INTERNATIONAL

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Standard Specification for ~~Carbons~~Carbon and Alloy Steel Nuts[1]

This standard is issued under the fixed designation A563; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope*

1.1 This specification[2] covers chemical and mechanical requirements for eight grades of carbon and alloy steel nuts for general structural and mechanical uses on bolts, studs, and other externally threaded parts.

NOTE 1—See Appendix X1 for guidance on suitable application of nut grades.

1.2 The requirements for any grade of nut may, at the supplier's option, and with notice to the purchaser, be fulfilled by furnishing nuts of one of the stronger grades specified herein unless such substitution is barred in the inquiry and purchase order.

1.3 Grades C3 and DH3 nuts have atmospheric corrosion resistance and weathering characteristics comparable to that of the steels covered in Specifications ~~A 242~~A242/A242M~~/A 242M, A 588/A 588M~~, A588/A588M~~, and A 709/A 709M~~, and A709/A709M. The atmospheric corrosion resistance of these steels is substantially better than that of carbon steel with or without copper addition (see 5.2). When properly exposed to the atmosphere, these steels can be used bare (uncoated) for many applications.

NOTE 2—A complete metric companion to Specification A563 has been developed—A563M; therefore, no metric equivalents are presented in this specification.

1.4 Terms used in this specification are defined in Terminology ~~F 1789~~F1789 unless otherwise defined herein.

2. Referenced Documents

2.1 *ASTM Standards:*[3]

A194/A194M Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both
A242/A242M Specification for High-Strength Low-Alloy Structural Steel
A307 Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength
A325 Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
A354 Specification for Quenched and Tempered Alloy Steel Bolts, Studs, and Other Externally Threaded Fasteners
A394 Specification for Steel Transmission Tower Bolts, Zinc-Coated and Bare
A449 Specification for Hex Cap Screws, Bolts and Studs, Steel, Heat Treated, 120/105/90 ksi Minimum Tensile Strength, General Use
A490 Specification for Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength
A588/A588M Specification for High-Strength Low-Alloy Structural Steel, up to 50 ksi [345 MPa] Minimum Yield Point, with Atmospheric Corrosion Resistance
A687 Specification for High-Strength Nonheaded Steel Bolts and Studs[4]
A709/A709M Specification for Structural Steel for Bridges
A751 Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products
B695 Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel
D3951 Practice for Commercial Packaging
F606 Test Methods for Determining the Mechanical Properties of Externally and Internally Threaded Fasteners, Washers, Direct Tension Indicators, and Rivets

[1] This specification is under the jurisdiction of ASTM Committee F16 on Fasteners and is the direct responsibility of Subcommittee F16.02 on Steel Bolts, Nuts, Rivets and Washers.

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[2] For *ASME Boiler and Pressure Vessel Code* applications see related Specification SA – 563 in Section II of that Code.

[3] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[4] Withdrawn.

***A Summary of Changes section appears at the end of this standard.**

F812/F812M Specification for Surface Discontinuities of Nuts, Inch and Metric Series
F1789 Terminology for F16 Mechanical Fasteners
F2329 Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners
G101 Guide for Estimating the Atmospheric Corrosion Resistance of Low-Alloy Steels

2.2 *ANSI Standards:*
ANSI B1.1 Unified Screw Threads[5]
ANSI B18.2.2 Square and Hex Nuts[5]

3. Ordering Information

3.1 Orders for nuts under this specification shall include the following:

3.1.1 Quantity (number of nuts),

3.1.2 Nominal size and thread series of nuts,

3.1.3 Style of nut (for example, heavy hex),

3.1.4 Grade of nut,

3.1.5 *Zinc Coating*—Specify the zinc-coating process required, for example, hot-dip, mechanically deposited, or no preference (see 4.7),

3.1.6 *Other Finishes*—Specify other protective finish if required,

3.1.7 ASTM designation and year of issue, and

3.1.8 Supplementary or special requirements.

NOTE 3—An example of an ordering description follows: 1000 ⅞-9 heavy hex nuts, Grade DH, hot-dip zinc-coated, and lubricated, ASTM A563–XX.

