

Santoprene™ 101-80

Thermoplastic Vulcanizate

Celanese Corporation

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Technical Data

Product Description

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 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.

General

Material Status	• Commercial: Active		
Search for UL Yellow Card	• Celanese Corporation • Santoprene™		
Availability	• Africa & Middle East • Asia Pacific	• Europe • Latin America	• North America
Features	• Chemical Resistant • Electrically Insulating • Fatigue Resistant	• Good Dimensional Stability • Good Electrical Properties • Good Tear Strength	• Heat Aging Resistant • Ozone Resistant • Recyclable Material
Uses	• Appliance Components • Automotive Applications • Automotive Under the Hood • Consumer Applications	• Diaphragms • Electrical Parts • Gaskets • Outdoor Applications	• Seals • Tubing
Agency Ratings	• UL QMFZ2	• UL QMFZ8	• UL QMTT2
RoHS Compliance	• RoHS Compliant		
Automotive Specifications	• CHRYSLER MS-AR-100 DGN	• FORD WSD-M2D381-A1	• GM GMW15813 Type 7
UL File Number	• E86313	• E80017	
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 (English)	Nominal Value (SI)	Test Method
Density / Specific Gravity			
--	0.960	0.958 g/cm ³	ASTM D792
--	0.960 g/cm ³	0.960 g/cm ³	ISO 1183
Outdoor Suitability	f1	f1	UL 746C
Detergent Resistance	f4	f4	UL 2157
Detergent Resistance	f3	f3	UL 749
Elastomers	Nominal Value (English)	Nominal Value (SI)	Test Method
Tensile Stress - Across Flow (100% Strain, 73°F (23°C))	669 psi	4.61 MPa	ASTM D412 ISO 37
Tensile Strength - Across Flow (Break, 73°F (23°C))	1510 psi	10.4 MPa	ASTM D412 ISO 37
Tensile Elongation - Across Flow (Break, 73°F (23°C))	530 %	530 %	ASTM D412 ISO 37
Tear Strength - Across Flow ² (73°F (23°C))	188 lbf/in	33.0 kN/m	ISO 34-1
Compression Set			
158°F (70°C), 22 hr ³	36 %	36 %	ASTM D395B
257°F (125°C), 70 hr ³	52 %	52 %	ASTM D395B
158°F (70°C), 22 hr ⁴	36 %	36 %	ISO 815
257°F (125°C), 70 hr ⁴	52 %	52 %	ISO 815
Hardness	Nominal Value (English)	Nominal Value (SI)	Test Method
Shore Hardness			ISO 868
Shore A, 15 sec, 73°F (23°C)	87	87	



