



TPE 6187

Thermoplastic Vulcanizate (TPV) for use in wire, cable insulation or jacket in flexible applications

Description

TPE 6187 is a natural, thermoplastic elastomer (TPV) intended for wire and cable insulation and jacketing. It is designed to offer excellent oil resistance, low temperature flexibility and deformation resistance. **TPE 6187** offers good extrusion processing characteristics on either conventional polyethylene or PVC extrusion lines.

TPE 6187 is readily pigmented to a variety of colors using standard wire and cable color concentrates designed for thermoplastic or crosslinked polyolefins.

Application

TPE 6187 is intended for pump cable, flexible cord insulation, and fixture applications. (It is also suitable for use in wet locations.)

UL Listings (QMTT2.E341949)

- 720 hour Sunlight Resistance
- 105°C Dry Rating

Specifications

Cables manufactured using **TPE 6187** in accordance with standard industry practices should meet the following industry cable specifications:

- Underwriters Laboratories Standard UL 62 Insulation Class 14, 15 & 16
- Underwriters Laboratories Standard UL 62 Jacket Class 1.9, 1.10 & 1.11
- Corresponding Classes for CSA C22.2 No. 49-14

Physical Properties	Typical Value ⁽²⁾⁽⁴⁾	Unit	Test Method ⁽¹⁾
Density	0.97	g / cm ³	ASTM D 792
Tensile Strength	2200 (15.2)	psi (Mpa)	ASTM D 412
Ultimate Elongation	800	%	ASTM D 412
Heat Aging, 7 days at 136°C			
Tensile Strength Retention	>= 85	%	ASTM D 412
Ultimate Elongation Retention	>= 65	%	ASTM D 412
Oil Resistance 96h @ 100°C			UL 2556
Retained Tensile	93	%	
Retained Elongation	88	%	

Oil Resistance 60 days @ 75°C			UL 2556
Retained Tensile	93	%	
Retained Elongation	91	%	
Durometer Hardness, Shore A	83	-	ASTM D 2240
Brittleness Temperature	< -50 (< -45)	°F (°C)	ASTM D 746
Heat Deformation at 150°C	<= 20	%	UL 1581

Electrical Properties	Typical Value ⁽²⁾⁽³⁾	Unit	Test Method ⁽¹⁾
Dielectric Constant (60 Hz)	2.2	-	ASTM D 150
Dielectric Strength	660	V / Mil	ASTM D 149

- (1) Tested in accordance with the latest issue of the designated Test Methods.
(2) Data represents typical values and should not be used for specification work.
(3) All electrical properties tested on a 0.075 inch thick molded plaque.
(4) All physical properties tested on a 0.030 inch thick extruded tape.

General Processing Guidelines

The guideline below is meant as a reference to general specifications and process parameters. For more detailed processing information contact M. Holland technical services.

Machine Tool Specifications

Die Design	Pressure tooling is preferred for insulation applications, as well as low draw down or minimal over sizing of the insulation or jacket.
Screw design	3:1 Compression ratio with shear mixer(maddock, barrier, or both)
Screens	20/40/60 recommended. If the extrudate exhibits porosity, try higher mesh screen packs (up to 100 mesh) to increase the melt pressure

Processing Parameters

Temperature settings	Zone 1: 185°C (365°F) Zone 2: 195°C (380°F) Zone 3: 200°C (395°F) Zone 4: 210°C (415°F) Gate and Die: 215°C (420°F)
RPM	This compound is shear dependant to achieve a good melt. Depending on the extruder size, 35 would be a good target. Use shear heat from the extruder before adjusting the heat profile.
Wire preheat	Preheating wire to a minimum of 120°C (250°F) will increase initial elongation properties and retention after heat aging.

Melt temperature	210 to 220°C (415 to 425°F)
Cooling	Slower cooling rates improve the elongation retention (after heat aging) of the insulation and jacket. This can be achieved by lowering the line speed , increasing the preheating of the wire, using warm water cooling or sequential cooling baths with warm to cold water.
Drying	It is recommended to dry the material prior to processing. Use a desiccant dryer for 3 hours at 80°C (180°F)
Coloring	The addition of any carrier resin can affect material properties, including hardness and retention properties. Some pigments also affect these properties. Pre-coloring or standard color concentrates (master batches) that use PP, TPE, PE, SEBS as the carrier can be used. Carrier-less color concentrates may also be used. Color concentrate addition of up to 3% has been used without dramatically affecting properties.

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