MILITARY SPECIFICATION SHEET

CABLE, FIBER OPTIC, ONE FIBER, CABLE CONFIGURATION TYPE 1 (BUFFERED FIBER), TIGHT BUFFER, CABLE CLASS SM AND MM, (METRIC)

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and the issue of the following specification listed in that issue of the Department of Defense Index of Specifications and Standards (DODISS) specified in the solicitation: MIL-C-85045.

CLASSIFICATION:

Fiber optic cable configuration type: 1 (Buffered fiber).

Fiber cable class: SM (Dispersion-unshifted, glass core and glass cladding, single-mode).
MM (Graded-index, glass core and glass cladding multimode).

DESIGN AND CONSTRUCTION:

Fiber:

Type MM fibers shall be in accordance with MIL-F-49291/6.

Type SM fibers shall be in accordance with MIL-F-49291/7.

Buffer diameter: 900 ± 50 µm.

FINISHED CABLE:

Dimensions and configuration: See figure 1.

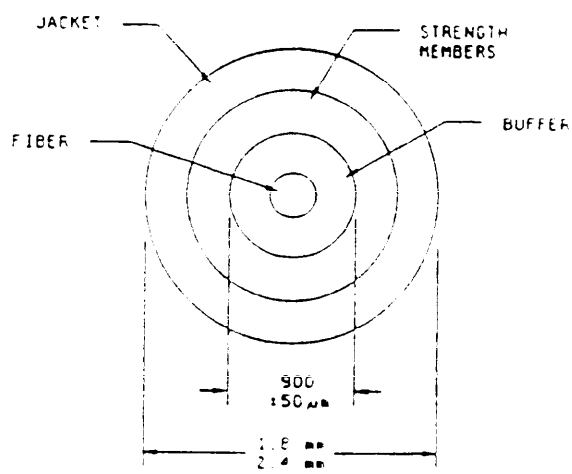

FIGURE 1. Tight buffered single fiber optical cable

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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Mass per unit length: ≤ 15 kg/km.

Color: Slate.

Jacket material: The jacket shall be composed of a low halogen, low smoke, low toxicity polymer material.

Number of fibers: 1.

Concentricity: ≥ 0.8.

Short term minimum bend diameter: Eight times the cable outer diameter. (The short term minimum bend diameter is to be used in all environmental and mechanical tests which specify a cable minimum bend diameter.)

Long term minimum bend diameter: Sixteen times the cable outer diameter.

Minimum continuous length: The minimum continuous length of all cables shall be not less than 0.5 km. If lengths less than 0.5 km are specified in the purchase order, the delivered cable shall be accompanied by certified test data demonstrating that the Quality Conformance Inspection was performed on a test specimen not less than 0.5 km in length.

PERFORMANCE REQUIREMENTS:

Optical Properties:

Change in optical transmittance: Measurements to be made at 1300 ± 20 nm.

Maximum attenuation rate: 4.5 dB/km at 850 ± 20 nm, 2.0 dB/km at 1300 ± 20 nm for type MM fiber.
1.0 dB/km at 1310 ± 20 nm and 1550 ± 20 nm for type SM fiber.

Bandwidth: Fiber with a minimum bandwidth of 500 MHz/km at 1300 nm shall be used (multimode cables only). Bandwidth is not specified at 850 nm.

Crosstalk: Not applicable.

ENVIRONMENTAL:

Tensile loading and elongation: Applicable, tensile loading ≥ 270 N.

Operating tensile loading: Applicable.

Dynamic bend: The tensile load shall be not less than 90 N.

Fluid immersion: Not applicable.

Crush: The test load shall be 250 N at a rate of 250 N/min.

Temperature range:

Operating: -28°C to 65°C.
Nonoperating: -40°C to 70°C.
Storage: -40°C to 70°C.

Low temperature flexibility: Applicable, except the preconditioning time shall be 4 hours.

Cyclic flexing: 500 cycles at 25°C ± 2°C and 100 cycles at -28°C ± 2°C. Change in optical transmittance measurements are to be made every 100 cycles for the 500 cycle exposure and every 25 cycles for the 100 cycle exposure.

Cable twist bending: 500 cycles at 25°C ± 2°C and 100 cycles at -28°C ± 2°C. The test load shall be 10 N. Change in optical transmittance measurements are to be made every 100 cycles for the 500 cycle exposure and every 25 cycles for the 100 cycle exposure.

Radial compression: Not applicable.

Impact: Not applicable.

Hosing: Not applicable.

Dripping: Not applicable.

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Temperature cycling: Change in optical transmittance measurements may be made periodically. At a minimum, three optical transmittance measurements shall be made over a period of 1 hour at the end of each temperature plateau.

Humidity: Change in optical transmittance measurements may be made periodically. At a minimum, three optical transmittance measurements shall be made at the end of each temperature plateau.

Storage temperature: Applicable.

Weathering: Not applicable.

Flame extinguishing: Not applicable.

Halogen content: < 0.2 percent.

Smoke generation and flame propagation: Not applicable.

Flaming smoke generation: $D_m \leq 225$ when tested in the flaming condition in accordance with ASTM E 662.

Shock: Not applicable.

Gas flame: Not applicable.

Paint susceptibility: Not applicable.

Tempest: Not applicable.

Part or Identifying Number (PIN): M85045/16-01 (Multimode)
M85045/16-02 (Single mode).

Qualification by similarity: Manufacturers who produce products for both MIL-C-85045/13, MIL-C-85045/15, MIL-C-85045/17, or MIL-C-85045/18 and this specification sheet and are qualified under MIL-C-85045/13, MIL-C-85045/15, MIL-C-85045/17, or MIL-C-85045/18 and pass the attenuation rate, cold bend, flaming smoke generation, and size inspection specified herein, are qualified under this specification sheet.

INTENDED USE:

This cable is intended for use as jumper cordage and pigtails for fiber optic components. This cable is intended for use inside of protected enclosures and is not intended for installation in the overheads or cableways.

CONCLUDING MATERIAL

Custodians:
Army - CR
Navy - SH
NASA - NA

Review activities:
Army - AR, AV, MI
Navy - EC, YD
Air Force - 13, 17, 19, 80, 90, 99
DLA - ES

Preparing activity:
Navy - SH

Agent:
DLA - ES

(Project 6015-0029-04)

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