

# Santoprene™ 203-50

## Thermoplastic Vulcanizate

Product Description	Key Features
A hard, colorable, 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 Directive 2002/95/EC (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>General Purpose</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 2003/11/EC</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> <li>FORD WSK-M4D712-A1</li> </ul>	<ul style="list-style-type: none"> <li>GM GMP.E/P.007</li> <li>TRW TMS-P-10,410</li> </ul>	
Color	<ul style="list-style-type: none"> <li>Natural Color</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>03/22/2006</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

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
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

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

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**ExxonMobil Chemical Santoprene™ 203-50  
Thermoplastic Vulcanizate**

<b>Elastomers</b>	<b>Typical Value (English)</b>	<b>Typical Value (SI)</b>	<b>Test Based On</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			ASTM D395B
158°F (70°C), 22.0 hr, Type 1	59 %	59 %	
257°F (125°C), 70.0 hr, Type 1	74 %	74 %	
Compression Set			ISO 815
158°F (70°C), 22.0 hr, Type A	59 %	59 %	
257°F (125°C), 70.0 hr, Type A	74 %	74 %	

<b>Thermal</b>	<b>Typical Value (English)</b>	<b>Typical Value (SI)</b>	<b>Test Based On</b>
Brittleness Temperature	-18 °F	-28 °C	ASTM D746
Brittleness Temperature	-18 °F	-28 °C	ISO 812

<b>Electrical</b>	<b>Typical Value (English)</b>	<b>Typical Value (SI)</b>	<b>Test Based On</b>
Dielectric Strength (0.0800 in (2.03 mm))	910 V/mil	36 kV/mm	ASTM D149
Dielectric Constant			ASTM D150
73°F (23°C), 0.0780 in (1.98 mm)	2.30	2.30	
Dielectric Constant			IEC 60250
73°F (23°C), 0.0780 in (1.98 mm)	2.30	2.30	

<b>Injection</b>	<b>Typical Value (English)</b>	<b>Typical Value (SI)</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 Re grind	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
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.

<b>Extrusion</b>	<b>Typical Value (English)</b>	<b>Typical Value (SI)</b>
Drying Temperature	180 °F	82.2 °C

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Extrusion	Typical Value (English)	Typical Value (SI)
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

### 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.

### 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.

### 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, Extrusion Guide and Blow Molding Guide.

### 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.

For additional technical, sales and order assistance:

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