



TeraLight™ Ultra Optical Fibre

Product Type: G.655.C / G.656

Coating Type: ColorLock™ and Natural

Draka Comteq TeraLight™ Non-Zero Dispersion Shifted Fibre (NZDSF) has set the standard for high bit-rate, multi-wavelength transmission. Its unique optimization of effective area, chromatic dispersion and dispersion slope enables excellent distortion management, cost effective operation at 10 and 40 Gbps, tight channel spacing in C- and L-bands, compatibility with the future S-band and provides full compliance with the ITU G.656 recommendation.

TeraLight™ Ultra is further optimized for long haul and ultra long haul applications. Its characteristic chromatic dispersion of 8 ps/nm.km at 1550 nm is optimized to be half that of standard singlemode fibre resulting in lower costs for dispersion compensation, but high enough to counter cross-channel non-linearities. Guaranteed PMD link design value of ≤ 0.04 ps/ $\sqrt{\text{km}}$ keeps distortions within tolerable limits, permitting 3 to 5 times longer distances without regeneration at 40 Gbps than fibres with higher PMD values, resulting in cost savings. Low attenuation in the 1450 nm region ensures maximum efficiency of distributed Raman amplification systems. Channel spacing as low as 25 GHz at 10 Gbps in C- and L-bands allows future capacity expansion. Commercially available dispersion compensating devices provide near 100% chromatic dispersion and dispersion slope compensation.

The fibre complies with or exceeds the ITU-T Recommendation G.655.C / G.656 and the IEC 60793-2-50 type B4 / B5 Optical Fibre Specification and can be used in all cable constructions, including loose tube, tight buffered, ribbon, and central tube designs. Draka Comteq's Advanced Plasma and Vapor Deposition (APVD™) manufacturing process and proprietary ColorLock™ coating process further enhance fibre purity, reliability, and durability.

Features	Benefits
<ul style="list-style-type: none"> • 10 Gbps, 40 Gbps, and higher data rates 	<ul style="list-style-type: none"> • Future capacity increase; future-proof
<ul style="list-style-type: none"> • PMD link design value ≤ 0.04 ps/$\sqrt{\text{km}}$ 	<ul style="list-style-type: none"> • Three to five times longer distance without regeneration at 40 Gbps than fibres with higher PMD values
<ul style="list-style-type: none"> • Guaranteed low attenuation at 1450 nm 	<ul style="list-style-type: none"> • Cost savings (every 0.01 dB/km attenuation decrease and optimized effective area improves the optical signal-to-noise ratio by 0.1, extending equipment reach)
<ul style="list-style-type: none"> • More flat dispersion slope provides near 100% end-to-end compensation with commercially available dispersion compensation devices 	<ul style="list-style-type: none"> • Potential cost savings from avoidance of costly channel-by-channel compensation at long distances or higher bit rates • Contact Draka Comteq for availability
<ul style="list-style-type: none"> • More than 160 channels in C-band alone at 10 Gbps 	<ul style="list-style-type: none"> • Maximizing C-band utilization defers costly L-band deployment, providing significant cost savings
<ul style="list-style-type: none"> • 320 channels in C-, L-, and S-bands at 10 Gbps 	<ul style="list-style-type: none"> • Higher capacity and more efficient bandwidth use

Key Industry Leading Milestones

1999	Introduced TeraLight™
2002	World record transmission – 6.4 Tbps over 2100km with 149 channels at 40 Gbps
2002	Introduction of dispersion compensation modules that compensate both dispersion and dispersion slope. Contact Draka Comteq for availability
2003	World record transmission – 80 channels at 10 Gbps over 6,000km

Draka Comteq | Optical Fibre

Netherlands:

Tel: +31 (0)40 29 58 700

Fax: +31 (0)40 29 58 710

France:

Tel: +33 (0)3 21 79 49 00

Fax: +33 (0)3 21 79 49 33

USA:

Tel: +1 800 869 3355

Fax: +1 828 459 8444

Email: fibresales@draka.com

Website: www.drakafibre.com | www.draka.com



TeraLight™ Ultra Optical Fibre

Product Type: G.655.C / G.656

Coating Type: ColorLock™ and Natural

Optical Specifications (Uncabled fibre)

Attenuation	Max. Value (dB/km)
Attenuation at 1550 nm	0.22
Attenuation at 1625 nm*	0.25
Attenuation at 1450 nm	0.26
Attenuation at 1383 nm	0.7

Other values available on request

Attenuation vs. Wavelength

Maximum attenuation change over the window from reference

Wavelength range (nm)	Reference λ (nm)	Difference (dB/km)
1525 - 1575	1550	≤ 0.03
1550 - 1625	1550	≤ 0.05
1440 - 1550	1550	≤ 0.1

Point discontinuities

No point discontinuity greater than 0.05 dB at 1550 nm.

