MIL-A-2550B
8 February 1973
SUPERSEDING
MIL-A-2550A
29 September 1961

MILITARY SPECIFICATION

AMMUNITION, 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 covers general requirements for all types of ammunition (non-nuclear and nuclear) and all components, propellants, explosives and other supplies used in ammunition.

2. APPLICABLE DOCUMENTS

2.1 The following documents of the issue in effect on date of invitation for bids form a part of this specification to the extent specified herein.

SPECIFICATIONS

MILITARY

MIL-D-1000 - Drawings, Engineering and Associated Lists
MIL-I-45607 - Inspection Equipment, Supply and Maintenance of
MIL-C-45662 - Calibration of Standards

STANDARDS

MILITARY

MIL-STD-9 - Screw Thread Conventions and Methods of Specifying

(Copies of specifications, standards, drawings and publications required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the Contracting Officer).

FSC: 1395

2.2 Other Publications.-The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitations for bids shall apply.

U. S. DEPARTMENT OF COMMERCE

NATIONAL BUREAU OF STANDARDS

HANDBOOK H28 - Screw Thread Standards for Federal Services

(Application for copies should be addressed to the Superintendent of Documents, U.S. Government Printing Ofc., Washington 25, D.C.)

USA STANDARDS

ASA B46.1 - Surface Texture, Surface Roughness, Waviness and Lay

USASI Y14.5 - Dimensioning and Tolerancing for Engineering Drawings

(Technical Society and Technical Association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal Agencies).

3. REQUIREMENTS

3.1 Contractor Design Data.-Unless otherwise specified, where the contractor agrees to furnish materiel for which the Government does not prescribe the design, the contractor shall prepare and submit to the Government a complete set of drawings and specifications of the materiel to be furnished. Drawings and changes thereto shall be in the format prescribed in MIL-D-1000. When approved by the Government, such drawings and specifications shall become Government property.

3.2 Compliance with Drawings and Specifications.-Items submitted under contract, including the materials, components and parts used therein shall comply with all the functional, dimensional, physical, chemical or other property requirements of the applicable contract, drawings and specifications. The list of specifications and standards shown on an approved Government drawings includes, either directly or by reference, each authorized specification and standard with which the Government requires compliance by the manufacturer of the item for which the list is prepared, including those for all materials, processing, general specifications and packaging specifications.

3.3 Sub-Contracts.-The contractor shall be responsible for the compliance with all requirements of the contract, the drawings, and specifications on the part of his sub-contractors, including those who supply raw materials. Evidence of such compliance shall be supplied by the contractor.

3.4 Use of Government Drawings and Specifications.-The contractor shall work to the dimensions given on the drawings and the numerical values prescribed by the specifications. In no case shall the drawings be scaled. All toleranced drawing dimensions (other than reference dimensions) and the numerical values cited in the specification requirements are absolute and describe the extreme permissible limits. Unless otherwise specified in this or the detailed specification, the tolerances for untoleranced drawing dimensions shall be ± 1/64 when given in fractions, ± .010 when given in decimals and ± 30 minutes when expressed in degrees. Material deviating from prescribed limits will be considered defective without regard to the extent of the deviation.

rawing or specification, the contractor may select the material or method he will use unless otherwise provided by the Invitation for Bid or Request for Proposal. The contractor shall specify in his bid which alternative he proposes to use and, if for some reason he desires a change to another authorized alternative, prior approval shall be obtained from the procuring activity. Such approval shall be furnished the Government Quality Assurance Representative (QAR) each time a change is made. Designs described on Government drawings as "substitute standard" may not be used without prior approval by the procuring activity.

3.6 Dimensions on Protectively Treated Surfaces.-Except where otherwise specified, dimensional requirements and tolerances shall apply after plating or other surface treatment prescribed, except that when painting or other coating or painting preparative coating (e.g., phosphatizing) is prescribed, the dimensional requirements and tolerances shall apply before application of the primary coating.

3.7 Condition of Materials, Parts and Assemblies.

3.7.1 Surface Finish.-Surfaces shall be finished to the requirements indicated by symbols on the drawing. Standards and classes of surface finish shall be in accordance with American Standard USAS-B46.1.

3.7.2 Intersection of Surfaces.-All intersections of surfaces shall be free of burrs, slivers or feather edges. Unless otherwise specified, intersections of surfaces shall be rounded as follows:

Fillets	.01 inch radius, maximum (max.)
Corners	.02 inch radius, max. or
	.02 inch by 45° chamfer, max.

3.7.3 Materials.-All materials shall be free from dirt, rust, corrosion, grease, chips or other foreign matter. Materials shall be free from extraneous porosity, cavitation, warp, laps, cracks, inclusions, pits, voids or other injurious defects.

