

# Santoprene™ 103-40

## Thermoplastic Vulcanizate

### ExxonMobil Chemical



# Prospector

#### Product Description

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.

#### General

Material Status	• Commercial: Active		
Availability	• Africa & Middle East • Asia Pacific	• Europe • Latin America	• North America • South America
Features	• Electrically Insulating • Fatigue Resistant • Good Chemical Resistance	• Good Dimensional Stability • Good Electrical Properties • Good Tear Strength	• Ozone Resistant • Recyclable Material
Uses	• Appliance Components • Automotive Applications • Automotive Under the Hood	• Consumer Applications • Diaphragms • Electrical Parts	• Living Hinges • Tubing
Agency Ratings	• EU 2003/11/EC	• UL QMFZ2	• UL QMFZ8
RoHS Compliance	• RoHS Compliant		
Appearance	• Black		
Forms	• Pellets		
Processing Method	• Blow Molding • Coextrusion • Extrusion • Extrusion Blow Molding	• Injection Blow Molding • Injection Molding • Multi Injection Molding • Profile Extrusion	• Sheet Extrusion • Thermoforming • Vacuum Forming

Physical	Nominal Value	Unit	Test Method
Specific Gravity			
--	0.948	g/cm <sup>3</sup>	ASTM D792
--	0.950	g/cm <sup>3</sup>	ISO 1183

Elastomers	Nominal Value	Unit	Test Method
Tensile Stress - Across Flow (100% Strain, 23°C)	9.00	MPa	ASTM D412 ISO 37
Tensile Strength - Across Flow (Break, 23°C)	20.7	MPa	ASTM D412 ISO 37
Tensile Elongation - Across Flow (Break, 23°C)	610	%	ASTM D412 ISO 37
Tear Strength - Across Flow			
23°C <sup>2</sup>	67.0	kN/m	ASTM D624
23°C <sup>3</sup>	67	kN/m	ISO 34-1
Compression Set			
70°C, 22.0 hr <sup>4</sup>	54	%	ASTM D395B
125°C, 70.0 hr <sup>4</sup>	61	%	ASTM D395B
70°C, 22.0 hr <sup>5</sup>	54	%	ISO 815
125°C, 70.0 hr <sup>5</sup>	61	%	ISO 815

Hardness	Nominal Value	Unit	Test Method
Shore Hardness			
Shore D, 15 sec, 23°C, 2.00 mm	41		ISO 868

Thermal	Nominal Value	Unit	Test Method
Brittleness Temperature	-52.0	°C	ASTM D746 ISO 812

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Aging	Nominal Value	Unit	Test Method
Change in Tensile Strength in Air			ASTM D573 ISO 188
150°C, 168 hr	-11	%	
Change in Ultimate Elongation in Air			ASTM D573 ISO 188
150°C, 168 hr	-15	%	
Change in Durometer Hardness in Air			ASTM D573 ISO 188
Shore D, 150°C, 168 hr	4.0		
Change in Tensile Strength			ASTM D471 ISO 1817
23°C, 168 hr, in Acetic Acid	0.0	%	
23°C, 168 hr, in Cyclohexane	-2.0	%	
23°C, 168 hr, in Detergent (Tide), 2.5%	0.0	%	
23°C, 168 hr, in Ethanol, 95%	-3.0	%	
23°C, 168 hr, in Hydrochloric Acid, 10%	6.0	%	
23°C, 168 hr, in Isopropyl Alcohol	5.0	%	
23°C, 168 hr, in Methyl ethyl ketone	3.0	%	
23°C, 168 hr, in Sodium Chloride, 15%	4.0	%	
23°C, 168 hr, in Sodium Hydroxide, 50%	4.0	%	
23°C, 168 hr, in Sulfuric Acid, 98%	-22	%	
23°C, 168 hr, in Trichloroethylene	8.0	%	
100°C, 168 hr, in Deionized Water	3.0	%	
100°C, 168 hr, in IRM 903 Oil	-26	%	
125°C, 70 hr, in IRM 903 Oil	-27	%	
125°C, 168 hr, in IRM 903 Oil	-30	%	
Change in Ultimate Elongation			ASTM D471 ISO 1817
23°C, 168 hr, in Acetic Acid	3.0	%	
23°C, 168 hr, in Cyclohexane	2.0	%	
23°C, 168 hr, in Detergent (Tide), 2.5%	0.0	%	
23°C, 168 hr, in Ethanol, 95%	-2.0	%	
23°C, 168 hr, in Hydrochloric Acid, 10%	5.0	%	
23°C, 168 hr, in Isopropyl Alcohol	5.0	%	
23°C, 168 hr, in Methyl ethyl ketone	2.0	%	
23°C, 168 hr, in Sodium Chloride, 15%	2.0	%	
23°C, 168 hr, in Sodium Hydroxide, 50%	3.0	%	
23°C, 168 hr, in Sulfuric Acid, 98%	-23	%	
23°C, 168 hr, in Trichloroethylene	2.0	%	
100°C, 168 hr, in Deionized Water	0.0	%	
100°C, 168 hr, in IRM 903 Oil	-28	%	
125°C, 70 hr, in IRM 903 Oil	-33	%	
125°C, 168 hr, in IRM 903 Oil	-39	%	

