Polyethylene

Visico™ LE4427 / Ambicat™ LE4476

Description

Visico LE4427 / Ambicat LE4476 is a silane crosslinkable black compound system designed for weather resistant covering/insulation of aerial bundled cables

Visico LE4427 is a black low density polyethylene, copolymerised with vinyl silane. 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 LE4427 (95 parts) and Ambicat LE4476 (5 parts) exhibits excellent thermo-oxidative stability. The combination is suitable for both copper and aluminum conductors. The final product contains nominal 2,4% of well dispersed fine size carbon black ensuring excellent weatherability.

Applications

Visico LE4427 / Ambicat LE4476 is designed for weather resistant covering/insulation of aerial bundled cables.

Specifications

Visico LE4427 / Ambicat LE4476 in combination meets the applicable requirements as below when processed using sound extrusion and testing procedure:

ANSI/ICEA S-70-547
ASTM D 1248 Type II, Class C, Category 4
HD 626 S1 (TIX-2, TIX-3, TIX-4, TIX-5, TIX-6, TIX-8, TIX-9)
NF C33-209 (Except messenger wire part 6.5 and 6.8)
NEMA WC 70/ ICEA S-100-685
NEMA WC 71/ ICEA S-96-659

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

Special Features

Visico LE4427 / Ambicat LE4476 insulation system offers:

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.

Physical Properties

Property	Typical Value Data should not be used for specification work	Test Method
Density (mixture 95:5)	935 kg/m³	ISO 1183-1, Method A
Melt Flow Rate (190 °C/2,16 kg)	1,0 g/10min	ISO 1133
Tensile Strain at Break (250 mm/min)	> 300 %	IEC 60811-501
Tensile Strength (250 mm/min)	> 15 MPa	IEC 60811-501

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Change of Tensile Properties After Ageing (240 h, 150 °C) [1]		<= 25 %	IEC 60811-401
Change of Tensile Properties After UV Ageing (Between 3 and 6 weeks) [1]		<= 15 %	NF C33-209
Change of Tensile Properties After UV Ageing (After 6 weeks) [1]		<= 30 %	NF C33-209
Carbon black content		2,4 %	ISO 6964
Brittleness temperature		< -76 °C	ASTM D 746
Environmental Stress Crack Resistance (50 °C, Igepal 10 %, F20)		> 96 h	IEC 60811-406
Hot Set Test (200 °C, 0,30 MPa)	Elongation under load	30 %	IEC 60811-507
	Permanent deformation	0 %	

[1] 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 Data should not be used for specification work	Test Method
Dielectric constant (50 Hz)	< 2,9	IEC 60250
DC Volume Resistivity	> 1 PΩcm	IEC 60093
Dielectric Strength	> 22 kV/mm	IEC 60243

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Processing Techniques

Visico LE4427 / Ambicat LE4476 are suitable for most equipment designed for PVC/PE extrusion.

Extrusion

Typically the following process conditions are used:

Barrel 1	150 °C
Barrel 2	170 °C
Barrel 3	170 °C
Barrel 4	170 °C
Die head	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 mm² for good mechanical properties.

Crosslinking

These products can be crosslinked in room temperature, 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.

Packaging

Visico LE4427 - Base material is protected from moisture ingress
Package: Octabins
Ambicat LE4476 - Catalyst master batch is protected from moisture ingress
Package: Bags

Storage

Visico LE4427 / Ambicat LE4476 has excellent storage stability. Visico LE4427 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 LE4427 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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Safety
Please see our "Safety data sheet" / "Product safety information sheet" for details on various aspects of safety, recovery and disposal of the product. For more information, contact your Borealis representative.

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