3.7.4 Parts and Assemblies.-All parts and assemblies shall be sound, of uniform quality and condition and free from seams, cracks, nicks, warp, obstructions, inclusions, scratches, dents, scrapes, gouges, holes, voids, porous areas, distortion, laps, pits, rust, corrosion or other injurious defects or blemish. Cleaning shall be thorough to remove all dirt, chips, grease, oil, flux, residues, chemical deposits or other foreign matter; and shall not be injurious to any part, nor shall the parts be contaminated by the cleaning agents.

3.8 Threads.-Threads shall be in accordance with MIL-STD-9.

3.9 Drilled Holes.

3.9.1 Tolerance.-Where a drilled hole is shown on the drawing and is dimensioned only by drill or letter reference or by linear dimension without a stated tolerance, the tolerance shall be that listed in Table I.

3.9.2 Depth of Drilled Holes.-Unless otherwise specified, the depth of a drilled hole shall be from the theoretical intersection of the conical and cylindrical surfaces.

3.10 Positional and Other Geometrical Tolerances.-Positional and other geometrical tolerances shall be in accordance with USASI Y14.5.

3.11 Protective Surface Treatment.-When the drawing permits one or more alternative protective finishes on a metal part, the salt spray requirement shall be limited to that protective finish which requires the least severe test, unless otherwise specified by the detail specification or contract.

3.12 Rotational Assembling and Disassembling of Spin-Actuated Fuze Sub-Assemblies and Fuzes Assembled to Complete Rounds - 37MM or Larger.-The fuze shall at no time be spun in excess of 300 revolutions per minute (rpm) nor shall the fuze be accelerated to 300 rpm in less than one second. Free-rolling and assembling or disassembling operations shall be prohibited where the rotational limitations may be exceeded. Wherever possible, anti-tampering devices shall be installed on mechanical assembling or disassembling rotating tools.

4. QUALITY ASSURANCE PROVISIONS

4.1 The supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own or any other inspection facilities and services acceptable to the Government. Inspection records of the examination and tests shall be kept complete and available to the Government as specified in the contract or order. 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 Samples required prior to the initiation of regular production.

4.2.1 Qualification Sample.-When required by the detail specification, the supplier shall submit samples to a Government approved laboratory for examination or test prior to bidding on the work. If satisfactory, the supplier's name and product name will be entered on a "Qualified Products List". Successful completion of qualification testing, and inclusion on a "Qualified Products List" in no manner implies either acceptance of any given quantity of material or the waiving of the specified inspection and testing to determine acceptability of any given lot.

4.2.2 Preproduction Samples (First Article).-When required by the detail specification or contract, the contractor shall submit a preproduction sample manufactured by the same methods and equipment which will be used in performing the work under contract. The Contracting Officer will furnish instructions for shipment of the sample to a Government approved facility or proving ground for examination and test. The samples will be inspected for all the requirements specified on the applicable drawings and in the detail specification. Results of the examinations and tests will be furnished to the contractor. Approval or disapproval of the preproduction sample will be given by the responsible procuring activity. Instructions for the submission of new samples in case of disapproval of the original sample will be issued by the procuring activity. Regular production shall not proceed until the preproduction sample has been approved.

4.2.3 Pilot Sample.-A pilot sample may be required by the detail specification if the contractor is to partially or completely design the item being procured. Acceptance of such a pilot sample is required prior to the start of regular production; however, acceptance of the pilot sample signifies only assent to the design and does not entail acceptance of future production.

4.3 Inspection Equipment

4.3.1 Supply.-Unless otherwise specified, supply and maintenance of inspection equipment shall be in accordance with MIL-I-45607.

4.3.2 Acceptance Gage Limitations.-The actual measured size of gages may differ from the dimensions shown on the component drawing by the amount of the wear allowance plus the gage-maker's tolerance, and may therefore consume that much of the component tolerance. In case such differences operate to reject any part, it shall be the responsibility of the contractor to satisfy the Government Representative that the parts are in fact within the limits permitted by the tolerances specified and, in the event they conform thereto, the part shall be accepted, provided it otherwise complies with the detail specifications.

4.3.3 Calibration.-Unless otherwise specified, calibration of inspection equipment shall be in accordance with MIL-C-45662.

4.4 Thread Gaging.-The design and usage of thread gages shall be in accordance with the practices outlined in Handbook H28 except that Not-Go thread gages may enter or be entered provided the gage encounters a snug fit on or before the third pitch, and maintains this snug fit throughout full entry. A snug fit is demonstrated by a perceptible resistance to turning of the gage and by absence of shake or play, and must not be obtained by the thread gage bottoming in the hole or the thread ring gage abutting a shoulder.

