

SI-LINK™ DFDA-6451 NT

Crosslinkable Polyethylene for Moisture Curable Power Cable Insulation

The Dow Chemical Company

Message:

SI-LINK cross-linked polyethylene: power cable insulation material

SI-LINK™ Cross-linked polyethylene DFDA-6451 Natural has a density of 0.922 and a melt index of 1.5. It is a silane-ethylene copolymer applied to medium voltage power cables. After co-extrusion with the DFDB-5480 Natural catalyst masterbatch, the DFDA-6451 Natural can undergo a crosslinking reaction after wet diffusion into the insulating material.

Specifications

SI-Link DFDA-6451 NT / SI-Link DFDB 5480 can be used as an insulating material for XLPE medium voltage cables. When processed by reliable extrusion and cross-linking processes, DFDA-6451 NT/DFDB 5480 NT can meet the general requirements for medium voltage cables specified in IEC 60502.

General Information			
Uses	Low voltage insulation		
	Wire and cable applications		
Forms	Particle		
Processing Method	Profile extrusion molding		
Physical	Nominal Value	Unit	Test Method
Density	0.922	g/cm ³	ASTM D1505
Melt Mass-Flow Rate (MFR) (190°C/2.16 kg)	1.5	g/10 min	ASTM D1238
Mechanical	Nominal Value	Unit	Test Method
Tensile Strength ¹	16.5	MPa	ASTM D638
Tensile Elongation (Break)	350	%	ASTM D638
Aging	Nominal Value	Unit	Test Method
Tensile strength retention-7 days (121°C)	90	%	ASTM D638
Elongation retention rate-7 days (121°C)	95	%	ASTM D638
Hot Creep ²	100	%	ICEA T-28-562
Power Factor	2.50E-4	rad	ASTM D150
Electrical	Nominal Value	Unit	Test Method
Dielectric Constant	2.30		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	Unit	
Drying Temperature	60.0 - 71.1	°C	

Drying Time	4.0 - 6.0	hr
Melt Temperature	149 - 232	°C

Extrusion instructions

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.

NOTE

1. 510 mm/min
2. Cured 2.5 hours in 90°C water, 30 mil wall

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