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Aging	Nominal Value	Unit	Test Method
Change in Durometer Hardness			ASTM D471 ISO 1817
Shore A, 23°C, 168 hr, in Acetic Acid	-1.0		
Shore A, 23°C, 168 hr, in Cyclohexane	-13		
Shore A, 23°C, 168 hr, in Detergent (Tide), 2.5%	0.0		
Shore A, 23°C, 168 hr, in Ethanol, 95%	0.0		
Shore A, 23°C, 168 hr, in Hydrochloric Acid, 10%	-1.0		
Shore A, 23°C, 168 hr, in Isopropyl Alcohol	2.0		
Shore A, 23°C, 168 hr, in Methyl ethyl ketone	0.0		
Shore A, 23°C, 168 hr, in Sodium Chloride, 15%	2.0		
Shore A, 23°C, 168 hr, in Sodium Hydroxide, 50%	1.0		
Shore A, 23°C, 168 hr, in Sulfuric Acid, 98%	2.0		
Shore A, 23°C, 168 hr, in Trichloroethylene	1.0		
Shore A, 100°C, 168 hr, in Deionized Water	0.0		
Shore A, 100°C, 168 hr, in IRM 903 Oil	-13		
Shore A, 125°C, 168 hr, in IRM 903 Oil	-15		
Change in Mass			ASTM D471
23°C, 168 hr, in Acetic Acid	1.2	%	
23°C, 168 hr, in Cyclohexane	-3.4	%	
23°C, 168 hr, in Detergent (Tide), 2.5%	0.40	%	
23°C, 168 hr, in Ethanol, 95%	-0.60	%	
23°C, 168 hr, in Hydrochloric Acid, 10%	0.10	%	
23°C, 168 hr, in Isopropyl Alcohol	-5.0	%	
23°C, 168 hr, in Methyl ethyl ketone	-12	%	
23°C, 168 hr, in Sodium Chloride, 15%	0.10	%	
23°C, 168 hr, in Sodium Hydroxide, 50%	0.0	%	
23°C, 168 hr, in Sulfuric Acid, 98%	1.1	%	
23°C, 168 hr, in Trichloroethylene	-1.0	%	
100°C, 168 hr, in Deionized Water	1.4	%	
100°C, 168 hr, in IRM 903 Oil	35	%	
125°C, 168 hr, in IRM 903 Oil	44	%	
Change in Mass			ISO 1817
23.0°C, 168 hr, in Methyl ethyl ketone	-12	%	
23.0°C, 168 hr, in Isopropyl Alcohol	-5.0	%	
23.0°C, 168 hr, in Cyclohexane	-3.4	%	
23.0°C, 168 hr, in Trichloroethylene	-1.0	%	
23.0°C, 168 hr, in Ethanol, 95%	-0.60	%	
23.0°C, 168 hr, in Sodium Hydroxide, 50%	0.0	%	
23.0°C, 168 hr, in Hydrochloric Acid, 10%	0.10	%	
23.0°C, 168 hr, in Sodium Chloride, 15%	0.10	%	
23.0°C, 168 hr, in Detergent (Tide), 2.5%	0.40	%	
23.0°C, 168 hr, in Sulfuric Acid, 98%	1.1	%	
23.0°C, 168 hr, in Acetic Acid	1.2	%	
100°C, 168 hr, in Deionized Water	1.4	%	
100°C, 168 hr, in IRM 903 Oil	35	%	
125°C, 168 hr, in IRM 903 Oil	44	%	
Change in Volume			ASTM D471 ISO 1817
125°C, 70 hr, in IRM 903 Oil	40	%	

Electrical	Nominal Value	Unit	Test Method
Dielectric Strength (2.03 mm)	34	kV/mm	ASTM D149
Dielectric Constant (23°C, 1.98 mm)	2.60		ASTM D150 IEC 60250

**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.

Injection	Nominal Value	Unit
Drying Temperature	82.2	°C
Drying Time	3.0	hr
Suggested Max Moisture	0.080	%
Suggested Max Regrind	20	%
Rear Temperature	193	°C
Middle Temperature	199	°C
Front Temperature	204	°C
Nozzle Temperature	210 to 238	°C
Processing (Melt) Temp	216 to 232	°C
Mold Temperature	10.0 to 51.7	°C
Injection Rate	Fast	
Back Pressure	0.345 to 0.689	MPa
Screw Speed	100 to 200	rpm
Clamp Tonnage	4.1 to 6.9	kN/cm <sup>2</sup>
Cushion	3.18 to 6.35	mm
Screw L/D Ratio	16.0:1.0 to 20.0:1.0	
Screw Compression Ratio	2.0:1.0 to 2.5:1.0	
Vent Depth	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	Nominal Value	Unit
Drying Temperature	82.2	°C
Drying Time	3.0	hr
Melt Temperature	210	°C
Die Temperature	216	°C
Back Pressure	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.

**Notes**

<sup>1</sup> Typical properties: these are not to be construed as specifications.

<sup>2</sup> Die C

<sup>3</sup> Method Bb, Angle (Nicked)

<sup>4</sup> Type 1

<sup>5</sup> Type A