

INCH- POUND  
MIL-S-19622F(SH)  
11 December 1992  
SUPERSEDING  
MIL-S-19622E(SH)  
24 June 1986  
(See 6.10)

## MILITARY SPECIFICATION

### STUFFING TUBES, NYLON, AND PACKING ASSEMBLIES; GENERAL SPECIFICATION FOR

This specification is approved for use by the Naval Sea Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense

#### 1. SCOPE

1.1 Scope. This specification covers the general requirements for nylon stuffing tubes for shipboard electrical cables, which include tube types suitable for both thin wall enclosures up to 3/16-inch thick and wall enclosures of 3/16- to 3/4-inch thick.

1.2 Classification Nylon stuffing tubes are of the following types as specified (see 3.1 and 6.2).

Straight	- Unified form thread
90 degrees	- Unified form thread
NPT	- American Standard Pipe Thread
Y	- Unified form thread

1.2.1 Sizes Sizes are as specified (see 3.1 and 6.2)

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to Commander, Naval Sea Systems Command, SEA 05Q42, Department of the Navy, 2531 National Center Bldg 3, Washington, DC 20362-5160 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter

FSC 5975

AMSC N/A

DISTRIBUTION STATEMENT A Approved for public release, distribution is unlimited

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## 2 APPLICABLE DOCUMENTS

2 1 Government documents.

2.1.1 Specifications, standards, and handbooks The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

## SPECIFICATIONS

## MILITARY

- MIL-S-901 - Shock Tests, H.I (High-Impact) Shipboard Machinery, Equipment, and Systems, Requirements for.
- MIL-R-6855 - Rubber, Synthetic, Sheets, Strips, Molded or Extruded Shapes, General Specification for.
- MIL-E-17555 - Electronic and Electrical Equipment, Accessories, and Provisioned Items (Repair Parts) Packaging of

(See Supplement 1 for list of associated specifications )

## STANDARDS

## FEDERAL

- FED-STD-H28 - Screw-Thread Standards for Federal Services
- FED-STD-H28/2 - Screw-Thread Standards for Federal Services Section 2 Unified Inch Screw Threads - UN and UNR Thread Forms
- FED-STD-H28/6 - Screw-Thread Standards for Federal Services Section 6 Gages and Gaging for Unified Screw Threads - UN and UNR Thread Forms.
- FED-STD-H28/7 - Screw-Thread Standards for Federal Services Section 7 Pipe Threads, General Purpose.

## MILITARY

- MIL-STD-108 - Definitions of and Basic Requirements for Enclosures for Electric and Electronic Equipment
- MIL-STD-167-1 - Mechanical Vibrations of Shipboard Equipment (Type I - Environmental and Type II - Internally Excited)
- MIL-STD-202 - Test Methods for Electronic and Electrical Component Parts
- DOD-STD-2003-3 - Electric Plant Installation Standard Methods for Surface Ships and Submarines (Penetrations)

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, BLDG 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094 )

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2.2 Non-Government publications. The following document(s) form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

D 3029 - Standard Test Methods for Impact Resistance of Rigid Plastic Sheeting or Parts by Means of a TUP (Falling Weight). (DOD adopted)

D 4066 - Standard Specification for Nylon Injection and Extrusion Materials (PA). (DOD adopted)

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103 )

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein (except for specification sheets), the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3 REQUIREMENTS

3.1 Specification sheets. The individual item requirements shall be as specified herein and in accordance with the applicable specification sheet. In the event of any conflict between the requirements of this specification and the specification sheet, the latter shall govern.

3.2 First article. When specified (see 6.2), a sample shall be subjected to first article inspection (see 6.4) in accordance with 4.4.

3.3 Materials.

3.3.1 Polyamide (nylon). Polyamide (nylon) molding plastic material shall be group 1, class 8, grade 1 in accordance with ASTM D 4066 (see 6.3).

