

B13: 900 µm and 600 µm buffered fibers: ES9, ES6, LS9, PS9, TB9 and TB6

ES9, ES6, LS9, PS9, TB9 and TB6 fact sheet

Overview

Cables with 900 µm and 600 µm buffered fibers are commonly used for distribution (mini-breakout) cables, full breakout cables and assembly cables.

In order to meet all market requirements, Prysmian Group offers 4 different 900 µm and 600 µm buffer types as Draka branded:

- ES9/ES6: Tight buffer, made with low smoke fire retardant materials. 50-150 mm strippability.
- LS9: Semi-tight buffer, made with low smoke fire retardant materials. 300-700 mm strippability.
- PS9: Loose buffer, made with low smoke fire retardant materials. >1 m strippability.
- TB9/TB6: A very tight and robust buffer, made with a high grade modified thermoplastic polyester (PBT). Only for specialty applications. <20 mm strippability.

ES9 and ES6 tight buffer

ES9 standard tightly buffered fiber consist of a 1% proof tested fiber, a dual acrylate primary Colorlock™ coating to nominally 242 µm and a secondary buffer to 900 µm or 600 µm. The buffer is tightly extruded around the acrylate coating in order to make a versatile and robust buffering system.

The buffer material consists of a low smoke and fumes, zero halogen flame retardant compounds. The buffer material fulfills or exceeds the requirements of EN 60290-2-27 as well as is complies with the EU RoHS requirements. It contains a high amount of advanced flame retardant fillers giving the buffer very good properties in case of burning. The buffer is extruded on the coated fiber to a narrow tolerance of ± 50 µm. The buffer may be colored to any color of IEC 60304.

This buffer is supplied as in a unique dual layer concept. The inner layer is optimized for the best protection of the fiber and for the optimum stripping performance. The outer buffer layer is to eliminate sticking issue of buffer to the cable jacket material or to avoid buffer and cable jacket to melt together. As both jacket material and buffer consist of LSHF based close family materials, those issues are likely to occur. If outer buffer layer is selected as a smoother surface with high melting point, then such issues are eliminated.

The combined coating and buffer may be removed to the 125 µm glass cladding diameter in one operation with ease and low force. Stripping is ideally done in bites of 15 – 25 mm.

The buffer alone may be removed up to a length of 150 mm to the 242 µm primary coating. The primary coated fiber is thereafter, available for splicing. The 242 µm coating may then in a second step be mechanically stripped to the 125 µm glass diameter. Stripping length is then up to the mentioned 150 mm.

Standards

ES9 complies with tight buffer fiber standards, such as:

IEC 60794-2-10 and IEC 60794-2-11	EN 60794-2-10 and EN 60794-2-11
IEC 60794-2-20 and IEC 60794-2-21	EN 60794-2-20 and EN 60794-2-21
IEC 60794-2-50 and IEC 60794-2-51	EN 60794-2-50 and EN 60794-2-51
GR-409-CORE : 2008	GR-409-CORE

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Properties

Diameter	900 µm ± 50 µm and 600 µm ± 50 µm, accordingly
Possible colors	12 according to IEC 60304 and TIA/EIA 598-A
Stripping	50 – 150 mm to the coating 15 – 25 mm to the cladding in one step < 150 mm to the cladding in two steps
Possible Fibers	All Draka fibers
Buffer material	LSHF-FR /LSZH fire retardant polymer compound, according to EN 50290-2-27
Properties in case of fire:	
Heat of combustion	17 MJ/km (0.005 kWh/m) for ES9 and 12 MJ/km (0.004 kWh/m) for ES6
No halogens	IEC 60754-1, pass
No acid matters	IEC 60754-2, pass
No dense smoke	IEC 61034-2, pass
Temperature range	-40°C – +70 °C*
Shrink back	< 0,1 %, IEC 60811-1-3, (70°C, 3 hours, 1 meter sample)
Kink	No kink
Crush resistance	100N/100 mm
Repeated bending	500 cycles, R= 20 mm, no damage

*The temperature range of tight buffered fibres is highly depending on cable construction and therefore the applicable temperature range is stated in cable data sheets.

LS9 tight buffer

LS9 dry semi tight buffered fiber consist of a 1% proof tested fiber, a dual acrylate primary Colorlock™ coating to nominally 242 µm and a secondary buffer to 900 µm. The buffer is extruded around the acrylate coating in order to make a semi loose buffer easily removable over a long length.

The buffer material consists of a low smoke and fumes, zero halogen flame retardant compounds. The buffer material fulfill or exceeds the requirements of EN 60290-2-27 as well as is complies with the EU RoHS requirements. It contains a high amount of advanced flame retardant fillers giving the buffer very good properties in case of burning. The buffer is extruded on the coated fiber to a narrow tolerance of ± 50 µm. The buffer may be colored to any color of IEC 60304.

This buffer is supplied as in a unique dual layer concept. The inner layer is optimized for the best protection of the fiber and for the optimum stripping performance. The outer buffer layer is to eliminate sticking issue of buffer to the cable jacket material or to avoid buffer and cable jacket to melt together. As both jacket material and buffer consist of LSHF based close family materials, those issues are likely to occur. If outer buffer layer is selected as a smoother surface with high melting point, then such issues are eliminated.

The buffer alone may be removed over a length of 300 to 700 mm to the 242 µm primary coating. The primary coated fiber is thereafter, available for splicing. The 242 µm coating may then in a second step be mechanically stripped to the 125 µm glass diameter.

The combined LS9 coating and buffer may be removed to the 125 µm glass cladding diameter in one operation with ease and low force. Stripping is thus done in bites of 15 – 25 mm.