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Thermal	Nominal Value (English)	Nominal Value (SI)	Test Method
Brittleness Temperature	-76.0 °F	-60.0 °C	ASTM D746 ISO 812
RTI Elec	194 °F	90.0 °C	UL 746B
RTI Str			UL 746B
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	
Aging	Nominal Value (English)	Nominal Value (SI)	Test Method
Change in Tensile Strength in Air 302°F (150°C), 168 hr	-5.8 %	-5.8 %	ASTM D573 ISO 188
Change in Ultimate Elongation in Air 302°F (150°C), 168 hr	-12 %	-12 %	ASTM D573 ISO 188
Change in Durometer Hardness in Air Shore A, 302°F (150°C), 168 hr	1.7	1.7	ASTM D573 ISO 188
Change in Tensile Strength			ASTM D471 ISO 1817
73°F (23°C), 168 hr, in Acetic Acid	7.0 %	7.0 %	
73°F (23°C), 168 hr, in Cyclohexane	19 %	19 %	
73°F (23°C), 168 hr, in Ethanol, 95%	-3.0 %	-3.0 %	
73°F (23°C), 168 hr, in Hydrochloric Acid, 10%	5.0 %	5.0 %	
73°F (23°C), 168 hr, in Isopropyl Alcohol	26 %	26 %	
73°F (23°C), 168 hr, in Methyleneethylketone	30 %	30 %	
73°F (23°C), 168 hr, in Sodium Chloride, 15%	3.0 %	3.0 %	
73°F (23°C), 168 hr, in Sodium Hydroxide, 50%	6.0 %	6.0 %	
73°F (23°C), 168 hr, in Sulfuric Acid, 98%	-16 %	-16 %	
73°F (23°C), 168 hr, in Trichloroethylene	30 %	30 %	
212°F (100°C), 168 hr, in Deionized Water	-1.0 %	-1.0 %	
212°F (100°C), 168 hr, in IRM 903 Oil	-25 %	-25 %	
257°F (125°C), 70 hr, in IRM 903 Oil	-25 %	-25 %	
257°F (125°C), 168 hr, in IRM 903 Oil	-30 %	-30 %	
Change in Ultimate Elongation			ASTM D471 ISO 1817
73°F (23°C), 168 hr, in Acetic Acid	4.0 %	4.0 %	
73°F (23°C), 168 hr, in Cyclohexane	12 %	12 %	
73°F (23°C), 168 hr, in Detergent (Tide), 2.5%	0.0 %	0.0 %	
73°F (23°C), 168 hr, in Ethanol, 95%	0.0 %	0.0 %	
73°F (23°C), 168 hr, in Hydrochloric Acid, 10%	4.0 %	4.0 %	
73°F (23°C), 168 hr, in Isopropyl Alcohol	14 %	14 %	
73°F (23°C), 168 hr, in Methyleneethylketone	16 %	16 %	
73°F (23°C), 168 hr, in Sodium Chloride, 15%	2.0 %	2.0 %	
73°F (23°C), 168 hr, in Sodium Hydroxide, 50%	4.0 %	4.0 %	
73°F (23°C), 168 hr, in Sulfuric Acid, 98%	-26 %	-26 %	
73°F (23°C), 168 hr, in Trichloroethylene	12 %	12 %	
212°F (100°C), 168 hr, in Deionized Water	-6.0 %	-6.0 %	
212°F (100°C), 168 hr, in IRM 903 Oil	-46 %	-46 %	
257°F (125°C), 70 hr, in IRM 903 Oil	-43 %	-43 %	
257°F (125°C), 168 hr, in IRM 903 Oil	-52 %	-52 %	



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Aging	Nominal Value (English)	Nominal Value (SI)	Test Method
Change in Durometer Hardness			ASTM D471 ISO 1817
Shore A, 73°F (23°C), 168 hr, in Acetic Acid	-1.0	-1.0	
Shore A, 73°F (23°C), 168 hr, in Cyclohexane	-13	-13	
Shore A, 73°F (23°C), 168 hr, in Detergent (Tide), 2.5%	1.0	1.0	
Shore A, 73°F (23°C), 168 hr, in Ethanol, 95%	-1.0	-1.0	
Shore A, 73°F (23°C), 168 hr, in Hydrochloric Acid, 10%	-1.0	-1.0	
Shore A, 73°F (23°C), 168 hr, in Isopropyl Alcohol	0.0	0.0	
Shore A, 73°F (23°C), 168 hr, in Methylenechloride	0.0	0.0	
Shore A, 73°F (23°C), 168 hr, in Sodium Chloride, 15%	0.0	0.0	
Shore A, 73°F (23°C), 168 hr, in Sodium Hydroxide, 50%	0.0	0.0	
Shore A, 73°F (23°C), 168 hr, in Sulfuric Acid, 98%	1.0	1.0	
Shore A, 73°F (23°C), 168 hr, in Trichloroethylene	-3.0	-3.0	
Shore A, 212°F (100°C), 168 hr, in Deionized Water	-2.0	-2.0	
Shore A, 212°F (100°C), 168 hr, in IRM 903 Oil	-17	-17	
Shore A, 257°F (125°C), 168 hr, in IRM 903 Oil	-20	-20	
Change in Mass			
73°F (23°C), 168 hr, in Acetic Acid	3.3 %	3.3 %	
73°F (23°C), 168 hr, in Cyclohexane	-3.4 %	-3.4 %	
73°F (23°C), 168 hr, in Detergent (Tide), 2.5%	0.40 %	0.40 %	
73°F (23°C), 168 hr, in Ethanol, 95%	-0.40 %	-0.40 %	
73°F (23°C), 168 hr, in Hydrochloric Acid, 10%	0.20 %	0.20 %	
73°F (23°C), 168 hr, in Isopropyl Alcohol	-11 %	-11 %	
73°F (23°C), 168 hr, in Methylenechloride	-19 %	-19 %	
73°F (23°C), 168 hr, in Sodium Chloride, 15%	0.20 %	0.20 %	
73°F (23°C), 168 hr, in Sodium Hydroxide, 50%	-0.10 %	-0.10 %	
73°F (23°C), 168 hr, in Sulfuric Acid, 98%	2.3 %	2.3 %	
73°F (23°C), 168 hr, in Trichloroethylene	-6.0 %	-6.0 %	
212°F (100°C), 168 hr, in Deionized Water	3.1 %	3.1 %	
212°F (100°C), 168 hr, in IRM 903 Oil	57 %	57 %	
257°F (125°C), 168 hr, in IRM 903 Oil	66 %	66 %	