3.3.2 Synthetic rubber (neoprene). Synthetic rubber (neoprene) shall be class 2, type A, grade 40 in accordance with MIL-R-6855.

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3 3 3 Recovered materials. Unless otherwise specified herein, all equipment, material, and articles incorporated in the products covered by this specification shall be new and may be fabricated using materials produced from recovered materials to the maximum extent practicable without jeopardizing the intended use. The term "recovered materials" means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. None of the above shall be interpreted to mean that the use of used or rebuilt products is allowed under this specification unless otherwise specifically specified.

3 4 Construction The stuffing tubes and packing assemblies shall be of the construction and physical dimensions as specified (see 3 1)

3.4.1 Molded nylon parts Molded nylon parts (body, washers, locknut and cap) shall meet the requirements specified herein

3 4 1.1 Stress relief Measures shall be taken in molding or processing plastic to ensure that stress build-up does not occur or is satisfactorily treated to relieve these stresses to prevent deterioration or failure of a part or assembly. The stress-relieving process shall be as provided by the contractor of the raw materials

3.4.1.2 Threads Threads shall be unified form (UN), class 2A or 2B or taper pipe thread (NPT) as specified in FED-STD-H28/2 and FED-STD-H28/7, respectively. Type (UN or NPT), nominal size, and threads per inch shall be as specified on the applicable specification sheet. The UN thread gauging shall be GO-NOT GO in accordance with FED-STD-H28/6. The NPT gauging shall be in accordance with FED-STD-H28/7

3 4 2 Neoprene parts Neoprene parts (bushing and plug) shall meet the requirements in accordance with MIL-R-6855 and, when assembled in a stuffing tube, shall meet the performance requirements specified herein

3.4.3 O-ring (preformed packing) The O-ring is identified on the applicable specification sheet but shall not be furnished with the stuffing tube or stuffing tube assembly. The O-ring shall be provided separately by the installing activity in accordance with DOD-STD-2003-3

3.4.4 Level of effectiveness A complete stuffing tube with O-ring installed and properly assembled to a cable or with plug installed shall be submerged (15 foot) in accordance with MIL-STD-108

### 3 5 Performance

3 5.1 Vibration There shall be no evidence of cracking, or loosening of parts when stuffing tubes are tested as specified in 4 7.1

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3.5.2 Shock. There shall be no evidence of cracking, breaking, distortion, or loosening of parts when stuffing tubes are tested as specified in 4.7.2.

3.5.3 Falling ball impact. There shall be no evidence of mechanical damage when stuffing tubes or nylon parts are tested as specified in 4.7.3.

3.5.4 Torsion. There shall be no evidence of cracking, breaking, distortion or damage to the threads when stuffing tubes are tested as specified in 4.7.4.

3.5.5 Effectiveness of seal. There shall be no evidence of leakage through or around the stuffing tubes when stuffing tubes are tested as specified in 4.7.5.

3.5.6 Porosity There shall be no evidence of air or gas pockets, resin pockets, solvent areas, area lacking resin, uncured areas, delaminations and soft spots when stuffing tubes or nylon parts are tested as specified in 4.7.6. Some inner porosity is permitted provided that the stuffing tube is not weakened excessively as determined by the shock and falling ball impact tests specified in 4.7.2 and 4.7.3 This porosity shall not penetrate the outer surface of the stuffing tube

3.6 Identification Identification of part numbers shall be as shown on the applicable specification sheet in 1/8-inch high raised letters Except where molds have been built with the identification markings of a superseded drawing or specification sheet, these markings will be accepted New molds or molds that require rework shall contain markings as specified on the applicable specification sheet

3.7 Workmanship Stuffing tubes shall be free from warp, cracks, chipped edges or surfaces, blisters, uneven surfaces, scratches, dents and heat marks. They shall be free from fins, burrs and from unsightly finish caused by chipping, filing, or grinding without subsequent buffing or polishing All molded nylon parts shall be thoroughly cleaned of annealing mediums Packing assemblies shall be free of voids, pin holes, flash or other imperfections

#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in this specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements

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4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of the manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

- (a) First article inspection (see 4.4).
- (b) Quality conformance inspection (see 4.5).

