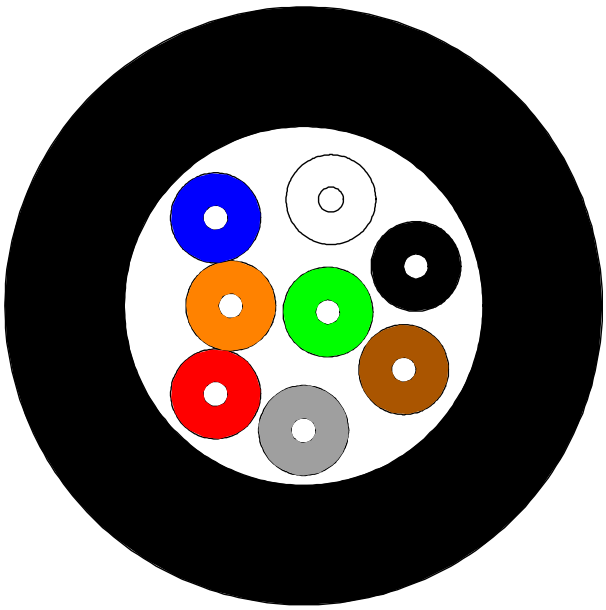
Draka black distribution cable

Universal indoor/outdoor distribution or mini break-out cable with ES9 tight buffer, 2 – 24 fibres and black FireBur® sheath, VDE: U-V(ZN)H



Application and Installation

This distribution or mini-break-out cable can be used for many indoor applications and outdoor applications
The cable features our new and improved **ES9** tight buffer.
Typical cable applications include: LAN and WAN backbones, central office interconnections, backbones in data centres, and many other.
The cable is suited for installation in ducts and on trays.
The cable features an UV stabilised, water and moisture resistant FireBur® sheathing, the cable is thus well suited for outdoor runs; but is not longitudinal water blocked.

Standards

ISO 11801 2nd edition, EN 187 000, IEC 60794-2, EN 50 173-1, IEC 60794-2-20

Flame resistance

LSHF (FRNC):	IEC 60332-1-2; IEC 60754-2; IEC 61034

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Construction

Fibre	2 - 24 tightly buffered fibres 900 µm ± 50 µm.			
Fibre colour code	1	Red	13	Yellow w/mark every 70 mm
	2	Green	14	White w/mark every 70 mm
	3	Blue	15	Grey w/mark every 70 mm
	4	Yellow	16	Turquoise w/mark every 70 mm
	5	White	17	Orange w/mark every 70 mm
	6	Grey	18	Pink w/mark every 70 mm
	7	Brown	19	Yellow w/mark every 35 mm
	8	Violet	20	White w/mark every 35 mm
	9	Turquoise	21	Grey w/mark every 35 mm
	10	Black	22	Turquoise w/mark every 35 mm
	11	Orange	23	Orange w/mark every 35 mm
	12	Pink	24	Pink w/mark every 35 mm
Strength member	E- Glass rovings			
Sheath	Black FireBur®, halogen free, flame resistant thermoplastic sheathing compound acc. to EN 50290-2-27, UV stabilized			
Sheath marking	Draka I/O DI LSHF ES9 <Fibre count> <Fibre type><Fibre brand><Item No>05<Batch Number><Meter mark> U-V(ZN) H <Fibre count> <Fibre family> <Mode field diameter> /125 <Transmission Class>			

Physical properties

IEC 60794-1-2

Attribute	*Method*	*Limits*						
Fibre count		2	4	6	8	12	16	24
Nominal diameter [mm]	-	6	6.5	6.5	7.0	7.5	8.0	8.5
Nominal weight [kg/km]	-	32	34	36	39	43	52	63
Maximum installation load (a few hours) [N]	-	1500					2100	2400
Short term tensile strength (some days) [N]	E1	1000					1400	1600
Permanent tensile strength [N]	E1	500					1000	1500
Impact [J]	E4	20 J						
Crush (compressive strength)	E3	3000 N/ 100 mm						
Torsion	E7	5 cycles ± 1 turn						
Minimum bending radius	E11	50				75		115
Minimum bending radius under tension	E18A	100				130		230
Temperature range	F1	Operation and Installation Storage				-20 °C to 70 °C -40 °C to 70 °C		
Minimum bending radius of the ES9 tightly buffered fibres	G01	With standard fibres With MaxCap-BB-OMx fibres With BendBright-XS fibers:				20 mm 7.5 mm 7.5 mm		
Heat of combustion [MJ/km] – [kW/m]		660 0.18	760 0.21	845 0.23	970 0.29	1180 0.33	1400 0.39	1700 0.47

