

METRIC

MIL-PRF-24623/6A

16 January 2009

SUPERSEDING

MIL-PRF-24623/6

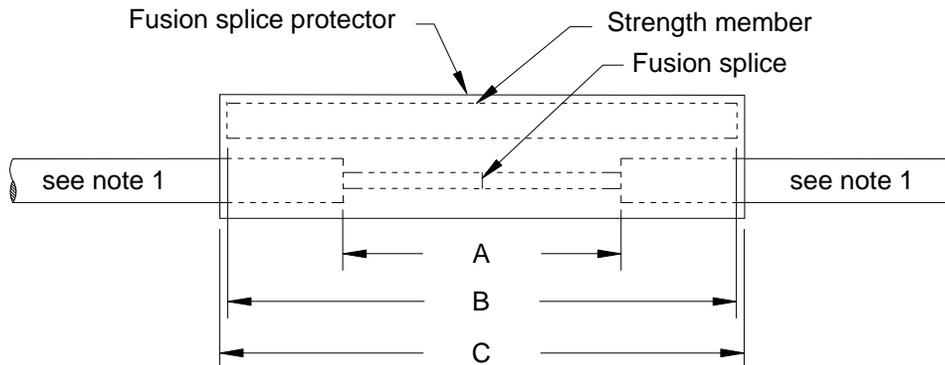
28 June 2007

PERFORMANCE SPECIFICATION SHEET  
SPLICE, FUSION, FIBER OPTIC, PROTECTOR

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 MIL-PRF-24623.

SCOPE: The performance requirements specified herein cover fusion splice protectors suitable for military use with multi-mode or single-mode optical fibers.



Designator	Description	Dimensions <sup>2/</sup>			
		Maximum		Minimum	
		mm	inches	mm	inches
A <sup>3/</sup>	Optical fiber splice length	24	0.945	--	--
B	Strength member length	39.9	1.571	39.3	1.547
C	Fusion splice protector length	40.5	1.594	39.5	1.555

NOTES:

<sup>1/</sup> Applicable fiber types include M49291/6 and M49291/7.

<sup>2/</sup> Inch equivalents may contain rounding errors and are given for reference purposes only.

<sup>3/</sup> Minimum optical fiber splice length is preferred.

<sup>4/</sup> Strength member must be burr free. Slight radius on end of strength member is preferred.

FIGURE 1. Fusion splice protector.

Part or identifying number (PIN): See sample below and table I.

**M**                      **24623**                      /                      **6**                      **X**  
 Military                      Basic                      Specification sheet                      PIN code  
 designator                      specification

TABLE I. PIN numbers.

<b>PIN code</b>	<b>Description</b>	<b>Dimensions – mm (inches)</b>	<b>Figure</b>
1	Fusion splice protector	Length: 40 (1.575) OD: 2.90 (0.114)	1

**REQUIREMENTS:**

**Design and construction:** The fusion splice protector shall be of the construction, weight, and physical dimensions specified herein (see figure 1).

**Strength member:** The strength member shall be as specified herein (see figure 1).

**Fiber splice protector:** The fiber splice protector shall restore the environmental and mechanical integrity of the coating or buffer of the optical fiber with no impact to optical performance.

**Protection device**

**Installed outer diameter:** Maximum: 3.10 millimeters (0.122 inches), Minimum: 2.70 millimeters (0.106 inches)

**Installed length (figure 1, designator C):** Maximum: 40.5 millimeters (1.594 inches), Minimum: 38.7 millimeters (1.524 inches)

**Tooling:** The tooling used to manufacture splices to this specification shall meet the requirements of A-A-59799 for optical fiber fusion splicer and cleaver.

**Size:** The dimensions of the splice parts shall be as shown on figure 1 and specified herein.

**Weight:** The weight of the splice parts shall be 0.850 grams (0.03 ounces) maximum.

**Color:** Splice protection devices requiring a heat shrink process shall allow for visual inspection of defects that may have occurred during the shrinking process.

**Identification marking:** Applicable.

**JAN and J marking:** Not applicable.

**Cable seal flexing:** Not applicable.

**Twist:** Not applicable.

**Axial compressive loading:** Not applicable.

**Crush:** Not applicable.

Vibration: Applicable with the following modification. Completed fusion splices, with fusion splice protectors installed, shall be vibration tested when installed in tray and tray holders qualified to MIL-DTL-24728/8 and shall be tested in accordance with test condition II and test condition VII (test condition letter C) of TIA/EIA-455-11. The test duration for test condition VII shall be 30 minutes for each axis. The frequency range of test for test condition II shall be extended to a low frequency of 4 hertz.

Mechanical shock: Applicable with the following modification. Completed fusion splices, with fusion splice protectors installed, shall be shock tested when installed in tray and tray holders qualified to MIL-DTL-24728/8.

