Dow ENDURANCE™ HFDK-9253 S
Low Sag Super Clean Compound for High Voltage Power Cable Insulation

Overview

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DOW ENDURANCE™ HFDK-9253 S is a long-life, unfilled, crosslinkable, low density, super clean polyethylene insulation compound developed especially for the insulation of high voltage power cables. DOW ENDURANCE HFDK-9253 S has been designed for cable production processes on horizontal vulcanization lines and for cables with thick insulation manufactured on standard catenary vulcanization lines. DOW ENDURANCE HFDK-9253 S has been designed with a non-migrating stabilizer providing high thermal stability, long term stability and optimum crosslinking behavior. It has an enhanced degree of scorch retardance for fine mesh filtering and long production run lengths during cable manufacture.

DOW ENDURANCE HFDK-9253 S is recommended for the insulation of high voltage power transmission cables rated up to 230 kV

Specifications

DOW ENDURANCE HFDK-9253 S is designed for use in power distribution and transmission cables. Cables insulated with DOW ENDURANCE HFDK-9253 S, using sound commercial manufacturing practice, would be expected to meet the latest editions of the following specifications and regulations:

- IEC 62067, 60840
- CENELEC HD632 S2
- AEIC CS9
- ANSI/ICEA: S-108-720
- GB/T 11017, GB/Z 18890

Physical	**Nominal Value**	**(English)**	**Nominal Value**	**(SI)**	**Test Method**
Density (73°F (23°C))	0.920	g/cm³	0.920	g/cm³	ASTM D792
Moisture	< 200	ppm	< 200	ppm	Dow Method
Mechanical	**Nominal Value**	**(English)**	**Nominal Value**	**(SI)**	**Test Method**
Tensile Strength	2900	psi	20.0	MPa	ASTM D638
Tensile Elongation (Break)	500	%	500	%	ASTM D638
Thermal	**Nominal Value**	**(English)**	**Nominal Value**	**(SI)**	**Test Method**
Hot Set					IEC 60811-2-1
Under Load : 392°F (200°C)	< 100	%	< 100	%	
Without Load : 392°F (200°C)	< 5.0	%	< 5.0	%	
Aging	**Nominal Value**	**(English)**	**Nominal Value**	**(SI)**	**Test Method**
Change in Tensile Properties - 7 days (302°F (150°C))	< 25	%	< 25	%	ASTM D638
Electrical	**Nominal Value**	**(English)**	**Nominal Value**	**(SI)**	**Test Method**
Volume Resistivity (73°F (23°C))	> 1.0E+16	ohms·cm	> 1.0E+16	ohms·cm	ASTM D257
Dielectric Strength					ASTM D149
0.125 in (3.18 mm), Method A (Short-Time)	> 760	V/mil	> 30	kV/mm	
0.125 in (3.18 mm), Method B (Step-by-Step)	> 580	V/mil	> 23	kV/mm	
0.125 in (3.18 mm), Method C (Slow Rate-of-Rise)	> 990	V/mil	> 39	kV/mm	
Dielectric Constant (73°F (23°C))	2.30		2.30		ASTM D150
Dissipation Factor (73°F (23°C))	< 3.0E-4		< 3.0E-4		ASTM D150

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Additional Information

(1)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.

(2)Tests are made in accordance with current ASTM, IEC, ISO or Dow Methods.

Cleanliness Requirements

DOW ENDURANCE HFDK-9253 S meets very high standards for cleanliness (super clean) 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 clean room. The purity data is managed using an acceptance sampling procedure, which ensures that the product meets or exceeds Dow super-clean standards.

Processing Techniques

DOW ENDURANCE™ HFDK-9253 S provides excellent performance and outstanding output rates over a range of extrusion conditions. For optimum results, melt extrusion temperatures in the range of 115°C to 135°C (240°F to 275°F) are recommended. Screen packs are recommended if there is a need to improve the homogenization of the melt or as protection from contamination entering the extrusion process during product unloading and processing. At a minimum, the use of a 100-60-40-20 mesh screen pack is commonly used however, specific processing recommendations can only be made when information about the application and actual extrusion and processing equipment types are known. It is recommended melt pressures and optionally melt temperatures should be monitored during cable production. Prior to cable production, processing conditions, melt temperatures and melt pressures should be established with bleeding trials. During start up it is recommended to use the thermoplastic peroxide free compound in order to achieve stable extrusion conditions.

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. The recommended storage conditions, in the original unopened packages, are dry conditions with temperatures between 50°F and 104°F (10°C and 40°C). When stored between 50°F and 86°F (10°C and 30°C), the product may be used by the customer for up to one year from the date of sale or two years from the date of manufacture, whichever comes first. The recommended maximum storage time is 1 year at 104°F (40°C). It is recommended that the practice of using the product on a first-in / first-out basis be established.

Packaging

DOW ENDURANCE™ HFDK-9253 S can be delivered in different packaging types dependent on the specific materials handling needs. These packaging types could be in 1300lb/500 kg UNICLEAN™ octabins, 1300lb/500 kg top unloading octabins or 1000kg bottom unloading octabins. Please consult with your local Dow sales representative to discuss your packaging needs.

Notes

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

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c. use as a critical component in medical devices that support or sustain human life; or
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