SI-LINK™ DFDA-6451 NT
Crosslinkable Polyethylene for Moisture Curable Power Cable Insulation

Overview

SI-LINK™ Crosslinkable Polyethylene DFDA-6451 Natural with a density of 0.922, and a melt index of 1.5, is a silane-ethylene copolymer for use in medium voltage power cable applications. DFDA-6451 Natural may be crosslinked after it is extruded with DFDB-5480 Natural catalyst masterbatch by allowing moisture to diffuse into the insulation.

Specifications

SI-Link DFDA-6451 NT / SI-Link DFDB 5480 in combination, can be used as the insulation of XLPE medium voltage cables. DFDA-6451 NT/DFDB 5480 NT, when processed using sound extrusion and crosslinking conditions, meet typical medium voltage requirements as outlined in IEC 60502.

Physical	Nominal Value	(English)	Nominal Value	(SI)	Test Method
Density	0.922	g/cm³	0.922	g/cm³	ASTM D1505
Melt Mass-Flow Rate (190°C/2.16 kg)	1.5	g/10 min	1.5	g/10 min	ASTM D1238
Mechanical	**Nominal Value**	**(English)**	**Nominal Value**	**(SI)**	**Test Method**
Tensile Strength [1]	2400	psi	16.5	MPa	ASTM D638
Tensile Elongation (Break)	350	%	350	%	ASTM D638
Thermal	**Nominal Value**	**(English)**	**Nominal Value**	**(SI)**	**Test Method**
Hot Creep [2]	100	%	100	%	ICEA T-28-562
Aging	**Nominal Value**	**(English)**	**Nominal Value**	**(SI)**	**Test Method**
Retention of Tensile Elongation - 7 days					ASTM D638
250°F (121°C)	95	%	95	%	
Retention of Tensile Strength - 7 days					ASTM D638
250°F (121°C)	90	%	90	%	
Electrical	**Nominal Value**	**(English)**	**Nominal Value**	**(SI)**	**Test Method**
Dielectric Constant	2.30		2.30		ASTM D150
Power Factor	2.50E-4	rad	2.50E-4	rad	ASTM D150

Additional Information

Product Handling

- SI-LINK® PE base resins are inherently crosslinkable, but the reaction is extremely slow when the crosslinking catalyst is not present. Therefore, we recommend that under good warehouse conditions - (dry conditions, between 10 and 30 °C in temperature), SI-LINK® PE base resins should be used within one year of purchase. Opened containers should be used promptly to avoid moisture pickup or contamination.

Storage:

- The environment or conditions of storage greatly influences the recommended storage time. Storage under extreme conditions may affect the quality, processing, or performance of the product. Storage should be in accordance with good manufacturing practices. The recommended storage conditions are dry conditions with temperatures between 50°F and 86°F (10°C and 30°C). When stored under these conditions, the product may be used by the customer for up to one year from the date of sale or two years from the date of manufacture, whichever comes first. It is recommended that the practice of using the product on a first-in / first-out basis be established.

Extrusion	Nominal Value	(English)	Nominal Value	(SI)
Drying Temperature	140 to 160	°F	60 to 71	°C
Drying Time	4.0 to 6.0	hr	4.0 to 6.0	hr
Melt Temperature	300 to 450	°F	149 to 232	°C

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Extrusion Notes
DFDA-6451 Natural will extrude with excellent surface quality and without extrusion scorch if the accompanying catalyst masterbatch, DFDB-5480 Natural, is kept dry. It is especially recommended that the catalyst masterbatch be dried at 140°F-160°F (60°-70°C) for four to six hours using dehumidified air prior to mixing and extrusion. Melt temperatures in the range of 300°F-450°F (150°C-230°C) have been successfully used. After extrusion of the appropriate mixture of this product and its catalyst masterbatch, crosslinking can be achieved by allowing moisture to diffuse into the product. Most fabricators find that a hot water bath or sauna work best. Most manufacturers aim for a hot creep elongation of 100%. The actual time to achieve this degree of crosslinking is dependent on the insulation thickness and the water or sauna temperature.

Notes

These are typical properties only and are not to be construed as specifications. Users should confirm results by their own tests.

[1] 20 in/min (510 mm/min)

[2] Cured 2.5 hours in 90°C water, 30 mil wall

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