Dow ENDURANCE™ HFDA-0801 BK EHV

Supersmooth, Extra-Clean, Crosslinkable Semiconductive Shielding Compound

The Dow Chemical Company

Message:

DOW ENDURANCE™ HFDA-0801 BK EHV is a specially formulated semiconductive, vulcanizable compound designed for conductor shield and bonded insulation shield applications in high and extra-high voltage crosslinked polyethylene insulated cables.(1) DOW ENDURANCE™ HFDA-0801 BK EHV has demonstrated compatibility with copper and aluminum conductors.
DOW ENDURANCE™ HFDA-0801 BK EHV was specifically developed utilizing a special acetylene carbon black to provide a supersmooth surface to achieve best in class performance and yielding a more perfect interface between the extruded shield and the insulation. As a result, significantly improved cable performance can be expected.
Specifications
DOW ENDURANCE™ HFDA-0801 BK EHV is designed for use in power distribution cables. Cables with conductor and insulation shielding of DOW ENDURANCE™ HFDA-0801 BK EHV, prepared using sound commercial fabrication practice, would be expected to meet the following specifications:
AEIC: CS8, CS9
IEC: 60502, 60840, 62067
ICEA: S-108-720; S-94-649; S-97-682, S-93-639
DIN: VDE 0276-632, 0276-620
BS: 6622
CENELEC: HD620 S1, HD632 S1
ISO 1872-E/BA, KHXY, 23-G200, C40
NF: C33-223, C33-226
UTE: C33-223
(1) DOW ENDURANCE™ HFDA-0801 BK EHV is recommended for use in conjunction with DOW cross-linked polyethylene and tree-retardant cross-linked polyethylene compounds. For other polymer insulation such as EPR and EPDM's, the user is cautioned to establish the utility of DOW ENDURANCE™ HFDA-0801 BK EHV with each formulation.

General Information	
Uses	Extra High Voltage Semiconductive Shield Semiconductive Shield Underground cable Cable guard Wire and cable applications
Agency Ratings	AEIC CS8 AEIC CS9 BS 6622 DIN VDE 0276-620 DIN VDE 0276-632 ICEA S-93-639 ICEA S-94-649 ICEA S-97-682 IEC 60502 IEC 60840 IEC 62067 ISO 1872 E/BA KHXY 23G200 C40 NF C 33-223 NF C 33-226

	UTE C 33-223
Appearance	Black
Forms	Particle

Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.14	g/cm³	ASTM D792
Environmental Stress-Cracking Resistance (100% Igepal, F0)	> 504	hr	ASTM D1693

Mechanical	Nominal Value	Unit	Test Method
Tensile Strength	14.5	MPa	ASTM D638
Tensile Elongation (Break)	200	%	ASTM D638

Aging	Nominal Value	Unit	Test Method
Tensile strength retention-1 week (150°C)	98	%	ASTM D638
Elongation retention rate-1 week (150°C)	90	%	ASTM D638

Thermal	Nominal Value	Unit	Test Method
Brittleness Temperature	-40.0	°C	ASTM D746

Electrical	Nominal Value	Unit	Test Method
Volume Resistivity			ASTM D991
23°C	15	ohms·cm	ASTM D991
90°C	60	ohms·cm	ASTM D991
130°C	65	ohms·cm	ASTM D991

Additional Information

Nominal property values above represent tests on molded stress-relieved slabs. Cure times were 15 minutes at 175°C.Extra-Clean Requirements
Among many desirable characteristics, DOW ENDURANCE™ HFDA-0801 BK EHV is extra-clean. DOW ENDURANCE™ HFDA-0801 BK EHV typically has less than 0.005% sulfur and less than 0.01% ash. The raw materials used for DOW ENDURANCE™ HFDA-0801 BK EHV are cleaner by design than those used for conventional semiconductive materials. Additional precautions are employed during the manufacture of DOW ENDURANCE™ HFDA-0801 BK EHV relative to conventional conductor shields to prevent introduction of any contamination to the raw materials and to the final product. These low levels of contamination can be expected to play a positive role in the manufacture of a totally extra-clean cable.
Supersmooth Extruded Surface
DOW ENDURANCE™ HFDA-0801 BK EHV meets the strictest standards of smoothness established for a crosslinkable semiconductive shield compound. The extruded surface of DOW ENDURANCE™ HFDA-0801 BK EHV must meet a smoothness specification that is more rigorous that typical supersmooth semiconductive shields. Throughout the production process, the product is tested to ensure smoothness. Extruded tapes are scanned by an automatic inspection system in a clean room. The tape smoothness data is managed using an acceptance sampling plan, which ensures that the shipping container meets or exceeds the product's smoothness standard. The DOW ENDURANCE™ HFDA-0801 BK EHV smoothness standard has been designed to meet the global industry specifications for semiconductive shield materials on high voltage and extra high voltage cables.
Each batch of DOW ENDURANCE™ HFDA-0801 BK EHV meets the following smoothness requirement:
Protrusion Height / Maximum Allowable
50-59 μm / 0 per m²
60-74 μm / 0 per m²
>75 μm / 0 per m²
Storage
The environment or conditions of storage greatly influences the recommended storage time. 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. It is recommended that the practice of using the product on a first-in / first-out basis be established. Storage under extreme conditions may affect the quality, processing, or performance of the product.

Extrusion	Nominal Value	Unit
Drying Temperature	60.0 - 70.0	°C
Drying Time	< 6.0	hr
Melt Temperature	121 - 140	°C

Extrusion instructions

DOW ENDURANCE™ HFDA-0801 BK EHV provides excellent surface finish and outstanding output rates over a broad range of conditions. For optimum results, use melt extrusion temperatures in the suggested range of 250 to 285°F (121 to 140°C) to avoid pre-cure or scorch. Extruder barrel settings of 110°C (230°F) are suggested as a starting point while learning to process DOW ENDURANCE™ HFDA-0801 BK EHV. Specific machine settings will depend on the extruder design and must be established through conventional practices.Dehumidified air hopper drying at 140-160°F (60-70°C) for up to six hours may be employed to remove residual moisture prior to extrusion. Drying is not necessary for DOW ENDURANCE™ HFDA-0801 BK EHV due to the lower moisture absorption characteristics relative to conventional semiconductive products.

Recommended distributors for this material

Susheng Import & Export Trading Co.,Ltd.

Tel: +86 21 5895 8519

Phone: +86 13424755533

Email: sales@su-jiao.com

No. 215, Lianhe North Road, Fengxian District, Shanghai, China

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