

METRIC

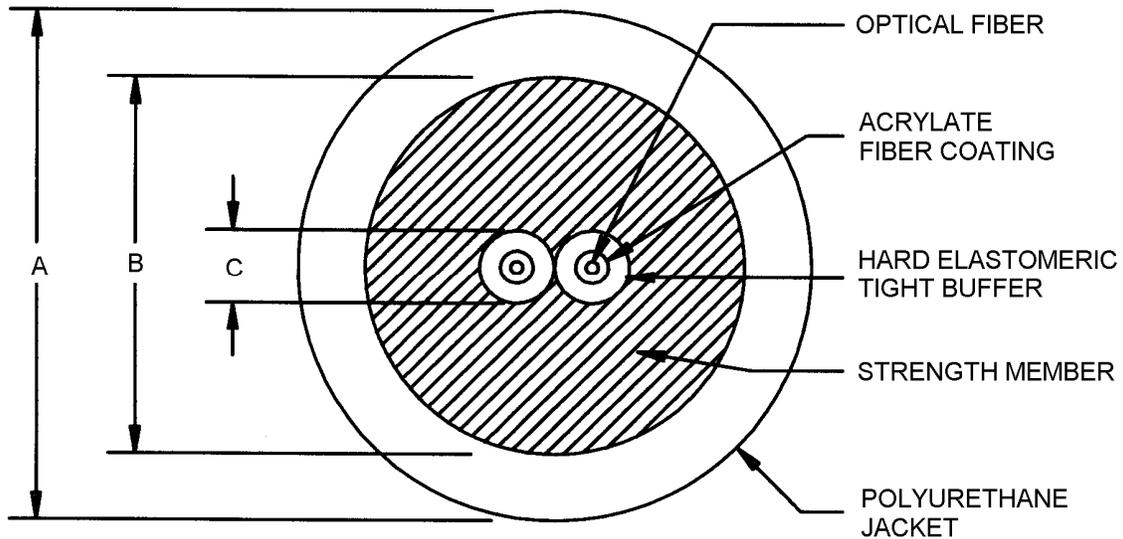
MIL-PRF-85045/8B  
17 September 2008  
SUPERSEDING  
MIL-PRF-85045/8A  
28 January 2003

PERFORMANCE SPECIFICATION SHEET

CABLE, FIBER OPTIC, RADIATION HARDENED, CABLE CONFIGURATION  
TYPE 1 (BUFFERED FIBER), APPLICATION E (GROUND TACTICAL),  
CABLE CLASS 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 and MIL-PRF-85045.



Dimensions		
A	B	C
5.8 ±0.15	2.7 ±0.15	0.9 ±0.05

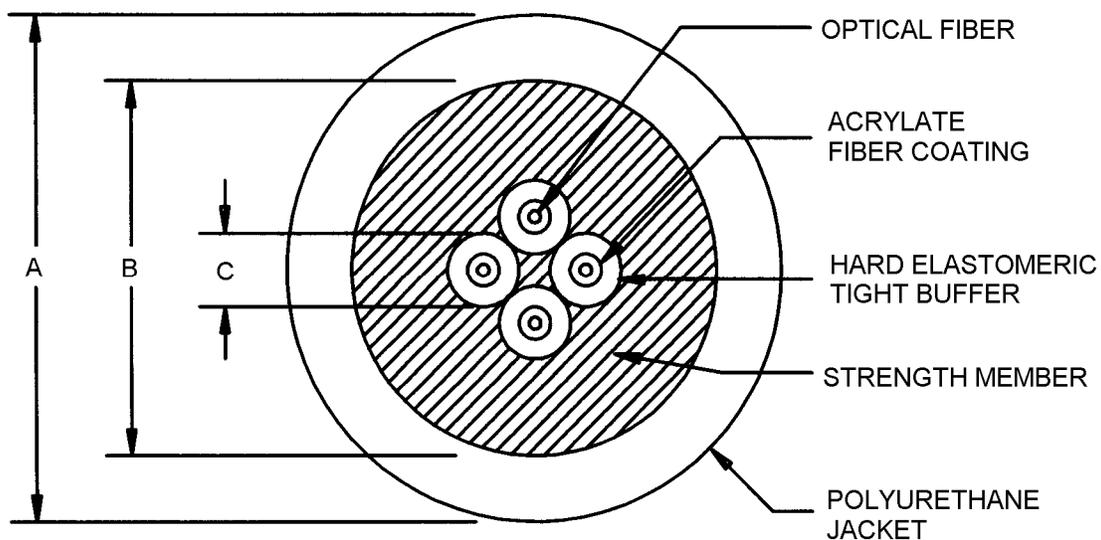
mm	Inches
0.05	0.002
0.15	0.006
0.9	0.035
2.7	0.106
5.8	0.23

NOTE:

1. Dimensions are in millimeters.

FIGURE 1. Two-fiber cable (85045/8B2X).

