

Petrothene®

LR590005

High Density Polyethylene

Wire and Cable Grade

Melt Index 0.80 Density 0.948

Applications

PETROTHENE LR590005 is a high density, high molecular weight resin designed for primary insulation for electronic cables. This resin exhibits low shrinkback after extrusion, contains a lower level of antioxidant than the standard LR590001, and is not suitable for the telecommunications applications for which LR590001 was formulated. Antioxidant has been added to LR590005 along with a metal deactivator to ensure thermal stability during processing and to prevent degradation from copper while the cable is in service, respectively.

Processing Techniques

LR590005, like other thermoplastic polyolefin resins, can be extruded as wire and cable insulation using a conventional extruder. Below are suggested extrusion conditions for LR590005. These conditions are intended as general guidelines only and are not optimum values, since manufacturing variables such as extruder type and size have an effect on the processing of thermoplastic resins.

Suggested General Extrusion Conditions

Extruder Zone	Temperature Range	Extruder Zone	Temperature Range
Feed	300°-325°F (149°-163°C)	Adapter	475°-500°F (246°-260°C)
Zone 2	350°-400°F (177°-204°C)	Die	475°-500°F (246°-260°C)
Zone 3	400°-450°F (204°-232°C)	Melt Temperature	475°-500°F (246°-260°C)
Zone 4-X	460°-500°F (238°-260°C)		

Industry Specifications

LR590005 meets the requirements of the following: ASTM D 1248-02, Type111, Class A, Category 4, Grades E8 and E9; Federal LP 390C. Type 11. Class H. Category 4, Grade 1; and REA PE-22; REA 7CFR 1755.390.

Typical Properties

Property	Nominal Value	Units	Test Method
Melt Index	0.80	g/10 min.	ASTM D 1238
Density	0.948	g/cc	ASTM D 1505
Low Temperature Brittleness, F ₅₀	<-76	°C	ASTM D 746
Thermal Stress Crack Resistance	0 Failures at 14 days in water at 100°C		Military Specification MS-17000
ESCR, 100% Igepal®	0 Failures in 7 days		ASTM D 1693
Tensile Stress @ Break	2,350 (16.2)	psi (MPa)	ASTM D 638
Tensile Strength	3,150 (21.7)	psi (MPa)	ASTM D 638
Elongation @ Break	800	%	ASTM D 638
Dielectric Constant @ 1 MHz	2.33		ASTM D 1531
Dissipation Factor @ 1 MHz	0.00004		ASTM D 1531
Volume Resistivity, Original	1 x 10 ¹⁸	ohm-cm	ASTM D 257

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