

SAE Executive Standards Committee Rules provide that: " This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user." SAE reviews each technical report at least every five years at which time it may be revised, reaffirmed, stabilized, or cancelled. SAE invites your written comments and suggestions.

**REV.
B**

AS5382™/4

FEDERAL SUPPLY CLASS
6010

RATIONALE

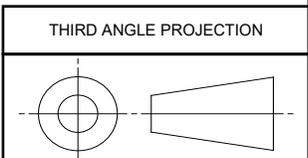
THIS DOCUMENT HAS BEEN DETERMINED TO CONTAIN BASIC AND STABLE TECHNOLOGY WHICH IS NOT DYNAMIC IN NATURE.

STABILIZED NOTICE

THIS DOCUMENT HAS BEEN DECLARED "STABILIZED" BY THE SAE AS-3 FIBER OPTICS AND APPLIED PHOTONICS COMMITTEE AND WILL NO LONGER BE SUBJECTED TO PERIODIC REVIEWS FOR CURRENCY. USERS ARE RESPONSIBLE FOR VERIFYING REFERENCES AND CONTINUED SUITABILITY OF TECHNICAL REQUIREMENTS. NEWER TECHNOLOGY MAY EXIST.

SAENORM.COM : Click to view the full PDF of as5382_4b

For more information on this standard, visit
<https://www.sae.org/standards/content/AS5382/4B>



CUSTODIAN: AE-8/AE-8D



AEROSPACE STANDARD
 CABLE, FIBER OPTIC, SINGLE-MODE,
 4.6/125/450 μm,
 HERMETIC COATED, TIGHT BUFFER

AS5382™/4

**REV.
B**

ISSUED 2004-04 REVISED 2006-12 STABILIZED 2021-09

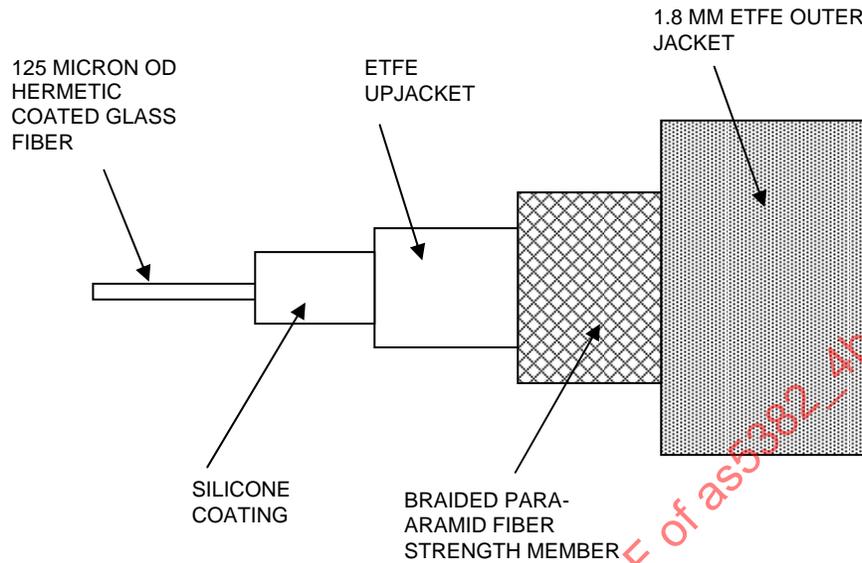


FIGURE 1 - CABLE CONFIGURATION

1. Construction Description

1.1 Optical Fiber Dimensions and Materials

Core Diameter:	4.6 μm nom. (0.00018 in)
Mode Field Diameter @ 1310 nm:	5.1 $\mu\text{m} \pm 1.0 \mu\text{m}$ (0.00020 in \pm 0.00004 in)
Mode Field Diameter @ 1550 nm:	5.8 $\mu\text{m} \pm 1.0 \mu\text{m}$ (0.00023 in \pm 0.00004 in)
Core Material:	Step Index Silica Glass
Cladding Diameter:	125 $\mu\text{m} \pm 2 \mu\text{m}$ (0.0049 in \pm 0.00008 in)
Cladding Material:	Silica Glass
Core to Cladding Ellipticity:	2% maximum
Core to Cladding Offset:	1 μm maximum
Hermetic Coated:	Yes
Coating Diameter:	450 $\mu\text{m} \pm 25 \mu\text{m}$ (0.0177 in \pm 0.001 in)
Coating Material:	Silicone
Coating Concentricity:	65% minimum

1.2 Cable Dimensions and Materials

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 max \pm 0.039 in max)
Outer Jacket Material:	Ethylene-Tetrafluoroethylene Copolymer (ETFE)
Outer Jacket Concentricity:	6% of Jacket Outer Diameter

1.3 Cable Performance

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

2. Optical Fiber Requirements

Maximum Attenuation:	≤ 1.5 dB/km @1310 nm, ≤ 1.4 dB/km @ 1550 nm
Numerical Aperture:	0.21 nominal
Fiber Tensile Proof Test:	200,000 psi minimum

3. Environmental

Fluid Immersion:	See Table 1 for test fluid listing.
Freezing Water Immersion:	≤ 0.5 dB change in optical transmittance during the test with ≤ 0.5 dB permanent change after test
Humidity Resistance:	≤ 0.5 dB change in optical transmittance during the test with ≤ 0.5 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:	≤ 0.5 dB change in optical transmittance after test
Cyclic Flex:	≤ 0.5 dB change in optical transmittance during the test with ≤ 0.5 dB permanent change after test Test temps: -55 °C, +25 °C, +150 °C
Impact Resistance:	≤ 0.5 dB change in optical transmittance during the test with ≤ 0.5 dB permanent change after test Test Cycles: 50 at -55°C, 100 at +25 °C, 50 at +150 °C
Crush Resistance:	≤ 0.5 dB change in optical transmittance during the test with ≤ 0.5 dB permanent change after test



AEROSPACE STANDARD

CABLE, FIBER OPTIC, SINGLE-MODE,
4.6/125/450 μm ,
HERMETIC COATED, TIGHT BUFFER

AS5382™/4
SHEET 2 OF 4

REV.
B

Corner Bend:	≤0.5 dB change in optical transmittance during the test with ≤0.5 dB permanent change after test
Cable Tensile Load and Bending:	≤0.5 dB change in optical transmittance during the test with ≤0.5 dB permanent change after test Maximum tensile load 132 N
Jacket Material Tensile and Elongation:	Tensile Strength: 900 N/cm ² minimum Elongation: 125% minimum
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. Thermal

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 h at 180 °C 300 h at 200 °C 100 h at 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

SAENORM.COM : Click to View the full PDF of AS5382-4b

	AEROSPACE STANDARD	AS5382™/4 SHEET 3 OF 4	REV. B
	CABLE, FIBER OPTIC, SINGLE-MODE, 4.6/125/450 μm, HERMETIC COATED, TIGHT BUFFER		