Attenuation with Bending

Number of Turns	Mandrel Diameter (mm)	Wavelength (nm)	Induced Attenuation (dB/km)
1	32	1550	≤ 0.5
100	50	1550	≤ 0.05
100	60	1625	≤ 0.05

Cutoff Wavelength

Cable Cutoff wavelength (λ_{ccf}) ≤ 1300 nm

Mode Field Diameter

Wavelength (nm)	MFD (μ m)
1550	9.2 ± 0.5

Chromatic Dispersion

Wavelength (nm)	Chromatic Dispersion (ps/[nm.km])
1440	> 0.1
1530 - 1565	5.5 to 10.0
1565 - 1625	7.5 to 13.4

Zero Dispersion Wavelength (λ_0): ≤ 1425 nm

Polarization Mode Dispersion (PMD)

	(\sqrt km)
Max. PMD Link Design Value*	0.04
Max. Individual Fibre	0.1

* According to IEC 60794 -3, Ed 3 (Q=0.01%)

Geometrical Specifications

Glass Geometry

Cladding Diameter	$125.0 \pm 1.0 \mu$ m
Core/Cladding Concentricity	$\leq 0.6 \mu$ m
Cladding Non-Circularity	$\leq 1.0 \%$
Fibre Curl (radius)	≥ 4 m

Coating Geometry

Coating Diameter	$242 \pm 7 \mu$ m
Coating / Cladding Concentricity	$\leq 12 \mu$ m
Coating Non-Circularity	$\leq 5 \%$

Lengths Standards lengths up to 25.2 km

Mechanical Specifications

Proof test

The entire length is subjected to a tensile proof stress > 0.7 GPa (100 kpsi); 1% strain equivalent.

Tensile Strength

Dynamic tensile strength (0.5 meter gauge length):

Aged** and unaged median > 3.8 GPa (550 kpsi)

**Aging at 85°C, 85% RH, 30 days

Dynamic and Static Fatigue

Dynamic fatigue, unaged and aged**

 $n_d > 20$

Static fatigue, aged**

 $n_s > 23$

Coating Performance

Coating strip force unaged and aged***:

- Average strip force: 1 N to 3 N

- Peak strip force: 1.3 N to 8.9 N

***Aging:

- 0°C and 45°C
- 30 days at 85°C and 85% RH
- 14 days water immersion at 23°C
- Wasp spray exposure (Telcordia)

Environmental Specifications

Environmental Test	Test Conditions	Induced Attenuation at 1550 nm, 1625 (dB/km)
Temperature cycling	-60°C to 85°C	≤ 0.05
Temperature-Humidity cycling	-10°C to 85°C, 4-98% RH	≤ 0.05
Water Immersion	14 days; 23°C	≤ 0.05
Dry Heat	30 days; 85°C	≤ 0.05
Damp Heat	30 days; 85°C; 85% RH	≤ 0.05

Typical Characterisation Values

Dispersion at 1440 nm	2 ps/(nm.km)
Dispersion at 1550 nm	8 ps/(nm.km)
Dispersion at 1625 nm	12 ps/(nm.km)
Dispersion Slope at 1550 nm	0.052 ps/(nm ² .km)

Effective area 63 μ m²Effective group index @ 1550 nm 1.4692
Effective group index @ 1625 nm 1.4694

Rayleigh Backscatter Coefficient for 1 ns pulse width:

- 1550 nm -80.5 dB
- 1625 nm -81.4 dB

Median Dynamic Tensile Strength 750 kpsi / 5.3 GPa
(Aged at 85°C, 85% RH, 30 days; 0.5 m gauge length)