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**REV.
B**

AS5382™/1

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RATIONALE

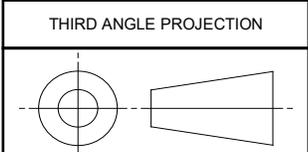
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CUSTODIAN: AE-8/AE-8D



AEROSPACE STANDARD
 CABLE, FIBER OPTIC, MULTIMODE,
 100/140/172 μm GRADED INDEX,
 HERMETIC COATED, TIGHT BUFFER

AS5382™/1

**REV.
B**

ISSUED 2003-07 REVISED 2007-01 STABILIZED 2021-09

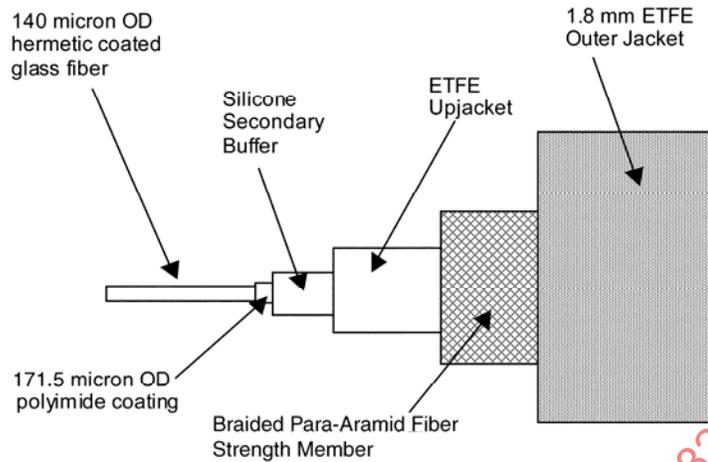


FIGURE 1 - CABLE CONFIGURATION

1. Construction Description:

1.1 Optical Fiber Dimensions and Materials

Core Diameter:	100 $\mu\text{m} \pm 3 \mu\text{m}$ (0.0039 in \pm 0.00012 in)
Core Material:	Graded Index Silica Glass
Cladding Diameter:	140 $\mu\text{m} \pm 2 \mu\text{m}$ (0.0055 in \pm 0.00008 in)
Cladding Material:	Silica Glass
Core to Cladding Ellipticity:	2% maximum
Core to Cladding Offset:	2 μm maximum
Hermetic Coated:	Yes
Coating Diameter:	171.5 $\mu\text{m} \pm 1 \mu\text{m}$ (0.00675 in \pm 0.00004 in) 0.66 Cpk with lower limit of 170.5 micron
Coating Material:	Polyimide

1.2 Cable Dimensions and Materials

Secondary Buffer Diameter:	450 $\mu\text{m} \pm 25 \mu\text{m}$ (0.0177 in \pm 0.001 in)
Secondary Buffer Material:	Silicone
Buffer Concentricity:	65% minimum
Upjacket Diameter:	900 $\mu\text{m} \pm 50 \mu\text{m}$ (0.0354 in \pm 0.002 in)
Upjacket Material:	Ethylene-Tetrafluoroethylene Copolymer (ETFE)
Strength Member:	Braided Para-Aramid Fiber
Yarn Size	380 Denier
Number of Ends	16
Braid Picks/Inch	14.5

Outer Jacket Diameter: 1800 $\mu\text{m} \pm 100 \mu\text{m}$ (0.0709 in \pm 0.039 in maximum)
 Outer Jacket Material: Ethylene-Tetrafluoroethylene Copolymer (ETFE)
 Outer Jacket Concentricity: 6% of Jacket Outer Diameter

1.3 Cable Performance

Operational Mode: Multimode
 Temperature Rating: -55 to +165 °C
 Storage Temperature: -55 to +85 °C
 Outer Jacket Color: Green
 Finished Cable Weight: 4.0 kg/km maximum

2. Optical Fiber Requirements:

Maximum Attenuation: $\leq 8 \text{ dB/km @ } 850 \text{ nm}, \leq 6 \text{ dB/km @ } 1300 \text{ nm}$
 Numerical Aperture: 0.29 ± 0.02
 Fiber Tensile Proof Test: 200,000 psi minimum
 Bandwidth: $\geq 200 \text{ MHz-km @ } 850 \text{ nm \& } 1300 \text{ nm}$

3. Environmental:

Fluid Immersion: See Table 1 for test fluid listing.
 Freezing Water Immersion: $\leq 0.5 \text{ dB change in optical transmittance during the test with } \leq 0.5 \text{ dB permanent change after test}$
 Humidity Resistance: $\leq 0.5 \text{ dB change in optical transmittance during the test with } \leq 0.5 \text{ dB permanent change after test}$
 Wicking: Water Penetration of 88.5 mm maximum
 Fungus Resistance: Fungus inert per MIL-HDBK-454 Guideline 4
 Blocking: No areas of localized adhesion

4. Mechanical:

Cold Bend: $\leq 0.5 \text{ dB change in optical transmittance after test}$
 Cyclic Flex: $\leq 0.5 \text{ dB change in optical transmittance during the test with } \leq 0.5 \text{ dB permanent change after test}$
 Test temps: -55 °C, +25 °C, +150 °C
 Impact Resistance: $\leq 0.5 \text{ dB change in optical transmittance during the test with } \leq 0.5 \text{ dB permanent change after test}$
 Test Cycles: 50 at -55°C, 100 at +25 °C, 50 at +150 °C
 Crush Resistance: $\leq 0.5 \text{ dB change in optical transmittance during the test with } \leq 0.5 \text{ dB permanent change after test}$
 Corner Bend: $\leq 0.5 \text{ dB change in optical transmittance during the test with } \leq 0.5 \text{ dB permanent change after test}$
 Cable Tensile Load and Bending: $\leq 0.5 \text{ dB change in optical transmittance during the test with } \leq 0.5 \text{ dB permanent change after test}$
 Maximum tensile load 132 N
 Jacket Material Tensile and Elongation: Tensile Strength: 900 N/cm² minimum
 Elongation: 125% minimum

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	CABLE, FIBER OPTIC, MULTIMODE, 100/140/172 μm GRADED INDEX, HERMETIC COATED, TIGHT BUFFER		

Durability of Manufacturer's Identification:	Required unless identification marking is under a clear jacket
Jacket Strippability:	Easily Removed, No damage to Fiber at 10X
5. <u>Thermal:</u>	
Flammability:	After Flame: 30 seconds maximum Flame Travel: 3 inches maximum Tissue Flaming: None
Thermal Shock:	Temperature Range: -55 to +165 °C Maximum Cable Diameter Change of ±10% ≤0.5 dB change in optical transmittance after test
Property Retention After Thermal Aging:	750 hours @ 180 °C, 300 hours @ 200 °C, 100 hours @ 220 °C Maximum Cable Diameter Change of ±10% ≤0.5 dB change in optical transmittance after test Jacket tensile and elongation: 75% of initial value
Storage Life:	Temperature Range: -55 to +85 °C No Visual Damage at 10X Magnification ≤0.5 dB change in optical transmittance after test
Temperature Cycling:	5 cycles, temperature range: -55 to +165 °C Maximum Cable Diameter Change of ±10% ≤0.5 dB change in optical transmittance during the test with ≤0.5 dB permanent change after test
Temperature Cycling With Mandrel:	5 cycles, temperature range: -55 to +165 °C Wrapped 5 times around a 0.75 inch mandrel ≤0.5 dB change in optical transmittance during the test with ≤0.5 dB permanent change after test
Jacket Shrinkage:	2.3 mm maximum in a 360 mm sample

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