

# Santoprene™ 121-80

## Thermoplastic Vulcanizate

### Product Description

A soft, black, UV resistant 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.
- Recommended for applications requiring excellent flex fatigue resistance.
- Excellent ozone resistance.
- Designed for improved UV resistance.

### 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> </ul>
Applications	<ul style="list-style-type: none"> <li>• Automotive - Seals and Gaskets</li> </ul>		
Uses	<ul style="list-style-type: none"> <li>• Automotive Applications</li> </ul>	<ul style="list-style-type: none"> <li>• Outdoor Applications</li> </ul>	
Agency Ratings	<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-AR-100 DGV</li> </ul>	<ul style="list-style-type: none"> <li>• FORD WSS-M2D381-B1</li> </ul>	<ul style="list-style-type: none"> <li>• GM GMW15812, Type 7E</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>• 06/20/2014</li> </ul>		

Physical	Typical Value (English)	Typical Value (SI)	Test Based On
Density / Specific Gravity	0.970	0.970	ASTM D792
Density	0.970 g/cm <sup>3</sup>	0.970 g/cm <sup>3</sup>	ISO 1183
Outdoor Suitability	f1	f1	UL 746C
Detergent Resistance	f3	f3	UL 749
Detergent Resistance	f4	f4	UL 2157

Hardness	Typical Value (English)	Typical Value (SI)	Test Based On
Shore Hardness Shore A, 15 sec, 73°F (23°C)	85	85	ISO 868

Santoprene™ 121-80  
Thermoplastic Vulcanizate

Elastomers	Typical Value (English)	Typical Value (SI)	Test Based On
Tensile Stress at 100% - Across Flow (73°F (23°C))	667 psi	4.60 MPa	ASTM D412
Tensile Stress at 100% - Across Flow (73°F (23°C))	667 psi	4.60 MPa	ISO 37
Tensile Strength at Break - Across Flow (73°F (23°C))	1600 psi	11.0 MPa	ASTM D412
Tensile Stress at Break - Across Flow (73°F (23°C))	1600 psi	11.0 MPa	ISO 37
Elongation at Break - Across Flow (73°F (23°C))	560 %	560 %	ASTM D412
Tensile Strain at Break - Across Flow (73°F (23°C))	560 %	560 %	ISO 37
Compression Set			ASTM D395B
73°F (23°C), 22 hr, Type 1	25 %	25 %	
257°F (125°C), 70 hr, Type 1	52 %	52 %	
Compression Set			ISO 815
73°F (23°C), 22 hr, Type A	25 %	25 %	
257°F (125°C), 70 hr, Type A	52 %	52 %	
Thermal	Typical Value (English)	Typical Value (SI)	Test Based On
Brittleness Temperature	-74 °F	-59 °C	ASTM D746
Brittleness Temperature	-74 °F	-59 °C	ISO 812
RTI Elec	194 °F	90.0 °C	UL 746
RTI Str			UL 746
0.04 in (1.0 mm)	194 °F	90.0 °C	
0.06 in (1.5 mm)	194 °F	90.0 °C	
0.12 in (3.0 mm)	203 °F	95.0 °C	
Electrical	Typical Value (English)	Typical Value (SI)	Test Based On
Dielectric Strength			ASTM D149
73°F (23°C), 0.0787 in (2.00 mm)	710 V/mil	28 kV/mm	
Dielectric Constant			ASTM D150
73°F (23°C), 0.0772 in (1.96 mm)	2.60	2.60	
Dielectric Constant			IEC 60250
73°F (23°C), 0.0772 in (1.96 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 6	PLC 6	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	

Santoprene™ 121-80  
Thermoplastic Vulcanizate

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	350 °F	177 °C
Middle Temperature	360 °F	182 °C
Front Temperature	370 °F	188 °C
Nozzle Temperature	380 to 450 °F	193 to 232 °C
Processing (Melt) Temp	390 to 450 °F	199 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 <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	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	395 °F	202 °C
Die Temperature	400 °F	204 °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 Molding Guide.

Aging	Typical Value (English)	Typical Value (SI)	Test Based On
Change in Tensile Strength in Air 275°F (135°C), 1008 hr	-3.0 %	-3.0 %	ASTM D573
Change in Tensile Strength in Air 275°F (135°C), 1008 hr	-3.0 %	-3.0 %	ISO 188
Change in Ultimate Elongation in Air 275°F (135°C), 1008 hr	-10 %	-10 %	ASTM D573
Change in Tensile Strain at Break in Air 275°F (135°C), 1008 hr	-10 %	-10 %	ISO 188
Change in Durometer Hardness in Air Shore A, 275°F (135°C), 1008 hr	7.0	7.0	ASTM D573
Change in Shore Hardness in Air Shore A, 275°F (135°C), 1008 hr	7.0	7.0	ISO 188
Continuous Upper Temperature Resistance 1008 hr	275 °F	135 °C	SAE J2236

## Santoprene™ 121-80

### Thermoplastic Vulcanizate

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	

#### 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.

For detailed Product Stewardship information, please contact Customer Service.

#### 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.

<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: [www.exxonmobilchemical.com/ContactUs](http://www.exxonmobilchemical.com/ContactUs)

©2018 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.