

# Santoprene™ 111-45

## Thermoplastic Vulcanizate

Product Description	Key Features
A soft, 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 injection molding applications. This grade of Santoprene TPV is shear-dependent and can be processed on conventional thermoplastics equipment for injection molding. It is polyolefin based and completely recyclable.	<ul style="list-style-type: none"> <li>Recommended for applications requiring excellent flex fatigue resistance.</li> <li>Excellent ozone resistance.</li> <li>UL listed: file #QMFZ2.E80017, Plastics - Component; file #QMFZ8.E80017, Plastics Certified For Canada - Component.</li> <li>Used in sealing applications.</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 Filter Gaskets</li> <li>Automotive - HVAC Flapper Door Seals</li> <li>Automotive - Motor Brush Holders</li> <li>Automotive - Plugs, Bumpers, Grommets, Clips</li> </ul>	<ul style="list-style-type: none"> <li>Automotive - Seals and Gaskets</li> <li>Consumer - Electronics</li> <li>Consumer - Floor Care</li> <li>General Purpose</li> </ul>	<ul style="list-style-type: none"> <li>Home &amp; Garden</li> <li>Industrial - Seals and Gaskets</li> <li>Printers</li> </ul>
Uses	<ul style="list-style-type: none"> <li>Automotive Applications</li> <li>Cell Phones</li> <li>Consumer Applications</li> </ul>	<ul style="list-style-type: none"> <li>Gaskets</li> <li>Industrial Applications</li> <li>Printer Parts</li> </ul>	<ul style="list-style-type: none"> <li>Seals</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 BMN</li> </ul>	<ul style="list-style-type: none"> <li>FORD WSD-M2D378-A4</li> </ul>	<ul style="list-style-type: none"> <li>GM GMP.E/P.137</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>Injection Molding</li> </ul>	<ul style="list-style-type: none"> <li>Multi Injection Molding</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	0.960	0.960	ASTM D792
Density	0.960 g/cm <sup>3</sup>	0.960 g/cm <sup>3</sup>	ISO 1183

Hardness	Typical Value (English)	Typical Value (SI)	Test Based On
Shore Hardness			ISO 868
Shore A, 15 sec, 73°F (23°C), 0.0787 in (2.00 mm)	49	49	

Elastomers	Typical Value (English)	Typical Value (SI)	Test Based On
Tensile Stress at 100% - Across Flow (73°F (23°C))	203 psi	1.40 MPa	ASTM D412
Tensile Stress at 100% - Across Flow (73°F (23°C))	203 psi	1.40 MPa	ISO 37

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

©2012 ExxonMobil. ExxonMobil, the ExxonMobil logo, the interlocking "X" device and other product or service names used herein are trademarks of ExxonMobil, unless indicated otherwise. This document may not be distributed, displayed, copied or altered without ExxonMobil's prior written authorization. To the extent ExxonMobil authorizes distributing, displaying and/or copying of this document, the user may do so only if the document is unaltered and complete, including all of its headers, footers, disclaimers and other information. You may not copy this document to or reproduce it in whole or in part on a website. ExxonMobil does not guarantee the typical (or other) values. Any data included herein is based upon analysis of representative samples and not the actual product shipped. The information in this document relates only to the named product or materials when not in combination with any other product or materials. We based the information on data believed to be reliable on the date compiled, but we do not represent, warrant, or otherwise guarantee, expressly or impliedly, the merchantability, fitness for a particular purpose, freedom from patent infringement, suitability, accuracy, reliability, or completeness of this information or the products, materials or processes described. The user is solely responsible for all determinations regarding any use of material or product and any process in its territories of interest. We expressly disclaim liability for any loss, damage or injury directly or indirectly suffered or incurred as a result of or related to anyone using or relying on any of the information in this document. This document is not an endorsement of any non-ExxonMobil product or process, and we expressly disclaim any contrary implication. The terms "we," "our," "ExxonMobil Chemical" and "ExxonMobil" are each used for convenience, and may include any one or more of ExxonMobil Chemical Company, Exxon Mobil Corporation, or any affiliate either directly or indirectly stewarded.

**ExxonMobil Chemical Santoprene™ 111-45  
Thermoplastic Vulcanizate**

<b>Elastomers</b>	<b>Typical Value (English)</b>	<b>Typical Value (SI)</b>	<b>Test Based On</b>
Tensile Strength at Break - Across Flow (73°F (23°C))	508 psi	3.50 MPa	ASTM D412
Tensile Stress at Break - Across Flow (73°F (23°C))	508 psi	3.50 MPa	ISO 37
Elongation at Break - Across Flow (73°F (23°C))	340 %	340 %	ASTM D412
Tensile Strain at Break - Across Flow (73°F (23°C))	340 %	340 %	ISO 37
Tear Strength - Across Flow (73°F (23°C), Die C)	62.8 lbf/in	11.0 kN/m	ASTM D624
Tear Strength - Across Flow 73°F (23°C), Method Bb, Angle (Nicked)	63 lbf/in	11 kN/m	ISO 34-1
Compression Set 73°F (23°C), 22.0 hr, Type 1	11 %	11 %	ASTM D395B
257°F (125°C), 70.0 hr, Type 1	35 %	35 %	
Compression Set 73°F (23°C), 22.0 hr, Type A	11 %	11 %	ISO 815
257°F (125°C), 70.0 hr, Type A	35 %	35 %	
<b>Thermal</b>	<b>Typical Value (English)</b>	<b>Typical Value (SI)</b>	<b>Test Based On</b>
Brittleness Temperature	-80 °F	-62 °C	ASTM D746
Brittleness Temperature	-80 °F	-62 °C	ISO 812
<b>Electrical</b>	<b>Typical Value (English)</b>	<b>Typical Value (SI)</b>	<b>Test Based On</b>
Dielectric Strength 73°F (23°C), 0.0800 in (2.03 mm)	690 V/mil	27 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
<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 Regrind	20 %	20 %	
Rear Temperature	350 to 380 °F	177 to 193 °C	
Middle Temperature	355 to 390 °F	179 to 199 °C	
Front Temperature	355 to 400 °F	179 to 204 °C	
Nozzle Temperature	375 to 445 °F	191 to 229 °C	
Processing (Melt) Temp	380 to 465 °F	193 to 241 °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	

