PRODUCT DATA SHEET

Polyethylene

Visico™ LE4423 / Ambicat™ LE4472

Silane Crosslinkable Insulation Compound

Description

Visico™LE4423 / Ambicat™LE4472 is a silane crosslinkable black compound system designed for insulation of low voltage energy cables and covering/insulation of overhead cables.

Visico LE4423 is a low density polyethylene, copolymerised with vinyl silane. Ambicat LE4472 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 LE4423 (93 parts) and Ambicat LE4472 (7 parts) exhibits excellent thermo-oxidative stability. The combination is suitable for both copper and aluminum conductors. The final product contains nominal 2,2% of fine size carbon black ensuring excellent weatherability.

Typical characteristics

Visico™ LE4423 / Ambicat™ LE4472 can be described with following typical characteristics:

- Excellent processing properties
- Low scorch allowing long runs and more frequent tooling changes
- Environmentally friendly (free from heavy metals)
- Less smell; more consistent quality (no volatiles)
- Outstanding curing speed
- No drying prior to extrusion
- Excellent surface finish
- 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. Please contact your Borealis representatives for additional information.

Applications

Visico™ LE4423 / Ambicat™ LE4472 is intended for following applications:

- Covering/insulation of overhead cables
- Insulation of low voltage energy cables, range up to 6 kV

Specifications

Visico™ LE4423 / Ambicat™ LE4472 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.

- ANSI/ICEA S-70-547
- ANSI/NEMA WC 70/ICEA S-95-658-2021
- ASTM D1248 Type II Class C, Category 4
- HD 603 S1
- HD 626 S1 TIX-2, TIX-3, TIX-4, TIX-5, TIX-6, TIX-8, TIX-9
- IEC 60502-1
- NEMA WC 71 / ICEA S-96-659
- NF C33-209 (Except messenger wire part 6.5 and 6.8)
- UL854 USE, USE-2
- Canadian Standards Association C22.2 No. 38 Cable Type RW-90 Outdoor

The standards referred to above is a selection and is not complete coverage of all applicable standards. Contact your Borealis representative for additional information.

Visico™/Ambicat™ are trademarks of the Borealis Group

Polyethylene

Visico™ LE4423 / Ambicat™ LE4472

Physical properties

Property	Typical value *	Unit	Test method
Density [1]	933	kg/m³	ISO 1183-1
Melt flow rate (190 °C/2.16 kg) [2]	1.0	g/10min	ISO 1133
Tensile strain at break (250 mm/min)	>300	%	IEC 60811-501
Tensile strength (250 mm)	>15	MPa	IEC 60811-501
Change of tensile properties After ageing 150 °C, 240h [3]	≤25	%	IEC 60811-401
Change of tensile properties After UV ageing (Between 3 and 6 weeks) [3]	≤15	%	NF C33-209
Change of tensile properties After UV ageing (After 6 weeks) [3]	≤30	%	NF C33-209
Hot set test - elongation under load (200°C, 0.30 MPa)	60	%	IEC 60811-507
Hot set test - permanent deformation (200°C, 0.30 MPa)	0	%	IEC 60811-507

* Data should not be used for specification work

[1] *Density (mixture 93:7).*

[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
Dielectric constant (50 Hz)	2.6	-	IEC 62631-2-1

* Data should not be used for specification work

Processing techniques

Extrusion:
Visico LE4423 / Ambicat LE4472 are suitable for most equipment designed for PVC/PE extrusion.

Typically the following process conditions are used:

Processing setting	Typical value/range
Barrel temperature 1	150 °C
Barrel temperature 2	170 °C
Barrel temperature 3	170 °C
Barrel temperature 4	170 °C
Die head temperature	170 °C

The temperature of the melted polymer during extrusion should preferably not exceed 200 °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.

Conductor preheating up to 100°C is recommended when producing cables with a conductor up to 16 mm ² for good mechanical properties.

Crosslinking:

Visico™/Ambicat™ are trademarks of the Borealis Group

BOREALIS

Visico™ LE4423 / Ambicat™ LE4472

Thickness	Time	Condition
0,7 mm	4,5 Days	23°C, 50% humidity, in air.
0,7 mm	< 30 min	90°C, Sauna or water bath.
1,8 mm	2 h	90°C, Sauna or water bath.

Packaging and storage

Visico LE4423 - Base material is protected from moisture ingress.
Package: Bags
Bulk
Octabins
Smallbins

Ambicat LE4472 - Catalyst master batch is protected from moisture ingress
Package: Bags
Octabins

Visico LE4423 / Ambicat LE4472 has excellent storage stability. Visico LE4423 can be stored for 18 months and Ambicat LE4472 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 LE4423 and Ambicat LE4472 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 LE4472 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. Once a bag of Ambicat LE4472 is opened, we recommend to fully use it; otherwise, the bag must be properly resealed between uses, as even short periods of storage in humid conditions may cause scorch during extrusion.

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.

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.