

## Optical fiber / Loose tube / Gel free / Corrugated steel tape / PE outer jacket

### Standards

ITU-T G.652, 657, IEC 60793, 60794-1-2  
 ISO 9001:2015, 14001:2015, TIA 598-C, 598-D  
 ANSI/ICEA S-87-640-2016  
 RUS 7 CFR 1755  
 GR 20 Core compliant glass



### Application

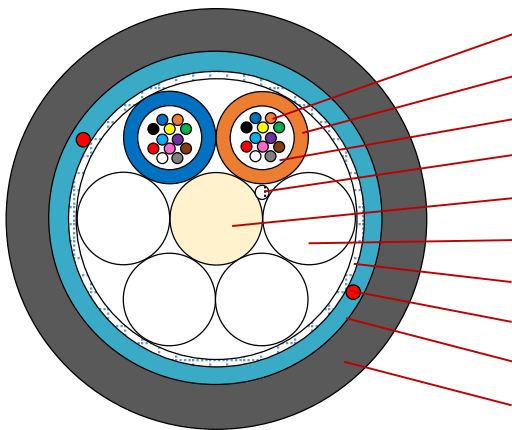
Direct buried  
 Local area network  
 Long haul communication system  
 Junction communication system  
 Communication link

### Features

Easy installation  
 Robustness & Flexibility  
 Distinguishable by color of fiber & Loose tube  
 Essential for moisture protection  
 UV-resistant outer jacket

### Cable Cross Section

In case of 24C fiber cable



- Optical fiber**
- Loose tube:** PBT or PP
- Dry block(s):** Water blocking yarn in tube
- Dry block(s):** Water blocking yarn in core
- Central strength member:** FRP (PE coated, if necessary)
- Filler:** Natural color
- Water blocking tape**
- Ripcord(s)**
- Armor:** Corrugated steel tape
- Outer jacket:** Black color MDPE or HDPE

### Cable Construction

Fiber count	Unit position	Active tube	Fibers per tube	Nominal cable outer diameter		Nominal cable weight	
				inch	mm	lbs/kft	kg/km
12 ~ 72	6	1 ~ 6	12	0.480	12.2	91	135
96	8	8	12	0.539	13.7	114	170
144	12	12	12	0.669	17.0	161	240
192 ~ 216	18 (6+12)	16 ~ 18	12	0.689	17.5	161	240
288	24 (9+15)	24	12	0.787	20.0	208	310
432	18 (6+12)	18	24	0.846	21.5	229	340
576	24 (9+15)	24	24	0.965	24.5	292	435

## Fiber Characteristics for Single Mode Fiber

Fiber type		ITU-T G.652D	ITU-T G.657A1
Mode field diameter (MFD)		9.2 μm ± 0.4 μm @1310 nm	8.9μm ± 0.4 μm @1310 nm
Mode field concentricity error		≤ 0.8 μm	
Cladding diameter		125 μm ± 1 μm	
Cladding non-circularity		≤ 1.0 %	
Coating diameter		245 μm ± 15 μm	
Attenuation	Up to 288 F	≤ 0.35 dB/km @ 1310 nm ≤ 0.25 dB/km @ 1550 nm	
	Up to 576 F	≤ 0.40 dB/km @ 1310 nm ≤ 0.30 dB/km @ 1550 nm	
Chromatic dispersion		≤ 3.5 ps/(nm.km) @ 1285 ~ 1330 nm ≤ 18 ps/(nm.km) @ 1550 nm	
Cable cut-off wavelength		≤ 1260 nm	
Zero dispersion wavelength		1300 nm ~ 1324 nm	
Zero dispersion slope		≤ 0.092 ps/nm <sup>2</sup> .km	
Proof test		Nom. 100 kpsi	

## Fiber & Tube Identification

Color code	#1 ~ #12	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Violet	Pink	Aqua
	#13 ~ #24	Blue *	Orange *	Green *	Brown *	Grey *	White *	Red *	#20	Yellow *	Violet *	Pink *	Aqua *

