



G.654.E

# PureAdvance™-110

Advanced Pure Silica Core Single Mode Optical Fiber



- **Ultra-low attenuation of  $\leq 0.16$  dB/km and optimally enlarged effective area of  $110 \mu\text{m}^2$**
- **For terrestrial long-haul 100 Gbit/s, 200 Gbit/s, 400 Gbit/s and beyond digital coherent transmission systems**
- **Applicable for high-density terrestrial cables**

## General

### Effective Area

Typical effective area at 1550 nm  $110 \mu\text{m}^2$

### Attenuation

Typical attenuation at 1550 nm  $0.156$  dB/km

### Core Glass

Pure Silica

## Optical Characteristics

### Attenuation

Attenuation at 1550 nm  $\leq 0.16$  dB/km  
 Attenuation at 1625 nm  $\leq 0.19$  dB/km  
 Point discontinuity at 1550 nm  $\leq 0.05$  dB

### Mode Field Diameter (MFD)

MFD at 1550nm  $11.7 \pm 0.7 \mu\text{m}$

### Chromatic Dispersion

Chromatic dispersion at 1550 nm  $17\text{--}23$  ps/nm/km  
 Chromatic dispersion slope at 1550 nm  $0.050\text{--}0.070$  ps/nm<sup>2</sup>/km

### Cable Cutoff Wavelength ( $\lambda_{cc}$ )

$\lambda_{cc} \leq 1530$  nm

### Polarization Mode Dispersion (PMD)

Individual fiber PMD\*<sup>1</sup>)  $\leq 0.1$  ps/r-km  
 Fiber PMD link design value\*<sup>2</sup>)  $\leq 0.06$  ps/r-km

## Geometrical Characteristics

### Glass Geometry

Core-cladding concentricity error  $\leq 0.8 \mu\text{m}$   
 Cladding diameter  $125.0 \pm 1.0 \mu\text{m}$   
 Cladding non-circularity  $\leq 2.0 \%$   
 Fiber curl radius  $\geq 4$  m

### Coating Geometry

Coating diameter (Natural)  $245 \pm 10 \mu\text{m}$   
 Coating diameter (Colored)  $250 \pm 15 \mu\text{m}$   
 Coating-cladding concentricity error  $\leq 12 \mu\text{m}$

## Mechanical Characteristics

### Proof Test

Proof stress level 1.2% (0.86GPa)

### Macrobending Loss

Bending radius	Number of turns	Wavelength	Induced Attenuation
30 mm	100	1550 nm	$\leq 0.1$ dB
30 mm	100	1625 nm	$\leq 0.1$ dB

### Dynamic Fatigue (Nd)

Nd 20

## Environmental Tests

Condition	Induced Attenuation Change at 1550 nm and 1625 nm
-60 to +85°C temperature cycling (IEC60793-1-52)	$\leq 0.05$ dB/km
-10 to +85°C/98%RH temperature humidity cycling	$\leq 0.05$ dB/km
+23°C water immersion (IEC60793-1-53)	$\leq 0.05$ dB/km
+85°C heat aging (IEC60793-1-51)	$\leq 0.05$ dB/km
+85°C/85%RH damp heat (IEC60793-1-50)	$\leq 0.05$ dB/km

## Packaging

### Delivery Length

6.3 – 50.4 km

## Performance Characteristics

### Effective Group Index of Refraction

Effective group index of refraction at 1550 nm 1.462

\*1) Measured on fiber with free tension.

\*2) Since PMD value may change when fiber is cabled, actual PMD link design value in a cable shall be confirmed by cable manufacturer. Under appropriate cable design, PureAdvance-110 specification supports network design requirements for a 0.20 ps/r-km of maximum cable PMD link design value recommended by ITU-T G.654.E.