Dynamic strength: The dynamic strength of the splice, with the fusion splice protector installed, shall be tested in accordance with TIA-455-28 by applying an axial tensile load (see table II) between the two fused fibers until failure. The change in optical transmittance shall be monitored during the dynamic strength test. The load at optical failure shall not be less than 8.9 N (2.0 pounds).

TABLE II. Dynamic strength test load.

Configuration	Figure	Force (N/lb)
Protected	1	8.9/2.0

Fiber pull out force: Not applicable.

Cable pull out force: Not applicable.

Insertion loss: Applicable with the following modification. The insertion loss for splices shall not exceed 0.2 decibels. The insertion loss shall not exceed 0.5 decibels at any time during any testing of the splice.

Return loss: Applicable with the following modification. Return loss shall be greater than or equal to 58 decibels for single-mode.

Crosstalk: Not applicable.

Environmental:

Operating temperature: -28 °C to +65 °C (-18.4 °F to +149 °F)

Non-operating temperature: -40 °C to +70 °C (-40 °F to +158 °F)

Storage temperature: -40 °C to +70 °C (-40 °F to +158 °F)

Thermal shock: Applicable with the following modification. The storage temperature range shall be as specified herein.

Temperature/humidity cycling: Applicable with the following modification. During and after the temperature/humidity cycling test, the splice shall meet the requirements of the change in optical transmittance. A post test visual examination of the test specimens shall reveal no leakage of waterproofing compounds or other apparent loss of sealing capability, no surface or identification marking impairment, nor any damage detrimental to the operation of the test specimens. The operating temperature range shall be used as specified herein.

Water pressure: Not applicable.

Freezing water immersion: Not applicable.

Nuclear radiation resistance: Not applicable.

Fluid immersion: Not applicable.

Flammability: Not applicable.

Temperature cycling: Splices shall be tested in accordance with EIA/TIA-455-3 using the test condition schedule and soak times in accordance with table III. The change in optical transmittance shall be measured during and after the test. A post test visual examination of the test specimens shall reveal no leakage of waterproofing compounds or other apparent loss of sealing capability, no surface or identification marking impairment, nor any damage detrimental to the operation of the test specimens. The operating temperature range shall be as specified herein.

TABLE III. Temperature cycling steps.

Step	Action	Temperature °C (°F)	Duration (hours)
1	Maintain	Room ambient	4 minimum
2	Ramp to	Low operating temp +0/-3 (+0/-5)	2
3	Maintain	Low operating temp +0/-3 (+0/-5)	2 minimum
4	Ramp to	25±2 (77±4)	2
5	Maintain	25±2 (77±4)	2 minimum
6	Ramp to	High operating temp +3/-0 (+5/-0)	1
7	Maintain	High operating temp +3/-0 (+5/-0)	2 minimum
8	Ramp to	25±2 (77±4)	1
9	Maintain	25±2 (77±4)	2 minimum
10	Repeat steps 2 through 9, four additional times, for a total of five (5) cycles.		

Life aging: Applicable with the following modification. The splice shall meet the requirements of the dynamic strength test, specified herein, after the test.

**VERIFICATION PROGRAM:** The verification system procedures, planning and all other documentation and data that comprise the verification system must be available to the Government for review. The Government may perform any necessary inspections, verifications and evaluations to ascertain conformance to the requirements and adequacy of the implementing procedures.

**QUALIFICATION:** With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Products List QPL No. 24623 whether or not such products have actually been solicited by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from the Defense Supply Center Columbus, DSCC-VQ, 3990 East Broad Street, Columbus, OH 43218-3990, or by e-mail to [vqp.chief@dla.mil](mailto:vqp.chief@dla.mil). An online listing of products qualified to this specification may be found in the Qualified Products Database (QPD) at <http://assist.daps.dla.mil>.

Re-qualification period: As long as the material supplied is identical in every respect to the qualification sample tested and found satisfactory, then the period for re-qualification is to be every 10 years.

Intended use: The splice and fusion splice protector are intended for use in all applications inside protective enclosures utilizing splice trays and splice tray holders in accordance with MIL-DTL-24728/8.

Referenced documents: In addition to MIL-PRF-24623, this specification sheet references the following documents:

A-A-59799  
MIL-DTL-24728/8  
EIA/TIA-455-3  
TIA/EIA-455-11  
TIA-455-28

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.

Custodians:

Army – CR  
Navy – SH  
Air Force – 85  
DLA – CC  
NASA – NA

Preparing Activity:

Navy – SH  
(Project 6060-2008-001)

Agent:

DLA – CC

Review Activities:

Army – AR, MI  
Navy – AS, CG, EC, MC  
Air Force – 19, 93, 99

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 <http://assist.daps.dla.mil>.