PureAdvance™ series
Data sheet

G.654.C/G.652. B

PureAdvance™-80

G.654.E

PureAdvance™-125

SUMITOMO ELECTRIC GROUP

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G.654.C

PureAdvance™-80

Pure Silica Core Single Mode Optical Fiber

- **Low attenuation of ≤ 0.17 dB/km and MFD compatible with standard G.652 SMFs**
- **For terrestrial metro and long-haul networks**
- **Applicable for high-density terrestrial cables**

PureAdvance™-80 (G.654.C)

General

Effective Area

Typical effective area at 1550 nm	85 μm²

Attenuation

Typical Attenuation at 1550 nm	0.165 dB/km

Core Glass

	Pure Silica

Optical Characteristics

Attenuation

Attenuation at 1550 nm	≤ 0.17 dB/km
Attenuation at 1625 nm	≤ 0.20 dB/km
Point discontinuity at 1550 nm	≤ 0.05 dB

Mode Field Diameter (MFD)

MFD at 1550 nm	10.1 ± 0.7 μm

Chromatic Dispersion

Chromatic dispersion at 1550 nm	≤ 20 ps/nm/km
Chromatic dispersion slope at 1550nm	≤ 0.070 ps/nm²/km

Cable Cutoff Wavelength (λcc)

λcc	≤ 1530 nm

Polarization Mode Dispersion (PMD)

Individual fiber PMD*1)	≤ 0.1 ps/r-km
Fiber PMD link design value*2)	≤ 0.06 ps/r-km

Geometrical Characteristics

Glass Geometry

Core-cladding concentricity error	≤ 0.8 μm
Cladding diameter	125.0 ± 1.0 μm
Cladding non-circularity	≤ 2.0 %
Fiber curl radius	≥ 4 m

Coating Geometry

Coating diameter (Natural)	245 ± 10 μm
Coating diameter (Colored)	250 ± 15 μm
Coating-cladding concentricity error	≤ 12 μm

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	≤ 0.1 dB
30 mm	100	1625 nm	≤ 0.1 dB

Dynamic Fatigue (Nd)

Nd	20

Environmental Tests

Condition	Induced Attenuation Change at 1550 nm and 1625 nm
-60 to +85ºC temperature cycling (IEC60793-1-52)	≤ 0.05 dB/km
-10 to +85ºC/98%RH temperature humidity cycling	≤ 0.05 dB/km
+23ºC water immersion (IEC60793-1-53)	≤ 0.05 dB/km
+85ºC heat aging (IEC60793-1-51)	≤ 0.05 dB/km
+85ºC/85%RH damp heat (IEC60793-1-50)	≤ 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	1.463

*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-80 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.C.

This document states a standard specification. Upon request, alternative value offerings will be available.

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G.652. B

PureAdvance™-80

Pure Silica Core Single Mode Optical Fiber

Low loss dB/km

Low bending loss

- **Low attenuation of ≤ 0.17 dB/km and MFD compatible with standard G.652 SMFs**
- **For terrestrial metro and long-haul networks**
- **Applicable for high-density terrestrial cables**

PureAdvance™-80 (G.652.B)

General

Effective Area

Typical effective area at 1550 nm	85 μm²

Attenuation

Typical attenuation at 1550 nm	0.165 dB/km

Core Glass

	Pure Silica

Optical Characteristics

Attenuation

Attenuation at 1310 nm	≤ 0.31 dB/km
Attenuation at 1550 nm	≤ 0.17 dB/km
Attenuation at 1625 nm	≤ 0.20 dB/km
Point discontinuity at 1550 nm	≤ 0.05 dB

Mode Field Diameter (MFD)

MFD at 1310 nm	9.0 ± 0.5 μm
MFD at 1550 nm	10.1 ± 0.7 μm

Chromatic Dispersion

Zero dispersion wavelength	1300-1324 nm
Zero dispersion slope	≤ 0.092 ps/nm²/km
Chromatic dispersion at 1550 nm	≤ 18.0 ps/nm/km
Chromatic dispersion at 1625 nm	≤ 22.0 ps/nm/km

Cable Cutoff Wavelength (λcc)

λcc	≤ 1260 nm

Polarization Mode Dispersion (PMD)

Individual fiber PMD*1)	≤ 0.1 ps/r-km
Fiber PMD link design value*2)	≤ 0.06 ps/r-km

Geometrical Characteristics

Glass Geometry

Core-cladding concentricity error	≤ 0.6 μm
Cladding diameter	125.0 ± 1.0 μm
Cladding non-circularity	≤ 1.0 %
Fiber curl radius	≥ 4 m

Coating Geometry

Coating diameter (Natural)	245 ± 10 μm
Coating diameter (Colored)	250 ± 15 μm
Coating-cladding concentricity error	≤ 12 μm

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	≤ 0.1 dB
30 mm	100	1625 nm	≤ 0.1 dB

Dynamic Fatigue (Nd)

Nd	20

Environmental Tests

Condition	Induced Attenuation Change at 1550 nm and 1625 nm
-60 to +85ºC temperature cycling (IEC60793-1-52)	≤ 0.05 dB/km
-10 to +85ºC/98%RH temperature humidity cycling	≤ 0.05 dB/km
+23ºC water immersion (IEC60793-1-53)	≤ 0.05 dB/km
+85ºC heat aging (IEC60793-1-51)	≤ 0.05 dB/km
+85ºC/85%RH damp heat (IEC60793-1-50)	≤ 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	1.464

*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-80 specification supports network design requirements for a 0.20 ps/r-km of maximum cable PMD link design value recommended by ITU-T G.652.B.

