PRODUCT DATA SHEET

Polyethylene

Visico™ LE4421/LE4437

Silane Crosslinkable Insulation Compound

Description

Visico™ LE4421/LE4437 is a silane crosslinkable natural compound system designed for insulation of low voltage energy cables.

Visico™ LE4421 is a low density polyethylene, copolymerised with vinyl silane.
Visico™ LE4437 is a crosslinking catalyst masterbatch specially designed to be used with Visico base resins. The system crosslinks quickly in sauna or in hot water.

Cable insulation with a proper mixture of Visico LE4421 (95) parts) and Visico™ LE4437 (5 parts) exhibits excellent thermo-oxidative stability. The combination is suitable for both copper and aluminium conductors. Visico™ LE4437 contains a copper passivator, which minimizes discoloration (blackening) of the conductor.

Typical characteristics

Visico™ LE4421/LE4437 can be described with following typical characteristics:

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

Applications

Visico™ LE4421/LE4437 is intended for following applications:

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

Specifications

Visico™ LE4421/LE4437 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.

Canadian Standards Association C22.2 No. 38 Cable Types RW-90 and RWU-90	HD 603 S1
EN 50290-2-29	IEC 60502-1

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]	923	kg/m³	ISO 1183-1
Density [2]	935	kg/m³	ASTM D792
Melt flow rate (190 °C/2.16 kg) [1]	1.0	g/10min	ISO 1133-1
Hot Creep Test (150°C, 29 psi) Permanent deformation [3]	0	%	ICEA T-28-562
Hot Creep Test (150°C, 29 psi) Elongation under load [3]	60	%	ICEA T-28-562
Tensile strength (250 mm) [3]	>2200	psi	ASTM D638
Elongation at Break [3]	>200	%	ASTM D638
Change of tensile properties After ageing 121 °C, 168h [4]	≤20	%	ASTM D638

* Data should not be used for specification work

[1] *Base resin*
[2] *Masterbatch*
[3] *Addition of 5% Catalyst masterbatch*
[4] *Addition of 5% 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 [5]	2.3	-	ASTM D150

* Data should not be used for specification work

[5] *60 Hz, Addition of 5% Catalyst masterbatch*

Processing techniques

Extrusion:
Visico LE4421/LE4437 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	295 °F
Barrel temperature 1	145 °C
Barrel temperature 2	330 °F
Barrel temperature 2	165 °C
Barrel temperature 3	340 °F
Barrel temperature 3	170 °C
Barrel temperature 4	340 °F
Barrel temperature 4	170 °C
Die head temperature	350 °F
Die head temperature	175 °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:
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.

Packaging and storage

Visico LE4421 - Base material is protected from moisture ingress
Package: Octabins
Smallbins
LE4437 - Catalyst master batch is protected from moisture ingress
Package: Bags
Smallbins

Visico LE4421/LE4437 has excellent storage stability. Visico LE4421 and Visico™ LE4437 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 LE4421 and Visico™ LE4437 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™ LE4437 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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