Solutions for Fibre Optic Systems –
Cables and Ducts

Fibre Optic System solutions

Optical fibre infrastructure is now recognised as the main building block for future proof high speed data transfer. Cables are aerial, direct buried, inserted in a modular duct system or under water. This puts severe demands on the material that protects the cable from the outside environment. The selection of the correct duct, jacket and tube is essential to produce an easy to install, robust and future-proof system. Borealis and Borouge have developed a large range of globally available products tailored to meeting these needs.

This document is intended to give a quick and easy overview of the available Borealis solutions for fibre optic systems. In case of in depth questions always contact a local technical service engineer. Specific needs require specific solutions and Borealis and Borouge have the expertise to advise and tailor solutions for your fibre optic systems.

Borstar® – Enhanced polyethylene

To satisfy the progressively evolving needs of fibre optic systems solutions, Borealis and Borouge offer a range of Borstar polyethylene and polypropylene materials which provide enhanced performance reliability through protection of the optical fibres during cable laying in the ground or sub-sea, as well as their in-service environment.

Borstar grades use Borealis' proprietary bimodal technology; deliver property combinations and performance levels not available with conventional PE. These include:
- High abrasion and impact resistance
- Thermal stability at high and low ambient temperatures
- Excellent balance of physical and water barrier properties
- Good ageing performance for long service life
- Optimal Environmental Stress Cracking Resistance
- Easy low temperature processability with very low shrink back

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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 | www.borealiseverminds.com

FOR MORE INFORMATION:
visit **www.borealisgroup.com** and **www.borouge.com**

Borealis AG
Trabrennstraße 6-8 · A-1020 Vienna · Austria
Tel +43 1 22 400 000 · Fax +43 1 22 400 333

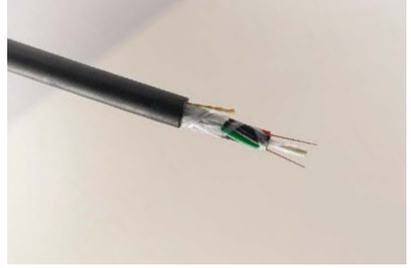
Borouge Pte Ltd · Sales and Marketing Head Office
1 George Street 18–01 · Singapore 049145

BOREALIS بروج Borouge

SUMMARY DATA SHEET

Solutions for Fibre Optic Systems – Cables and Ducts

BOREALIS بروج Borouge



Solutions for
Fibre Optic Systems – Cables and Ducts

	Application	Component	Type	Grade	Material + MB*	Features
Tight Buffer Unit	Buffer	Outer Fiber coating	Natural	Cascio™ FR4807	LSZH Compound	Soft fibre protection, easily strippable and LSZH.
Multi Loose tube	Standard Typical diameter: 8,5 mm	Jacket	Black	Borstar® HE6062	HDPE	High Strength, very good crush resistance, good ESCR.
			Natural	Borstar® HE6063	HDPE + color MB	Natural version of HE6062, UV stabilised.
			Black	Borstar® HE6067	HDPE	Extra low shrink back, low extrusion temperature, good crush resistance (HE6068 natural stabilised version).
			Natural	Borstar® HE6068	HDPE + color MB	Natural version of HE6067. UV stabilised, extra low shrink, high strength.
			Black	Borstar® HE6069	HDPE	Similar properties to HE6067 & HE6068 but laser printable.
			Black	Borstar® LE8707	LLDPE	High Strength, crush resistance, good ESCR.
			Natural	Borstar® LE8706	LLDPE + color MB	Natural version of LE8707, UV stabilised.
			Black	Borstar® ME6052	MDPE	Slightly less hard and lower shrinkage than HE6063, good processing.
			Natural	Borstar® ME6053	MDPE + color MB	Natural version of ME6052.
	Mini cables Typical diameter: 6,5 mm	Jacket	Black	Borstar® HE6067	HDPE	Extra low shrink back, low extrusion temperature, good crush resistance (HE6068 natural stabilised version).
			Natural	Borstar® HE6068	HDPE + color MB	Natural version of HE6067. UV stabilised, extra low shrink, high strength.
			Black	Borstar® HE6069	HDPE	Similar properties to HE6067 & HE6068 but laser printable.
Central tube	Central tube	Reinforced Jacket	Black	Borstar® HE6062	HDPE	High Strength, very good crush resistance, good ESCR, UV protected.
			Natural	Borstar® HE6063	HDPE + color MB	Natural version of HE6062.
			Black	Borstar® LE8707	LLDPE	High Strength, crush resistance, good ESCR, UV protected.
			Natural	Borstar® LE8706	LLDPE + color MB	Natural version of LE8707.
			Black	Borstar® ME6052	MDPE	Slightly less hard and lower shrinkage than HE6063, good processing, UV protected.
			Natural	Borstar® ME6053	MDPE + color MB	Natural version of ME6052.
Slotted core	Buffer tube	Jacket	Natural	PP1121	PP	PP for buffer tubes for loose tube constructions.
		Core	Natural	PP1121	PP	PP for buffer tubes for loose tube constructions.
Speciality	ADSS aerial	Jacket	Black	Borstar® HE6081	HDPE	Track resistant.
	Submarine	Jacket	Natural	Borstar® HE6068	HDPE	High cleanliness, extra low shrink back, low extrusion temperature.
	LSZH	Jacket	Black	FR4810	LSZH Compound	High flame retardant for campus cables and fibre optic cables.

	Application	Component	Type	Grade	Material + MB*	Features
Subduct	Tube Typical diameter: 16–50+ mm, Mono-Bilayer	Outer layer	Natural	BA415E	PP + UV MB	Downgauging possibilities. Optimal robustness during installation.
			Natural	BB2541	HDPE + UV MB	Easy processability. Optimal coiling.
		Inner layer	Natural	BA415E	PP + Slip MB	Mono layer option, maximise downgauging.
			Natural	BB2541	HDPE + Slip MB	Mono layer option, easy processability, Optimize coiling.
Microducts	Minicable Duct Typical outer diameter: 10–16 mm, Bi-Trilayer (Skin colouring)	Outer layer	Natural	BB2541	HDPE	Easy processability. Optimal coiling.
		Inner layer	Natural	BB2541	HDPE Ribbed	Easy processability. Optimal coiling.
	Fibre Unit Duct Typical outer diameter: 3–10 mm, Bi-Trilayer (Skin colouring)	Outer layer	Natural	FA3227	LDPE	Optimal coiling. Most flexible installation. UV stabilised.
			Natural	FB4230	LLDPE	Good coiling. Most flexible installation. Excellent ESCR.
		Inner layer	Natural	FA3227	LDPE	Optimal coiling. Most flexible installation. UV stabilised.
			Natural	FB4230	LLDPE	Good coiling. Most flexible installation. Excellent ESCR.

Key:
UV: Ultra-violet
ESCR: Environmental stress crack resistance
ADSS: All dielectric self supporting

FR: Flame retardant
LSZH: Low smoke zero halogen

*Masterbatch to be added during duct/cable production