Dow ENDURANCE™ HFDA-0693 BK LS

Strippable Semiconductive Insulation Shielding Compound

The Dow Chemical Company

Message:

DOW ENDURANCE™ HFDA-0693 BK LS is specially formulated semiconductive, vulcanizable compound designed for use in conventional extrusion practices as a strippable insulation shield for medium voltage power cable. DOW ENDURANCE™ HFDA-0693 BK LS was designed to have excellent extrusion processing. DOW ENDURANCE™ HFDA-0693 BK LS is an easy stripping insulation shield recommended for use over DOW ENDURANCE™ crosslinked polyethylene compounds. This product provides low strip force over a wide temperature range when used in conjunction with Dow insulation materials.
Specifications:
DOW ENDURANCE™ HFDA-0693 BK LS is designed for use in power distribution cables. Cables with conductor and insulation shielding of DOW ENDURANCE™ HFDA-0693 BK LS, prepared using sound commercial fabrication practice, would be expected to meet the following specifications:
ANSI/ICEA: S-94-649, S-97-682, S-93-639 / NEMA WC74
AEIC: CS 8
IEC 60502

General Information			
Uses	Medium Voltage Semiconductive Shield Semiconductive Shield Underground cable Cable guard Wire and cable applications		
Agency Ratings	AEIC CS8 ICEA S-93-639 ICEA S-94-649 ICEA S-97-682 IEC 60502 NEMA WC-74		
Forms	Particle		
Physical	**Nominal Value**	**Unit**	**Test Method**
Density	1.18	g/cm³	ASTM D1505
Mechanical	**Nominal Value**	**Unit**	**Test Method**
Tensile Strength			ASTM D638
Fracture	14.5	MPa	ASTM D638
Fracture, 136°C [1]	13.8	MPa	ASTM D638
Tensile Elongation			ASTM D638
Fracture	280	%	ASTM D638
Fracture, 136°C [2]	150	%	ASTM D638
Thermal	**Nominal Value**	**Unit**	**Test Method**
Brittleness Temperature	< -40.0	°C	ASTM D746
Electrical	**Nominal Value**	**Unit**	**Test Method**

Volume Resistivity			
23°C [3]	1.0E+2 - 4.0E+2	ohms·cm	S-66-524
23°C [4]	25	ohms·cm	ASTM D991
90°C [5]	1.0E+2 - 4.0E+2	ohms·cm	S-66-524
90°C [6]	30	ohms·cm	ASTM D991
110°C [7]	1.0E+2 - 4.0E+2	ohms·cm	S-66-524
110°C [8]	30	ohms·cm	ASTM D991

Additional Information	Nominal Value	Unit	Test Method
Cable Adhesion Force - Dry Cure [9] (23°C)	2.1 - 4.2	kN/m	Internal method
Feed part of extruder	43 - 60	°C	

Nominal property values above represent tests on molded stress-relieved slabs. Cure times were 15 minutes at 175°C.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 75°F (10°C and 23°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. Storage at elevated temperatures should be avoided to prevent blocking. Pellets are readily friable should blocking be experienced.

Extrusion	Nominal Value	Unit
Cylinder Zone 1 Temp.	82.2 - 87.8	°C
Cylinder Zone 2 Temp.	93.3 - 98.9	°C
Cylinder Zone 3 Temp.	98.9 - 110	°C
Cylinder Zone 4 Temp.	104 - 110	°C
Cylinder Zone 5 Temp.	107 - 110	°C
Melt Temperature	115 - 125	°C

Extrusion instructions

DOW ENDURANCE™ HFDA-0693 BK LS 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 235 to 255°F (115 to 125°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-0693 BK LS. Specific machine settings will depend on the extruder design and must be established through conventional practices. The curing temperature should be carefully controlled, and the maximum surface temperature in the CV tube should not exceed 527°F (275°C) for optimum results. Extruder feed-throat cooling is recommended to improve feed efficiency.DOW ENDURANCE™ HFDA-0693 BK LS can be handled in the same fashion as other vulcanizable polyolefin semiconductive materials. It is available in regular or UNICLEAN™ boxes and can be air-conveyed at transport temperatures of 75°F (24°C) or below. Do not use a heated dryer with HFDA-0693 BK as pellets may fuse. During shutdowns exceeding one hour, DOW ENDURANCE™ HFDA-0693 BK LS pellets should be removed from potentially warm hopper bins to avoid fusing.

NOTE	
1.	1 week
2.	1 week
3.	on cables
4.	on plaques
5.	on cables
6.	on plaques
7.	on cables
8.	on plaques
9.	Cable adhesion values are typical for dry cure at room temperature. Values will vary with cable size, insulation type, type of cure, temperature, speed of test, etc.

Recommended distributors for this material

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