

MIL-S-85069B  
12 October 1982  
SUPERSEDING  
MIL-S-85069A  
30 October 1980

## MILITARY SPECIFICATION

### SLEEVES, FASTENER, GENERAL SPECIFICATION FOR

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

#### 1. SCOPE

1.1 Scope. This specification defines the requirements for sleeves and their use in over-sized fastener holes in aerospace structures.

#### 2. APPLICABLE DOCUMENTS

##### 2.1 Government documents.

2.1.1 Specifications, specification sheets, and standards. Unless otherwise specified, the following specifications, specification sheets, and standards of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation form a part of this specification to the extent specified herein.

#### SPECIFICATIONS

##### FEDERAL

QQ-P-35	Passivation Treatments for Corrosion-Resisting Steel
QQ-P-416	Plating, Cadmium (Electrodeposited)
PPP-H-1581	Hardware (Fasteners and Related Items) Packaging
PPP-T-76	Tape, Packaging, Paper (For Carton Sealing)

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Engineering Specifications and Standards Department (Code 93), Naval Air Engineering Center, Lakehurst, NJ 08733, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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## MILITARY

MIL-C-5541 Chemical Conversion Coatings on Aluminum and Aluminum Alloys

(See supplement 1 for applicable specification sheets.)

## STANDARDS

## MILITARY

MIL-STD-105 Sampling Procedures and Tables for Inspection by Attributes

MIL-STD-129 Marking for Shipment and Storage

(Copies of specifications, specification sheets, and standards required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. The issues of the documents which are indicated as DoD adopted shall be the issue listed in the current DoDISS and the supplement thereto, if applicable.

Society of Automotive Engineers

AMS5525 Steel Sheet, Strip, and Plate, Corrosion & Heat Resistant - 15 Cr - 25.5 Ni - 1.2 Mo - 2.1Ti - 0.006B - 0.30V

(Application for copies should be addressed to: The Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.)

American National Standards Institute

ANSI B46.1 Surface Texture, Surface Roughness Waviness and Lay

(Applications for copies should be addressed to the American National Standards Institute, 1430 Broadway, New York NY 10018.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

## 3. REQUIREMENTS

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

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### 3.2 Design and construction.

3.2.1 Construction. The fastener sleeve shall be drawn from sheet or strip stock to form a one piece tubular section and head. The thickness of the tubular wall and head shall be uniform. The tubular section shall be grooved in 1/16" increments to provide a means of trapping sealant in the bearing areas and to aid in adjusting sleeve to desired length.

3.2.2 Material. Sleeve material will conform chemically to AMS5525 (see 4.4.3).

3.2.3 Head structure and grain flow. When visually examined, the sleeve may show axial flow lines in the tubular section typical of a drawn sleeve. The flow lines shall be continuous at the fillet radius.

3.2.4 Protective coatings. Platings and coatings shall be in accordance with the applicable specification sheet.

3.2.5 Lubrication. Lubrication shall be in accordance with the applicable specification sheet.

3.2.6 Surface texture. The surface shall be free of cracks or draw marks; slight visible orange peeling effect shall be permitted.

3.2.7 Ovality. Sleeves shall have no visible ovality.

### 3.3 Metallurgical properties.

3.3.1 Cracks. The sleeves shall be free of cracks. A crack is defined as a clean crystalline break passing through the grain or boundary without the inclusion of foreign elements.

3.3.2 Discontinuities. There shall be no laps or folds, seams or discontinuities, or other interruption in grain flow.

## 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 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 the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 Classification of inspections. The inspection requirements specified herein are classified as quality conformance inspection (see 4.3).

### 4.3 Quality conformance inspection.

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4.3.1 Sampling for examination. Test samples shall be selected at random in accordance with MIL-STD-105, inspection level and acceptance quality level (AQL) as specified in Table I. Identical sample items may be used for any of the tests, provided selection of random samples is maintained and known characteristics of the sample are not used to influence the integrity of test results.

TABLE I. Quality conformance examination.

