



DOW™ Electrical & Telecommunications HFDB-4201 EHV K Ultra Clean Polyethylene Compound for Extra High Voltage Power Cable Insulation

Overview

HFDB-4201 EHV K is a long-life, cross linkable, low-density, polyethylene insulation compound of extreme purity developed especially for the insulation of Extra High Voltage power cables that employ high electrical stresses. HFDB-4201 EHV K is equipped with a non-migrating stabilizer providing high thermal stability, long term storage stability, and optimum crosslinking behavior.

Applications:

- DOW ENDURANCE HFDB-4201 EHV K is recommended especially for the insulation of extra high voltage cables =220kV.

Specifications:

- Cables insulated with HFDB-4201 EHV K would be expected to meet the requirements in the following standards when processed using state-of-the-art cable manufacturing practices:
 - IEC: 62067, 60840
 - CENELEC: HD 632 S2
 - AEIC: CS9
 - ANSI/ICEA: 108-720-2004
 - GB/T 11017, GB/Z 18890

Physical	Nominal Value (English)	Nominal Value (SI)	Test Method
Density	0.921 g/cm ³	0.921 g/cm ³	ISO 1183 ¹
Melt Mass-Flow Rate (130°C/2.16 kg)	0.30 g/10 min	0.30 g/10 min	ISO 1133
Moisture	< 200 ppm	< 200 ppm	Dow Method ²
Mechanical	Nominal Value (English)	Nominal Value (SI)	Test Method
Tensile Strength	2900 psi	20.0 MPa	IEC 60811-1-1
Tensile Elongation (Break)	500 %	500 %	IEC 60811-1-1
Thermal	Nominal Value (English)	Nominal Value (SI)	Test Method
Hot Set			IEC 811-2-1 ³
Elongation under Load: 392°F (200°C)	< 100 %	< 100 %	
Permanent Deformation: 392°F (200°C)	< 5.0 %	< 5.0 %	
Aging	Nominal Value (English)	Nominal Value (SI)	Test Method
Change of Tensile Properties After Aging - 10 days			IEC 60811-1-1
302°F (150°C)	< 25 %	< 25 %	
Electrical	Nominal Value (English)	Nominal Value (SI)	Test Method
Volume Resistivity	> 1.0E+16 ohm·cm	> 1.0E+16 ohm·cm	IEC 60093
Dielectric Constant (1 MHz)	< 2.30	< 2.30	IEC 60250
Dissipation Factor (50 Hz)	< 0.00030	< 0.00030	IEC 60250
Electric Strength	> 1000 V/mil	> 40 kV/mm	IEC 60243-1
Additional Information	Nominal Value (English)	Nominal Value (SI)	Test Method
Gottfert Elastograph - Torque	5.3 in·lb	0.60 N·m	ISO 6502
Reaction Speed - t90 (356°F (180°C))	5.0 min	5.0 min	ISO 6502



Cleanliness:

- Extraordinary cleanliness is assured through a number of precautions taken during the manufacturing of DOW HFDB-4201 EHV K
- The specifications are set to exclude metallic contaminants >50µm and other contaminants >70µm.
- Contaminant counts/kg of particles <70µm are reported. These specifications are based on online continuous sampling and testing.
- Pellet checked product can be delivered on request.

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. HFDB-4201 EHV K is storage stable even at elevated temperatures. Peroxide may start to migrate at temperatures below 15°C.
- The recommended storage temperature is 15-30°C, storage up to 6 months at 40°C and 2 months below 15°C is possible. In general, the material can be used for regular HV and MV applications within two years after production if stored the remaining time between 15 and 30°C. It is recommended that the practice of using the product on a first-in / first-out basis be established.

Packaging:

- HFDB-4201EHV K can be delivered in 1000kg octabins or in 500kg UNICLEAN™ big bags.

Extrusion	Nominal Value (English)	Nominal Value (SI)
Melt Temperature	239 to 284 °F	115 to 140 °C

Extrusion Notes

- HFDB-4201 EHV K provides excellent surface finish and outstanding output rates over a broad range of conditions very similar to HFDB-4201. For optimum results, melt extrusion temperatures in the range of 115 -140°C are recommended, and preferably 135°C for HV applications.
- Screen packs are only required if there is a need to improve the homogenization of the melt or as protection from contamination entering during unloading and processing. If desirable HFDB-4201 EHV K allows the use of fine mesh screens (400mesh/30µm or 635mesh/20µm) without causing pressure build up over time. The use of 250 mesh screens (50µm) is common. Specific recommendations for processing conditions can be determined when the application and processing equipment type are known.
- At start-up, it is recommended to use DFDK-4850 transition compound to achieve stable extruder conditions.

Notes

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

¹ Base Resin

² Karl Fischer titration

³ 0.2 MPa

