



TPE 5575R

Flexible Flame Retardant Thermoplastic Elastomer (TPE) Compound for Appliance Wire and FR Insulation and Jacketing Applications

Description

TPE 5575R is a flexible natural, olefin-based thermoplastic elastomer (TPE) intended for wire and cable insulation and jacketing applications where high temperature performance and excellent flame resistance are required. **TPE 5575R** complies with “Restriction of Hazardous Substances” Directive, Citation 2002-95-EC, commonly known as RoHS without exemption. **TPE 5575R** exhibits excellent wet and dry electrical properties and superior chemical resistance. It also provides good resistance to abrasion, impact and crush. **TPE 5575R** also exhibits superior low temperature properties as demonstrated by it passing cold bend and impact testing at -65°C.

TPE 5575R contains a halogen-based, flame retardant additive package designed to reduce normal PE flame spread characteristics and achieve a VW-1 flame resistant rating on 14 AWG wires and larger. It also offers good extrusion processing characteristics on either conventional polyethylene or PVC extrusion lines. In addition, **TPE 5575R** contains a UV stabilization additive package that provides effective long-term UV weather resistance.

TPE 5575R is readily pigmented to a variety of colors using standard wire and cable color concentrates designed for thermoplastic or crosslinked polyolefins.

Application

TPE 5575R is intended for 125°C UL rated appliance wire and other flame retardant insulation or jacketing constructions. Specifically, this product is rated a V-0 by UL Standard 94 at a minimum thickness of 0.062 inches. **TPE 5575R** is capable of achieving a VW-1 flame resistance on 12 AWG or larger conductors as per UL Standard 1581.

Specifications

Cables manufactured using **TPE 5575R** in accordance with standard industry practices should meet the following industry cable specifications:

- Underwriters Laboratories Standard 62 Class 1.14 and 1.18 for Jacketing
- Underwriters Laboratories Standard 62 Class 2.20 and 2.28 for Insulation
- Underwriters Laboratories Standard 62 Class 36 Insulation and Jacketing
- Underwriters Laboratories Standard 94 V-0
- Underwriters Laboratories Standard 758 Style 1722 Appliance Wire

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	1.35	g / cm ³	ASTM D 792
Tensile Strength	2000	psi (Mpa)	ASTM D 412
Ultimate Elongation	1070	%	ASTM D 412
Flexural Modulus	14,074 (96.6)	psi (Mpa)	ASTM D 790
Heat Aging, 7 days at 136°C			UL 1581
Tensile Strength Retention	>90	%	ASTM D 412
Ultimate Elongation Retention	>90	%	ASTM D 412
Heat Aging, 7 days at 158°C ⁽⁵⁾			UL 1581
Tensile Strength Retention	>90	%	ASTM D 412
Ultimate Elongation Retention	>90	%	ASTM D 412
Durometer Hardness, Shore A	77	-	ASTM D 2240
Brittleness Temperature	-65	°C	ASTM D 746
Limiting Oxygen Index	29	%	ASTM D 2863
Flammability	V-0	-	UL 94

Electrical Properties	Typical Value ^{(2) (3)}	Unit	Test Method ⁽¹⁾
Dielectric Constant (60 Hz)	2.40	-	ASTM D 150
Dissipation Factor (60 Hz)	0.0027	-	ASTM D 150
Dielectric Strength	660	V / mil	ASTM D 149
Volume Resistivity	1.6 x 10 ¹⁶	Ω cm	ASTM D 257

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
- (5) 12 AWG Wire Samples

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