4. Materials and Manufacture

4.1 Steel for nuts shall be made by the open-hearth, basic-oxygen, or electric-furnace process except that steel for Grades O, A, and B nuts may be made by the acid-bessemer process.

4.2 Nuts may be made cold or hot by forming, pressing, or punching or may be machined from bar stock.

4.3 Grades DH and DH3 nuts shall be heat treated by quenching in a liquid medium from a temperature above the transformation temperature and tempering at a temperature of at least 800°F.

4.4 Grades C and D nuts made of steel having carbon content not exceeding 0.20 %, phosphorus not exceeding 0.04 %, and sulfur not exceeding 0.05 % by heat analysis may be heat treated by quenching in a liquid medium from a temperature above the transformation temperature and need not be tempered. When this heat treatment is used, there shall be particular attention to the requirements in 6.1.1.

4.5 Grades C, C3, and D nuts made of any steel permitted for these grades may be heat treated by quenching in a liquid medium from a temperature above the transformation temperature and tempering at a temperature of at least 800°F.

4.6 Threads shall be formed by tapping or machining.

4.7 *Zinc Coatings, Hot-Dip and Mechanically Deposited*:

4.7.1 When zinc-coated fasteners are required, the purchaser shall specify the zinc coating process, for example, hot-dip, mechanically deposited, or no preference.

4.7.2 When hot-dip is specified, the fasteners shall be zinc-coated by the hot-dip process in accordance with the requirements of Specification ~~F 2329~~F2329.

4.7.3 When mechanically deposited is specified, the fasteners shall be zinc coated by the mechanical deposition process in accordance with the requirements of Class ~~50~~55 of Specification ~~B 695~~B695.

4.7.4 When no preference is specified, the supplier may furnish either a hot-dip zinc coating in accordance with Specification ~~F 2329~~F2329, or a mechanically deposited zinc coating in accordance with Specification ~~B 695~~B695, Class ~~50.~~55. Threaded components (bolts and nuts) shall be coated by the same zinc-coating process and the supplier's option is limited to one process per item with no mixed processes in a lot.

4.7.5 Hot-dip zinc-coated nuts shall be tapped after zinc coating.

4.7.6 Mechanically deposited zinc-coated nuts for assembly with mechanically deposited zinc-coated bolts shall be tapped oversize prior to zinc coating and need not be retapped afterwards.

4.8 *Lubricant*:

4.8.1 Hot-dip and mechanically deposited zinc-coated Grade DH nuts shall be provided with an additional lubricant which shall be clean and dry to the touch (see Supplementary Requirement S1 to specify lubrication requirements for plain finish nuts).

4.8.2 See Supplementary Requirement S2 for option to specify a dye in the lubricant.

5. Chemical Composition

5.1 Grades O, A, B, C, D, and DH shall conform to the chemical composition specified in Table 1.

[5] Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, http://www.ansi.org.

TABLE 1 Chemical Requirements for Grades O, A, B, C, D, and DH Nuts

Grade of Nut	Composition, %				
	Analysis	Carbon	Manganese, min	Phosphorus, max	Sulfur, max
O, A, B, C	heat	0.55 max	...	0.12	0.15[A]
	product	0.58 max	...	0.13[B]	...
D[C]	heat	0.55 max	0.30	0.04	0.05
	product	0.58 max	0.27	0.048	0.058
	heat	0.20–0.55	0.60	0.04	0.05
DH[C]	product	0.18–0.58	0.57	0.048	0.058

[A] For Grades O, A, and B a sulfur content of 0.23 % max is acceptable with the purchasers approval.
[B] Acid bessemer steel only.
[C] For Grades D and DH a sulfur content of 0.05 – 0.15 % is acceptable provided the manganese is 1.35 % min.

5.2 Grades C3 and DH3 shall conform to the chemical composition specified in Table 2. See Guide ~~G 101~~G101 for methods of estimating the atmospheric corrosion resistance of low alloy steels.

5.3 Resulfurized or rephosphorized steel, or both, are not subject to rejection based on product analysis for sulfur or phosphorus.

5.4 Application of heats of steel to which bismuth, selenium, tellurium, or lead has been intentionally added shall not be permitted for Grades D, DH, and DH3.

