

# Borealis flame retardant solutions – empowering a safe and sustainable future

## FR cables in construction

Whether used in residential, commercial, or industrial buildings, flame retardant materials are subject to increasingly stringent regulations. Manufacturers must produce building products which exhibit low flame propagation and low smoke effluent generation. They must also be easily manufactured and fulfil all applicable safety specifications.

We, at Borealis, offer low fire hazard (LFH) solutions which meet a number of industry standards. Our proprietary Casico™ compounds exhibit reduced heat release and smoke generation, and produce no corrosive gas emissions. Our lower density compounds often permit downsizing thus contribute to environmental sustainability: less material is required while maintaining superior system performance. Specific Casico features include:

- Halogen-free flame retardancy
- Low smoke and no corrosive gas emissions
- Excellent processing characteristics
- Superb system ageing compatibility
- Mechanical strength and low water permeability
- UV-stabilised and suitable for colouring
- Allows cable downsizing
- Processability on most PVC/PE extrusion equipment

As low voltage cables across many applications are often used at high temperatures, there is an increasing demand for crosslinkable LFH materials. Our newly developed Visico™ FR compounds are designed to meet challenging requirements in mechanical and electrical properties whilst being easy to process and having long storage stability.

## FR cables in the automotive Industry

Global automotive manufacturers continually strive to improve vehicle performance while at the same time fulfilling increasingly complex environmental and safety-related requirements – all of which vary according to world region. Automotive wiring must be cost efficient; deliver higher temperature and wear resistance; offer greater flexibility; whilst meeting all relevant technical specifications.

We offer a broad range of peroxide and irradiation crosslinkable polyethylene (XLPE), flame retardant compounds which have been specifically developed to provide ideal primary wiring solutions in automobiles. Our XLPE solutions offer concrete benefits to OEMs and suppliers:

- Halogen-free flame retardancy
- Temperature performance: –40 °C to 125 °C
- Compliance with SAE (Society of Automotive Engineers) J-1127 and SAE J-1128
- Non-tarnishing characteristics
- Excellent heat stability and easy extrusion
- Easy colourability

We are expanding our offering with a halogen free, thermoplastic solution based on polypropylene. This new ISO 6722 compliant solution enables simple extrusion without the need for crosslinking.

The ever changing needs in this fast moving sector result in a stream of new products which will address new applications, fulfil stringent worldwide specifications and provide cost advantages.

Making everyday life easier | Date of issue: June 2022

**About Borealis** Borealis is one of the world's leading providers of advanced and circular polyolefin solutions and a European market leader in base chemicals, fertilizers and the mechanical recycling of plastics. We leverage our polymers expertise and decades of experience to offer value adding, innovative and circular material solutions for key industries. In re-inventing for more sustainable living, we build on our commitment to safety, our people and excellence as we accelerate the transformation to a circular economy and expand our geographical footprint.

With head offices in Vienna, Austria, Borealis employs 6,900 employees and operates in over 120 countries. In 2021, Borealis generated total sales and other income of EUR 10,153 million and a net profit of EUR 1,396 million. OMV, the Austria-based international oil and gas company, owns 75% of Borealis, while the remaining 25% is owned by a holding company of the Abu-Dhabi based Mubadala. We supply services and products to customers around the globe through Borealis and two important joint ventures: Borouge (with the Abu Dhabi National Oil Company, or ADNOC, based in UAE); and Baystar™ (with TotalEnergies, based in the US).

[www.borealisgroup.com](http://www.borealisgroup.com) | [www.borealiseverminds.com](http://www.borealiseverminds.com)

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## FOR MORE INFORMATION:

visit [www.borealisgroup.com](http://www.borealisgroup.com) and [www.borouge.com](http://www.borouge.com)

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## SUMMARY DATA SHEET

# Flame Retardant Solutions for Wire & Cable





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Product name	Density (kg/m³)	LOI (%)	Hardness Shore D (15s)	Tensile strength (Mpa)	Elongation at break (%)	Pressure test at high temperature (< 50 %)	Description
Thermoplastic insulation compounds, halogen-free							
Casico™ FR4802	1150	32	40	13	550	90 °C	70 °C rated insulation or sheathing
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Casico™ FR4802	1150	32	40	13	550	90 °C	70 °C rated insulation or sheathing
Casico™ FR4803	1150	31	39	12	500	90 °C	Sheath for fixed building wires and 1 kV energy cables, shielded data cables, UV stabilised
Casico™ FR4804	1150	35	39	11	500	90 °C	Sheath for data or energy cables, better flame retardancy than FR4803, UV stabilised
Casico™ FR4807	1150	34	31	12	700	80 °C	Sheath for flexible cords and patch cord data cables, OEM cables, UV stabilised
Casico™ FR6082	1175	28	53	15	450	115 °C	High strength sheath for power cables, excellent tear resistance, black coloured
Casico™ FR6083	1160	28	53	15	500	115 °C	High strength sheath for power cables, excellent tear resistance, natural coloured, UV stabilised
FR4810	1270	35	48	11	500	90 °C	High flame retardant sheath for campus cables and fibre optic cables, for tough environment, black coloured
Silane crosslinkable insulation and sheathing compounds, halogen-free							
Visico™ FR4450	1100	32	47	16	400	140 °C	Silane crosslinkable compound for building and industrial wire, used together with LE4433 or LE4439, UL 44, UL854
Visico™ FR4451	1190	32	40	16	400	140 °C	Silane crosslinkable compound for photovoltaic cables, used together with LE4439, TÜV 2 PfG 1169/08.2007, EN 50618
LE4439	940	–	–	–	–	–	Crosslinking catalyst master batch to be used with Visico™ FR4450 and FR4451, recommended dosage 5 %, natural colour
LE4433	1100	–	–	–	–	–	Crosslinking catalyst master batch to be used with Visico™ FR4450, recommended dosage 7 %, black colour
Compounds for automotive wire insulation, halogen-free							
FR4830	1400	25	50	16	220	–	Chemically crosslinkable compound for 125 °C automotive wire and appliance wire, SAE J1128/J1127, UL AWN Style 3173 125 °C, UL 44 SIS
FR4832	1400	25	50	17	200	–	Chemically crosslinkable compound for 125 °C automotive wire, SAE J1128/J1127
FR4845	1400	25	50	14	180	–	Irradiation crosslinkable compound for 125 °C automotive wire, SAE J1128/J1127
FR4847	1400	25	48	9	280	–	Thermoplastic striping compound for automotive wire, to be used in conjunction with Borealis crosslinkable products for automotive wire
FR4850	1380	27	70	>15	>300	–	Thermoplastic, PP, compound for 125 °C automotive wire, ISO 6722, SAE J1128/J1127, for small conductor sizes
FR4852	1270	24	60	>15	>300	–	Thermoplastic, PP, compound for 125 °C automotive wire, ISO 6722, SAE J1128/J1127, for larger conductor sizes