4.3 Inspection conditions. Unless otherwise specified herein, all inspections shall be performed under test conditions in accordance with MIL-STD-202.

4.4 First article inspection. First article inspection shall be performed on sample units which have been produced with equipment and procedures normally used in production. Acceptance will be allowed for all sizes of the individual parts that make up the stuffing tube assembly of the type tested and accepted (see 4.4.1).

4.4.1 Sample size. Two stuffing tubes of each type (see 1.2) shall be subjected to first article inspection. One tube shall be one of the two smallest sizes and the other tube shall be one of the two largest sizes specified on the applicable specification sheets.

4.4.2 Inspection routine. The sample shall be subjected to the inspections as specified in table I in the order shown.

TABLE I. First article inspection.

Inspection	Requirement	Test method
Visual and dimensional examination	3.1, 3.3, 3.4, 3.6, and 3.7	4.6.1
Vibration	3.5.1	4.7.1
Shock	3.5.2	4.7.2
Falling ball impact (nylon parts)	3.5.3	4.7.3
Torsion	3.5.4	4.7.4
Effectiveness of seal	3.5.5	4.7.5
Porosity (nylon parts)	3.5.6	4.7.6

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4.5 Quality conformance inspection Quality conformance inspection of a nylon product shall consist of groups A and B inspections (see 4.5.2 and 4.5.3). Quality conformance inspection of a neoprene product shall be in accordance with MIL-R-6855.

4.5.1 Inspection lot. An inspection lot may consist of one of the following products that are produced under essentially the same conditions, and offered for inspection at one time.

- (a) A part covered by a single specification sheet (see 3.1).
- (b) A stuffing tube consisting of a body, locknut, and cap (see 3 1)

4 5 2 Group A inspection Group A inspection shall consist of the inspections as specified in table II

TABLE II Group A inspection

Inspection	Requirement	Test method
Visual and dimensional examination	3 1, 3 3, 3 4, 3 6, and 3 7	4 6.1

4 5.3 Group B inspection Group B inspection shall consist of the inspections as specified in table III with samples selected from inspection lots that have passed group A inspection

TABLE III Group B inspection

Inspection	Requirement	Test method
Falling ball impact	3 5 3	4 7 3
Torsion <u>1/</u>	3.5.4	4.7 4
Effectiveness of seal <u>1/</u>	3 5 5	4.7 5
Porosity	3.5.6	4.7.6

1/ Required only when the inspection lot consists of a stuffing tube.

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**4.6 Examination**

**4.6.1 Visual and dimensional examination** Samples shall be visually examined to verify that the materials, design, construction, physical dimensions, marking and workmanship are as specified in the applicable requirements (see 3.1, 3.3, 3.4, 3.6, and 3.7).

**4.7 Test methods**

**4.7.1 Vibration** The stuffing tubes shall be subjected to the type I vibration test in accordance with MIL-STD-167-1. The following details shall apply

- (a) The stuffing tubes shall be complete with O-rings and 3 to 6 foot lengths of cable of the types in accordance with DOD-STD-2003-3
- (b) The free end of the cables shall be secured to prevent excessive cable whipping action during the test
- (c) Nonconformance to requirements of 3.5.1 shall be cause for rejection

**4.7.2 Shock** The stuffing tubes shall be subjected to the high-impact shock test for grade A, type A, class I equipment in accordance with MIL-S-901. The details specified in 4.7.1(a) and (b) shall apply. Nonconformance to the requirements of 3.5.2 shall be cause for rejection

**4.7.3 Falling ball impact** The stuffing tubes or nylon parts shall be subjected to the falling ball impact test in accordance with ASTM D 3029. Nonconformance to the requirements of 3.5.3 shall be cause for rejection