5.5 Chemical analyses shall be performed in accordance with Test Methods, Practices, and Terminology ~~A 751~~A751.

6. Mechanical Properties

6.1 *Hardness*:

6.1.1 The hardness of nuts of each grade shall not exceed the maximum hardness specified for the grade in Table 3.

TABLE 2 Chemical Requirements for Grades C3 and DH3 Nuts

Element	Composition, %							
	Classes for Grade C-3 Nuts[A]							Grade DH3 Nuts
	N	A	B	C	D	E	F	
Carbon:								
Heat analysis	...	0.33–0.40	0.38–0.48	0.15–0.25	0.15–0.25	0.20–0.25	0.20–0.25	0.20–0.53
Product analysis	...	0.31–0.42	0.36–0.50	0.14–0.26	0.14–0.26	0.18–0.27	0.19–0.26	0.19–0.55
Manganese:								
Heat analysis	...	0.90–1.20	0.70–0.90	0.80–1.35	0.40–1.20	0.60–1.00	0.90–1.20	0.40 min
Product analysis	...	0.86–1.24	0.67–0.93	0.76–1.39	0.36–1.24	0.56–1.04	0.86–1.24	0.37 min
Phosphorus:								
Heat analysis	0.07–0.15	0.040 max	0.06–0.12	0.035 max	0.040 max	0.040 max	0.040 max	0.046 max
Product analysis	0.07–0.155	0.045 max	0.06–0.125	0.040 max	0.045 max	0.045 max	0.045 max	0.052 max
Sulfur:								
Heat analysis	0.050 max	0.050 max	0.050 max	0.040 max	0.050 max	0.040 max	0.040 max	0.050 max
Product analysis	0.055 max	0.055 max	0.055 max	0.045 max	0.055 max	0.045 max	0.045 max	0.055 max
Silicon:								
Heat analysis	0.20–0.90	0.15–0.35	0.30–0.50	0.15–0.35	0.25–0.50	0.15–0.35	0.15–0.35	...
Product analysis	0.15–0.95	0.13–0.37	0.25–0.55	0.13–0.37	0.20–0.55	0.13–0.37	0.13–0.37	...
Copper:								
Heat analysis	0.25–0.55	0.25–0.45	0.20–0.40	0.20–0.50	0.30–0.50	0.30–0.60	0.20–0.40	0.20 min
Product analysis	0.22–0.58	0.22–0.48	0.17–0.43	0.17–0.53	0.27–0.53	0.27–0.63	0.17–0.43	0.17 min
Nickel:								
Heat analysis	1.00 max	0.25–0.45	0.50–0.80	0.25–0.50	0.50–0.80	0.30–0.60	0.20–0.40	0.20 min[B]
Product analysis	1.03 max	0.22–0.48	0.47–0.83	0.22–0.53	0.47–0.83	0.27–0.63	0.17–0.43	0.17 min
Chromium:								
Heat analysis	0.30–1.25	0.45–0.65	0.50–0.75	0.30–0.50	0.50–1.00	0.60–0.90	0.45–0.65	0.45 min
Product analysis	0.25–1.30	0.42–0.68	0.47–0.83	0.27–0.53	0.45–1.05	0.55–0.95	0.42–0.68	0.42 min
Vanadium:								
Heat analysis	...	...	...	0.020 min	...	...	...	...
Product analysis	...	...	...	0.010 min	...	...	...	...
Molybdenum:								
Heat analysis	...	...	0.06 max	...	0.10 max	...	...	0.15 min[B]
Product analysis	...	...	0.07 max	...	0.11 max	...	...	0.14 min
Titanium:								
Heat analysis	...	...	...	...	0.05 max	...	...	...
Product analysis	...	...	...	...	...	...	...	...

[A] C3 nuts may be made of any of the above listed material classes. Selection of the class shall be at the option of the manufacturer.
[B] Nickel or molybdenum may be used.

