

FED. SUPPLY CLASS

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1. SCOPE

- 1.1 This specification covers self-locking nuts and self-locking plate nuts for use where temperatures will not exceed 1,200 °F.

2. APPLICABLE DOCUMENTS

2.1 Government documents

- 2.1.1 Specification and standards. Unless otherwise specified, issues of referenced documents are those in effect at the time of solicitation. Information regarding the latest issue of government documents and adopted non-government documents can be obtained from the Department of Defense Index of Specification and Standards.

SPECIFICATIONS

Federal

GGG-W-636

Wrenches, Box and Open End (Nonadjustable)

GGG-W-641

Wrench, Sockets (and Sockets, Handles, and Attachments for Socket Wrenches; Hand)

Military

MIL-STD-2073/1

Standard Practice For Military Packaging

STANDARDS

Federal

AN503

Screw, Machine, Drilled, Fillister Head, Coarse Thread

Military

MS20500

Nut, Self Locking, Hexagon, 1,200 °F, 125 KSI Ftu

~~MS20501~~

~~Nut, Self Locking, Plate, Two Lug, 1,200 °F, 125 KSI Ftu~~

MIL-STD-129

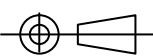
Marking for Shipment and Storage

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

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THE INITIAL RELEASE OF THIS DOCUMENT SUPERSEDES MIL-N-7873, REVISION B, AMENDMENT 1.

THIRD
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CUSTODIAN

NATIONAL AEROSPACE STANDARDS COMMITTEE

REVISION

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PROCUREMENT
SPECIFICATION

NONE

TITLE

NUT, SELF-LOCKING, 1,200 °F

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CLASSIFICATION
SPECIFICATION

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Documents

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- 2.2 Other publications. Unless otherwise specified, issues of the referenced documents are those in effect at the time of solicitation. Information regarding the latest issue of non-government documents not adopted by the government can be obtained from the organization responsible for their publications.

Aerospace Industries Association

NAS410	Nondestructive Testing Personnel (Qualification and Certification)
NASM1312	Fastener, Test Methods
NASM1312/7	Fastener, Test Method, Vibration
NASM1312/8	Fastener, Test Method, Tensile Strength
NASM1312/10	Fastener, Test Method, Stress Rupture
NASM20501	Nut, Self Locking, Plate, Two Lug, 1,200 °F, 125 KSI Ft _u

Copies can be obtained from the Aerospace Industries Association, 1000 Wilson Blvd., Suite 1700, Arlington, VA 22209. www.aia-aerospace.org

American Society for Quality

ANSI/ASQ Z1.4	Sampling Procedure and Tables for Inspection by Attributes
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Copies can be obtained from the American Society for Quality, 600 North Plankinton Ave., Milwaukee, WI 53203. www.asq.org

ASME

ASME B46.1	Surface Texture (Surface Roughness, Waviness and Lay)
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Copies can be obtained from ASME, Three Park Ave., New York, NY 10016-5990. www.asme.org

SAE International

AMS2411	Silver Plating, For High Temperature Applications
AS8879	Screw Threads, Controlled Radius Root with Increased Minor Diameter, General Specification for

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

ASTM International

ASTM A342/A342M	Standard Test Method For Permeability of Feebly Magnetic Materials
ASTM D3951	Standard Practice For Commercial Packaging
ASTM E1417	Inspection, Liquid Penetrant

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

3. REQUIREMENTS

- 3.1 NAS standards. The individual item requirements shall be as specified herein and in accordance with the applicable standards. In the event of a conflict between requirements of this specification and the standard, the latter shall govern.
- 3.2 Qualification. The nut manufacturer shall be responsible for conducting qualification tests and furnishing part drawings, certified qualification test reports (if required by the purchaser) and test samples. The nuts furnished under this specification shall be produced using the same manufacturing methods as those used to produce nuts that have passed qualification tests. The purchaser may apply any or all tests specified herein to any product represented as meeting this specification, at any time, to verify conformance.
- 3.2.1 Retention of qualification. Requalification will be required in the event any change is made in the product design, construction, materials, method of manufacture, heat treatment, finish, lubricant, or manufacturer's part number or designation.