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Aging	Nominal Value (English)	Nominal Value (SI)	Test Method
Change in Mass			ISO 1817
73.4°F (23.0°C), 168 hr, in Methyl ethyl ketone	-19 %	-19 %	
73.4°F (23.0°C), 168 hr, in Isopropyl Alcohol	-11 %	-11 %	
73.4°F (23.0°C), 168 hr, in Trichloroethylene	-6.0 %	-6.0 %	
73.4°F (23.0°C), 168 hr, in Cyclohexane	-3.4 %	-3.4 %	
73.4°F (23.0°C), 168 hr, in Ethanol, 95%	-0.40 %	-0.40 %	
73.4°F (23.0°C), 168 hr, in Sodium Hydroxide, 50%	-0.10 %	-0.10 %	
73.4°F (23.0°C), 168 hr, in Sodium Chloride, 15%	0.20 %	0.20 %	
73.4°F (23.0°C), 168 hr, in Hydrochloric Acid, 10%	0.20 %	0.20 %	
73.4°F (23.0°C), 168 hr, in Detergent (Tide), 2.5%	0.40 %	0.40 %	
73.4°F (23.0°C), 168 hr, in Sulfuric Acid, 98%	2.3 %	2.3 %	
212°F (100°C), 168 hr, in Deionized Water	3.1 %	3.1 %	
73.4°F (23.0°C), 168 hr, in Acetic Acid	3.3 %	3.3 %	
212°F (100°C), 168 hr, in IRM 903 Oil	57 %	57 %	
257°F (125°C), 168 hr, in IRM 903 Oil	66 %	66 %	
Change in Volume			ASTM D471 ISO 1817
257°F (125°C), 70 hr, in IRM 903 Oil	64 %	64 %	
Continuous Upper Temperature Resistance 1008 hr	275 °F	135 °C	SAE J2236
Electrical	Nominal Value (English)	Nominal Value (SI)	Test Method
Dielectric Strength			ASTM D149
73°F (23°C), 0.0787 in (2.00 mm)	750 V/mil	30 kV/mm	
Dielectric Constant			ASTM D150 IEC 60250
73°F (23°C), 0.0780 in (1.98 mm)	2.60	2.60	
Comparative Tracking Index (CTI)	PLC 0	PLC 0	UL 746A
High Amp Arc Ignition (HAI)	PLC 0	PLC 0	UL 746A
High Voltage Arc Resistance to Ignition (HVAR)	PLC 6	PLC 6	UL 746A
High Voltage Arc Tracking Rate (HVTR)	PLC 1	PLC 1	UL 746A
Hot-wire Ignition (HWI)			UL 746A
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	
Flammability	Nominal Value (English)	Nominal Value (SI)	Test Method
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	
Injection	Nominal Value (English)	Nominal 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 Re grind	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	



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Injection	Nominal Value (English)	Nominal Value (SI)
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 ²	4.1 to 6.9 kN/cm ²
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	Nominal Value (English)	Nominal 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.

Notes

¹ Typical properties: these are not to be construed as specifications.

² Method Ba, Angle (Unnicked)

³ Type 1

⁴ Type A



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Where to Buy

Supplier

Celanese Corporation

Florence, Florence USA

Telephone: 800-833-4882

Web: <http://www.celanese.com/engineered-materials>

Distributor

Nexeo Plastics

Nexeo Plastics is leading global resin distributor with the technical resources you need to overcome material challenges. Visit us on the web at www.nexeoplastics.com.

Telephone: 833-446-3936

Web: <https://www.nexeoplastics.com/>

Availability: North America