TABLE 3 Mechanical Requirements

Nuts with UNC, 8 UN, 6 UN and Coarser Pitch Threads

Grade of Nut	Nominal Nut Size, in.	Style of Nut	Proof Load Stress, ksi[A]		Hardness			
			Non-Zinc-Coated Nuts[B]	Zinc-Coated Nuts[B]	Brinell		Rockwell	
					min	max	min	max
O	¼ to 1½	square	69	52	103	302	B55	C32
A	¼ to 1½	square	90	68	116	302	B68	C32
O	¼ to 1½	hex	69	52	103	302	B55	C32
A	¼ to 1½	hex	90	68	116	302	B68	C32
B	¼ to 1	hex	120	90	121	302	B69	C32
B	1⅛ to 1½	hex	105	79	121	302	B69	C32
D[C]	¼ to 1½	hex	135	135	159	352	B84	C38
DH[D]	¼ to 1½	hex	150	150	248	352	C24	C38
DH3	½ to 1	hex	150	150	248	352	C24	C38
A	¼ to 4	heavy hex	100	75	116	302	B68	C32
B	¼ to 1	heavy hex	133	100	121	302	B69	C32
B	1⅛ to 1½	heavy hex	116	87	121	302	B69	C32
C[C]	¼ to 4	heavy hex	144	144	143	352	B78	C38
C3	¼ to 4	heavy hex	144	144	143	352	B78	C38
D[C]	¼ to 4	heavy hex	150	150	159	352	B84	C38
DH[D]	¼ to 4	heavy hex	175	150	248	352	C24	C38
DH3	¼ to 4	heavy hex	175	150	248	352	C24	C38
A	¼ to 1½	hex thick	100	75	116	302	B68	C32
B	¼ to 1	hex thick	133	100	121	302	B69	C32
B	1⅛ to 1½	hex thick	116	87	121	302	B69	C32
D[C]	¼ to 1½	hex thick	150	150	159	352	B84	C38
DH[D]	¼ to 1½	hex thick	175	175	248	352	C24	C38
Nuts with UNF, 12 UN, and Finer Pitch Threads								
O	¼ to 1½	hex	65	49	103	302	B55	C32
A	¼ to 1½	hex	80	60	116	302	B68	C32
B	¼ to 1	hex	109	82	121	302	B69	C32
B	1⅛ to 1½	hex	94	70	121	302	B69	C32
D[C]	¼ to 1½	hex	135	135	159	352	B84	C38
DH[D]	¼ to 1½	hex	150	150	248	352	C24	C38
A	¼ to 4	heavy hex	90	68	116	302	B68	C32
B	¼ to 1	heavy hex	120	90	121	302	B69	C32
B	1⅛ to 1½	heavy hex	105	79	121	302	B69	C32
D[C]	¼ to 4	heavy hex	150	150	159	352	B84	C38
DH[D]	¼ to 4	heavy hex	175	150	248	352	C24	C38
A	¼ to 1½	hex thick	90	68	116	302	B68	C32
B	¼ to 1	hex thick	120	90	121	302	B69	C32
B	1⅛ to 1½	hex thick	105	79	121	302	B69	C32
D[C]	¼ to 1½	hex thick	150	150	159	352	B84	C38
DH[D]	¼ to 1½	hex thick	175	175	248	352	C24	C38

[A] To determine nut proof load in pounds, multiply the appropriate nut proof load stress by the tensile stress area of the thread. Stress areas for UNC, UNF, and 8 UN thread series are given in Table 4.

[B] Non-zinc-coated nuts are nuts intended for use with externally threaded fasteners which have a plain (nonplated or noncoated) finish or have a plating or coating of insufficient thickness to necessitate overtapping the nut thread to provide assemblability. Zinc-coated nuts are nuts intended for use with externally threaded fasteners which are hot-dip zinc-coated, mechanically zinc-coated, or have a plating or coating of sufficient thickness to necessitate overtapping the nut thread to provide assemblability.

[C] Nuts made in accordance to the requirements of Specification ~~A 194~~ A194/A194M/~~A 194M~~, Grade 2 or Grade 2H, and marked with their grade symbol are acceptable equivalents for Grades C and D nuts. When A194 zinc-coated inch series nuts are supplied, the zinc coating, overtapping, lubrication and rotational capacity testing shall be in accordance with Specification A563.

[D] Nuts made in accordance with the requirements of Specification ~~A 194~~ A194/A194M/~~A 194M~~, Grade 2H, and marked with its grade symbol are an acceptable equivalent for Grade DH nuts. When A194 zinc-coated inch series nuts are supplied, the zinc coating, overtapping, lubrication and rotational capacity testing shall be in accordance with Specification A563.