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Dimensions		
A	B	C
5.8 ±0.15	2.9 ±0.15	0.9 ±0.05

mm	Inches
0.05	0.002
0.15	0.006
0.9	0.035
2.9	0.114
5.8	0.23

NOTE:

1. Dimensions are in millimeters.

FIGURE 2. Four-fiber cable (M85045/8B4X).

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CLASSIFICATION:

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

Fiber cable class: MM (graded-index, glass core and glass cladding, multimode).

Part or Identifying Number (PIN): See PIN construction below. Additional manufacturer's marking is allowed.

PIN construction:

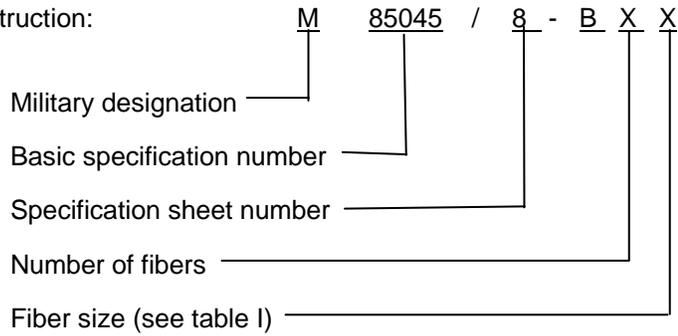


TABLE I. PIN number fiber size.

M85054/8-BXX	Fiber size (micron)
A	62.5/125
B	50/125

Example: M85045/8-B4A --- 4 fiber cable with 62.5/125 micron fiber

DESIGN AND CONSTRUCTION:

Fiber:

Class MM (50/125 μm) fibers shall be in accordance with MIL-PRF-49291/1.

Class MM (62.5/125 μm) fibers shall be in accordance with MIL-PRF-49291/6.

Buffer diameter: 0.900 ± 0.05 mm.

REQUIREMENTS:

Finished cable:

Dimensions and configuration: See figure 1 and 2.

Number of fibers: 2 or 4 (see PIN).

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### Materials:

Fiber coating: Acrylate or equivalent.

Buffer: Hard elastomeric or equivalent.

Jacket material: Flame retardant polyurethane, or equivalent.

### Strength members:

Polyarylamide, type PAA (Aramid yarn), or equivalent.

Impregnated glass rods (if required).

Short term minimum bend diameter: Five 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: Ten times the cable outer diameter.

Optical fiber cable component (OFCC): Not applicable.

Cable bundle jacket: Not applicable.

Cable jacket concentricity: > 0.65.

Cable mass per unit length: 32 kg/km maximum.

### Performance requirements:

#### Optical properties:

Attenuation rate: Applicable, except multimode attenuation rate shall be measured in accordance with TIA-455-78 method A.

#### Maximum attenuation rate:

50/125 micron fiber: 3.50 dB/km at 850 nm  $\pm$  20 nm.

1.0 dB/km at 1,300 nm  $\pm$  20 nm.

62.5/125 micron fiber: 3.75 dB/km at 850 nm  $\pm$  20 nm.

1.50 dB/km at 1,300 nm  $\pm$  20 nm.

End resultant attenuation due to cumulative environmental and mechanical testing: Not applicable.

#### Mechanical properties:

Tensile loading and elongation: Applicable, except the induced attenuation shall be measured only after releasing the load. The complete post-test visual and mechanical testing is not required. A post-test visual jacket examination shall be made under 10X magnification.

Operating tensile load: Applicable, except the complete post-test visual and mechanical testing is not required. A post-test visual jacket examination shall be made under 10X magnification.

Dynamic bend: Not applicable.

Corner bend: Applicable, except the test force shall be 500 N.

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Cable jacket material tensile strength and elongation: Applicable.

Durability of identification marking: Applicable, except the applied mass of 100 grams shall be applied.

Environmental:

Temperature range:

Operating temperature: -46°C, +71°C.

Storage temperature: -57°C, +85°C.

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

Thermal shock: Use test schedule A.

Barometric pressure (reduced):

Operating: 3,000 m. (Test condition letter B).

Nonoperating: 12,200 m.

Life aging: Test exposure time shall be 240 hours at 110°C.

Freezing water immersion: Applicable. Use method A, procedure I.

Flame extinguishing: Not applicable.

Smoke generation and flame propagation: Not applicable.

Shock: Not applicable.

Water absorption: Applicable except the sample size shall be in accordance with ASTM-D-470 and test shall be performed in accordance with the gravimetric method of ASTM-D-470.

Paint susceptibility: Not applicable.

