



TPE 5280

Thermoplastic Elastomer (TPE) Compound for Low Voltage Flexible Power Cables

Description

TPE 5280 is a natural, olefin-based thermoplastic elastomer (TPE) intended for flexible cable, welding cable and general purpose cable jacketing. This dynamically crosslinked compound offers a low-modulus and excellent low temperature flexibility. **TPE 5280** exhibits good extrusion processing characteristics on either conventional polyethylene or PVC extrusion lines.

TPE 5280 is readily pigmented to a variety of colors using standard wire and cable color concentrates designed for thermoplastic or crosslinked polyolefins. UV weather resistance is obtainable by the addition of a suitable carbon black or UV additive.

Application

TPE 5280 is intended for low voltage flexible cable and welding cable jacketing usage.

General Processing Guidelines

Extrusion start-up and shut-down procedures are similar to those of polyethylene. Since these materials are non-corrosive or abrasive, no special recommendations are made for barrel and screw materials of construction. A suggested melt temperature of 410°F (210°C) should provide a good quality product. Exposure of these materials to elevated temperatures >450°F (230°C) for prolonged periods of time has been shown to decrease long-term stability. Preheating the conductor to 125-150°C is recommended during insulation extrusion to minimize orientation and internal stress that could result in poorer physical properties.

Physical Properties	Typical Value ⁽²⁾⁽⁴⁾	Unit	Test Method ⁽¹⁾
Density	0.890	g / cm ³	ASTM D 792
Tensile Strength	2200 (15)	psi (Mpa)	ASTM D 412
Ultimate Elongation	600	%	ASTM D 412
Heat Aging, 7 days at 136°C			UL 1581
Tensile Strength Retention	>= 95	%	ASTM D 412
Ultimate Elongation Retention	>= 95	%	ASTM D 412
Durometer Hardness, Shore D	35	-	ASTM D 2240
Durometer Hardness, Shore A	80	-	ASTM D 2240
Brittleness Temperature	< -50 (< -45)	°F (°C)	ASTM D 746
Heat Deformation at 150°C	<= 30	%	UL 1581

Electrical Properties	Typical Value ⁽²⁾⁽³⁾	Unit	Test Method ⁽¹⁾
Dielectric Constant (60 Hz)	2.2	-	ASTM D 150
Dielectric Strength, 40 mils, short time	650	V / mil	ASTM D 149

Suggested Extrusion Equipment

Suggested Extrusion Conditions

Extruder L/D:	20:1 (minimum)	Throat:	Water-cooled
Extruder L/D:	24:1 (preferred)	Zone 1:	370°F (190°C)
Screw:	Barrier or Single Flight	Zone 2:	390°F (200°C)
Compression Ratio:	2.7 to 3.5:1	Zone 3:	400°F (205°C)
Die:	Smooth transition, With >= 1/8 in. land	Zone 4:	410°F (210°C)
	Die & Tip include angle: 22-35°	Head / Die:	410-450°F (210-230°C)

- (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.

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