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

©2012 ExxonMobil. ExxonMobil, the ExxonMobil logo, the interlocking "X" device and other product or service names used herein are trademarks of ExxonMobil, unless indicated otherwise. This document may not be distributed, displayed, copied or altered without ExxonMobil's prior written authorization. To the extent ExxonMobil authorizes distributing, displaying and/or copying of this document, the user may do so only if the document is unaltered and complete, including all of its headers, footers, disclaimers and other information. You may not copy this document to or reproduce it in whole or in part on a website. ExxonMobil does not guarantee the typical (or other) values. Any data included herein is based upon analysis of representative samples and not the actual product shipped. The information in this document relates only to the named product or materials when not in combination with any other product or materials. We based the information on data believed to be reliable on the date compiled, but we do not represent, warrant, or otherwise guarantee, expressly or impliedly, the merchantability, fitness for a particular purpose, freedom from patent infringement, suitability, accuracy, reliability, or completeness of this information or the products, materials or processes described. The user is solely responsible for all determinations regarding any use of material or product and any process in its territories of interest. We expressly disclaim liability for any loss, damage or injury directly or indirectly suffered or incurred as a result of or related to anyone using or relying on any of the information in this document. This document is not an endorsement of any non-ExxonMobil product or process, and we expressly disclaim any contrary implication. The terms "we," "our," "ExxonMobil Chemical" and "ExxonMobil" are each used for convenience, and may include any one or more of ExxonMobil Chemical Company, Exxon Mobil Corporation, or any affiliate either directly or indirectly stewarded.

**ExxonMobil Chemical Santoprene™ 111-45  
Thermoplastic Vulcanizate**

Injection	Typical Value (English)	Typical Value (SI)
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. An SPI/SPE #3 finish is recommended (do not polish). For more information regarding processing and mold design, please consult our Injection Molding Guide.

Aging	Typical Value (English)	Typical Value (SI)	Test Based On
Change in Tensile Strength in Air 302°F (150°C), 168 hr	-23 %	-23 %	ASTM D573
Change in Tensile Strength in Air 302°F (150°C), 168 hr	-23 %	-23 %	ISO 188
Change in Ultimate Elongation in Air 302°F (150°C), 168 hr	26 %	26 %	ASTM D573
Change in Tensile Strain at Break in Air 302°F (150°C), 168 hr	26 %	26 %	ISO 188
Change in Durometer Hardness in Air Shore A, 302°F (150°C), 168 hr	1.0	1.0	ASTM D573
Change in Shore Hardness in Air Shore A, 302°F (150°C), 168 hr	1.0	1.0	ISO 188

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

**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 and Injection 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:

Worldwide and the Americas	Asia Pacific	Europe, Middle East and Africa
ExxonMobil Chemical Company 13501 Katy Freeway Houston, TX 77079-1398 USA 1-281-870-6050	ExxonMobil Chemical Asia Pacific 1 HarbourFront Place #06-00 HarbourFront Tower One Singapore 098633 +86-21-24173999	ExxonMobil Chemical Europe Hermeslaan 2 1831 Machelen, Belgium 420-239-016-274

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

©2012 ExxonMobil. ExxonMobil, the ExxonMobil logo, the interlocking "X" device and other product or service names used herein are trademarks of ExxonMobil, unless indicated otherwise. This document may not be distributed, displayed, copied or altered without ExxonMobil's prior written authorization. To the extent ExxonMobil authorizes distributing, displaying and/or copying of this document, the user may do so only if the document is unaltered and complete, including all of its headers, footers, disclaimers and other information. You may not copy this document to or reproduce it in whole or in part on a website. ExxonMobil does not guarantee the typical (or other) values. Any data included herein is based upon analysis of representative samples and not the actual product shipped. The information in this document relates only to the named product or materials when not in combination with any other product or materials. We based the information on data believed to be reliable on the date compiled, but we do not represent, warrant, or otherwise guarantee, expressly or impliedly, the merchantability, fitness for a particular purpose, freedom from patent infringement, suitability, accuracy, reliability, or completeness of this information or the products, materials or processes described. The user is solely responsible for all determinations regarding any use of material or product and any process in its territories of interest. We expressly disclaim liability for any loss, damage or injury directly or indirectly suffered or incurred as a result of or related to anyone using or relying on any of the information in this document. This document is not an endorsement of any non-ExxonMobil product or process, and we expressly disclaim any contrary implication. The terms "we," "our," "ExxonMobil Chemical" and "ExxonMobil" are each used for convenience, and may include any one or more of ExxonMobil Chemical Company, Exxon Mobil Corporation, or any affiliate either directly or indirectly stewarded.