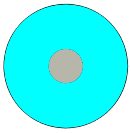
S LSHF ES9 0.9 1

ES9 fibre cord, 1 tightly buffered fibre Ø900 µm

DIN/VDE NO FR DK



Application and Installation

The intended use of this ES9 tightly buffed fibre is pigtails. The ES9 buffered fibre may also be manufactured to patch-cords, and be used as an element in cables. The standard colours for the cord are yellow, orange, grey and aqua, depending on fibre type as given in the table construction. As an option the cords are available in 12 colours according to IEC 60304.

Construction

Fibre	Uncoloured nominally 250 µm fibre	
Standard buffer colour	With SM fibres	Yellow
	With M5 fibres	Orange
	With M6 fibres	Grey
	With MaxCap-OM3 and MaxCap-OM4 fibres	Aqua
Buffer	ES9 buffer to 900 µm	

Fire rating

IEC 60754-1	No halogens
IEC 60754-2	No acid matters
IEC 61034-2	No dense smoke

Physical properties

IEC 60974-1-2

Property	Test method	Values
Diameter		Ø900 µm ± 50 µm
Weight		0.7 kg/km
Material		LSHF / LSZH material with high amount of flame retardants
Heat of combustion		17 MJ/km; 0.005 kWh/m
Stripping		150 mm to the coating 30 mm to the cladding
Shrink back		< 0.05%, IEC 60811-1-3, (70°C, 3 hours, 1 meter sample)
Crush resistance	E3	100N/100 mm
Repeated bending	E6	500 cycles, R= 20 mm , no damage
Kink	E10	No kink

Note: The Draka policy of continuous improvement may cause in changed specifications without prior notice

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For version with BendBright^{XS} fibre: Minimum bending radius	E11/ G01	R= 7.5 mm R = 15 mm, 6 turns around a mandrel ø 30 mm (maximum attenuation increase ≤ 0.02 dB at 1550 nm). Maximum attenuation increase for R = 10 mm 0.1 dB/turn at 1550 nm. Maximum attenuation increase for R = 7.5 mm 0.5 dB/turn at 1550 nm.
Minimum bending radius, other fibres	E11 / G01	R = 20 mm
Temperature range	F1	Operation and installation -40 °C to 60 °C Storage -40 °C to 60 °C

Optical properties of the buffered fibre

	OM1	OM2	MaxCap-OM3	MaxCap-OM4	ESMF	Bendbright^{XS}
Attenuation 850 nm	≤3.2 dB/km	≤2.7 dB/km	≤2.7 dB/km	≤2.7 dB/km		
Attenuation 1300 nm	≤1.0 dB/km	≤0.8 dB/km	≤0.8 dB/km	≤0.8 dB/km		
Attenuation 1310 nm					≤0.39 dB/km	≤0.39 dB/km
Attenuation 1550 nm					≤0.25 dB/km	≤0.25 dB/km
Bandwidth 850 nm	200 MHz·km	500 MHz·km	1500 MHz·km	3500 MHz·km		
Bandwidth EMB 850 nm			2000 MHz·km	4700 MHz·km		
Bandwidth 1300 nm	600 MHz·km	500 MHz·km	500 MHz·km	500 MHz·km		
Complete data see cabled fibre data sheet	C02	C23	C12	C11	C18e	C24

Product codes – ordering information – standard variants

Item No.	Fibre count	Product code	Fibre type	Fibre data sheet
o.request	1	S LSHF LS9 0.9 1 MM52	OM2 50/125 multi mode 500/500	C23
o.request	1	S LSHF LS9 0.9 1 MM53	MaxCap-OM3 multi mode	C12
o.request	1	S LSHF LS9 0.9 1 MM61	OM1 65.5/125 multi mode	C02
o.request	1	S LSHF LS9 0.9 1 SM2D.P	OS2 single mode	C18e
o.request	1	S LSHF LS9 0.9 1 SM7B	BendBright^{XS} G675. A/B	C24

Standard delivery lengthy: 2000 m or 4200 m

C23: General purpose multi mode 50 µm fibre

Properties for cabled OM2 fibre for use at 850 nm and at 1300 nm

General and application

This fibre is a graded-index multimode fibre suitable for transmission speeds of up to 10 Gb/s (82m 10GBASE-SX). It has a 50 µm core diameter and a 125 µm cladding diameter. The fibre is designed for use at 850 and/or 1300 nm.
This fibre fulfils all requirements for an OM2 fibre

Standards and Norms

IEC 60793-2-10 Category A1a;	EN 50173-1:2007 category OM2
EN 60793-2-10: type A1a	ISO/IEC 11801:2002 category OM2.
TIA/EIA-492 AAAB	IEEE 802.3 - 2002. with amendment 802.3ae - 2002.
	ANSI/TIA/EIA-568.B.3 - 2000

