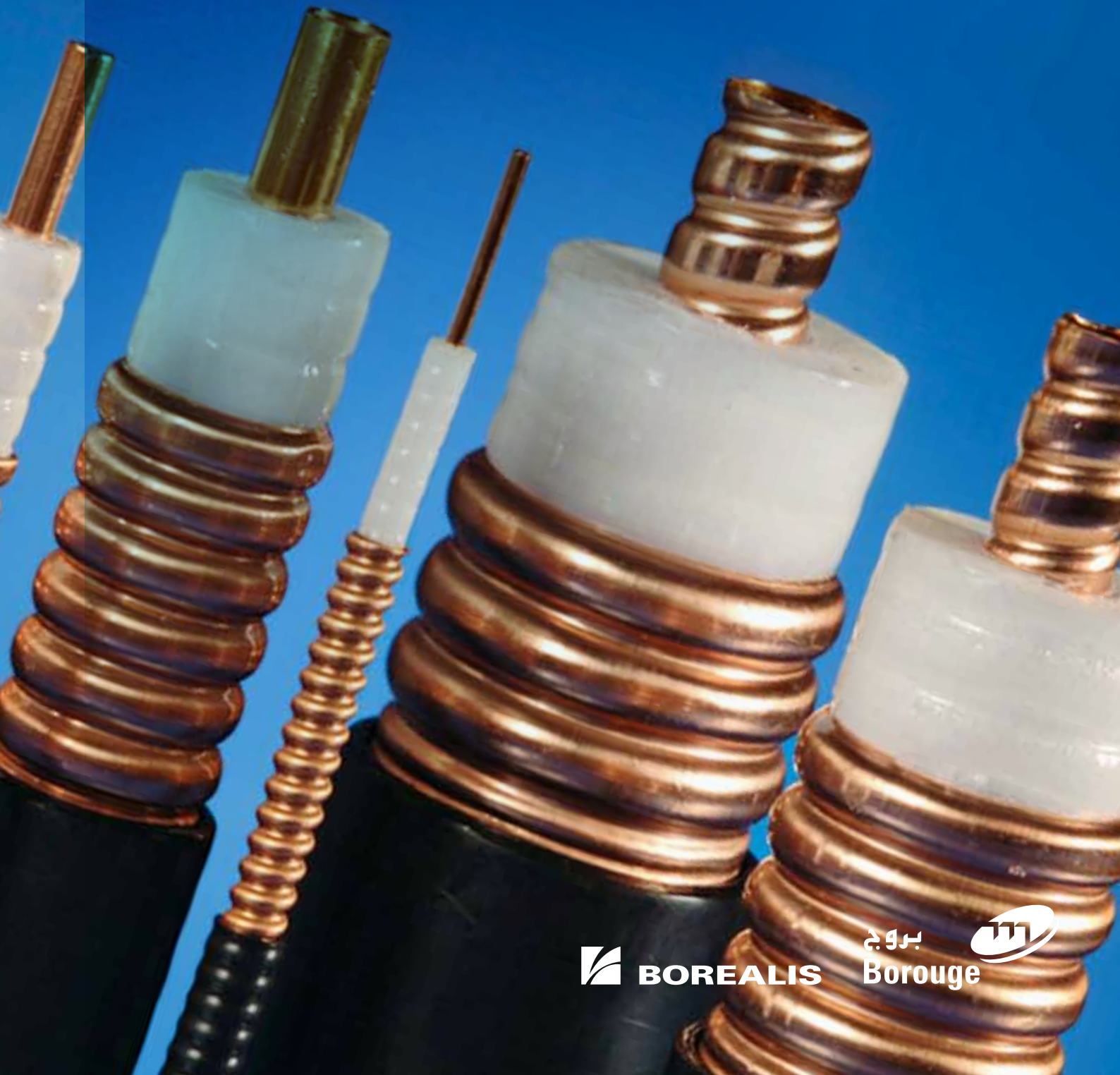

Solutions for Wire & Cable communication cables

Summary Data Sheet



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Solutions for Wire & Cable communication cables

