Borealis FR4810

Polyolefin

Borealis AG

Message:

FR4810 is a thermoplastic, low smoke zero halogen (LSZH) flame retardant, black jacketing compound combining with flexibility and exceptional fluid resistance. The composition is based on the elements Carbon, Hydrogen, Oxygen, Silicon and Calcium. Compounds based on these elements will therefore be the only significant constituents of the combustion fumes. Other elements may be present in concentrations less than 0.1%.
Its excellent flame retardancy is achieved by an inorganic filler and a novel char-forming additive.
The high operating temperatures and durability (abrasion resistance, hardness) of FR4810 makes it an attractive solution for energy cables installed in industrial areas, tunnels, ducts The ability of this compound to be used for both internal and external applications is valuable as it avoids the requirement of cable splicing at building service entrances. It can be used in areas sensitive to smoke or corrosive and toxic combustion products. In general, FR4810 has sufficient flame retardancy to satisfy bunched cable vertical burning tests.
FR4810 meets the applicable requirements as below when processed using sound extrusion practice and testing procedure:
BS 6724
BS 7655 LTS2
VDE 0207 Teil 24 (HM4)

General Information	
Filler / Reinforcement	Filler
Additive	Flame Retardant
Features	Durable Flame Retardant Good Abrasion Resistance Good Corrosion Resistance Good Flexibility Good Processability Good Strength Good Toughness Good UV Resistance Halogen Free High Heat Resistance Low Smoke Emission Low Toxicity Moisture Resistant
Uses	Cable Jacketing Industrial Cable Insulation
Agency Ratings	BS 6724 BS 7655 2 VDE 0207 3
Appearance	Black
Forms	Pellets

Processing Method	Extrusion		
Physical	**Nominal Value**	**Unit**	**Test Method**
Density [1]	1.27	g/cm³	ISO 1183
Melt Mass-Flow Rate (MFR) (190°C/2.16 kg)	0.10	g/10 min	ISO 1133
Water Absorption (70°C) [2]	0.800	mg/cm²	IEC 60811-1-3
Temperature Index	250	°C	ISO 4589-3
Smoke	15.0		NES 711
Toxicity	2.00		NES 713
Vertical Burn Test (760.0 µm) [3]	Pass		
Cone Calorimeter			ISO 5660
Average Heat Release [4]	152	kW/m²	
CO [5]	0.0110	kg/m³	
CO2 [6]	17.1	kg/m³	
Heat Combustion [7]	27.0		
Ingition time [8]	1.8	min	
Max Heat Release [9]	213	kW/m²	
Smoke Obscuration [10]	297		
Pressure Test (90°C) [11]	20	%	IEC 60811-3-1
Environmental Stress-Cracking Resistance (Condition B, 50°C, 10% Igepal, F20)	> 1000	hr	IEC 60811-4-1/B
Hardness	**Nominal Value**	**Unit**	**Test Method**
Shore Hardness [12] (Shore D, 15 sec)	48		ISO 868
Mechanical	**Nominal Value**	**Unit**	**Test Method**
Tensile Stress (Yield)	11.0	MPa	IEC 60811-1-1
Tensile Strain [13] (Break)	500	%	IEC 60811-1-1
Flexural Modulus [14]	200	MPa	ISO 178
Aging	**Nominal Value**	**Unit**	**Test Method**
Change in Tensile Stress [15] (110°C, 240 hr)	> -80	%	IEC 60811-1-2
Thermal	**Nominal Value**	**Unit**	**Test Method**
Brittleness Temperature [16]	< -35.0	°C	ASTM D746
Electrical	**Nominal Value**	**Unit**	**Test Method**
Volume Resistivity [17]	5.0E+15	ohms·cm	IEC 60093
Electric Strength	> 20	kV/mm	IEC 60243-1
Flammability	**Nominal Value**	**Unit**	**Test Method**
Oxygen Index	35	%	ASTM D2863
Extrusion	**Nominal Value**	**Unit**	
Cylinder Zone 1 Temp.	160	°C	
Cylinder Zone 2 Temp.	170	°C	
Cylinder Zone 3 Temp.	180	°C	
Cylinder Zone 4 Temp.	190	°C	
Die Temperature	190	°C	
NOTE			

1.	Compound, ISO 1872-2
2.	14 days, Cable (0.7 mm insulation over 1.5 mm^2 solid Cu)
3.	VW-1
4.	heat flux 35 kW/m2, 3 mm plaque
5.	heat flux 35 kW/m2, 3 mm plaque
6.	heat flux 35 kW/m2, 3 mm plaque
7.	heat flux 35 kW/m2, 3 mm plaque, MJ/dm3
8.	heat flux 35 kW/m2, 3 mm plaque
9.	heat flux 35 kW/m2, 3 mm plaque
10.	heat flux 35 kW/m2, 3 mm plaque, M2/dm3
11.	at high temperature, 4 hrs
12.	Compound
13.	Cable (0.7 mm insulation over 1.5 mm^2 solid Cu)
14.	Compound
15.	Cable (0.7 mm insulation over 1.5 mm^2 solid Cu)
16.	Compound
17.	Compound

Recommended distributors for this material

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