**4.7.4 Torsion** Torsion tests shall be conducted as follows

- (a) Straight, 90 degree, and Y stuffing tubes - the stuffing tubes shall be inserted through a suitable size opening in a 1/16-inch steel panel and the stuffing tube locknuts, with O-rings in place, shall be tightened with a torque wrench to the measured value of torque, respectively, for the stuffing tube sizes shown in table IV
- (b) NPT stuffing tubes - the NPT type bodies shall be installed in a 1/2-inch thick plate tapped with mating NPT threads. The correct size packing assemblies and cable, in accordance with DOD-STD-2003-3, shall be installed in the tube. The caps shall then be torqued to the values shown in table IV
- (c) Nonconformance to the requirements of 3.5.4 shall be cause for rejection



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TABLE IV Torque values

Size (MIL-S-19622/5, /6, /7 and /8)	Applied torque values	
	Locknut MIL-S-19622/9 and /15 and body, MIL-S-19622/7	Cap MIL-S-19622/10
	(pound-inches)	(pound-inches)
1	100	50
2 and 3	120	75
4 and 4T	150	75
5	480	210
6	480	210
7	480	210
8	600	240
9	840	300

4.7.5 Effectiveness of seal Stuffing tubes assembled as specified in 3.4.4 shall be subjected to the submersible (15 foot) test in accordance with MIL-STD-108. Rejection criteria shall be in accordance with MIL-STD-108 and as specified in 3.5.5

4.7.6 Porosity Nylon parts shall be subjected to a fluoroscopic examination for defects as specified in 3.5.6. In lieu of a fluoroscopic examination, the stuffing tube parts may be examined internally by two cross sectional cuts, one along the major axis and one perpendicular to the major axis. Nonconformance to the requirements of 3.5.6 shall be cause for rejection.

4.8 Inspection of packaging Sample packages and packs, and the inspection of the preservation, packing and marking for shipment and storage shall be in accordance with the requirements of section 5 and the documents specified therein.

## 5 PACKAGING

(The packaging requirements specified herein apply only for direct Government acquisition. For the extent of applicability of the packaging requirements of referenced documents listed in section 2, see 6.5.)

5.1 Preservation, packing and marking Preservation, packing, and marking shall be level A, B, C, or commercial as specified (see 6.2), in accordance with MIL-E-17555. Packages containing neoprene parts shall contain the cure date and precautionary markings in accordance with MIL-R-6855

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## 6 NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. Nylon stuffing tubes are intended for making electric cable penetration in Naval shipboard enclosures for electrical equipment.

6.2 Acquisition requirements Acquisition documents must specify the following:

- (a) Title, number, and date of this specification
- (b) Type, size, and part number (see 1.2, 1.2.1 and 3.1)
- (c) Issue of DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2)
- (d) When first article inspection is required (see 3.2)
- (e) Level of preservation, packing, and marking required (see 5.1)

6.3 Consideration of data requirements The following data requirements should be considered when this specification is applied on a contract. The applicable Data Item Descriptions (DID's) should be reviewed in conjunction with the specific acquisition to ensure that only essential data are requested/provided and that the DID's are tailored to reflect the requirements of the specific acquisition. To ensure correct contractual application of the data requirements, a Contract Data Requirements List (DD Form 1423) must be prepared to obtain the data, except where DoD FAR Supplement 27.475-1 exempts the requirement for a DD Form 1423.

<u>Reference Paragraph</u>	<u>DID Number</u>	<u>DID Title</u>	<u>Suggested Tailoring</u>
3.3.1 and appendix	DI-MISC-80678	Certification/data report	10.3.2 does not apply

The above DID's were those cleared as of the date of this specification. The current issue of DoD 5010.12-L, Acquisition Management Systems and Data Requirements Control List (AMSDL), must be researched to ensure that only current, cleared DID's are cited on the DD Form 1423.