6.1.2 Jam nuts, slotted nuts, nuts smaller in width across flats or thickness than standard hex nuts (7.1), and nuts that would require a proof load in excess of 160 000 lbf may be furnished on the basis of minimum hardness requirements specified for the grade in Table 3, unless proof load testing is specified in the inquiry and purchase order.

6.2 *Proof Load*:

6.2.1 Nuts of each grade, except those listed in 6.1.2, shall withstand the proof load stress specified for the grade, size, style, thread series, and surface finish of the nut in Table 3 and Table 4.

TABLE 4 Tensile Stress Areas

Nominal Size–Threads per Inch	UNC Tensile Stress Area,[A] A_s in.^{2}	Nominal Size-Threads per Inch	UNF Tensile Stress Area[A] A_s in.^{2}	Nominal Size–Threads per Inch	8 UN Tensile Stress Area,[A] A_s in.^{2}
¼ –20	0.0318	¼ –28	0.0364	...	...
5⁄16 –18	0.0524	5⁄16 –24	0.0580	...	...
3⁄8 –16	0.0775	3⁄8 –24	0.0878	...	...
7⁄16 –14	0.1063	7⁄16 –20	0.1187	...	...
½ –13	0.1419	½ –20	0.1599	...	...
9⁄16 –12	0.182	9⁄16 –18	0.203	...	...
5⁄8 –11	0.226	5⁄8 –18	0.256	...	...
¾ –10	0.334	¾ –16	0.373	...	...
7⁄8 –9	0.462	7⁄8 –14	0.509	...	...
1–8	0.606	1–12	0.663	1–8	0.606
1⅛ –7	0.763	1⅛ –12	0.856	1⅛ –8	0.790
1¼ –7	0.969	1¼ –12	1.073	1¼ –8	1.000
1⅜ –6	1.155	1⅜ –12	1.315	1⅜ –8	1.233
1½ –6	1.405	1½ –12	1.581	1½ –8	1.492
1¾ –5	1.90	...	...	1¾ –8	2.08
2–4½	2.50	...	...	2–8	2.77
2¼ –4½	3.25	...	...	2¼ –8	3.56
2½ –4	4.00	...	...	2½ –8	4.44
2¾ –4	4.93	...	...	2¾ –8	5.43
3–4	5.97	...	...	3–8	6.51
3¼ –4	7.10	...	...	3¼ –8	7.69
3½ –4	8.33	...	...	3½ –8	8.96
3¾ –4	9.66	...	...	3¾ –8	10.34
4–4	11.08	...	...	4–8	11.81

[A] A_s The stress area is calculated as follows:

$$A_s = 0.7854\left[D - \frac{0.9743}{n}\right]^2$$ A0563-07A_1

where:

A_s = stress area, in.^{2},
D = nominal size, in., and
n = threads per inch.

6.2.2 Nuts hot dip or mechanically zinc coated in accordance with 4.7.2 or 4.7.3 shall be proof load tested after zinc coating and overtapping.[6]

7. Dimensions

7.1 Unless otherwise specified, nuts shall be plain (uncoated) and shall conform to the dimensions prescribed in ANSI B18.2.2.

7.2 Hex and hex-slotted nuts over 1½ to 2 in. inclusive shall have dimensions conforming to ANSI B18.2.2 calculated using the formulas for the 1¼ through 1½-in. size range in Appendix III (Formulas for Nut Dimensions) of ANSI B18.2.2.

7.3 *Threads: Plain (Uncoated) Nuts*

7.3.1 Unless otherwise specified, the threads shall conform to the dimensions for coarse threads with Class 2 B tolerances prescribed in ANSI B1.1.

7.4 *Threads: Nuts Hot Dip Zinc Coated*~~Specification F 2329~~ Specification F2329(4.7.2)

7.4.1 Nuts to be used on bolts with Class 2A threads before hot-dip zinc coating, and then hot-dip zinc coated in accordance with Specification ~~F 2329~~F2329, shall be tapped oversize after coating, to the minimum and maximum thread dimensions in Table 5. The major and minor diameters shall also be increased by the allowance to provide the corresponding minimum and maximum major and minor diameters.