(1) For threads which are less than four full pitches in length, the gage must not enter or be entered beyond two pitches or beyond half the total number of pitches, whichever is smaller.

(2) For threads used in special applications, and when specifically stated in the drawings, specifications, deviation may be made from the above standards.

4.5 Lots.-A lot is a collection of articles, satisfying homogeneity criteria cited in the detail specification, to which an authorized Government lot number has been assigned by the Contracting Officer. Normally, the lot number will consist of three parts - a manufacturer's identification symbol, interfix number and a serial number, each separated by hyphens. The identification symbol consists of letters assigned so as to indicate the identity of the manufacturer. The interfix number is used to identify lots with respect to variations in the design or manufacturing process. The serial number identifies the lot according to its sequence of production under the conditions of manufacture represented by the interfix. The Ammunition Lot Numbering shall be in accordance with Standard MIL-STD-1168, unless otherwise specified in the detail specification.

4.6 Access to Operations.-The Government Representative shall be accorded free access to all manufacturing, inspecting or testing operations incident to the work under contract. The contractor shall give sufficient notice of inspections or tests required to be performed in the inspector's presence to permit the inspector to attend.

4.7 Unlisted Defects.-The item detail specification stipulates only those characteristics which will be used to determine the acceptability of the lot. However, if the Government Representative, during the performance of verification inspection, finds a defect which is not listed in the characteristics specified in Section 4, he will reject the piece containing the defect and return it to the contractor. The discovery of any unlisted characteristics will be reported along with regular inspection reports.

4.8 Rotational Assembling and Disassembling of Spin-Actuated Fuze Sub-Assemblies and Fuzes Assembled to Complete Rounds - 37MM and Larger (see 3.12).-Prior to the start of each shift, each assembly line shall be inspected and approved for compliance with the requirements. In addition, the equipment shall be inspected and approved whenever a change or significant adjustment is made which could affect the rotational speed.

5. PREPARATION FOR DELIVERY

5.1 Preservation.-All preservation treatments shall be in accordance with the requirements of the detail specification or drawings, or as specified by the procuring activity.

5.2 Packaging and Packing.-Supplies shall be packaged and packed in accordance with the detail specification and drawings, or as specified by the procuring activity.

5.3 Marking.-Supplies shall be marked and identified as required by the drawings, the detail specification, the contract or as specified by the procuring activity.

6. NOTES

6.1 Ordering Data.-Procurement documents will specify the following:

a. Title, number and date of this specification.

b. Precedence of contractual documents. Normally, if any conflict should exist between the contract and any applicable drawings and specifications, the order of precedence will be as follows:

1. Contract
2. Drawings
3. Detail specification for the item being procured.
4. Detail specification for material or operations
5. General specification for class of items.
6. General specification for class of materials.

6.2 Clarification of Requirements.-Should additional dimensions be required for any drawing, or should the contractor desire the interpretation to clarify any requirement of the drawings, application therefore shall be made to the inspector, who will secure the clarification from the appropriate source.

6.3 Ammunition Data Cards.-Standard MIL-STD-1167 has been developed for Ammunition Data Cards.

NOTICE: When Government drawings, specifications or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever, and the fact that the Government may have formulated, furnished or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use or sell any patented invention that may in any way be related thereto.

Custodians:
Navy-OS
Air Force-70
Army-MU

Preparing Activity:
Army-MU (PA)

Review Activities:
Army - MI, MU(EA), MU(FA), MU(PA)
Navy - AS, OS
Air Force - 70

User Activity:
Navy-MC

Project Number:
1395-0601

TABLE I
DRILLED HOLE TOLERANCES

DRILL	DECIMAL	TOLERANCE
80	.0135	+.0023 - .0005
79	.0145	+.0024 - "
1/64	.015625	+.0025 - "
78	.016	+.0025 - "
77	.018	+.0026 - "
76	.020	+.0027 - .0005
75	.021	+.0027 - "
74	.0225	+.0028 - "
73	.024	+.0028 - "
72	.025	+.0029 - "
71	.026	+.0029 - .0005
70	.028	+.003 - "
69	.0292	+.003 - "
68	.031	+.0031 - "
1/32	.03125	+.0031 - "
67	.032	+.0031 - .0005
66	.033	+.0032 - "
65	.035	+.0032 - "
64	.036	+.0033 - "
63	.037	+.0033 - "
62	.038	+.0033 - .0005
61	.039	+.0033 - "
60	.040	+.0034 - "
59	.041	+.0034 - .001
58	.042	+.0034 - "
57	.043	+.0035 - .001
56	.0465	+.0035 - "
3/64	.046875	+.0036 - "
55	.052	+.0037 - "
54	.055	+.0038 - "

