

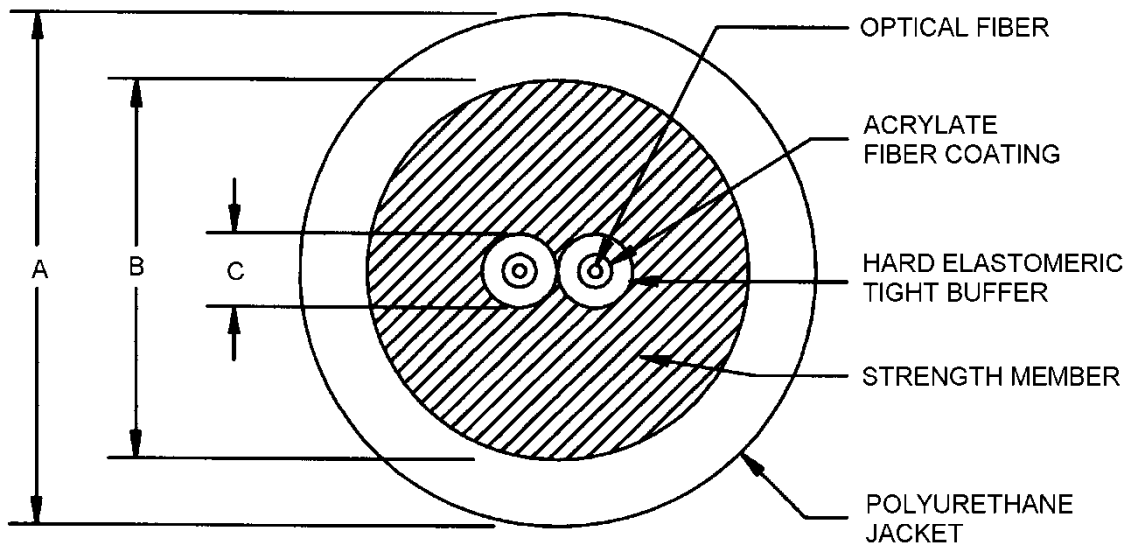
METRIC

MIL-PRF-85045/30  
w/Amendment 1  
25 July 2012  
MIL-PRF-85045/30  
19 February 2009

PERFORMANCE SPECIFICATION SHEET  
CABLE, FIBER OPTIC, RADIATION HARDENED, CABLE CONFIGURATION  
TYPE 1 (BUFFERED FIBER), APPLICATION E (GROUND TACTICAL),  
CABLE CLASS SM, (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.



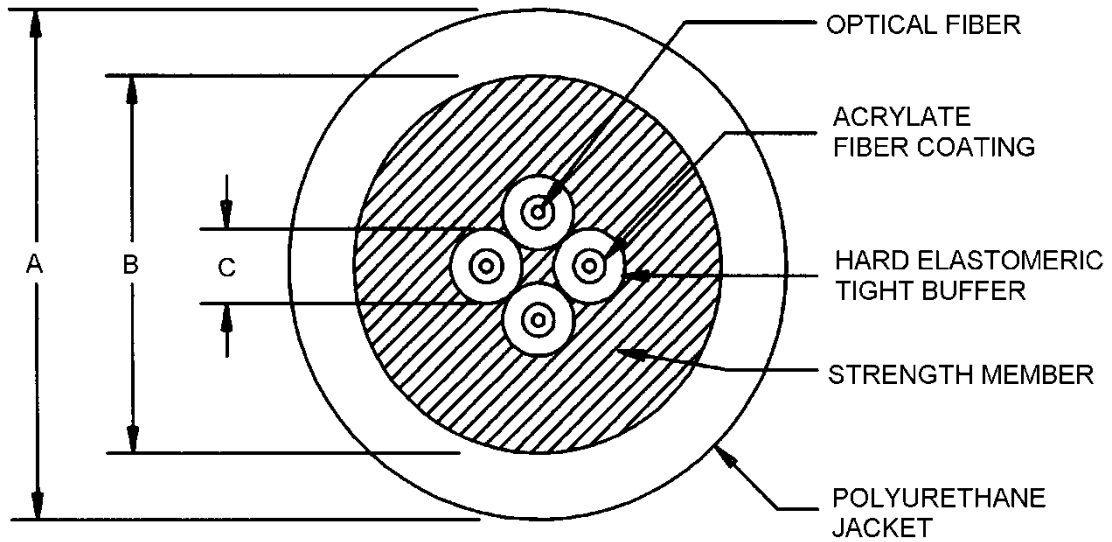
Dimensions		
A	B	C
5.8 ± 0.15	2.7 ± 0.15	0.9 ± 0.05

mm	Inches
0.15	.006
0.9	.035
2.7	.106
5.8	.23

NOTE:

1. Dimensions are in millimeters.
2. Inch equivalents are given for reference purposes.

FIGURE 1. Two-fiber cable (M85045/30E2X).



Dimensions			mm	Inches
A	B	C		
5.8 ± 0.15	2.9 ± 0.15	0.9 ± 0.05	0.05	.002
			0.15	.006
			0.9	.035
			2.9	.114
			5.8	.23

NOTE:

1. Dimensions are in millimeters.
2. Inch equivalents are given for reference purposes.

FIGURE 2. Four-fiber cable (M85045/30E4X).

