

# SANTOPRENE® 211-45

## SANTOPRENE®

A soft, colorable, 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 recyclable within the manufacturing stream.

### Key Features

- Recommended for applications requiring excellent flex fatigue resistance.
- Excellent ozone resistance.
- UL listed: file #QMFZ2.E80017, Plastics - Component; file #QMFZ8.E80017, Plastics Certified For Canada - Component.
- Used in sealing applications.

### Product information

Resin Identification	TPV	ISO 1043
Part Marking Code	>TPV<	ISO 11469

### Rheological properties

Moulding shrinkage, parallel	4.1 <sup>[1]</sup> %	ISO 294-4, 2577
Moulding shrinkage, normal	0.7 <sup>[1]</sup> %	ISO 294-4, 2577

[1]: 2.0 mm thickness, min. 24 hours after molding, per test method TPE-X0080

### Typical mechanical properties

Tensile stress at 100% elongation, perpendicular	1.4 MPa	ISO 37
Tensile stress at break, perpendicular	3.5 MPa	ISO 527-1/-2 or ISO 37
Elongation at break, perpendicular	340 %	ISO 527-1/-2 or ISO 37
Brittleness Temperature	-62 °C	ASTM D 746
Low temperature brittleness	-62 °C	ISO 812
Shore A hardness, 15s	49	ISO 48-4 / ISO 868
Compression set, 23°C, 24h	11 %	ISO 815
Compression set, 125°C, 70h	35 %	ISO 815

### Thermal properties

RTI, electrical, 1.5mm	100 °C	UL 746B
RTI, electrical, 3.0mm	100 °C	UL 746B
RTI, strength, 1.5mm	90 °C	UL 746B
RTI, strength, 3.0mm	95 °C	UL 746B

### Flammability

Burning Behav. at thickness h	HB class	IEC 60695-11-10
Thickness tested	1 mm	IEC 60695-11-10
UL recognition	yes	UL 94
FMVSS Class	B	ISO 3795 (FMVSS 302)
Burning rate, Thickness 2 mm	32 mm/min	ISO 3795 (FMVSS 302)

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### Electrical properties

Relative permittivity, 60Hz	2.4	IEC 62631-2-1
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### Physical/Other properties

Density	960 kg/m <sup>3</sup>	ISO 1183
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### Injection

Drying Recommended	yes
Drying Temperature	80 °C
Drying Time, Dehumidified Dryer	≥3 h
Processing Moisture Content	≤0.08 %
Max. regrind level	20 %
Melt Temperature Optimum	215 °C
Min. melt temperature	190 °C
Max. melt temperature	240 °C
Mold Temperature Optimum	30 °C
Min. mould temperature	10 °C
Max. mould temperature	50 °C

### Characteristics

Processing	Injection Moulding, Multi Injection Moulding
Delivery form	Pellets

### Additional information

#### Non Standard Data

Property Name	Condition	Value	Unit	Standard
Change in Tensile Strength	150 °C, 168h	-23	%	ISO 188
Change in Tensile Strain at Break	150 °C, 168h	-26	%	ISO 188
Change in Shore A Hardness	150 °C, 168h	1	-	ISO 188

#### Injection molding

Holding pressure should be about 50 to 75% of the actual injection pressure.  
A high screw RPM (100 to 200) is recommended.  
Back pressure is not always needed, however, a back pressure of 0.3 to 0.7 MPa may be used to ensure a homogeneous melt and maintain a consistent shot size.  
A higher back pressure is normally employed when using masterbatches.

#### Processing Notes

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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. An SPI/SPE #3 finish is recommended (do not polish).

Santoprene® TPV has a relatively high melt viscosity at low shear rates. Viscosity decreases as the shear rate increases.

Increasing temperature has little effect on TPV melt viscosity. Smaller gates and higher shear rates keep melt viscosity low and improve melt flow. Please also refer to the injection molding guide.

### Automotive

#### OEM

Ford

Stellantis - Chrysler

#### STANDARD

WSD-M2D378-A4

MS-AR-100 BMN

#### ADDITIONAL INFORMATION

Natural