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Product codes – ordering information

Prysmian group material code	Prysmian Group material description	Draka Material code	Fibre count	Fibre type	Fibre data sheet
	DR I/O DI N LSHF ES9 2 OM2B BL		2	MaxCap-BB-OM2 50/125	C34
60019951	DR I/O DI N LSHF ES9 4 OM2B BL		4	MaxCap-BB-OM2 50/125	C34
	DR I/O DI N LSHF ES9 6 OM2B BL		6	MaxCap-BB-OM2 50/125	C34
	DR I/O DI N LSHF ES9 8 OM2B BL		8	MaxCap-BB-OM2 50/125	C34
	DR I/O DI N LSHF ES9 12 OM2B BL		12	MaxCap-BB-OM2 50/125	C34
	DR I/O DI N LSHF ES9 24 OM2B BL		24	MaxCap-BB-OM2 50/125	C34
	DR I/O DI N LSHF ES9 2 OM3B BL		2	MaxCap-BB-OM3	C31
60019530	DR I/O DI N LSHF ES9 4 OM3B BL		4	MaxCap-BB-OM3	C31
	DR I/O DI N LSHF ES9 6 OM3B BL		6	MaxCap-BB-OM3	C31
60019531	DR I/O DI N LSHF ES9 8 OM3B BL		8	MaxCap-BB-OM3	C31
60019532	DR I/O DI N LSHF ES9 12 OM3B BL		12	MaxCap-BB-OM3	C31
	DR I/O DI N LSHF ES9 16 OM3B BL		16	MaxCap-BB-OM3	C31
60019534	DR I/O DI N LSHF ES9 24 OM3B BL		24	MaxCap-BB-OM3	C31
60019535	DR I/O DI N LSHF ES9 4 OM4B BL		4	MaxCap-BB-OM4	C32
	DR I/O DI N LSHF ES9 6 OM4B BL		6	MaxCap-BB-OM4	C32
60019536	DR I/O DI N LSHF ES9 8 OM4B BL		8	MaxCap-BB-OM4	C32
	DR I/O DI N LSHF ES9 12 OM4B BL		12	MaxCap-BB-OM4	C32
60019538	DR I/O DI N LSHF ES9 16 OM4B BL		16	MaxCap-BB-OM4	C32
60019539	DR I/O DI N LSHF ES9 24 OM4B BL		24	MaxCap-BB-OM4	C32
	DR I/O DI N LSHF ES9 4 MM61 BK		2	OM1 62.5/125 multi mode	C02
	DR I/O DI N LSHF ES9 4 MM61 BK		4	OM1 62.5/125 multi mode	C02
	DR I/O DI N LSHF ES9 6 MM61 BK		6	OM1 62.5/125 multi mode	C02
	DR I/O DI N LSHF ES9 8 MM61 BK		8	OM1 62.5/125 multi mode	C02
	DR I/O DI N LSHF ES9 12 MM61 BK		12	OM1 62.5/125 multi mode	C02
	DR I/O DI N LSHF ES9 16 MM61 BK		16	OM1 62.5/125 multi mode	C02
	DR I/O DI N LSHF ES9 24 MM61 BK		24	OM1 62.5/125 multi mode	C02
	DR I/O DI N LSHF ES9 2 SM2D BK		2	OS2 single mode	C03e
60037923	DR I/O DI N LSHF ES9 4 SM2D BK		4	OS2 single mode	C03e
	DR I/O DI N LSHF ES9 6 SM2D BK		6	OS2 single mode	C03e
60037924	DR I/O DI N LSHF ES9 8 SM2D BK		8	OS2 single mode	C03e
	DR I/O DI N LSHF ES9 12 SM2D BK		12	OS2 single mode	C03e
60038345	DR I/O DI N LSHF ES9 16 SM2D BK		16	OS2 single mode	C03e
	DR I/O DI N LSHF ES9 24 SM2D BK		24	OS2 single mode	C03e
	DR I/O DI N LSHF ES9 4 SM7B BK		4	BendBrightXS G.657.A2	C24

C32: MaxCap-BB-OM4 multimode fibre

Properties of cabled bend insensitive OM4 fibre.