CLASSIFICATION:

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

Fiber cable class: SM (Type II, class 5, size II, composition A, wavelength D, radiation resistant, metric).

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

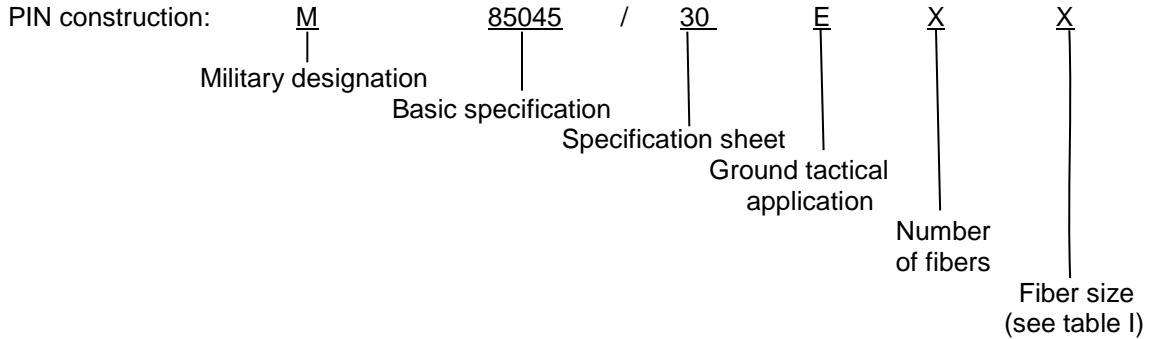


TABLE I. PIN number fiber size.

M85054/30EXX	Mode field diameter (µm)	Cladding (µm)	Coating (µm)
A	8.5-10 ± 0.7	125 ± 1	250 ± 15
B	8.5-10 ± 0.7	125 ± 1	500 ± 25

Example: M85045/30E4A is a tactical 4 fiber cable consisting of SM fibers with a 250 µm coating.

DESIGN AND CONSTRUCTION:

Fiber:

Class SM fibers shall be in accordance with MIL-PRF-49291/7 (SM).

Buffer diameter: 900 ± 50 µm.

Buffer colors: Each buffer shall be colored brown, green, yellow or black.

REQUIREMENTS:

Finished cable:

Dimensions and configuration: See figure 1 and figure 2.

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

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Materials:

Fiber coating: Acrylate or equivalent.

Buffer: Hard elastomer 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 single mode attenuation rate shall be measured in accordance with TIA-455-78, method A.

Maximum attenuation rate:

SM fiber:

0.5 dB/km at 1,310 nm  $\pm$  20 nm.

0.5 dB/km at 1,550 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 accomplished by utilizing 10X magnification.

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

Dynamic bend: Not applicable.

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

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

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.

Barometric pressure (reduced):

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

Non-operating: 12,200 m.

Life aging: Applicable except the test exposure time shall be 240 hours at 110 °C.

Freezing water immersion: Applicable. Use method A procedure.

Flammability (60 degree angle): Applicable.

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 the test shall be performed in accordance with the gravimetric method of ASTM-D-470.

Paint susceptibility: Not applicable.

Acid gas generation: Not applicable.

Halogen content: Not applicable.

Toxicity: Not applicable.

QUALIFICATION BY SIMILARITY:

Qualified SM 4 fiber cable and produce SM 2 fiber cable.

Manufacturers who are qualified under this specification sheet for SM 4 fiber cable and whose SM 2 fiber cable passes the 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 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.

TABLE II Qualification by similarity (4 fiber SM to 2 fiber SM).

<u>Group I</u>
Visual and mechanical
<u>Group III</u>
Cyclic flexing Storage temperature Crush Cable twist-bend Impact, (low temperature only) Tensile loading and elongation Operating tensile loading
<u>Group IV</u>
Thermal shock

Qualified MM 2 fiber cable to MIL-PRF-85045/8 and produce SM 2 fiber cable to this specification or qualified MM 4 fiber cable to MIL-PRF-85045/8 and produce SM 4 fiber cable to this specification.

Manufacturers who are qualified to MIL-PRF-85045/8 for MM 2 or 4 fiber cable and produce SM 2 or SM 4 fiber cable to this specification sheet can become qualified to this specification sheet for SM 2 fiber cable or SM 4 fiber cable by passing the tests and inspections specified in table III. This qualification by similarity is applicable if the only difference between the previously qualified cable and the cable under test is the mode (MM to SM). 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 III Qualification by similarity (2 fiber MM to 2 Fiber SM or 4 fiber MM to 4 fiber SM).

<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-bending Impact (low temperature only) Barometric pressure (reduced) Tensile loading and elongation Operating tensile loading
<u>Group IV</u>
Thermal shock

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

MIL-PRF-49291/7	ASTM-D-470
MIL-PRF-85045/8	TIA-455-78

The margins of this specification are marked with vertical lines to indicate modifications generated by this amendment. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations.

Custodians:

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

Preparing activity:

DLA-CC

(Project 6015-2012-001)

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 <https://assist.dla.mil>.