

FED.SUPPLY CLASS

5310

1. SCOPE

1.1 Scope. This specification covers the requirements for nuts which are permanently attached to a structure by pressing the nut shank or collar into a single hole. Anti-rotation and push-out resistance results from cold flow of the structure material into the shank or collar of the nut, or the flaring over of the nut shank.

1.2 Classification. Types and sizes of clinch nuts shall be as specified on the applicable specification sheets and MS21331.

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 extend the 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 supplemented thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

Federal

QQ-A-225/5 Aluminum Alloy 2017 Bar, Rod and Wire; Rolled, Drawn or Cold Finished

QQ-A-225/6 Aluminum Alloy 2024 Bar, Rod and Wire; Rolled, Drawn or Cold Finished

Military

MIL-S-7742 Screw Threads, Standard, Optimum Selected Series: General Specification for

MIL-A-8625 Anodic Coatings, for Aluminum and Aluminum Alloys

MIL-L-23398 Lubricant, Solid Film, Air -Cured, Corrosion Inhibiting

MIL-L-46010 Lubricant, Solid Film, Heat Cured, Corrosion Inhibiting

STANDARDS

Federal

FED STD-H28/2 Screw Thread Standards for Federal Services. Section 2. Unified Inch Threads UN & UNR Thread Forms

Military

MS21331 Nut, Plain, Clinch

Copies can be obtained from the Department of Defense Single Stock Point (DODSSP). <http://dodssp.daps.dla.mil>

2.2 Non-Government publications. The following documents form a part of this document to the extend specified herein. Unless otherwise specified, the issues of 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).

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THE INITIAL RELEASE OF THIS DOCUMENT SUPERSEDES MIL-N-45938, REVISION A.

THIRD ANGLE PROJECTION	CUSTODIAN NATIONAL AEROSPACE STANDARDS COMMITTEE	REVISION 1
PROCUREMENT SPECIFICATION NONE	TITLE NUT, PLAIN, CLINCH AND NUT, SELF-LOCKING, CLINCH, GENERAL SPECIFICATION FOR	CLASSIFICATION SPECIFICATION NAS 45938 SHEET 1 OF 8

ASTM International

ASTM A322	Standard Specification for Steel Bars, Alloy, Standard Grades
ASTM A342/A342M	Standard Test Methods for Permeability of Feebly Magnetic Materials
ASTM A493	Standard Specifications for Stainless and Heat-Resisting Steel Wire and Wire Rods for Cold Heading and Cold Forging
ASTM B633	Electrodeposited Coatings of Zinc on Iron and Steel, Standard Specification for
ASTM B700	Standard Specification for Electrodeposited Coatings of Silver for Engineering Use
ASTM F1470	Guide For Fastener Sampling For Specified Mechanical Properties in Performance Inspection
ASTM D3951	Commercial Packing, Standard Practices For

Copies can be obtained from ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959. www.astm.org

Aerospace Industries Association

NASM25027	Nut, Self-Locking, 250 °F, 450 °F, and 800 °F
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Copies can be obtained from the Aerospace Industries Association, 1000 Wilson Blvd., Suite 1700, Arlington, VA 22209. www.aia-aerospace.org

SAE International

AMS-QQ-A-225/5	Aluminum Alloy, 2017, Bar, Rod, and Wire Rolled, Drawn, or Cold Finished - UNS A92017
AMS-QQ-A-225/6	Aluminum Alloy, 2024, Bar, Rod, and Wire; Rolled, Drawn, or Cold Finished - UNS A92024
AMS-QQ-P-416	Plating, Cadmium (Electrodeposited)
AMS2700	Passivation Treatments for CRES
AS5272	Lubricant, Solid Film, Heat Cured, Corrosion Inhibiting
AMS5640	CRES, Bars, Wire, and Forgings 18Cr - 9.0Ni Free Machining
AMS5734	Steel Bars, Forging and Tubing, Corrosion and Heat Resistant
AS8879	Screw Threads, Controlled Radius Root with Increased Minor Diameter: General Specification for
AMS-C-81562	Coatings, Cadmium, Tin-Cadmium and Zinc (Mechanically Deposited)

Copies can be obtained from SAE International, 400 Commonwealth Dr., Warrendale, PA 15096-0001. www.sae.org

ASME

ASME B46.1	Surface Texture (Surface Roughness, Waviness, and Lay)
ASME B18.18.2	Quality Assurance for Fasteners

Copies can be obtained from ASME, Three Park Ave., New York, NY 10016-5990. www.asme.org

- 2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein (except for the related associated NASM standards), the text of this specification shall take precedence. Nothing in this specification, 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 sheets.
- 3.2 Material. Clinch nuts shall be made from the following materials, as specified in the applicable specification sheet and MS21331.
- 3.2.1 Carbon and alloy steel. Carbon steel shall conform to any of the grades 1010 thru 1095 (UNS G10100 thru G10950). Alloy steel shall be 4130 (UNS G41300) in accordance with ASTM A322.