\*: Fiber with black color dots, Tube with a black color stripe

#20: Natural color fiber with black color dots, Black color tube with a white or yellow color stripe

## Temperature Range

Installation	- 22 °F ~ 140 °F (- 30 °C ~ + 60 °C)
Operation, Storage, Transport	- 40 °F ~ 158 °F (- 40 °C ~ + 70 °C)

## Cable Bend radius & Marking & Packing

With load	20 X Cable diameter
Without load	10 X Cable diameter

## Jacket Marking & Packing

Marking	Sequence	Customer (Upon request), Part number, Serial number (4~5 digits), Fiber type, Fiber count, Manufacturer, Manufacture year (YYYY), Length marking (Every 2 feet or 1mtrs),
	Example	<b>BU-9E-24-P-A-SS-MD-F-0 00001 G652D 24F GAON CABLE 2022 00002FT</b>
	Method	Hot foil indent (White color)
Packing	Length	Standard 15,000 ft

## Mechanical & Environmental Tests (Based on GR-20 core & ICEA S-87-640)

Test items	Test method	Description	Acceptance criteria <sup>1)</sup>
Tensile strength	IEC 794-1-2 E1	≥ 90 m, 40 D <sup>2)</sup> , 2,700 N, 60 min	Δ ≤ 0.15 dB, after test
Crush resistance	IEC 794-1-2 E3	2,200 N / 100 mm plate, 10 min	Δ ≤ 0.15 dB, after test
Impact resistance	IEC 794-1-2 E4	9.8 N.m, 3 different points	Δ ≤ 0.15 dB, after test
Cable bend	IEC 794-1-2 E11	20 D, 4 turns	Δ ≤ 0.15 dB, after test
Torsion	IEC 794-1-2 E7	2m sample, 50N, 10 cycles, ± 180°	Δ ≤ 0.15 dB, after test
Water penetration	IEC 794-1-2 F5	3m sample, 1m height, 24 h	No leakage
Temperature cycling	IEC 794-1-2 F1	≥ 500 m sample, soak: 12 h, 2 cycles, + 23 °C, - 40 °C, + 70 °C, + 23 °C	Δ ≤ 0.15 dB/km, after test

<sup>1)</sup> It shall be measured at 1550nm for single mode fiber. The acceptance measurement equipment error is 0.02dB.

<sup>2)</sup> Cable diameter

## Part number

Description		BU – <u>P1</u> – <u>P2</u> – <u>P3</u> – <u>P4</u> – <u>P5</u> – <u>P6</u> – <u>P7</u> – <u>P8</u>	
Fiber type	<u>P1</u>	<b>9E:</b> G.652D	<b>A1:</b> G.657A1
Fiber count	<u>P2</u>	<b>12 ~ 576</b>	
Tube material	<u>P3</u>	<b>P:</b> PBT	<b>Y:</b> PP
Fibers per tube	<u>P4</u>	<b>A:</b> 12	<b>B:</b> 24
Construction	<u>P5</u>	<b>SS:</b> Single jacket single armor	
Jacket material	<u>P6</u>	<b>MD:</b> MDPE	<b>HD:</b> HDPE
Length unit	<u>P7</u>	<b>F:</b> Feet	<b>M:</b> Meter
Special requirements	<u>P8</u>	<b>0:</b> No special requirement	

Example (SJSA, 652D, 24F cable, PBT tube, MDPE jacket, FT unit): **BU-9E-24-P-A-SS-MD-F-0**

## Revised Record

Revised number	Date	Description
5	Oct, 15, 2020	Modify Mechanical & Environmental Performance & Tests
6	Feb, 19, 2021	Remove characteristics of multi-mode fiber, G.657A2
7	Sep, 14, 2021	Add standards (ICEA, RUS), Application, zero dispersion wavelength, marking method, part number
8	Aug. 24, 2022	Unit is changed for chromatic dispersion