Dow ENDURANCE™ HFDC-4202 EC

Low Density Polyethylene

The Dow Chemical Company

Message:

DOW ENDURANCE™ HFDC-4202 EC is a long-life, water-tree-retardant, unfilled, crosslinkable, low density polyethylene insulation compound. The permanent tree-retardant additive provides improved performance in power cables in service involving exposure to moisture while retaining the excellent physical, electrical, and processing attributes of conventional, crosslinkable polyethylene.
DOW ENDURANCE™ HFDC-4202 EC compound provides electric utilities with:
State-of-the-art "water" tree-retardant technology, consistently outperforming conventional XLPE in all accelerated cable wet aging tests at ambient and elevated temperatures
Proven in the field for over 25 years, at a broad cross section of geographical conditions, demonstrating excellent reliability and help achieving lowest life cycle costs
Excellent electrical performance demonstrated by very high aged electrical strength and very low aged dissipation factor and power loss.
DOW ENDURANCE™ HFDC-4202 EC compound represents the state-of-the-art in tree-retardant, power cable insulation compounds.
Specifications
DOW ENDURANCE™ HFDC-4202 EC tree-retardant compound is designed for use in power distribution and sub-transmission cables, especially in underground applications. DOW ENDURANCE™ HFDC-4202 EC provides improved performance over XLPE cables and is recommended, with or without moisture barriers, for use as cable insulation up to and including 69 kV applications. Cables insulated with DOW ENDURANCE™ HFDC-4202 EC, using sound commercial fabrication manufacturing practice, would be expected to meet the latest editions of the following specifications and regulations:
ANSI/ICEA: S-94-649, S-97-682, S-93-639 / NEMA WC74 (TR-XLPE requirements)
AEIC: CS8
RUS 50-70 (U-1)
CEA: WCWG-01, WCWG-02
UL 1072
IEC: 60502, 60840
CENELEC: HD 620 S1
DIN VDE 0276-620
BSI BS 6622
GB/T 12706
DL/T 1070

General Information	
Uses	Tree Retardant Insulation
	Underground cable
	Wire and cable applications
	Insulating material
	Medium voltage insulation
Agency Ratings	AEIC CS8
	BS 6622
	DIN VDE 0276-620
	HD 620 S1
	ICEA S-93-639
	ICEA S-94-649
	ICEA S-97-682
	IEC 60502
	IEC 60840
	NEMA WC-74

Forms	Particle		
Physical	**Nominal Value**	**Unit**	**Test Method**
Specific Gravity	0.920	g/cm³	ASTM D792
The degree of cross-binding-Extractables		%	ASTM D2765A
Tensile strength retention rate			ASTM D638
14 days : 150°C	> 75	%	ASTM D638
30 days : 121°C	> 75	%	ASTM D638
30 days : 136°C	> 75	%	ASTM D638
Elongation retention rate			ASTM D638
14 days : 150°C	> 75	%	ASTM D638
30 days : 121°C	> 75	%	ASTM D638
30 days : 136°C	> 75	%	ASTM D638
Hot Creep (200°C)		%	ICEA T-28-562
Thermosetting (200°C)		%	ICEA T-28-562
Water-Tree Growth Rate [1]	10	%	ASTM D6097
Water-Tree Relative Size [2]	25	%	ASTM D6097
Mechanical	**Nominal Value**	**Unit**	**Test Method**
Tensile Strength	22.1	MPa	ASTM D638
Tensile Elongation (Break)	530	%	ASTM D638
Electrical	**Nominal Value**	**Unit**	**Test Method**
Volume Resistivity (23°C)	> 1.0E+15	ohms·cm	ASTM D257
Dielectric Strength			ASTM D149
3.18 mm [3]	26	kV/mm	ASTM D149
3.18 mm [4]	23	kV/mm	ASTM D149
Dielectric Constant (60 Hz)	2.30		ASTM D150
Dissipation Factor (60 Hz)	3.0E-4		ASTM D150
Additional Information			

Nominal property values representing tests on molded, stress-relieved slabs. Cure times were 15 minutes at 175°C. Values are typical, and not to be construed as specifications.Extra-Clean Requirements
DOW ENDURANCE™ HFDC-4202 EC meets the strictest standards for cleanliness established for an unfilled, crosslinkable cable insulation compound. Throughout the production process, the product is tested to ensure a high level of cleanliness. Extruded tapes are scanned by an automatic inspection system in a class 10,000 clean room. The purity data is managed using an acceptance sampling plan, which ensures that the product in the shipping container meets or exceeds extra-clean standards.
Maximum Allowable in 1.6 kg Tape: DOW ENDURANCE™ HFD-4202 EC
5-9.9 mils (125-250 µm): 3
10-25 mils (250-630 µm): 0
>25 mils (>630 µm): 0
In addition, as DOW ENDURANCE™ HFDC-4202 EC is packaged, a continuous side stream of pellets is analyzed using an electronic pellet inspector to comply with ICEA specification S-94-649-2004 section K2.2. A review of detected contamination is incorporated into our EC quality program.
Processing Techniques
DOW ENDURANCE™ HFDC-4202 EC provides excellent surface finish and outstanding output rates over a broad range of conditions. For optimum results, melt extrusion temperatures in the range of 240 to 285°F (116 to 140°C) are recommended, although higher melt temperatures are possible on certain equipment with due care. Generally, a 60-40-20 screen pack is recommended. However, specific recommendations for processing conditions can be determined when the application and type of processing equipment are known.
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. If proper warehousing and storage temperatures [dry conditions, between 50°F and 86°F (10°C and 30°C) in temperature] are utilized, this product may be stored by the customer for up to one year. In general, the product should be used within two years of the date of manufacture. It is recommended that the practice of using the product on a first-in / first-out basis be established.

NOTE	
1.	Rate is relative to rate for Dow's standard XLPE, FREQ = 1 kHz.
2.	Size is relative to size for Dow's standard XLPE.
3.	Method A (short time)
4.	Method B (step by step)

Recommended distributors for this material

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