

Polyethylene

Visico" LE4417/Ambicat" LE4476

Silane Crosslinkable Insulation Compound

Description

Visico" LE4417 / Ambicat" LE4476 is a silane crosslinkable natural compound system designed for insulation of flexible low voltage energy cables. Visico LE4417 is a low-density terpolymer comprised of polyethylene, vinyl silane and a further co-monomer defining the flexibility of the polymer. Ambicat LE4476 is an ambient crosslinking catalyst masterbatch specially designed to be used with Visico base resins. The system is highly active and crosslinks quickly at ambient conditions, in sauna or in hot water. Cable insulation with a proper mixture of Visico LE4417 (95 parts) and Ambicat LE4476 (5 parts) exhibits excellent thermo-oxidative stability. The combination is suitable for both copper and aluminum conductors.

Typical characteristics

Visico" LE4417/Ambicat" LE4476 can be described with following typical characteristics:

Improved flexibility	Consistent quality
Excellent processing properties	Excellent curing speed
Low scorch allowing long runs and more frequent tooling changes	No drying prior to extrusion
Low odour during processing	Excellent storage stability

The addition of metal soaps and basic (high pH) components, like some fillers, stearates and UV-stabilisers, will deactivate the catalyst and is not suitable together with Ambicat. To prevent deactivation of the catalyst during colouring, Ambicat compatible colour masterbatches are needed. Please contact your Borealis representatives for additional information.

Applications

Visico" LE4417/Ambicat" LE4476 is intended for following applications:

Insulation of low voltage energy cables, range up to 6 kV

Designed for applications where flexibility is important, such as electric vehicle chargers and wind turbines.

Specifications

ASTM D1248 Type I, Class A, Category 4	HD 603 S1
EN 50290-2-29	NEMA WC 70 / ICEA S-100-685
IEC 60502-1	NEMA WC 71 / ICEA S-96-659
HD 604 S1	
EN 50620 (EVI-2)	

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Physical properties

Property	Typical value *	Unit	Test method
Base resin density	920	kg/m ³	ISO 1183-1
MFR 190°C/2.16kg ¹	0.70	g/10min	ISO 1133-1
Flexural modulus	92	MPa	ISO 178
DC Volume resistivity (23°C)	8.9 x 10 ¹⁶	P&cm	ASTM D 257
Elongation at Break	407	%	ISO 527-2
Hardness, Shore D	37	-	ISO 868
Hot set test - Elongation under load (200 °C, 0.20 MPa)	30	%	IEC 60811-507
Hot set test - Permanent deformation (200 °C, 0.20 MPa)	0.3	%	IEC 60811-507
Tensile strength (250 mm/min)	17	MPa	ISO 527-2

* Data should not be used for specification work

¹ Base resin

Processing setting	Typical value/range
Barrel temperature 1	120 °C
Barrel temperature 2	130 °C
Barrel temperature 3	140 °C
Barrel temperature 4	150 °C
Die head temperature	150 °C

Having the above set temperature profile, a stable extrusion process and a cable having smooth glossy appearance should be achieved. On-size pressure or draw down tube-on tooling is preferred. The use of a gradient cooling bath will improve the cable insulation physical properties further

Processing techniques

Visico LE4417 / Ambicat LE4476 are suitable for most equipment designed for PVC/PE extrusion.

These products can be crosslinked by immersion in hot water or exposed to low pressure steam at a temperature up to 90°C. This time period may be varied due to the humidity, thickness of insulation, reel size and temperature.

Thickness	Time	Condition
0,7 mm	1 day	23°C, 50% humidity, in air.
1,8 mm	2 days	23°C, 50% humidity, in air.

Packaging and storage

Visico LE4417 - Base material is protected from moisture ingress

Package:

1/2 Octabins

Ambicat LE4476 - Catalyst master batch is protected from moisture ingress

Package: Bags

Visico LE4417 / Ambicat LE4476 has excellent storage stability. Visico LE4417 can be stored for 18 months and Ambicat LE4476 for 15 months after production, at 10-30 °C (50-85 °F) in unopened original packages, without significant deterioration in the quality of the material. Visico LE4417 and Ambicat LE4476 should be stored in dry conditions and protected from direct sunlight. Improper storage can initiate degradation, which results in odour generation and colour changes and can have negative effects on the physical properties of this product. Ambicat LE4476 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.

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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.