

# Optical Fiber Duct Cable 12-144F 1500N

## Cable Design

### Buffer Tube Optical Fiber Cable-Dielectric-Dry Core-G.652D Fiber



- **Central Strain-support Element (CE):** glass fiber reinforced plastic rod (FRP), with PE sheath covering when needed.
- **Buffer Tube:** PBT plastic material, containing 12 fibers and filled with a suitable water tightness compound.
- **Filler Elements:** Nature PP plastic rods, when needed.
- **Stranding:** loose tubes (and fillers), SZ stranded around the CE.
- **Longitudinal Water Tightness:** dry core with water swellable elements.
- **Ripcord(s):** 2 polyester ripcords under sheath.
- **Outer Sheath:** Black HDPE.

## Cable Specification

| Cable Cores                  |       | 12   | 24 | 48 | 72 | 96   | 144  |
|------------------------------|-------|------|----|----|----|------|------|
| No. of Tubes                 |       | 1    | 2  | 4  | 6  | 8    | 12   |
| No. of Fillers               |       | 5    | 4  | 2  | 0  |      |      |
| Fiber Counts in Fiber        |       | 12   |    |    |    |      |      |
| Tube/Filler- $\phi$          | mm    | 2.05 |    |    |    |      |      |
| CE- $\phi$                   | mm    | 2.1  |    |    |    | 2.5  | 3.0  |
| Coated CE- $\Phi$            | mm    | ---  |    |    |    | 3.5  | 6.3  |
| Thickness of Outer PE Sheath | mm    | 1.5  |    |    |    |      |      |
| Nominal Cable Diameter       | mm    | 9.6  |    |    |    | 11.0 | 13.8 |
| Nominal Cable Weight         | Kg/km | 71   |    |    |    | 92   | 144  |
| Tensile Force                | N     | 1600 |    |    |    | 2200 | 3000 |

## Cable Application

| Temperature Range        |           | Minimum Bend Radius |      |
|--------------------------|-----------|---------------------|------|
| Transportation & Storage | -30~+70°C | Load                | 20×D |
| Operation                | -30~+60°C | Unload              | 10×D |

## Main Mechanical and Environmental Characteristic

| Test                | Test Standard    | Specified Value           | Acceptance Criteria                                  |
|---------------------|------------------|---------------------------|--|
| Tensile             | IEC 60794-1-2-E1 | Tensile, 10 min           | $\Delta\alpha$ reversible, fiber strain $\leq$ 0.60% |
| Crush               | IEC 60794-1-2-E3 | 2000N/10cm, 1 min         | $\Delta\alpha$ reversible, no damage                 |
| Impact              | IEC 60794-1-2-E4 | 4J, R=300mm               | $\Delta\alpha$ reversible, no damage                 |
| Repeated Bending    | IEC 60794-1-2-E6 | R=20D, 25N, 25 cycles     | $\Delta\alpha$ reversible, no damage                 |
| Torsion             | IEC 60794-1-2-E7 | 40N, 5 cycles, +/-180°    | $\Delta\alpha$ reversible, no damage                 |
| Temperature Cycling | IEC 60794-1-2-F1 | -30~+70°C, 2 cycles,      | $\Delta\alpha$ reversible, no damage                 |
| Water Penetration   | IEC 60794-1-2-F5 | 3m sample, 1m height, 24h | No water leakage                                     |

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## Cabled Fiber Performance (G.652D)

| Characteristics   |                 | Acceptance Value               |
|---|-----------------|--------------------------------|
| Attenuation   | @1310nm         | ≤0.35dB/km                     |
|   | @1383nm         | ≤0.34dB/km                     |
|   | @1550nm         | ≤0.21dB/km                     |
|   | @1625nm         | ≤0.23dB/km                     |
| Mode Field Diameter   | @1310nm         | 9.2±0.4 μm                     |
|   | @1550nm         | 10.4±0.5 μm                    |
| Dispersion  | @1300 +30/-15nm | ≤3.0ps/(nm·km)                 |
|   | @1550nm         | ≤18ps/(nm·km)                  |
|   | @1625nm         | ≤22ps/(nm·km)                  |
| Zero-Dispersion wavelength  |                 | 1302nm~1322nm                  |
| Zero-Dispersion slope   |                 | ≤0.092ps/(nm <sup>2</sup> ·km) |
| Cable cutoff wavelength λ <sub>CC</sub> (nm)                      |                 | ≤1260nm                        |
| Cladding diameter   |                 | 125±0.7μm                      |
| Cladding non-circularity  |                 | ≤0.7%                          |
| Core/cladding concentricity error                                 |                 | ≤0.5μm                         |
| Proof stress  |                 | ≥0.69GPa(100kpsi)              |
| Dynamic stress corrosion susceptibility parameter (typical value) |                 | ≥20                            |

## Fiber and Tube Color

### Color Identification of Fiber

| No    | 1   | 2     | 3      | 4    | 5     | 6     | 7    | 8      | 9     | 10     | 11   | 12   |
|-------|-----|-------|--------|------|-------|-------|------|--------|-------|--------|------|------|
| Color | Red | Green | Yellow | Blue | Brown | White | Grey | Violet | Black | Orange | Aqua | Pink |

### Color Identification of Tube

| No    | 1   | 2     | 3      | 4    | 5     | 6     | 7    | 8      | 9     | 10     | 11   | 12   |
|-------|-----|-------|--------|------|-------|-------|------|--------|-------|--------|------|------|
| Color | Red | Green | Yellow | Blue | Brown | White | Grey | Violet | Black | Orange | Aqua | Pink |

## Sheath Marking, Delivery Length

The outer sheath is marked in 1 meter intervals as follows:

**In Accordance with Custom's Requirement**

Standard delivery length will be 4 km with -1+3% tolerance.