



SPECIFICATION

Ribbon Gel-free Cable (GYDXW)



1. General

1.1 This specification covers the requirements for the supply of single-mode gel-free optical fiber ribbon cables.

1.2 The single mode optical fiber cable comply with the requirements of this specification and generally meet any latest relevant ITU-T Recommendation G.652.

2. Fiber characteristics

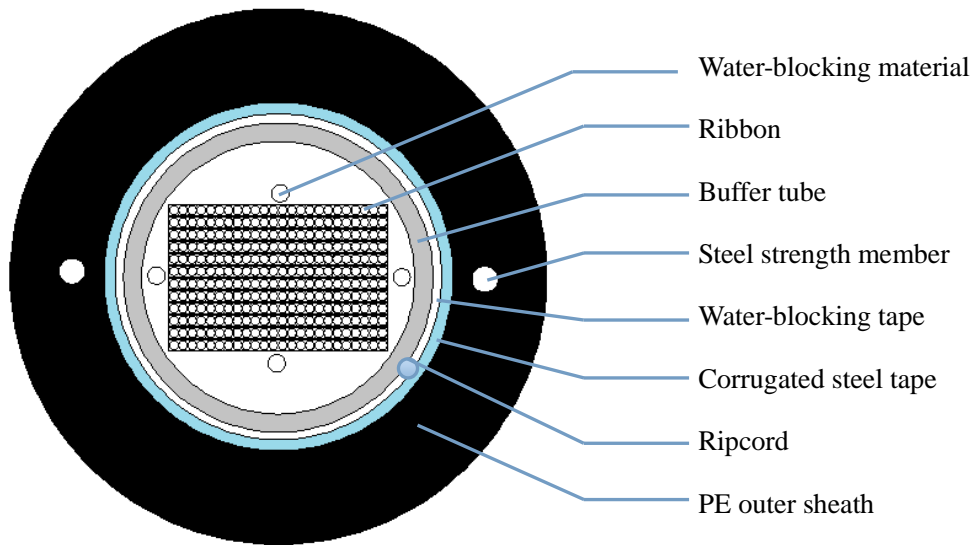
2.1 G.652

B1.3 fiber characteristics (Finished optical cable test)		
Optics specifications		
Attenuation	@1310nm	$\leq 0.40\text{dB/km}(\text{Max.})$
	@1383nm	$\leq 0.36\text{dB/km}(\text{Max.})$
	@1550nm	$\leq 0.30\text{dB/km}(\text{Max.})$
Attenuation Range	1285nm-1330nm	$\leq 0.04\text{dB/km}$
	1525nm-1575nm	$\leq 0.03\text{dB/km}$
Attenuation uniformity		$\leq 0.05\text{dB/km}$
Point discontinuity	at 1310nm	$\leq 0.05\text{dB}$
	at 1550nm	$\leq 0.05\text{dB}$
Macrobend loss 16mm Radius,1 turns	at 1550nm	$\leq 0.05\text{dB}$
Macrobend loss 30mm Radius,100 turns	at 1625nm	$\leq 0.1\text{dB}$
Rayleigh backscattering coefficients	at 1310nm	-80dB
	at 1550nm	-82dB
Fiber cutoff wavelength $\lambda_c(\text{nm})$		$1150\text{nm} \leq \lambda_c \leq 1330\text{nm}$
Cable cutoff wavelength $\lambda_{cc}(\text{nm})$		$\leq 1260\text{nm}$
Mode field diameter (MFD) at 1310nm		$9.2 \pm 0.4 \mu\text{m}$
Mode field diameter (MFD) at 1550nm		$10.4 \pm 0.4 \mu\text{m}$
Dispersion	@1285nm~1340nm	$\leq 3.2\text{ps}/(\text{nm}\cdot\text{km})$
	@1550nm	$\leq 18\text{ps}/(\text{nm}\cdot\text{km})$
	@1625nm	$\leq 22\text{ps}/(\text{nm}\cdot\text{km})$
Zero-Dispersion slope		$\leq 0.092\text{ps}/(\text{nm}^2\cdot\text{km})$
Zero-Dispersion wavelength		$1300\text{nm} \sim 1324\text{nm}$
Effective group index (N_{eff}) @1310nm		1.4675
Effective group index (N_{eff}) @1550nm		1.4681
Geometrical characteristics		
Core Diameter		$8.2 \mu\text{m}$
Cladding diameter		$125 \pm 0.7 \mu\text{m}$
Cladding non-circularity		$\leq 0.5\%$
Core/cladding concentricity error		$\leq 0.5 \mu\text{m}$
Overall Coating Diameter		$245 \pm 10 \mu\text{m}$
Cladding/coating concentricity error		$\leq 12.0 \mu\text{m}$
Fiber Curl-ROC		$> 4.0\text{m}$