6.4 First article When first article inspection is required, the contracting officer should provide specific guidance to offerors whether the item(s) should be a preproduction sample, a first article sample, a first production item, a sample selected from the first \_\_\_ production items, a standard production item from the contractor's current inventory (see 3.2), and the number of items to be tested as specified in 4.4. The contracting officer should also include specific instructions in acquisition documents regarding arrangements for examinations, approval of first article test results, and disposition of first articles. Invitations for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection to those

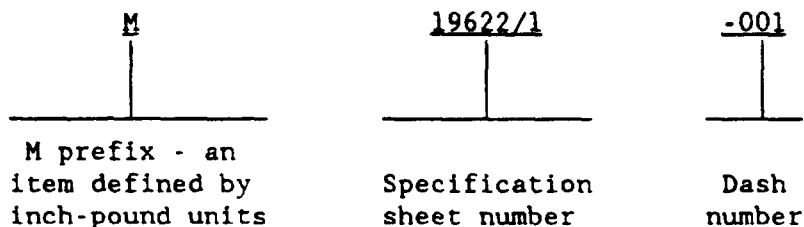
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bidders offering a product which has been previously acquired or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract. Bidders should not submit alternate bids unless specifically requested to do so in the solicitation.

6.5 Sub-contracted material and parts. The packaging requirements of referenced documents listed in section 2 do not apply when material and parts are acquired by the contractor for incorporation into the equipment and lose their separate identity when the equipment is shipped.

6.6 Conditions for use of level B preservation. When level B preservation is specified (see 5 1), this level of protection should be reserved for the acquisition of nylon stuffing tubes and packing assemblies for resupply worldwide under known favorable handling, transportation, and storage conditions.

6.7 Part or identifying number (PIN) The PIN should consist of the letter "M", the basic number of the specification sheet, and an assigned dash number (see 3 1) as shown in the following example:



6 8 Subject term (key word) listing

Nylon  
Packing assembly  
Plastic coating  
Porosity  
Rubber synthetic  
Stuffing tube

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

Preparing activity  
Navy - SH  
(Project 5975-N077)

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APPENDIX

CERTIFICATION/DATA REPORT TECHNICAL CONTENT REQUIREMENTS

10. SCOPE

10.1 Scope. This appendix covers information that shall be included in the certification/data report when specified in the contract or order. This appendix is mandatory only when data item description DI-MISC-80678 is cited on the DD Form 1423.

20 APPLICABLE DOCUMENTS

This section is not applicable to this appendix

30 CERTIFICATION CONTENT

30.1 Plastic material certification Material certification shall be required from the manufacturer of the plastic material to ensure the material was manufactured, sampled, tested, and inspected in accordance with ASTM D 4066. Material identity, traceable to this certification, shall be maintained throughout the manufacturing process.

# STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

## INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

**NOTE:** This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

<b>RECOMMEND A CHANGE:</b>		1. DOCUMENT NUMBER MIL-S-19622F(SH)	2. DOCUMENT DATE (YYMMDD) 11 DECEMBER 1992
3. DOCUMENT TITLE			
4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed)			
5. REASON FOR RECOMMENDATION			
<b>A. SUBMITTER</b>			
a. NAME (Last, First, Middle Initial)		b. ORGANIZATION	
c. ADDRESS (Include Zip Code)		d. TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON (If applicable)	e. DATE SUBMITTED (YYMMDD)
<b>B. PREPARING ACTIVITY</b>			
a. NAME COMMANDER NAVAL SEA SYSTEMS COMMAND SEA 05Q42		b. TELEPHONE (Include Area Code) (1) Commercial 703-602-6020	(2) AUTOVON AV 332-6020
c. ADDRESS (Include Zip Code) 2531 NATIONAL CENTER BLDG 3 WASHINGTON, DC 20362-5160		IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041 3466 Telephone (703) 756-2340 AUTOVON 289 2340	