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SANTOPRENE® 151-70W256

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A black, flame retardant thermoplastic vulcanizate (TPV) in the thermoplastic elastomer (TPE) family. This material has been designed to meet the Underwriter Laboratories (UL) Subjects 6703, 6703A, 3730 and 1703 material requirements for both junction boxes and connectors (both enclosure and insulation) for use in photovoltaic systems. The flame retardants used are RoHS compliant and provide UL 94 flammability classifications of V-1 down to a thickness of 1.5 mm and 5VA down to a thickness of 1.8 mm. The material has an elevated Relative Thermal Index (RTI) of 95 °C and meets the requirements for suitability for outdoor use with an (f1) rating. 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

- UL listed: file #QMFZ2.E80017, Plastics - Component; file #QMFZ8.E80017, Plastics Certified For Canada - Component
- RTI of 95 °C per UL 746B
- Suitability for outdoor use (f1) rating per UL 746C
- UL 94 V-1 flammability rating down to 1.5 mm
- UL 94 5VA flammability rating down to 1.8 mm
- UL 746A Inclined-Plane Tracking time of 107 min at 2.5 kV

Product information

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

Typical mechanical properties

Tensile stress at 100% elongation, perpendicular	2.3	MPa	ISO 37
Tensile stress at break, perpendicular	4.8	MPa	ISO 527-1/-2 or ISO 37
Elongation at break, perpendicular	480	%	ISO 527-1/-2 or ISO 37
Shore A hardness, 15s	75		ISO 48-4 / ISO 868

Thermal properties

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

Specific Application Suitability

Outdoor suitability	f1	UL 746C

Flammability

Burning Behav. at 1.5mm nom. thickn.	V-1	class	IEC 60695-11-10
Thickness tested	1.5	mm	IEC 60695-11-10
UL recognition	yes		UL 94
Burning Behav. 5V at thickness h	5VA	class	IEC 60695-11-20
Thickness tested	1.8	mm	IEC 60695-11-20
UL recognition	yes		UL 94

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Oxygen index	24	%	ISO 4589-1/-2
Hot Wire Ignition, 1.5mm	PLC 2	s	UL 746A
Hot Wire Ignition, 3mm	PLC 1	s	UL 746A

Electrical properties

Comparative tracking index, 23 °C	1	PLC	UL 746A
Arc Resistance Performance Level Category	PLC 6	class	UL 746B
High Amperage Arc Ignition Category, 1.5 mm	PLC 0	class	UL 746A

Physical/Other properties

Density	1260	kg/m³	ISO 1183

Injection

Drying Recommended	yes	
Drying Temperature	80	°C
Drying Time, Dehumidified Dryer	≥3	h
Processing Moisture Content	≤0.08	%
Melt Temperature Optimum	200	°C
Min. melt temperature	190	°C
Max. melt temperature	210	°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
Special characteristics	Flame retardant, U.V. stabilised or stable to weather

Additional information

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

Processing Notes

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.

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.

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