Mechanical characteristics		
Proof Test Stress	> 9.0N	
Proof Test	0.69GPa	
Proof Test	100kpsi	
Dynamic Stress Corrosion Suspectibility Parameter	> 20	
Coating Strip Force	Dry	3N
	Wet, 14 days room temperature	3N
	Typical	1.5N
Environmental characteristics (at 1310nm & 1550nm&1625nm)		
Temperature induced attenuation(-60~+85°C)	≤0.05dB/km	
Temp. Humidity Cycle (-10 to +85, up to 98% RH)	≤0.05dB/km	
Dry heat induced attenuation (85°C±2°C, 30 days)	≤0.05dB/km	
Water immersion induced attenuation (23°C±2°C, 30 days)	≤0.05dB/km	
Heat Aging (85°C±2°C)	≤0.05dB/km	
Damp heat induced attenuation (85°C±2°C, RH85%, 30 days)	≤0.05dB/km	

3 Optical Fiber Cable

3.1 Cross section



3.2 Dimension of the cable

Amount. of fiber	numb of fiber per tube	*Nom. thickness of sheath	Overall diameter (Approx.)	Weight (Approx.)
		mm	mm	kg/km
48	12	3.0	14.1	182
72	12	3.0	14.6	193



96	12	3.0	15.5	212
144	12	3.0	17.0	248
288	24	3.0	20.8	333

*Note: The minimum thickness of the sheath is 2.5mm

3.3 Performance

NO	ITEM	TEST METHOD	SPECIFICATION
1	Tensile performance IEC60794-1-21-E1	- Load: 2700N - Time: 1 minute	- Loss change \leq 0.10 dB @1550 nm - Fiber strain \leq 0.60 % - No fiber break - No sheath damage
2	Crush test IEC60794-1-21-E3	- Load: 2200 N /100mm - Time: 1 minute - Length: 100 mm	- No fiber break - No sheath damage
3	Impact test IEC60794-1-21-E4	- Impact height: 1m - Impact weight: 450g - Number of impacts: 5 - Impact rate: 3 sec/cycle	- No fiber break - No sheath damage
4	Repeated bending IEC60794-1-21-E6	- Bending radius.: $25 \times D$ - Load: 250N - Flexing rate: 3sec/cycle - No. of cycle: ≥ 30	- No fiber break - No sheath damage
5	Water penetration IEC60794-1-22-F5 B	- Height of water: 1m - Sample length: 3 m - Time: 24 hr	- No drip through the cable core assembly
6	Twist / Torsion IEC60794-1-21-E7	- Length: 1 m - Load: 250N - Twist rate: 6sec/cycle - Twist angle: $\pm 180^\circ$ - No. of cycle: 10	- No fiber break - No sheath damage
7	Temperature Cycling IEC60794-1-22-F1	- Temperature step: $+20^\circ\text{C} \rightarrow -40^\circ\text{C} \rightarrow +70^\circ\text{C} \rightarrow +20^\circ\text{C}$ - Number of cycle: 2 turns - Time per each step: 12 hrs	- Maximum Loss change \leq 0.15dB/km @1550 nm - No fiber break - No sheath damage

D*: Cable diameter

4. Sheath marking

