257°F (125°C), 70.0 hr, Type 1)	74 %	74 %	
Compression Set (158°F (70°C), 22.0 hr, Type A)	59 %	59 %	ISO 815
Compression Set (257°F (125°C), 70.0 hr, Type A)	74 %	74 %	
<b>Thermal</b>			
Brittleness Temperature	-18 °F	-28 °C	ASTM D746
Brittleness Temperature	-18 °F	-28 °C	ISO 812
RTI Elec	185 °F	85.0 °C	UL 746
RTI Str	185 °F	85.0 °C	UL 746
<b>Electrical</b>			
Dielectric Strength (73°F (23°C), 0.0800 in (2.03 mm))	780 V/mil	31 kV/mm	ASTM D149
Dielectric Constant (73°F (23°C), 0.0780 in (1.98 mm))	2.40	2.40	ASTM D150
Dielectric Constant (73°F (23°C), 0.0780 in (1.98 mm))	2.40	2.40	IEC 60250
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)	PLC 3	PLC 3	UL 746
<b>Injection</b>			
Drying Temperature	180 °F	82.2 °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 465 °F	210 to 241 °C	
Processing (Melt) Temp	420 to 450 °F	216 to 232 °C	
Mold Temperature	50.0 to 125 °F	10.0 to 51.7 °C	
Injection Rate	Fast	Fast	

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Injection	Typical Value (English)	Typical Value (SI)
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 <sup>2</sup>	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	0.0010 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	82.2 °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 mold design, please consult our Extrusion Guide.

Aging	Typical Value (English)	Typical Value (SI)	Test Based On
Change in Tensile Strength in Air 302°F (150°C), 168 hr	-32 %	-32 %	ASTM D573
Change in Tensile Strength in Air 302°F (150°C), 168 hr	-32 %	-32 %	ISO 188
Change in Ultimate Elongation in Air 302°F (150°C), 168 hr	-27 %	-27 %	ASTM D573
Change in Tensile Strain at Break in Air 302°F (150°C), 168 hr	-27 %	-27 %	ISO 188
Change in Durometer Hardness in Air Shore D, 302°F (150°C), 168 hr	5.0	5.0	ASTM D573
Change in Shore Hardness in Air Shore D, 302°F (150°C), 168 hr	5.0	5.0	ISO 188

Flammability	Typical Value (English)	Typical Value (SI)	Test Based On
Flame Rating			UL 94
0.0394 in (1.00 mm)	HB	HB	
0.0591 in (1.50 mm)	HB	HB	
0.118 in (3.00 mm)	HB	HB	

**Additional Information**

Values are for injection molded plaques, fan-gated, 102.0 mm x 152.0 mm x 2.0 mm (4.000" x 6.000" x 0.080").  
Tensile strength, elongation and tensile stress are measured across the flow direction - ISO type 1, ASTM die C.  
Compression set at 25% deflection.

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## Legal Statement

For detailed Product Stewardship information, please contact Customer Service.

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.

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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 Material Safety Data Sheet, Injection Molding Guide and Extrusion Guide.

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## Notes

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

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