

Polyethylene

Visico™ Visico LE4422M / Visico LE4431M

Silane Crosslinkable Insulation Compound

Description

Visico LE4422M / Visico LE4431M is a silane crosslinkable compound system, specially designed for insulation of energy cables.

Typical characteristics

Visico™ Visico LE4422M / Visico LE4431M can be described with following typical characteristics:

- Quick change-over for short length cables
- Longer production runs between cleaning stops
- Very good surface finish
- Low odor during processing
- Long shelf life

Visico LE4422M / Visico LE4431M is a ready-to-use two-component compound system. Together with Borealis recommended semiconductive system Visico™ LE0542 (Bonded screen) and LE0572 (Strippable screen), they have been developed with the objective to provide the above benefits.

Applications

Visico™ Visico LE4422M / Visico LE4431M is intended for following applications:

Insulation of XLPE medium voltage cables with rated voltages up to 36 kV.

Specifications

Visico™ Visico LE4422M / Visico LE4431M is expected to meet the applicable requirements included in the below mentioned standards provided it is processed using sound material handling and processing practices as well as appropriate testing procedures.

Physical properties

Property	Typical value *	Unit	Test method
Density ¹	923	kg/m ³	ISO 1183-1
Melt flow rate (190 °C/2.16 kg) ²	1.0	g/10min	ISO 1133-1
Change of tensile properties After ageing 135 °C, 168h ³	≤25	%	IEC 60811-401
Tensile strain at break (250 mm/min)	>300	%	ISO 527-2
Tensile strength (250 mm/min)	>15	MPa	ISO 527-2
Hot set test - Elongation under load (200 °C, 0.20 MPa)	60	%	IEC 60811-507
Hot set test - Permanent deformation (200 °C, 0.20 MPa)	0	%	IEC 60811-507

* Data should not be used for specification work

¹ Density (Mixture 95:5)

² Base Resin

³ These values are based on sufficient crosslinked/cured Visico. If Visico is not sufficiently crosslinked the material will continue to crosslink during the ageing procedure and a larger change between values before and after ageing may occur.

Electrical properties

Property	Typical value *	Unit	Test method
DC volume resistivity	≥100	PQcm	IEC 60093
Dielectric constant (50 Hz)	2.3	-	IEC 62631-2-1
Dissipation factor (50 Hz)	<0.0005	-	IEC 62631-2-1

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Processing techniques

The crosslink system is based on the use of Visico LE4422M (base material) and Visico LE4431M (catalyst masterbatch). When used in combination, Visico LE4431M would accelerate the moisture-induced crosslinking reaction of Visico LE4422M. The system is easy to use: dry blend 5 parts Visico LE4431M to 95 parts Visico LE4422M directly into the extruder hopper. To produce a good and reliable cable, it is essential to ensure careful and very clean handling of the insulation material. Hence all material handling should preferably be conducted in closed systems and in clean room conditions. Practical advice is given in a separate brochure. Please contact your Borealis representative for more details.

Crosslinking:

Visico LE4422M / Visico LE4431M shall be crosslinked by immersion in hot water or exposed to low pressure steam at a temperature in typical circumstances of 70-80 °C. The time period needed and maximum temperature will depend on e.g. the thickness of insulation, type of semiconductive screen and reel size. It is good practice to purge stranded aluminium conductors with air or nitrogen during crosslinking to prevent conductor corrosion.

Packaging and storage

Visico LE4422M - Base material - Octabins

Visico LE4431M - Catalyst master batch - Bags and small bins

Visico LE4422M / Visico LE4431M has excellent storage stability. Visico LE4422M and Visico LE4431M can be stored for 18 months after production, at 10-30 °C (50-85 °F) in unopened original packages, without significant deterioration in the quality of the material. Visico LE4422M and Visico LE4431M should be stored in dry conditions and protected from direct sunlight. Improper storage can initiate degradation, which results in odor generation and color changes and can have negative effects on the physical properties of this product. Visico LE4431M is sensitive to moisture and is therefore delivered with low moisture content, ready to be used. Pre-drying is not recommended, as it will destroy the drying agent that has been added to prevent the material to take up moisture. The bags must be properly resealed between uses, as even short periods of storage in humid conditions may cause scorch during extrusion.

More information on storage is found in our "Safety data sheet" / "Product safety information sheet" for these products.

Product compliance documents

Latest versions of product safety information sheets (PSIS), product safety data sheets (SDS) and other product liability documents are available in our website www.borealisgroup.com.

Sustainability aspects

Borealis is ever mindful of the impact of our products on the planet. We promote Design for Circularity (DfC) and Design for Recycling (DfR) to conserve natural resources and to reduce the environmental impact of products over their entire lifetime (including production, use phase and after phase). DfR helps ensure that material can be effectively recycled while maximizing the material performance efficiency.

Further information on sustainability and Design for Recycling (DfR) can be found from our websites www.borealisgroup.com and www.borealiseverminds.com.

Disclaimer

The product(s) mentioned herein are not intended to be used for medical, pharmaceutical or healthcare applications and we do not support their use for such applications.

To the best of our knowledge, the information contained herein is accurate and reliable as of the date of publication; however we do not assume any liability whatsoever for the accuracy and completeness of such information.

Borealis makes no warranties which extend beyond the description contained herein. Nothing herein shall constitute any warranty of merchantability or fitness for a particular purpose.

It is the customer's responsibility to inspect and test our products in order to satisfy itself as to the suitability of the products for the customer's particular purpose. The customer is responsible for the appropriate, safe and legal use, processing and handling of our products.

No liability can be accepted in respect of the use of any Borealis product in conjunction with any other products and/or materials. The information contained herein relates exclusively to our products when not used in conjunction with any other material unless as specifically provided for in the test methods stated above.