Cable attenuation

IEC 60793-1-40

850 nm	≤ 2.7 dB/km
1300 nm	≤ 0.8 dB/km
Inhomogeneity of OTDR trace for any two 1000 metre fibre lengths	Max. 0.2 dB/km

Bandwidth

IEC 60793-1-41

850 nm	500 MHz • km
1300 nm	500 MHz • km

Group index of refraction

IEC 60793-1-22

Group index of refraction at 850 nm	1.482
Group index of refraction at 1300 nm	1.477

Other properties

IEC 60793-1-xx

Attribute	Measurement method	Units	Limits
Core diameter	IEC/EN 60793-1-20	µm	50 ± 2.5
Cladding diameter	IEC/EN 60793-1-20	µm	125.0 ± 1
Cladding non-circularity	IEC/EN 60793-1-20	%	≤ 1.0
Core non-circularity	IEC/EN 60793-1-20	%	≤ 5
Core-cladding concentricity error	IEC/EN 60793-1-20	µm	≤ 1.5
Primary coating diameter - uncoloured	IEC/EN 60793-1-21	µm	242 ± 0.7
Primary coating non-circularity	IEC/EN 60793-1-21	%	≤ 5
Primary coating-cladding concentricity error	IEC/EN 60793-1-21	µm	≤ 10
Proof stress level	IEC/EN 60793-1-30	GPa	≥ 0.7 (≈ 1 %)
Typical average stripforce	IEC/EN 60793-1-32	N	1.7
Strip force (peak)	IEC/EN 60793-1-32	N	$1.2 \leq F_{peak.strip} \leq 8.9$
Numerical aperture	IEC/EN 60793-1-43		0.200 ± 0.015

Note: The Draka policy of continuous improvement may cause in changed specifications without prior notice

C02: General purpose multimode 62.5 µm fibre

Properties of cabled OM1 fibre for use at 850 nm and at 1300 nm

General and application

This fibre is a graded-index multimode fibre suitable for transmission speeds of up to 10 Gb/s (33m 10GBASE-SX). It has a 62.5 µm core diameter and a 125 µm cladding diameter. The fibre is designed for use at 850 and/or 1300 nm.
This fibre is suitable for use in premises wiring application like LAN's with video, data and or voice services using LED, VCSEL and Fabry-Perot laser sources.

Standards and Norms

IEC 60793-2-10 Category A1b	ISO/IEC 11801 category OM1.
EN 60793-2-10: type A1b	IEEE 802.3 - 2002. with amendment 802.3ae - 2002.
TIA/EIA-492 AAAA	ANSI/TIA/EIA-568.B.3 – 2000
EN 50173-1:2007 category OM1	IBM™ Fibre Optic Channel Links; ESCON™

Cable attenuation

IEC 60793-1-40

850 nm	≤ 3.2 dB/km
1300 nm	≤ 1.0 dB/km
Inhomogeneity of OTDR trace for any two 1000 metre fibre lengths	Max. 0.2 dB/km

Bandwidth

IEC 60793-1-41

850 nm	200 MHz • km
1300 nm	600 MHz • km

Group index of refraction

IEC 60793-1-22

Group index of refraction at 850 nm	1.496
Group index of refraction at 1300 nm	1.491

Other properties

IEC 60793-1-xx

Attribute	Measurement method	Units	Limits
Core diameter	IEC/EN 60793-1-20	µm	62.5 ± 2.5
Cladding diameter	IEC/EN 60793-1-20	µm	125. ± 1.0
Cladding non-circularity	IEC/EN 60793-1-20	%	≤ 1.0
Core non-circularity	IEC/EN 60793-1-20	%	≤ 5
Core-cladding concentricity error	IEC/EN 60793-1-20	µm	≤ 1.5
Primary coating diameter - uncoloured	IEC/EN 60793-1-21	µm	242 ± 7
Primary coating diameter - coloured	IEC/EN 60793-1-21	µm	250 ± 15
Primary coating non-circularity	IEC/EN 60793-1-21	%	≤ 5
Primary coating-cladding concentricity error	IEC/EN 60793-1-21	µm	≤ 10
Proof stress level	IEC/EN 60793-1-30	GPa	≥ 0.7 (≈ 1 %)
Typical average strip force	IEC/EN 60793-1-32	N	1.7
Strip force (peak)	IEC/EN 60793-1-32	N	$1.3 \leq F_{peak.strip} \leq 8.9$
Numerical aperture	IEC/EN 60793-1-43		0.275 ± 0.015.

Note: The Draka policy of continuous improvement may cause in changed specifications without prior notice