Standards

LS9 complies with semi-tight buffer fiber standards, such as:

IEC 60794-2-10 and IEC 60794-2-11	EN 60794-2-10 and EN 60794-2-11
IEC 60794-2-20 and IEC 60794-2-21	EN 60794-2-20 and EN 60794-2-21
IEC 60794-2-50 and IEC 60794-2-51	EN 60794-2-50 and EN 60794-2-51
GR-409-CORE: 2008	GR-409-CORE

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Properties

Diameter	900 µm ± 50 µm
Weight	0.7 kg/km
Possible colors	12 according to IEC 60304 and TIA/EIA 598-A
Stripping	< 700 mm & > 300 mm to the coating 15 – 25 mm to the cladding in one step < 150 mm to the cladding in two steps
Possible Fibers	All Draka fibers
Buffer material	LSHF-FR /LSZH fire retardant polymer compound, according to EN 50290-2-27
Properties in case of fire:	
Heat of combustion	17 MJ/km; 0.005 kWh/m
No halogens	IEC 60754-1, pass
No acid matters	IEC 60754-2, pass
No dense smoke	IEC 61034-2, pass
Temperature range	-5°C – +60 °C*
Shrink back	< 1 %, IEC 60811-1-3, (70°C, 3 hours, 1 meter sample)
Kink	No kink
Crush resistance	100N/100 mm
Repeated bending	500 cycles, R= 20 mm, no damage

*The temperature range of tight buffered fibres is highly depending on cable construction and therefore the applicable temperature range is stated in cable data sheets.

PS9 tight buffer

PS9 dry semi tight buffered fiber consist of a 1% proof tested fiber, a dual acrylate primary Colorlock™ coating to nominally 242 µm and a secondary buffer to 900 µm. The buffer is extruded around the acrylate coating in order to make a semi loose buffer easily removable over a long length.

The buffer material consists of a low smoke and fumes, zero halogen flame retardant compounds. The buffer material fulfill or exceeds the requirements of EN 60290-2-27 as well as is complies with the EU RoHS requirements. It contains a high amount of advanced flame retardant fillers giving the buffer very good properties in case of burning. The buffer is extruded on the coated fiber to a narrow tolerance of ± 50 µm. The buffer may be colored to any color of IEC 60304.

This buffer is supplied as in a unique dual layer concept. The inner layer is optimized for the best protection of the fiber and for the optimum stripping performance. The outer buffer layer is to eliminate sticking issue of buffer to the cable jacket material or to avoid buffer and cable jacket to melt together. As both jacket material and buffer consist of LSHF based close family materials, those issues are likely to occur. If outer buffer layer is selected as a smoother surface with high melting point, then such issues are eliminated.

The buffer alone may be removed over a length of more than 1 m to the 242 µm primary coating. The primary coated fiber is thereafter, available for splicing. The 242 µm coating may then in a second step be mechanically stripped to the 125 µm glass diameter.

The combined LS9 coating and buffer may be removed to the 125 µm glass cladding diameter in one operation with ease and low force. Stripping is thus done in bites of 15 – 25 mm.

Standards

PS9 complies with semi-tight buffer fiber standards, such as:

IEC 60794-2-10 and IEC 60794-2-11	EN 60794-2-10 and EN 60794-2-11
IEC 60794-2-20 and IEC 60794-2-21	EN 60794-2-20 and EN 60794-2-21
IEC 60794-2-50 and IEC 60794-2-51	EN 60794-2-50 and EN 60794-2-51
GR-409-CORE: 2008	GR-409-CORE

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Properties

Diameter	900 µm ± 50 µm
Weight	0.7 kg/km
Possible colors	12 according to IEC 60304 and TIA/EIA 598-A
Stripping	> 1m to the coating, 1.5 m nominal 15 – 25 mm to the cladding in one step < 150 mm to the cladding in two steps
Possible Fibers	All Draka fibers
Buffer material	LSHF-FR /LSZH fire retardant polymer compound, according to EN 50290-2-27
Properties in case of fire:	
Heat of combustion	17 MJ/km; 0.005 kWh/m
No halogens	IEC 60754-1, pass
No acid matters	IEC 60754-2, pass
No dense smoke	IEC 61034-2, pass
Temperature range	0°C – +60 °C*

*The temperature range of tight buffered fibres is highly depending on cable construction and therefore the applicable temperature range is stated in cable data sheets.

TB9 and TB6 PBT buffer

TB9 tightly buffered fibres consist of a 1% proof tested fibre, a dual acrylate primary Colorlock™ coating to nominally 242 µm and a secondary buffer to 900 µm or 600 µm. The buffer is tightly extruded around the acrylate coating in order to make a robust buffering system with unsurpassed micro-bending relief.

The buffer material consists of mixture of PBT: polybutylene-terephthalate and amorphous polyether. It complies with the EU RoHS requirements. The buffer offers excellent hydrolyses stability, tear resistance and oil resistance. It has good UV stability, general chemical resistance, tear strength and wear properties. The buffer is extruded on the coated fibre to a narrow tolerance of ± 50 µm. The buffer may be coloured to any colour of IEC 60304.

The combined coating and buffer may be removed to the 125 µm glass cladding diameter in one operation with ease and low force. Stripping is ideally done in bites of 10 – 20 mm.

Properties

Diameter	900 µm ± 50 µm and 600 µm ± 50 µm, accordingly
Possible colours	12 according to IEC 60304 and TIA/EIA 598-A
Stripping	10 – 20 mm to the coating in one step
Possible Fibres	All Draka fibres
Buffer material	PBT
Temperature range	-40 °C – +70 °C*
Shrink back	None
Kink	No kink
Crush resistance	100N/100 mm
Repeated bending	500 cycles, R= 20 mm , no damage

*The temperature range of tight buffered fibres is highly depending on cable construction and therefore the applicable temperature range is stated in cable data sheets.

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