Test	Reference Paragraph	MIL-STD-105 Sampling Level	AQL (percent)
1. Lot inspection	4.3.2	I	1.0
2. Examination	4.4.1		
3. Material certification	4.4.3		
4. Grip length break	4.4.4	S-2	1.5

4.3.2 Lot inspection. A lot shall consist of sleeves made from the same lot of material and fabricated as a single continuous production run in which the forming machine set up remains unchanged except for head configuration. A lot shall be restricted to one material diameter or sleeve. A lot of material shall be defined as the quantity of sheet or strip made from a single heat. It shall be controlled and shipped with appropriate mill certification. In addition, the manufacturer shall maintain, for a period of three years, a record of inspections by lot number.

4.3.3 Certified test report. The manufacturer shall furnish certification that the product conforms to the specification. The record shall state that the required inspections were conducted and that the product met the requirements of this specification.

#### 4.4 Examination and tests.

4.4.1 Examination. Each of the sample sleeves selected for examination shall be examined for conformance to the requirements for dimensions, workmanship, identification, and to all requirements not covered by tests.

4.4.2 Strength. The strength of the sleeve fastener combination will be considered to be the strength of the fastener alone. The wall thickness of the sleeve is considered thin enough so that there will be no material decrease in thickness when under load.

4.4.3 Material certification. Mill certification on all materials shall be kept on file by the manufacturer and shall be available to the procuring agency for a period of three years.

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4.4.4 Grip length break. Using different sleeves, break at different lengths with the proper tooling. Only break a sleeve one time. The step plate tool indicates the grip length at which the sleeve will break along the groove without damage to the sleeve. To adjust to length other than the breaking area of the step plate, the sleeve may be ground to length using the painted section of the step plate. Grind on a disc or belt sander.

## 5. PACKAGING

5.1 Preservation, packaging, and packing. Preservation, packaging, and packing shall be as specified in PPP-H-1581. All seams of shipping containers shall be sealed with water-resistant tape conforming to PPP-T-76.

5.2 Marking of shipments. In addition to any special marking required by the contract or purchase order, unit and intermediate packages and shipping containers shall be marked in accordance with MIL-STD-129.

## 6. NOTES

6.1 Intended use. The fastener sleeves covered by this specification are intended for structural and non-structural application in aerospace structures and other military equipment. The function of the sleeves is to serve as a repair procedure for holes which have become damaged, elongated, or corroded and to protect the structure in soft or brittle material. The sleeve is intended to increase the integrity of the overall joint not the strength of the individual fastener.

6.1.1 Length adjustment. Sleeves are manufactured with proper head configuration and diameter but must be adjusted to the correct length for each individual fastener.

6.1.2 Installation of sleeves. Fastener sleeves must be installed with reasonable care to insure that they seal properly, inhibit corrosion, and restore the structural integrity of joints in modification, repair, or in the original manufacture of aerospace or military hardware. The installation information and the processing specifications should be followed. Tools are available to facilitate and insure proper installation of the sleeve.

### 6.2 Ordering data.

6.2.1 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Specification sheet part number.
- c. Quantity.
- d. Selection of applicable preservation, packaging, and packing per PPP-H-1581 (see 5.1).

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6.3 The sleeves covered by this specification are manufactured under United States Patent Numbers 3835615 and 3835525. Both patents expire on 9/17/91. The Government does not have a royalty-free license.

Custodians:

Navy - AS

Air Force - 11

Army - AV

Preparing Activity:

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DOCUMENT IDENTIFIER (Number) AND TITLE

MIL-S-85069B Sleeves, Fastener, General Specification for

NAME OF ORGANIZATION AND ADDRESS OF SUBMITTER

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1. ☐ HAS ANY PART OF THE DOCUMENT CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE? ☐ IS ANY PART OF IT TOO RIGID, RESTRICTIVE, LOOSE OR AMBIGUOUS? PLEASE EXPLAIN BELOW.

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DATE

**DD FORM 1426**  
1 OCT 76

Replaces edition of 1 Jan 72 which may be used.

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