

# Santoprene™ 111-55

## 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. | <p>***This grade is being discontinued. Please contact your Sales Representative for suggested alternate products.***</p> <ul style="list-style-type: none"> <li>• Recommended for applications requiring excellent flex fatigue resistance.</li> <li>• Excellent ozone resistance.</li> <li>• Designed for applications requiring high-flow materials.</li> <li>• Recommended for applications requiring superior part surface appearance.</li> <li>• UL listed: file #QMFZ2.E80017, Plastics - Component; file #QMFZ8.E80017, Plastics Certified For Canada - Component.</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>• Automotive - Boots and Bellows for Steering and Suspension</li> <li>• Automotive - Seals and Gaskets</li> <li>• Consumer - Electronics</li> <li>• Industrial - Seals and Gaskets</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 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 CMN • FORD WSD-M2D378-A4 • VALEO VMS-8734</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>• 07/02/2009</li> </ul>   |   |  |

| Physical         | Typical Value (English) | Typical Value (SI)      | Test Based On |
|------------------|-------------------------|-------------------------|---------------|
| 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      |

| 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) | 59                      | 59                 |               |

| Elastomers  | Typical Value (English) | Typical Value (SI) | Test Based On |
|---|-------------------------|--------------------|---------------|
| Tensile Stress at 100% - Across Flow (73°F (23°C))    | 276 psi                 | 1.90 MPa           | ASTM D412     |
| Tensile Stress at 100% - Across Flow (73°F (23°C))    | 276 psi                 | 1.90 MPa           | ISO 37        |
| Tensile Strength at Break - Across Flow (73°F (23°C)) | 667 psi                 | 4.60 MPa           | ASTM D412     |
| Tensile Stress at Break - Across Flow (73°F (23°C))   | 667 psi                 | 4.60 MPa           | ISO 37        |

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

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**ExxonMobil Chemical Santoprene™ 111-55  
Thermoplastic Vulcanizate**

| <b>Elastomers</b>   | <b>Typical Value (English)</b>  | <b>Typical Value (SI)</b> | <b>Test Based On</b> |
|---|---------------------------------|---------------------------|----------------------|
| Elongation at Break - Across Flow (73°F (23°C))   | 400 %                           | 400 %                     | ASTM D412            |
| Tensile Strain at Break - Across Flow (73°F (23°C))   | 400 %                           | 400 %                     | ISO 37               |
| Compression Set   |                                 |                           | ASTM D395B           |
| 73°F (23°C), 22.0 hr, Type 1  | 12 %                            | 12 %                      |                      |
| 257°F (125°C), 70.0 hr, Type 1  | 34 %                            | 34 %                      |                      |
| Compression Set   |                                 |                           | ISO 815              |
| 73°F (23°C), 22.0 hr, Type A  | 12 %                            | 12 %                      |                      |
| 257°F (125°C), 70.0 hr, Type A  | 34 %                            | 34 %                      |                      |
| <b>Thermal</b>  | <b>Typical Value (English)</b>  | <b>Typical Value (SI)</b> | <b>Test Based On</b> |
| Brittleness Temperature   | -76 °F                          | -60 °C                    | ASTM D746            |
| Brittleness Temperature   | -76 °F                          | -60 °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))   | 780 V/mil                       | 31 kV/mm                  | ASTM D149            |
| 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                      |                      |
| <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  | 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<br>20.0:1.0         | 16.0:1.0 to<br>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                  |                      |
| <b>Injection Notes</b>  |                                 |                           |                      |
| 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. |                                 |                           |                      |

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| Aging   | Typical Value (English) | Typical Value (SI) | Test Based On |
|---|-------------------------|--------------------|---------------|
| Change in Tensile Strength in Air<br>302°F (150°C), 168 hr            | -12 %                   | -12 %              | ASTM D573     |
| Change in Tensile Strength in Air<br>302°F (150°C), 168 hr            | -12 %                   | -12 %              | ISO 188       |
| Change in Ultimate Elongation in Air<br>302°F (150°C), 168 hr         | 16 %                    | 16 %               | ASTM D573     |
| Change in Tensile Strain at Break in Air<br>302°F (150°C), 168 hr     | 16 %                    | 16 %               | ISO 188       |
| Change in Durometer Hardness in Air<br>Shore A, 302°F (150°C), 168 hr | 3.0                     | 3.0                | ASTM D573     |
| Change in Shore Hardness in Air<br>Shore A, 302°F (150°C), 168 hr     | 3.0                     | 3.0                | ISO 188       |
| Continuous Upper Temperature Resistance                               | 275 °F                  | 135 °C             | SAE J2236     |

### 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:

EXXONMOBIL CHEMICAL COMPANY  
388 S. Main Street  
Akron, OH 44311-1065

#### AnswerPerson(SM)

|   |                       |
|---|-----------------------|
| U.S.:                                     | 800.305.8070 option 2 |
| North America:                            | 330.849.5272          |
| Europe:                                   | 32.2.706.3511         |
| Japan:                                    | 81-44-288-9920        |
| PRC/Taiwan/Malaysia/New Zealand:          | 00 800 3996 6662      |
| Hong Kong/S. Korea-KT/Singapore/Thailand: | 001 800 3996 6662     |
| S. Korea-Dacom:                           | 002 800 3996 6662     |
| Australia:                                | 0011 800 3996 6662    |
| India:                                    | 000 8008521286        |
| Indonesia:                                | 001 8038527887        |

[www.santoprene.com/answer](http://www.santoprene.com/answer)

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