PRODUCT DATA SHEET

Polyethylene

FR6012

Halogen Free Flame Retardant Compound

Description

FR6012 is a black, thermoplastic, low smoke, halogen free flame retardant jacket compound with high mechanical strength combined with high flame retardancy.

The principal feature of this compound is its foundation in Borealis's unique PE base resin, combined with an advanced FR filler. This results in high physical strength and toughness, along with excellent fire performance.

Typical characteristics

FR6012 can be described with following typical characteristics:

High mechanical strength and toughness

UV resistance

High flame retardancy

Low smoke halogen free (LSHF) flame retardant jacket for power cables with high fire performance.

Applications

FR6012 is intended for following applications:

Jackets for energy cables

Halogen free flame retardant compounds

It is suitable for cables used in areas that are highly sensitive to smoke, or to corrosive and toxic combustion products. Ideal for most cable constructions where high flame retardancy is required—such as those subject to CPR regulations or located in areas with strict fire codes (public buildings, transportation infrastructure, data centers, high-occupancy residential & office building).

Specifications

FR6012 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 60502-2 Type ST12
IEC 60840 Type ST12
IEC 62067 Type ST12

Polyethylene

FR6012

Physical properties

Property	Typical value *	Unit	Test method
Density	1315	kg/m³	ISO 1183-1
MFR 190°C/21.6kg	6.3	g/10 min	ISO 1133-1
Hardness, Shore D [1]	57	-	ISO 868
Tensile strength [2]	>15	MPa	ISO 527-2
Elongation at Break [2]	>450	%	ISO 527-2
Tensile Strength after Ageing (240 h, 110 °C) [3]	>10	MPa	IEC 60811-401
Elongation after Ageing (240 h, 110 °C) [4]	>300	%	IEC 60811-401
Pressure test at high temperature (110 °C, 6h) [4]	< 25	%	IEC 60811-508
Tear resistance [5]	>15	N/mm	HD 605 S2
Water absorption (70 °C, 14 days)	0.4	mg/cm²	IEC 60811-402

* Data should not be used for specification work

[1] *Measured after 15s*

[2] *Measured on extruded tape at 50 mm/min*

[3] *Change d 30% Measured on extruded tape.*

[4] *Measured on extruded tape*

[5] *Measured on extruded tape at 23°C*

Electrical properties

Property	Typical value *	Unit	Test method
DC Volume resistivity [6]	20	PΩm	IEC 62631
Dielectric strength	>10	kV/mm	IEC 60243

* Data should not be used for specification work

[6] *Measured at 23°C*

Other properties

Property	Typical value *	Unit	Test method
Limiting Oxygen Index [7]	>30	%	ISO 4589-2
Corrosivity of combustion fumes, Conductivity	<10	µS/mm	IEC 60754-2
Corrosivity of combustion fumes, pH	>4.3	-	IEC 60754-2

* Data should not be used for specification work

[7] *Specimen type IV, method A*

Processing techniques

FR6012 can be processed on a variety of PE/PVC extruders. The length/diameter (L/D) ratio of the extruder should be in the range 24 to 32. FR6012 needs proper homogenisation in the extruder. A low compression screw is recommended but also a screw with medium compression can be used at lower rpm. FR6012 must be pre-dried.

BOREALIS

Polyethylene

FR6012

Processing setting	Typical value/range
Drying temperature [8]	60 °C
Feed section temperature	85 °C
Barrel temperature	120 - 150 - 170 - 180 °C
Die temperature	190 °C
Maximum melt temperature	190 °C

[8] *4 - 6 hour*

The actual conditions will depend on the type of equipment used.

Packaging and storage

FR6012 should be stored indoors at temperatures between 10 - 30°C in unopened original packages in clean and dry environment, protected from sunlight. Following above-mentioned conditions the material can be safely stored for a period of up to 15 months after date of production.

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.

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

Borealis AG | Trabrennstrasse 6-8 | A-1020 Vienna | Austria
Telephone: +43 1 22 400 0* | Fax: +43 1 22 400 333
Website www.borealisgroup.com