PRODUCT DATA SHEET

Polyethylene

Visico™ ME4425/LE4462

Silane Crosslinkable Compound

Description

Visico™ ME4425/LE4462 is a silane crosslinkable black compound system designed for overhead track resistant energy cables.

Visico™ ME4425 is a medium density polyethylene, copolymerized with vinyl silane.
Visico™ LE4462 is a crosslinking catalyst masterbatch specially designed to be used with Visico ME4425 to accelerate the moisture-induced reaction and impact track resistance. The system crosslinks quickly in sauna or in hot water.

Cable insulation with a proper mixture of Visico ME4425 (90 parts) and LE4462 (10 parts) exhibits excellent thermo-oxidative stability. The system can be used with copper or aluminum although overhead cables, covered conductors, is primarily aluminum conductors due to the weight saving versus copper for overhead pole cables. The use of ME4425 and LE4462 is designed to provide good weathering performance.

If a semiconductive inner layer is required, we recommend to use Borealis LE0542 together with Visico ME4425/LE4462.

Typical characteristics

Visico™ ME4425/LE4462 can be described with following typical characteristics:

- Excellent processing properties
- Low scorch allowing long runs and more frequent tooling changes
- Excellent surface finish
- Less smell; more consistent quality (no volatiles)
- Good curing speed
- No drying prior to extrusion
- Excellent storage stability

Applications

Visico™ ME4425/LE4462 is intended for following applications:

Covering/insulation of overhead cables

Visico ME4425/LE4462 is designed as a track resistant covering for overhead energy cables with rated voltages up to 35 kV

Specifications

Visico™ ME4425/LE4462 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.

- NBR 11873 / NBR 10296
- ASTM D2303/ASTM D2132
- IEC 60587

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

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Physical properties

Property	Typical value *	Unit	Test method
Density [1]	935	kg/m³	ISO 1183-1
Melt flow rate (190 °C/2.16 kg) [2]	1.00	g/10min	ISO 1133-1
Melt flow rate (190 °C/2.16 kg) [3]	10.5	g/10min	ASTM D1238
Tensile strength (250 mm/min) [4]	≥20	MPa	IEC 60811-501
Tensile strain at break (250 mm/min) [4]	>300	%	IEC 60811-501
Change of tensile properties After ageing 135 °C, 168h [5]	≤25	%	IEC 60811-401
Tensile strength at break [4]	≥2900	psi	ASTM D638
Elongation at Break [4]	> 300	%	ASTM D638
Hot set test - Permanent deformation (200 °C, 0.40 MPa) [4]	0	%	IEC 60811-507
Hot set test - Elongation under load (200 °C, 0.40 MPa) [4]	60	%	IEC 60811-507
Hot Creep Test (150°C, 29 psi) Permanent deformation [4]	0	%	ICEA T-28-562
Hot Creep Test (150°C, 29 psi) Elongation under load [4]	60	%	ICEA T-28-562

* Data should not be used for specification work

[1] *(mixture 90:10)*
[2] *Base resin*
[3] *Masterbatch*
[4] *Addition of 10% Catalyst masterbatch.*
[5] *Addition of 10% Catalyst masterbatch.*
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) [4]	2.3	-	IEC 60250
Dielectric constant [6]	2.3	-	ASTM D150

* Data should not be used for specification work

[4] *Addition of 10% Catalyst masterbatch.*
[6] *60 Hz, Addition of 10% Catalyst masterbatch.*

Other properties

Property	Typical value *	Unit	Test method
Track resistance [4]	2.75	kV	NBR 10296

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[4] *Addition of 10% Catalyst masterbatch.*

Processing techniques

Extrusion:
Visico ME4425/LE4462 are suitable for most equipment designed for PVC/PE extrusion. Temperature profile will vary depending on the extruder and screw configuration, ie, depending on the shear heat. Typically the following process conditions are used:

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Processing setting	Typical value/range
Barrel temperature 1	140-150 °C
Barrel temperature 2	150-170 °C
Barrel temperature 3	160-180 °C
Barrel temperature 4	170-185 °C
Die head temperature	170-190 °C
Melt temperature	180-195 °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. If an inner semiconductive layer is used in the cable, pressure tooling is preferable. Otherwise tube-on tooling is preferable especially with larger cables.

The use of a gradient cooling bath will improve the cable physical properties and ensure the track resistance performance of the cable

Crosslinking:
These products can be crosslinked by immersion in hot water or exposed to low pressure steam at a temperature up to 80°C. This time period may be varied due to the humidity, thickness of insulation, reel size and temperature.

Packaging and storage

Visico ME4425 - Base material is protected from moisture ingress
Package: Bulk
Octabins
Ambicat LE4462 - Catalyst master batch is protected from moisture ingress
Package: Bags

Visico ME4425/LE4462 has excellent storage stability. Visico ME4425 and Ambicat LE4462 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 ME4425 and LE4462 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. LE4462 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.

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

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