Network Segments	Cable Type	Application	Type	Compound Name	Description
Trunk	Buried Fibre Optic	Sheath	Black	Borstar® LE8707	Bimodal LLDPE
				Borstar® HE6062	Bimodal HDPE
				Borstar® ME6052	Bimodal MDPE
	Aerial Fibre Optic	Steath	Black	Borstar® HE6081	Bimodal HDPE
	Submarine Fibre Optic	Sheath	Natural	Borstar® HE 6068	Bimodal HDPE
Access	Copper Multipair	Insulation	Solid	ME6032	Natural highly stabilised MDPE containing MDA
				HE3366	Natural highly stabilised HDPE containing MDA
			Cellular	ME1244	Natural highly stabilised MDPE containing chemical blowing agent and MDA
				HE1345	Natural highly stabilised HDPE containing chemical blowing agent and MDA
		Sheath	Black	LE6022	Low Density Copolymer
			Black	Borstar® LE8707	Bimodal LLDPE
	Coax 50 Ohm (Mobile antenna cable)	Insulation	Cellular	HE1123	Stabilised very low dielectric loss HDPE for gas injection
				LE1120	Unstabilised broad MWD LDPE for gas injection
		Sheath	Black	Borstar® LE8707	Bimodal LLDPE
	Coax 75 Ohm (CATV, Satellite drop, OEM, ...)	Insulation	Cellular	HE1106	Low dielectric loss HDPE containing stabiliser and nucleant for gas injection
			Solid	LE6006	Stabilised low dielectric loss LDPE
		Sheath	Black	Borstar® LE8707	Bimodal LLDPE
	FTTX	Sheath	Black	Borstar® HE6067	Bimodal HDPE
		Duct	Black	Borstar® HE6062	Bimodal HDPE
	Building	Symmetric copper data cable (Cat 5E, 6A, ...)	Insulation	Solid	HE4872
PP4874					Stabilised PP Compund
Cellular				HE1344	Natural highly stabilised HDPE containing chemical blowing agent and MDA
				HE4873	HDPE containing stabiliser, MDA and nucleant for gas injection
Sheath			Flame Retardant	Casico™ FR4804	Natural LSZH Flame Retardant
			Flame Retardant	Casico™ FR4803	Natural LSZH Flame Retardant
Optical Fiber Data cable		Sheath	Flame Retardant	Casico™ FR4803	Natural LSZH Flame Retardant
		Sheath	Flame Retardant	FR4810	Black LSZH Flame Retardant

MDA - Metal deactivator
UV - Ultra-violet

ESCR - Environmental stress crack resistance
ADSS - All dielectric self supporting

FR - Flame retardant
FOC - Fibre Optic Cable

LSZH - Low smoke zero halogen



Features

Very low shrink back, good crush resistance (Borstar LE8706 natural UV stabilised version).

High strength, very good crush resistance, good ESCR (Borstar HE6063 natural UV stabilised version).

Similar HE6062. Slightly less hard and lower shrinkage (Borstar ME6053 natural UV stabilised version).

Track resistance. Suitable for ADSS cable.

High cleanliness, low shrink back, low extrusion temperature.

High extrusion line speed, also suitable as conductor skin.

Very high extrusion line speed, tough, crush resistant, also suitable as insulation skin.

Very process tolerant, very high extrusion line speed, suitable for expansion 30–50%.

Tough, high extrusion line speed, suitable for expansion 30–40% (see HE1344 for higher expansion).

Long established meeting many standards, easy processing.

Crush and abrasion resistant, high strength (LE8706 natural UV stabilised version).

Blending component, to be used in combination with LE1120.

Blending component that provides melt stiffness. To be used in combination with HE1123.

High strength, crush resistance and very good ESCR (LE8706 natural UV stabilised version).

Expansion up to 75%.

High melt strength. Suitable for larger coaxial cables. Can also be used as a conductor or insulation skin.

Crush and abrasion resistant, high strength (LE8706 natural UV stabilised version).

Low shrink back, low extrusion temperature, good crush resistance (HE6068 natural UV stabilised version).

Other products may suit particular applications. Consult Borealis.

High extrusion line speed. Suitable for outer skin of foam-skin constructions.

High extrusion line speed with faster twisting speed and tougher mechanical performance.

High extrusion line speed. Expansion 40–50% (See HE1345 for lower expansion).

Very high line speed and fine cell structure.

Meets single wire burning EN60332-1-2. Suitable for Category 5 cables.

Meets single wire burning EN60332-1-2. Suitable for Category 7 (and bigger) cables.

Sheath for internal FOC & telephone cables. Suitable for campus application.