Halogen content: Not applicable.

Toxicity: Not applicable.

QUALIFICATION BY SIMILARITY:

Qualified 50/125 2 fiber cable and candidate 62.5/125 2 fiber cable

Manufacturers who are qualified under this specification sheet for 50/125 micron 2 fiber cable and whose 62.5/125 micron 2 fiber cable passes the following tests and inspections specified in table II are qualified by similarity under this specification. This qualification by similarity is applicable if the only difference between the previously qualified cable and the cable under test is that the optical fiber had been changed from 50/125 to 62.5/125 optical fiber. Testing and inspection may be performed on either one or two lengths of cable, each with a minimum length of 0.5 km. Test order must be observed up to and including the storage temperature test. If only one cable length is used, the thermal shock test shall be performed after the storage temperature test.

TABLE II Qualification by similarity (fiber size).

<u>Group I</u>
visual and mechanical
attenuation rate
<u>Group III</u>
temperature cycling
temperature/humidity cycling
storage temperature
cyclic flexing
crush
cable twist-bend
impact, (low temperature only)
tensile loading and elongation
operating tensile loading
<u>Group IV</u>
thermal shock

Qualified 50/125 4 fiber cable and produce 50/125 2 fiber cable

Manufacturers who are qualified under this specification sheet for 50/125 micron 4 fiber cable and whose 50/125 micron 2 fiber cable passes the following tests and inspections specified in table III are qualified by similarity under this specification. This qualification by similarity is applicable if the only difference between the previously qualified cable and the cable under test is that the number of fibers in the cable had been changed from 4 fibers to 2 fibers. Testing and inspection may be performed on either one or two lengths of cable, each with a minimum length of 0.5 km. Test order must be observed up to and including the storage temperature test. If only one cable length is used, the thermal shock test shall be performed after the storage temperature test.

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TABLE III Qualification by similarity (fiber number).

<u>Group I</u>
visual and mechanical
<u>Group III</u>
cyclic flexing
crush
cable twist-bend
impact, (low temperature only)
tensile loading and elongation
operating tensile loading

Qualified 50/125 2 and 4 fiber cables and candidate 62.5 2 and 4 fiber cables

Manufacturers who are qualified under this specification sheet for 50/125 micron 2 and 4 fiber cable and whose 62.5/125 micron fiber cable passes the tests and inspections specified in table IV are qualified by similarity under this specification. This qualification by similarity is applicable if the only difference between the previously qualified cable and the cable under test is that the optical fiber had been changed from 50/125 to 62.5/125 optical fiber. Testing and inspection may be performed on either one or two lengths of cable, each with a minimum length of 0.5 km. Test order must be observed up to and including the storage temperature test. If only one cable length is used, the thermal shock test shall be performed after the storage temperature test.

TABLE IV Qualification by similarity (fiber size and number).

<u>Group I</u>
visual and mechanical
attenuation rate
<u>Group III</u>
temperature cycling
temperature/humidity cycling
storage temperature
cyclic flexing
crush
cable twist-bend
impact, (low temperature only)
tensile loading and elongation
operating tensile loading
<u>Group IV</u>
thermal shock

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Qualified 62.5/125 2 fiber cable and candidate 50/125 2 fiber cable

Manufacturers who are qualified under this specification sheet for 62.5/125 micron 2 fiber cable and whose 50/125 micron 2 fiber cable passes the tests and inspections specified in table V are qualified by similarity under this specification. This qualification by similarity is applicable if the only difference between the previously qualified cable and the cable under test is that the optical fiber had been changed from 62.5/125 to 50/125 optical fiber. Testing and inspection may be performed on either one or two lengths of cable, each with a minimum length of 0.5 km. Test order must be observed up to and including the storage temperature test. If only one cable length is used, the thermal shock test shall be performed after the storage temperature test.

TABLE V Qualification by similarity (fiber size).

<u>Group I</u>
visual and mechanical
attenuation rate
<u>Group III</u>
temperature cycling
temperature/humidity cycling
storage temperature
cyclic flexing
crush
cable twist-bend
impact, (low temperature only)
tensile loading and elongation
operating tensile loading
<u>Group IV</u>
thermal shock

Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

Referenced documents. In addition to MIL-PRF-85045, this document references the following:

MIL-PRF-49291/1  
MIL-PRF-49291/6

ASTM D470  
TIA-455-78

MIL-PRF-85045/8B

Custodians:

Army - CR  
Navy - SH  
Air Force - 85  
DLA - CC

Preparing activity:

DLA - CC

(Project 6015-2008-001)

Review activities:

Navy - AS  
Air Force - 13, 19, 93  
DIA - DI

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at [assist.daps.dla.mil](http://assist.daps.dla.mil).