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- 3.3 Materials. Nuts shall be fabricated from heat-resisting and corrosion-resisting austenitic steel which is not subject to intergranular deterioration at $1,200^{\circ}\text{F} \pm 25^{\circ}\text{F}$. In the event the applicable standard drawing specifies a particular material for fabrication of the nuts, the specified material shall be used.
- 3.4 Design. Self-locking nut design shall conform to the applicable standard.
- 3.5 Construction. The self-locking nut element shall be a self contained, all metal unit, including the self-locking device. The locking device shall be of the prevailing torque type and shall not operate by means of separate movement from the installation and shall not depend upon pressure on the bearing surface for locking action.
- 3.5.1 Bearing surface. The bearing surface shall be normal to the axis of the thread pitch cylinder of the threads within .003 inches FIM for sizes up to .5000 inches, and within .005 inches for sizes larger than .5000 inches (see 4.5.1.1). The wrenching surface circular runout to the thread pitch cylinder shall be within .010 inches FIM.
- 3.5.1.1 The bearing surface roughness average of the nuts shall not exceed 125 microinches (Ra) in accordance with ASME B46.1 (see 4.5.1.2).
- 3.5.2 Threads. Unless otherwise specified, the threads shall be in conformance with AS8879 prior to incorporation of the locking feature. Threads used on the locking device may be displaced or deformed in any manner which provides self-locking nuts conforming to this specification. After incorporation of the locking feature, the nut shall allow the "go" gage to enter a minimum of 1.5 turns before engagement of the locking element.
- 3.5.3 Plate nut rivet-bolt hole alignment. Plate nut rivet-bolt hole alignment shall be in accordance with the applicable standard (see 4.5.1.3).
- 3.6 Plating and surface treatment. The threads shall be silver plated in accordance with AMS2411. Nominal thread size .2500 inches and larger shall show a minimum of .0002 inches thick silver plate on thread flank and show complete coverage of threads. Nominal thread size under .2500 inches shall show .0003 to .0005 inches thick silver plate on bearing surface. Silver plate shall be optional on other areas except, no plating shall be applied in the area of the projecting weld nibs of weld plate nuts.
- 3.7 Mechanical Properties
- 3.7.1 Axial tensile strength. The nuts shall have a minimum axial tensile strength of not less than the values specified in Table I, when tested as specified in 4.5.2.
- 3.7.2 Stress rupture tensile strength. Nuts shall withstand the tensile load specified in Table I, when tested at elevated temperature as specified in 4.5.2.

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TABLE I – MINIMUM STRENGTH REQUIREMENTS

Thread size	Axial strength at room temp (LBF min.)	Axial strength after baking at 1,200 °F for 6 hours (LBF min.)	Stress rupture tensile load 96 hours at 1,200 °F (LBF min.)
.1380-32	1,130	850	
.1640-32	1,720	1,290	
.1900-32	2,460	1,840	940
.2500-28	4,580	3,430	1,710
.3125-24	7,390	5,500	2,730
.3750-24	11,450	8,600	4,130
.4375-20	15,450	11,600	5,580
.5000-20	21,110	15,800	7,520
.5625-18	26,810	20,100	9,540
.6250-18	34,130	25,600	12,000
.7500-16	50,020	37,500	17,600
.8750-14	68,440	51,300	23,900
1.0000-12	92,180	69,100	32,000

3.7.3 Torque

3.7.3.1 **Wrench torque.** Wrenchable nuts shall withstand the wrench torque listed in Table II (see 4.5.3.1). There shall be no permanent deformation that may interfere with the use of a box or socket wrench conforming to GGG-W-636 and GGG-W-641, respectively.

TABLE II – WRENCH TORQUE AT ROOM TEMPERATURE
AFTER 6-HOUR (+25 HR/- .000 HR) BAKE AT 1,200 °F ± 25 °F

Thread Size	Wrench torque inch-Pounds
.1380-32	20
.1640-32	30
.1900-32	60
.2500-28	150
.3125-24	360
.3750-24	650
.4375-20	1,200
.5000-20	1,600
.5625-18	2,300
.6250-18	4,000
.7500-16	6,000
.8750-14	8,000
1.0000-12	11,000

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