Good FR and weatherability. Suitable for campus FOC & telephone cables.

Solutions for Wire & Cable communication cables

The selection of the correct insulation and sheath is key to producing optimum cables. The term “communication cable” covers many applications and each application has specific needs. Borealis has developed a large range of products tailored to meeting these needs. This document is intended to give a quick and easy overview of the available Borealis solutions for communication applications. For in depth questions, always contact a local technical service engineer. Specific needs require specific solutions and Borealis has the expertise to advise on tailor-made solutions for your cables.

Borstar® – Enhanced polyethylene

The Borstar jacketing product family provides an outstanding balance between all important properties for communication cables like:

- Low shrinkage
- Good processability
- Excellent ESCR
- Low abrasion/hard surface
- Good barrier properties

Chemically and physically foamed insulation compounds

To meet the growing need for enhanced electrical properties in telephone, TV and data cables, Borealis has further developed its cellular insulation compounds. Borealis has an extensive range of chemically and physically foamed polyethylene (PE) compounds offering improved transmission properties and processability. Our PE cellular compounds are optimised to generate uniform and evenly distributed cells which enhance the transmission properties. In addition, improved flow

properties, melt elasticity and purity allow high line speeds in combination with minimised capacitance variations. Typical applications for the various PE insulation compounds include:

- Multipair telephone cables, smaller coaxial cables, such as Community Antenna Television Cables (CATV) and data cables produced with chemical foaming having expansion degrees of up to 50%.
- High expansion (up to 80%) physically foamed insulation typically used for large 50 ohm antenna cables.

Casico™ – Halogen-free flame retardant

In any fire, numerous aspects of the combustion process are important – propagation, heat release, combustion fumes, toxicity and smoke. Although flame spread remains a key concern, it is now recognised that the fuel loading, potential size and nature of the fire as defined by parameters such as heat of combustion and toxicity indices cannot be ignored. The importance of heat release is recognised and some cable specifications reflect this by defining cable heat release (MJ/m) as a design parameter. The concept of ‘down-sizing’ to minimise heat and toxic gas release will become more and more accepted in performance based cable design codes. Casico fire retardancy has two phases. The first involves the ester pyrolysis of the acrylate copolymer with the subsequent release of water. The second is the formation of a tough char which starves the fire of oxygen thus inhibiting propagation. Compared with hydrate filled Flame Retardant compounds the filler content is modest with a consequent minor increase in electrical permittivity and low water permeability.

About Borealis and Borouge Borealis is a leading provider of innovative solutions in the fields of polyolefins, base chemicals and fertilizers. With headquarters in Vienna, Austria, Borealis currently employs around 6,500 and operates in over 120 countries. It generated EUR 8.3 billion in sales revenue in 2014. The International Petroleum Investment Company (IPIC) of Abu Dhabi owns 64% of the company, with the remaining 36% owned by OMV, the leading energy group in the European growth belt. Borealis provides services and products to customers around the world in collaboration with Borouge, a joint venture with the Abu Dhabi National Oil Company (ADNOC). Building on its proprietary Borstar® and Borlink™ technologies and 50 years of experience in polyolefins, Borealis and Borouge support key industries including infrastructure, automotive and advanced packaging. The Borouge 3 plant expansion in Abu Dhabi will be fully operational in 2015. Borouge 3 will deliver an additional 2.5 million tonnes of capacity when fully ramped up, bringing the total Borouge capacity to 4.5 million tonnes. Borealis and Borouge will then have approximately 8 million tonnes of polyolefin capacity. Borealis offers a wide range of base chemicals, including melamine, phenol, acetone, ethylene, propylene, butadiene and pygas, servicing a wide range of industries. Together with Borouge the two companies will produce approximately 6 million tonnes of Base Chemicals in 2015. Borealis also creates real value for the agricultural industry with a large portfolio of fertilizers. The company distributes approximately 2.1 million tonnes per year. This volume will increase to more than 5 million tonnes by the end of 2015. Borealis and Borouge aim to proactively benefit society by taking on real societal challenges and offering real solutions. Both companies are committed to the principles of Responsible Care®, an initiative to improve safety performance within the chemical industry, and contribute to solve the world's water and sanitation challenges through product innovation and their Water for the World™ programme. **For more information visit:** www.borealisgroup.com · www.borouge.com · www.waterfortheworld.net

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