General and application

This fibre is a laser-optimised, bend-insensitive graded-index multimode OM4 fibre suitable for transmission speeds of 10 Gb/s or higher. It has a 50 μm core diameter and a 125 μm cladding diameter. The fibre is optimised for maximum transmission properties at 850 nm; but is also well suited for 1300 nm systems. This fibre is fully compliant to the OM4 specification. The fibre supports 1100 m link length for a 1000BASE-SX system and 550 m for a 1000BASE-LX system as well as 550 m for a properly engineered 10GBASE-SX system. In data centres, this fibre supports 150 m for 40BASE-SR and 100 BASE100-SR systems. The outstanding bending performance of this fibre supports future compact cable management.

Standards

IEC 60793-2-10: type A1a.3	EN 50173-1 category OM4
ISO/IEC 11801 category OM4	TIA/EIA-492 AAAD
ISO/IEC 24764	ANSI/TIA/EIA-568.C
ITU G.651.1	IEEE 802.3
EN 60793-2-10: type A1a.3	

Optical properties

Attribute	*Measurement method*	*Units*	*Limits*
Attenuation limit according to IEC 60793-2-10, 850 nm	IEC 60793-1-40	dB/km	≤ 2.5
Attenuation limit according to IEC 60793-2-10, 1300 nm	IEC 60793-1-40	dB/km	≤ 0.8
Inhomogeneity of OTDR trace for any two 1000 metre fibre lengths	IEC 60793-1-40	dB/km	Max. 0.1
Numerical aperture	IEC 60793-1-43	-	0.200 ± 0.015

Cable attenuation

Maximum attenuation value of cable at 850 nm	IEC 60793-1-40	dB/km	≤ 3.0
Maximum attenuation value of cable at 1300 nm	IEC 60793-1-40	dB/km	≤ 1.0

Attenuation variation vs bending

Fibre bending loss R=7.5 mm 850/1300 nm	IEC 60793-1-40	dB	≤ 0.2 / ≤ 0.5
Fibre bending loss R=15 mm 850/1300 nm	IEC 60793-1-40	dB	≤ 0.1 / ≤ 0.3

Bandwidth

Overfilled (OFL) modal bandwidth at 850 nm	IEC 60793-1-41	MHz • km	≥ 3500
Overfilled (OFL) modal bandwidth at 1300 nm	IEC 60793-1-41	MHz • km	≥ 500
Effective Modal Bandwidth (EMB) at 850 nm	IEC 60793-1-49	MHz • km	≥ 4700

Group index of refraction

Group index of refraction at 850 nm	IEC 60793-1-22	-	1.482
Group index of refraction at 1300 nm	IEC 60793-1-22	-	1.477

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Geometrical properties

Attribute	*Measurement method*	*Units*	*Limits*
Core diameter	IEC 60793-1-20	µm	50 ± 2
Cladding diameter	IEC 60793-1-20	µm	125.0 ± 1.0
Cladding non-circularity	IEC 60793-1-20	%	≤ 0.7
Core non-circularity	IEC 60793-1-20	%	≤ 5
Core-cladding concentricity error	IEC 60793-1-20	µm	≤ 1
Primary coating diameter – uncoloured	IEC 60793-1-21	µm	242 ± 5
Primary coating diameter - coloured	IEC 60793-1-21	µm	250 ± 15
Primary coating non-circularity	IEC 60793-1-21	%	≤ 5
Primary coating-cladding concentricity error	IEC 60793-1-21	µm	≤ 6

Mechanical properties

Attribute	*Measurement method*	*Units*	*Limits*
Proof stress level	IEC 60793-1-30	GPa	≥ 0.7 (≈ 1 %)
Typical average strip force	IEC 60793-1-32	N	1.7
Strip force (peak)	IEC 60793-1-32	N	$1.3 \leq F_{peak.strip} \leq 8.9$