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SUMITOMO ELECTRIC
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G.654.E

PureAdvance™-110

Advanced Pure Silica Core Single Mode Optical Fiber

- **Ultra-low attenuation of ≤ 0.16 dB/km and optimally enlarged effective area of 110 μm²**
- **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 μm²

Attenuation

Typical attenuation at 1550 nm	0.156 dB/km

Core Glass

	Pure Silica

Optical Characteristics

Attenuation

Attenuation at 1550 nm	≤ 0.16 dB/km
Attenuation at 1625 nm	≤ 0.19 dB/km
Point discontinuity at 1550 nm	≤ 0.05 dB

Mode Field Diameter (MFD)

MFD at 1550nm	11.7 ± 0.7 μm

Chromatic Dispersion

Chromatic dispersion at 1550 nm	17–23 ps/nm/km
Chromatic dispersion slope at 1550 nm	0.050-0.070 ps/nm²/km

Cable Cutoff Wavelength (λcc)

λcc	≤ 1530 nm

Polarization Mode Dispersion (PMD)

Individual fiber PMD*1)	≤ 0.1 ps/r-km
Fiber PMD link design value*2)	≤ 0.06 ps/r-km

Geometrical Characteristics

Glass Geometry

Core-cladding concentricity error	≤ 0.8 μm
Cladding diameter	125.0 ± 1.0 μm
Cladding non-circularity	≤ 2.0 %
Fiber curl radius	≥ 4 m

Coating Geometry

Coating diameter (Natural)	245 ± 10 μm
Coating diameter (Colored)	250 ± 15 μm
Coating-cladding concentricity error	≤ 12 μm

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	≤ 0.1 dB
30 mm	100	1625 nm	≤ 0.1 dB

Dynamic Fatigue (Nd)

Nd	20

Environmental Tests

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

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SUMITOMO ELECTRIC
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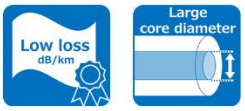
PureAdvance™-125

Advanced Pure Silica Core Single Mode Optical Fiber



- **Ultra-low attenuation of ≤ 0.16 dB/km and enlarged effective area of 125 μm²**
- **For terrestrial long-haul 100 Gbit/s, 200 Gbit/s, 400 Gbit/s and beyond digital coherent transmission systems**

General

Effective Area

Typical effective area at 1550 nm	125 μm²

Attenuation

Typical attenuation at 1550 nm	0.156 dB/km

Core Glass

	Pure Silica

Optical Characteristics

Attenuation

Attenuation at 1550 nm	≤ 0.16 dB/km
Attenuation at 1625 nm	≤ 0.19 dB/km
Point discontinuity at 1550 nm	≤ 0.05 dB

Mode Field Diameter (MFD)

MFD at 1550nm	12.5 ± 0.7 μm

Chromatic Dispersion

Chromatic dispersion at 1550 nm	17–23 ps/nm/km
Chromatic dispersion slope at 1550 nm	0.050-0.070 ps/nm²/km

Cable Cutoff Wavelength (λcc)

λcc	≤ 1530 nm

Polarization Mode Dispersion (PMD)

Individual fiber PMD*1)	≤ 0.1 ps/r-km
Fiber PMD link design value*2)	≤ 0.06 ps/r-km

Geometrical Characteristics

Glass Geometry

Core-cladding concentricity error	≤ 0.8 μm
Cladding diameter	125.0 ± 1.0 μm
Cladding non-circularity	≤ 2.0 %
Fiber curl radius	≥ 4 m

Coating Geometry

Coating diameter (Natural)	245 ± 10 μm
Coating diameter (Colored)	250 ± 15 μm
Coating-cladding concentricity error	≤ 12 μm

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	≤ 0.1 dB
30 mm	100	1625 nm	≤ 0.1 dB

Dynamic Fatigue (Nd)

Nd	20

Environmental Tests

Condition	Induced Attenuation Change at 1550 nm and 1625 nm
-60 to +85ºC temperature cycling (IEC60793-1-52)	≤ 0.05 dB/km
-10 to +85ºC/98%RH temperature humidity cycling	≤ 0.05 dB/km
+23ºC water immersion (IEC60793-1-53)	≤ 0.05 dB/km
+85ºC heat aging (IEC60793-1-51)	≤ 0.05 dB/km
+85ºC/85%RH damp heat (IEC60793-1-50)	≤ 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-125 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.

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