7.5 *Threads: Nuts With Other Coatings*

7.5.1 Nuts to be used on bolts mechanically zinc coated or on bolts hot-dip zinc-coated to a specification other than Specification ~~F 2329~~F2329, or otherwise hot-dip coated, shall be tapped oversize by a diametral amount sufficient to permit assembly on the coated bolt thread, unless other requirements are specified in the inquiry or purchase order.

7.5.2 When specifically permitted by the purchaser, nuts for bolts with electrodeposited coating, such as cadmium, zinc, and so forth, or with chemically applied coating may be tapped oversize by a diametral amount sufficient to permit assembly on the coated bolt thread.

7.5.3 The allowable oversize tapping shall not exceed that specified in Table 5.

[6] Rotational capacity test procedures, nut rotations, and acceptance criteria are a function of the bolt with which the nuts will be used. When required, they are covered by the applicable bolt specification.

TABLE 5 Thread Dimensions and Overtapping Allowances for Nuts Hot Dip Zinc Coated per Specification ~~F 2329~~ F2329

Nominal Nut Size, in. and Pitch	Diametral Allowance, in.[A]	Pitch Diameter, in.	
		min	max
0.250-20	0.016	0.2335	0.2384
0.312-18	0.017	0.2934	0.2987
0.375-16	0.017	0.3514	0.3571
0.437-14	0.018	0.4091	0.4152
0.500-13	0.018	0.4680	0.4745
0.562-12	0.020	0.5284	0.5352
0.625-11	0.020	0.5860	0.5932
0.750-10	0.020	0.7050	0.7127
0.875-9	0.022	0.8248	0.8330
1.000-8	0.024	0.9428	0.9516
1.125-8	0.024	1.0678	1.0768
1.125-7	0.024	1.0562	1.0656
1.250-8	0.024	1.1928	1.2020
1.250-7	0.024	1.1812	1.1908
1.375-8	0.027	1.3208	1.3301
1.375-6	0.027	1.2937	1.3041
1.500-8	0.027	1.4458	1.4553
1.500-6	0.027	1.4187	1.4292
1.750-5	0.050	1.6701	1.6817
2.000-4.5	0.050	1.9057	1.9181
2.250-4.5	0.050	2.1557	2.1683
2.500-4	0.050	2.3876	2.4011
2.750-4	0.050	2.6376	2.6513
3.000-4	0.050	2.8876	2.9015
3.250-4	0.050	3.1376	3.1517
3.500-4	0.050	3.3876	3.4019
3.750-4	0.050	3.6376	3.6521
3.750-4	0.050	3.6376	3.6521
4.000-4	0.050	3.8876	3.9023

[A] These allowances also apply to the minimum and maximum major and minor diameters.

8. Workmanship

8.1 Surface discontinuity limits shall be in accordance with Specification ~~F 812~~F812/F812M~~/F 812M.~~ .

9. Number of Tests

9.1 The requirements of this specification shall be met in continuous mass production for stock, and the manufacturer shall make sample inspections to ensure that the product conforms to the specified requirements. Additional tests of individual shipments of material are not ordinarily contemplated. Individual heats of steel are not identified in the finished product.

9.2 When additional tests are specified in the inquiry and purchase order, a lot, for purposes of selecting test samples, shall consist of all material offered for inspection at one time that has the following common characteristics:

9.2.1 Grade,

9.2.2 Nominal size,

9.2.3 Style of nut,

9.2.4 Thread series and class, and

9.2.5 Surface finish.

9.3 Unless otherwise specified in the inquiry and purchase order, the number of tests for each lot of required property shall be as follows:

Number of Nuts in Lot	Number of Specimens
800 and under	1
801 to 8 000	2
8 001 to 22 000	3
Over 22 000	5

9.4 If any test specimen shows flaws, it may be discarded and another specimen substituted.

9.5 Should any specimen fail to meet the requirements of any specified test, double the number of specimens from the same lot shall be tested for this property, in which case all of the additional specimens shall meet the specifications.

10. Test Methods

10.1 Tests shall be conducted in accordance with Test Methods ~~F 606~~F606.