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Polyethylene
LE1120

Description
LE1120

It is a low density polyethylene compound intended for the insulation of radio frequency coaxial cables. BorcellLE1120 is designed to give the lowest possible cable attenuation by the selection of electrical clean feedstock and contains no additives.

Applications
LE1120 is designed to use as physically foamed insulation for:

Radio frequency coaxial cables (50 Ohm)

Specifications
LE1120 meets the following material classification:

ISO 1872-PE, KGN, 23-D045
ASTM D 1248 Type I, Class A, Category 3, Grade E1, E2, E3

The following cable material standards are met by LE1120:

EN 50290-2-23 [1]

[1] Appropriate parts

Cables manufactured with LE1120 using sound extrusion practice normally comply with the following cable product standards:

IEC 61196
EN 50117

Special features
LE1120 consists of specially selected components to offer:

Low attenuation at high frequency
Expansion degree above 80 %

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Polyethylene
LE1120

Physical Properties

Property	Typical Value Data should not be used for specification work	Test Method
Density	924 kg/m³	ISO 1183
Melt Flow Rate (190 °C/2,16 kg)	5 g/10min	ISO 1133
Tensile Strain at Break (50 mm/min)	500 %	ISO 527-2
Tensile Strength (50 mm/min)	12,2 MPa	ISO 527-2
Hardness, Shore D (1 s)	45	ISO 868

Electrical Properties

Property	Typical Value Data should not be used for specification work	Test Method
Dielectric constant (1 MHz)	2,28	IEC 60250
Dielectric constant (1,9 GHz)	2,28	Borealis Method
Dissipation Factor (1 MHz)	0,00004	IEC 60250
Dissipation Factor (1,9 GHz)	0,00015	Borealis Method

Processing Techniques

LE1120 can be processed over a wide range of conditions.

Processing conditions are influenced by the construction of the gas injection system, cable size, choice of HDPE component and nucleating agent as well as HDPE/LDPE ratio.

A variety of nucleating agents can be used in combination with LE1120/HE1123.
Nucleating agent masterbatch Hydrocerol NUC 5532 from Clariant, which contains endothermic blowing agent has shown good results.

Tooling
Pressure tooling is invariably required. The die diameter is a function of the level of expansion with a greater expansion requiring a smaller die. Typically a die diameter 50% of the nominal insulation outer diameter is used.

Typical extrusion temperatures
Typical extrusion profiles for LE1120/HE1123 ratio 70/30 + 1%NUC5532:

Single extruder process:

Screw cooling	120°C
Zone 1	160°C
Zone 2	190°C
Zone 3	185°C
Gas Injection	
Zone 4	145°C
Zone 5	135°C
Flange	135°C
Adapter	135°C

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Adapter	140°C
Head	130°C

Cascade Extruder process

Extruder 1:	
Entry zone cooling	35°C
Screw cooling	110°C
Zone 1	165°C
Zone 2	185°C
Zone 3	190°C
Zone 4	195°C
Gas-injection	
Zone 5	175°C
Zone 6	165°C
Head 1	160°C
Head 2	155°C
Head 3	150°C
Head 4	150°C

Extruder 2:	
Entry zone cooling	50°C
Screw cooling	75°C
Zone 1	145°C
Zone 2	140°C
Zone 3	135°C
Zone 4	135°C
Zone 5	135°C
Zone 6	135°C
Head 1	140°C
Head 2	140°C
Head 3	140°C
Head 4	145°C

Please contact your local Borealis representative for specific assistance.

Packaging

Package:	Bags Bulk Octabins

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Storage
LE1120 should be stored in dry conditions at temperatures below 50°C and protected from UV-light.

Safety
The product is not classified as dangerous.Check and follow local codes and regulations!

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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