



# Polyethylene Casico™ FR4804

Natural Low Smoke Zero Halogen Flame Retardant Jacketing Compound for Data Cables and Energy Distribution Cables

## Description

**Casico FR4804** is a thermoplastic, low smoke zero halogen (LSZH) flame retardant, UV stabilised, natural jacketing compound combining with excellent extrusion properties.

It is based on the novel technology, Casico, containing inorganic filler and a novel char-forming additive which confer flame retardancy with very limited smoke generation.

## Applications

**Casico FR4804** is designed for:

Jacket for data cables and 90 °C rated jacket for energy distribution cables.

It can be used in areas sensitive to smoke or corrosive and toxic combustion products.

## Specifications

**Casico FR4804** meets the applicable requirements below using sound commercial extrusion practice and testing procedures:

BS 7655 LTS2  
EN 50173  
EN 50290-2-27  
EN 50363-8 TM7

IEC 60227  
VDE 0207 Teil 24 (HM2, HM4 & HM5)  
VDE 0250 Teil 215

## Special features

**Casico FR4804** consists of specially selected components to offer:

Low smoke and reduced toxic or corrosive gas emissions  
Excellent processing properties  
Superb system ageing compatibility  
Low water permeability

UV stabilised and suitable for colouring  
Possibility for cable downsizing  
Processability on most PVC/PE extrusion equipment  
No need for pre-drying normally

## Physical Properties

Property	Typical Value	Test Method
	Data should not be used for specification work	
Density (Compound) <sup>1</sup>	1150 kg/m <sup>3</sup>	ISO 1872-2/ISO 1183
Melt Flow Rate (190 °C/2,16 kg) <sup>1</sup>	0,4 g/10min	ISO 1133
Flexural Modulus <sup>1</sup>	205 MPa	ISO 178
Tensile Strain at Break <sup>2</sup>	500 %	IEC 60811-1-1
Tensile Strength (50 mm/min) <sup>2</sup>	11 MPa	IEC 60811-1-1
Retention of Tensile Properties After Ageing (240 h, 100 °C)	< 20 %	IEC 60811-1-2

Casico is a trademark of Borealis A/S, Denmark.

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°C) <sup>2</sup>		
Retention of Tensile Properties After UV Ageing	< 20 %	
Hardness, Shore D ( 15 s) <sup>1</sup>	39	ISO 868
Pressure Test at High Temperature (90 °C, 4 h) <sup>2</sup>	9 %	IEC 60811-3-1
Cold Bend (-40 °C) <sup>2</sup>	Pass	IEC 60811-1-4
Cold Impact (-40 °C) <sup>2</sup>	Pass	IEC 60811-1-4
Water absorption (70 °C, 14 Days) <sup>2</sup>	0,11 mg/cm <sup>2</sup>	IEC 60811-1-3

<sup>1</sup> Compound<sup>2</sup> Cable (0.7 mm insulation over 1.5 mm<sup>2</sup> solid Cu)

### Electrical Properties

Property	Typical Value	Test Method
Data should not be used for specification work		
Volume Resistivity <sup>1</sup>	45 POhm.cm	IEC 60093
Dielectric Strength <sup>1</sup>	> 20 kV/mm	IEC 60243
Breakdown Voltage <sup>2</sup>	60 kV	ISO 6722
Breakdown Duration <sup>2</sup>	Pass	IEC 60227-2/2.3

<sup>1</sup> Compound<sup>2</sup> Cable (0.7 mm insulation over 1.5 mm<sup>2</sup> solid Cu)

### Combustion Properties

Property	Typical Value	Test Method
Data should not be used for specification work		
Limited Oxygen Index	35 %	
NBS Smoke Data	Optical Smoke Density Dmax	72
(76x76x0.7 mm plaque)	Time to Dmax	13 min
Flaming mode		
NBS Smoke Data	Optical Smoke Density Dmax	71
(76x76x0.7 mm plaque) Non	Time to Dmax	20 min
Flaming mode		
Cone Calorimeter (heat flux	Ignition time	150 s
35 kW/m <sup>2</sup> , 3 mm plaque)	Average Heat Release	177 kW/m <sup>2</sup>
	Max Heat Release	319 kW/m <sup>2</sup>
	Heat Combustion	28 MJ/dm <sup>3</sup>
	Smoke Obscuration	447 m <sup>2</sup> /dm <sup>3</sup>
	CO	0,025 kg/dm <sup>3</sup>
	CO <sub>2</sub>	1,8 kg/dm <sup>3</sup>
Corrosivity of Combustion Fumes <sup>1</sup>		1,5 µS/cm
		5,3

<sup>1</sup> Compound



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## Processing Techniques

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

Using the below set temperatures a stable extrusion process and a cable having a smooth glossy appearance can be achieved. On-size pressure or low draw down tube-on tolling is preferred. Whichever type of tooling is used, the die should preferably have a parallel land of length equal to the final cable diameter. Homo or Copolymer based masterbatches are suitable for colouring Casico FR4804.

Barrel 1	120 °C
Barrel 2	140 °C
Barrel 3	160 °C
Barrel 4	170 °C
Die	170 °C

## Packaging

Package:           Bulk  
                           Octabins  
                           Bags

## Storage

**Casico FR4804** normally does not need pre-drying unless the material has been stored in a moist environment for a long period. In such cases drying in dehumidified air for 4 hours at 70°C will normally reduce the moisture content to an acceptable value.

## Safety

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

Please see our Safety Data Sheet for details on various aspects of safety of the product, for more information contact your Borealis representative.



**Polyethylene**  
**Casico FR4804**

**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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