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- 3.2.2 CRES. CRES shall be AISI 303 (UNS S30300) in accordance with AMS5640 or 302 HQ (UNS S30430) in accordance with ASTM A493. When specified in the applicable cable specification sheet, CRES shall be Type A286 in accordance with AMS5734.
- 3.2.2.1 Magnetic permeability. CRES shall have a magnetic permeability of 2.0 max (air = 1.0) for a field strength of H = 200 Oersteds when tested using an indicator in accordance with ASTM A342/A342M. CRES nuts that cannot meet the minimum required physical size for testing in accordance with ASTM A342/A342M shall be exempt from this requirement; however, raw material stock used to manufacture these unmeasurable parts shall meet magnetic permeability requirements specified herein.
- 3.2.3 Aluminum alloy. Aluminum alloy shall be 2017-T4 in accordance with ~~QQ-A-225/5~~ AMS-QQ-A-225/5 or 2024-T4 in accordance with ~~QQ-A-225/6~~ AMS-QQ-A-225/6.
- 3.2.4 Non-metallic insert. The non-metallic insert used in self-locking nuts shall be nylon.
- 3.3 Protective finish
- 3.3.1 Cadmium plating. Carbon and alloy steel nuts shall be cadmium plated in accordance with AMS-QQ-P-416, Type II, Class 3.
- 3.3.1.1 Hydrogen embrittlement. Cadmium plated alloy or carbon steel nuts heat treated to 39 HRC or higher shall be subjected to an embrittlement relief treatment within 4 hours after plating, conducted in accordance with AMS-QQ-P-416.
- 3.3.2 Passivation. CRES (303) nuts shall be passivated in accordance with AMS2700, Method 1, Type II, Class 4 and (302) nuts in accordance with AMS2700, Method 1, Type VI, Class 4,.
- 3.3.3 Silver plating. CRES (A286) nuts shall be silver plated in accordance with ASTM B700, Type II, Grade B, .0002" thick.
- 3.3.4 Zinc plating. When specified, nuts shall be zinc coated in accordance with AMS-C-81562, Type II, Class 2 or in accordance with ASTM B633, Fe/Zn 13, Type II for mechanical or electrodeposition, respectively.
- 3.3.5 Lubricant. When specified on the applicable specification sheet, alloy steel nuts shall have a supplementary solid film lubricant coating in accordance with ~~MIL-L-46010~~ AS5272 Type I or MIL-L-23398. When specified on the applicable specification sheet, CRES nuts shall have a supplementary solid film lubricant coating in accordance with ~~MIL-L-46010~~ AS5272 or MIL-L-23398. Lubricant shall be optional on nuts with non-metallic inserts.
- 3.4 Design and construction. Clinch nuts shall be of one-piece construction. (Nuts with permanently attached non-metallic inserts are considered as one-piece construction. For the purpose of this specification, floating clinch nuts shall be considered as one-piece construction.) Clinch nuts shall have a countersunk entry on both sides, except for deformed thread lock nuts and nuts with nonmetallic inserts, which shall only be required to have the countersink on the entry side. When properly installed in a predrilled or punched hole in sheet material, the clinch portion of the nut shall provide a positive, permanent attachment to the sheet without damaging or affecting the threads. The locking device shall not operate by means of separate movement from the installation and shall not depend upon pressure on the bearing surface for locking action.
- 3.4.1 Dimensions. Dimensions and tolerances shall be as specified on the applicable specification sheet and MS21331 and shall apply after plating and prior to supplemental lubrication.
- 3.4.2 Threads. Unless otherwise specified, threads shall be in accordance with FED-STD-H28/2. When specified on the applicable specification sheet, threads shall be in accordance with MIL-S-7742 or AS8879.
- 3.4.2.1 Thread start. Self-locking nuts with locking feature incorporated and without lubricant, shall allow a "Go" plug gage to enter the nut a minimum of 3/4 turn before engagement of the locking feature.

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