

Polyethylene

LE0563

Thermoplastic Semiconductive Jacketing Compound

Description

LE0563 is a thermoplastic semi-conductive compound specifically designed for medium- high and extra-high voltage cable systems requiring improved grounding. It may be used either as a complete jacket or as a thin layer extruded on top of the regular jacket.

This compounds permits easy diagnostic testing of the cable to ensure jacket conformity, allowing confirmation of fault-free cable before and after installation. It provides excellent mechanical properties, superior environmental stress crack resistance and good electrical conductivity. Due to the semi-conductive properties, it will also provide added protection against lightning.

Typical characteristics

LE0563 can be described with following typical characteristics:

Excellent environmental stress cracking resistance (ESCR)

Good electrical conductivity

Applications

LE0563 is intended for following applications:

Semi-conductive layer for medium to extra-high voltage cable systems, Submarine cables

Specifications

LE0563 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.

IEC 60502 Type ST7

ICEA S-94-649 Type 1

IEC 60840 Type ST7

ICEA S-108-720 Type 1

IEC 62067 Type ST7

ICEA S-108-720 Type 2

Physical properties

| Property | Typical value * | Unit | Test method |
|---|-----------------|-------------------|---------------|
| Density ¹ | 1055 | kg/m ³ | ISO 1183-1 |
| Melt flow rate (190 °C/21.6 kg) | 30 | g/10min | ISO 1133-1 |
| Tensile strain at break ² | 560 | % | ISO 527-2 |
| Tensile stress at break ² | 16 | MPa | ISO 527-2 |
| Change of tensile properties after ageing 110°C, 10 days ³ | ≤25 | % | IEC 60811-401 |
| Environmental stress crack resistance (50°C, Igepal 10%, F0) ² | >2000 | h | ASTM D 1693 |
| Hardness, Shore D ⁴ | 58 | - | ISO 868 |
| Hardness, Shore D ⁵ | 55 | - | ISO 868 |
| Moisture content ⁶ | 400 | ppm | EN ISO 15512 |
| Pressure test at high temperature (110 °C, 6h) | ≤5 | % | IEC 60811-508 |

* Data should not be used for specification work

¹ 23°C

² Measured on molded plaques.

³ Measured on molded plaques,

⁴ 1s

⁵ 3s

⁶ Karl Fischer titration

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Electrical properties

| Property | Typical value * | Unit | Test method |
|---|-----------------|--------|-------------|
| DC Volume resistivity (23°C) ¹ | 25 | Ohm*cm | ISO 3915 |
| DC Volume resistivity (90°C) ⁷ | 50 | Ohm*cm | ISO 3915 |

* Data should not be used for specification work

¹ 23°C

⁷ 90°C

Processing techniques

To produce a good and reliable cable, it is essential to ensure careful and very clean handling of the jacketing material.

Pre-drying

It is recommended that LE0563 is dried prior to extrusion. Typical drying conditions are shown below:

Predrying (4 h) 70°C With dehumidified air

No screw cooling

Optimum DC volume resistivity and mechanical properties could be obtained by maximizing cooling water temperature or distance between cooling water and die head

| Processing setting | Typical value/range |
|------------------------------------|---------------------|
| Barrel temperature 1 ⁸ | 180 °C |
| Barrel temperature 2 ⁹ | 190 °C |
| Barrel temperature 3 ¹⁰ | 200 °C |
| Barrel temperature 4 ¹¹ | 210 °C |
| Barrel temperature 5 ¹¹ | 210 °C |
| Die temperature ¹¹ | 210 °C |
| Melt temperature ¹² | 215-245 °C |

⁸ 356 °F

⁹ 374 °F

¹⁰ 392 °F

¹¹ 410 °F

¹² 419-473 °F

Please contact your local Borealis representative for specific assistance.

Packaging and storage

Package: Small bins

LE0563 has a shelf life of 24 months from production date if stored in unopened original packages, under dry and clean conditions at temperatures between 10 - 30 °C (50 - 85 °F). Material shelf life is affected by the storage conditions and extreme conditions influence the general material quality and performance. It is also recommended to ensure proper stock rotation by First In – First Out principle.

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.

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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.

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