

SI-LINK™ DFDA-5445 BK

Flame Retarding Masterbatch for Moisture Curable Power Cable Insulation

The Dow Chemical Company

Описание материалов:

DFDA-5445 BK is a flame retardant, carbon black filled masterbatch, and SI-LINK@PE is used together for large cables that need to meet the requirements of UL-44 horizontal combustion tests. This product can pass the requirement of horizontal combustion XHHW-2 on thicker cables. specifications

DFDA-5445 BK is used with 60% SI-LINK crosslinkable polyethylene DFDA-5451 NT and 5% DFDB-5480 NT catalyst masterbatch in 35% proportion for 2 AWG or thicker conduits. At this ratio, the XHHW-2, RHW-2 and RHH cable specifications specified in the UL-44 and UL-1571 and the underground access cable (USE-2) specifications specified in the UL-854 and UL-1581 can be met, including flame retardant performance. DFDA-5445 BK concentration increases, even cables as thin as 6 AWG can meet the requirements of horizontal combustion test.

DFDA-5445 BK is a highly filled, black flame retardant masterbatch used to add standard SI-LINK PE extrusion resin (DFDA-5451) and catalyst (DFDB-5480) moisture curing system. DFDA-5445 the flexibility of BK, the formula products added with this component can meet the requirements of horizontal combustion test in various cable specifications. Under normal circumstances, the addition of 55% DFDA-5445 BK can make cables as thin as 6 AWG pass the horizontal combustion test; the addition of 35% can make cables as thin as 2 AWG pass the horizontal combustion test. The formula can be optimized according to the cable specifications made and the selected UL sample specifications to reduce costs. Factors such as processing conditions, curing degree and conduit type may affect product performance, so it is up to the cable manufacturer to determine the best formula for its product.

Главная Информация			
Используется	Изоляция низкого напряжения Применение проводов и кабелей		
Рейтинг агентства	UL 1581 UL 44 UL 854		
Формы	Частицы		
Физический	Номинальное значение	Единица измерения	Метод испытания
Плотность	1.28	g/cm ³	ASTM D1505
Массовый расход расплава (MFR) (190°C/2.16 kg)	0.21	g/10 min	ASTM D1238
Механические	Номинальное значение	Единица измерения	Метод испытания
Прочность на растяжение ¹	19.8	MPa	ASTM D638
Удлинение при растяжении ² (Break)	350	%	ASTM D638
Старение	Номинальное значение	Единица измерения	Метод испытания
Предел прочности при растяжении ³			ASTM D638
Carbon Arc Weathering, 300 hours	97	%	ASTM D638
Heat Aging, 7 days : 121 °C	97	%	ASTM D638
Коэффициент удлинения ⁴			ASTM D638
Carbon Arc Weathering, 300 hours	92	%	ASTM D638
Heat Aging, 7 days : 121 °C	94	%	ASTM D638

Тепловое удлинение ползучести ⁵	43	%	ICEA T-28-562
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Дополнительная информация

Typical Formulation Effect on Horizontal Burn

Aluminum Wire Size: 2 AWG

Wall Thickness: 45 mil

60% DFDA-5451 NT

5% DFDB-5480 NT

35% DFDA-5445 BK

Horizontal Burn: PASS

System Density: 1.022 g/cc

Aluminum Wire Size: 4 AWG

Wall Thickness: 45 mil

50% DFDA-5451 NT

5% DFDB-5480 NT

45% DFDA-5445 BK

Horizontal Burn: PASS

System Density: 1.055 g/cc

Aluminum Wire Size: 2 AWG

Wall Thickness: 45 mil

40% DFDA-5451 NT

5% DFDB-5480 NT

55% DFDA-5445 BK

Horizontal Burn: PASS

System Density: 1.090 g/cc

For conductor sizes smaller than 6 AWG, Dow Wire & Cable Compound's DFDA-5400 flame retardant masterbatch should be used.

Экструзия	Номинальное значение	Единица измерения
Температура сушки	60.0 - 70.0	°C
Время сушки	4.0 - 6.0	hr
Температура расплава	170 - 180	°C

Инструкции по экструзии

Highly filled systems with carbon black are inherently hygroscopic and will, over a period of time, absorb moisture. Though the packaging used for DFDA-5445 Black is specifically designed to reduce moisture penetration, drying for 4 to 6 hours at 140°-160°F (60°-70°C) in a hopper drier with dehumidified air is recommended for optimum results. If desired, it may be dry mixed with Dow Wire & Cable Compound's DFDB-5480 Natural catalyst master-batch prior to being dried. SI-LINK® PE can be extruded as a thermoplastic, with ordinary polyethylene extrusion equipment. To prevent scorch, the die and cross-head should be as streamlined as possible, and its volume be as small as possible. Exact extrusion characteristics will be dependent on the equipment in use and can be determined only during cable trials. An approximate melt temperature of 170-180°C is recommended. SI-LINK PE systems require curing in a warm, humid environment. A water bath at 70-90°C or a sauna at 70-90°C and 50-90% relative humidity is ideal. Cure time is typically around 8 hours, but reel size, cable construction and exact sauna or water bath conditions all affect cure time. Each manufacturer must determine the required cure time for each cable construction.

NOTE

- Insulation (35% DFDA-5445 BK, 60% SI-LINK® PE Cross-linkable Polyethylene DFDA-5451 NT and 5% DFDB-5480 NT Catalyst Masterbatch). 14 AWG copper cable with 30 mil insulation thickness. Cured 16 hours at 90°C in water.

2. Insulation (35% DFDA-5445 BK, 60% SI-LINK® PE Cross-linkable Polyethylene DFDA-5451 NT and 5% DFDB-5480 NT Catalyst Masterbatch). 14 AWG copper cable with 30 mil insulation thickness. Cured 16 hours at 90°C in water.

3. Insulation (35% DFDA-5445 BK, 60% SI-LINK® PE Cross-linkable Polyethylene DFDA-5451 NT and 5% DFDB-5480 NT Catalyst Masterbatch). 14 AWG copper cable with 30 mil insulation thickness. Cured 16 hours at 90°C in water.

4. Insulation (35% DFDA-5445 BK, 60% SI-LINK® PE Cross-linkable Polyethylene DFDA-5451 NT and 5% DFDB-5480 NT Catalyst Masterbatch). 14 AWG copper cable with 30 mil insulation thickness. Cured 16 hours at 90°C in water.

5. Insulation (35% DFDA-5445 BK, 60% SI-LINK® PE Cross-linkable Polyethylene DFDA-5451 NT and 5% DFDB-5480 NT Catalyst Masterbatch). 14 AWG copper cable with 30 mil insulation thickness. Cured 4 hours at 90°C in water.

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