

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.
- Recommended for applications requiring excellent flex fatigue resistance.
- Excellent ozone resistance.
- Designed for improved UV resistance.

General

Availability ¹	- Africa & Middle East - Asia Pacific	- Europe - Latin America	North America
Applications	Automotive - Seals and Gaskets		
Uses	Automotive Applications	Outdoor Applications	
Agency Ratings	UL QMFZ2	UL QMFZ8	
RoHS Compliance	RoHS Compliant		
Automotive Specifications	CHRYSLER MS-AR-100 DGV	FORD WSS-M2D381-B1	GM GMW15812, Type 7E
UL File Number	E80017		
Color	Black		
Form(s)	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
Revision Date	06/20/2014		

Physical	Typical Value (English)	Typical Value (SI)	Test Based On
Density / Specific Gravity	0.970	0.970	ASTM D792
Density	0.970 g/cm ³	0.970 g/cm ³	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			ISO 868
Shore A, 15 sec, 73°F (23°C)	85	85	



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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 73°F (23°C), 22 hr, Type 1	25 %	25 %	ASTM D395B
257°F (125°C), 70 hr, Type 1	52 %	52 %	
Compression Set 73°F (23°C), 22 hr, Type A	25 %	25 %	ISO 815
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 73°F (23°C), 0.0787 in (2.00 mm)	710 V/mil	28 kV/mm	ASTM D149
Dielectric Constant 73°F (23°C), 0.0772 in (1.96 mm)	2.60	2.60	ASTM D150
Dielectric Constant 73°F (23°C), 0.0772 in (1.96 mm)	2.60	2.60	IEC 60250
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	



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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 ²	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

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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

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	

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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.

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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.

¹ Product may not be available in one or more countries in the identified Availability regions. Please contact your Sales Representative for complete Country Availability.

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