TABLE I (Con't)
DRILLED HOLE TOLERANCES

DRILL	DECIMAL	TOLERANCE
53	.0595	+.0039 - .001
1/16	.0625	+.0039 - "
52	.0635	+.0039 - "
51	.067	+.004 - "
50	.070	+.0041 - "
49	.073	+.0041 - .001
48	.076	+.0042 - "
5/64	.078125	+.0042 - "
47	.0785	+.0042 - "
46	.081	+.0043 - "
45	.082	+.0043 - .001
44	.086	+.0044 - "
43	.089	+.0044 - "
42	.0935	+.0045 - "
3/32	.09375	+.0045 - "
41	.096	+.0045 - .001
40	.098	+.0046 - "
39	.0995	+.0046 - "
38	.1015	+.0046 - "
37	.104	+.0047 - "
36	.1065	+.0047 - .001
7/64	.109375	+.0047 - "
35	.110	+.0047 - "
34	.111	+.0048 - "
33	.113	+.0048 - "
32	.116	+.0048 - .001
31	.120	+.0049 - "
1/8	.125	+.005 - "
30	.1285	+.005 - "
29	.136	+.0051 - "

TABLE I (Con't)
DRILLED HOLE TOLERANCES

DRILL	DECIMAL	TOLERANCE
28	.1405	+.0052 - .001
9/64	.140625	+.0052 - "
27	.144	+.0052 - "
26	.147	+.0052 - "
25	.1495	+.0053 - "
24	.152	+.0053 - .001
23	.154	+.0053 - "
5/32	.15625	+.0053 - "
22	.157	+.0053 - "
21	.159	+.0054 - "
20	.161	+.0054 - .001
19	.166	+.0055 - "
18	.1695	+.0055 - "
11/64	.171875	+.0055 - "
17	.173	+.0055 - "
16	.177	+.0056 - .001
15	.180	+.0056 - "
14	.182	+.0056 - "
13	.185	+.0057 - "
3/16	.1875	+.0057 - "
12	.189	+.0057 - .001
11	.191	+.0057 - "
10	.1935	+.0057 - "
9	.196	+.0058 - "
8	.199	+.0058 - "
7	.201	+.0058 - .001
13/64	.203125	+.0058 - "
6	.204	+.0058 - "
5	.2055	+.0059 - "
4	.209	+.0059 - "
3	.213	+.0059 - .001
7/32	.21875	+.006 - "
2	.221	+.006 - "
1	.228	+.0061 - "
A	.234	+.0061 - "

TABLE I (Con't)

DRILLED HOLE TOLERANCES

DRILL	DECIMAL	TOLERANCE
15/64	.234375	+.0061 - .001
B	.238	+.0061 - "
C	.242	+.0062 - "
D	.246	+.0062 - "
1/4	.250	+.0063 - "
F	.257	+.0063 - .001
G	.261	+.0063 - "
17/64	.265625	+.0064 - "
H	.266	+.0064 - "
I	.272	+.0064 - "
J	.277	+.0065 - .002
K	.281	+.0065 - "
9/32	.28125	+.0065 - "
L	.290	+.0066 - "
M	.295	+.0066 - "
19/64	.296875	+.0066 - .002
N	.302	+.0067 - "
5/16	.3125	+.0067 - "
O	.316	+.0068 - "
P	.323	+.0068 - "
21/64	.328125	+.0068 - .002
Q	.332	+.0069 - "
R	.339	+.0069 - "
11/32	.34375	+.007 - "
S	.348	+.007 - "
T	.358	+.0071 - .002
23/64	.359375	+.0071 - "
U	.368	+.0072 - "
3/8	.375	+.0072 - "
V	.377	+.0072 - "
W	.386	+.0072 - .002
25/64	.390625	+.0073 - "
X	.397	+.0073 - "
Y	.404	+.0073 - "
13/32	.40625	+.0074 - "

TABLE I (Con't)

DRILLED HOLE TOLERANCES

DRILL	DECIMAL	TOLERANCE
Z	.413	+.0074 - .002
27/64	.421876	+.0075 - "
7/16	.4375	+.0075 - "
29/64	.453125	+.0076 - "
15/32	.46875	+.0077 - "
31/64	.484375	+.0078 - .002
1/2	.500	+.0079 - "
33/64	.515625	+.008 - "
17/32	.53125	+.0081 - "
35/64	.546875	+.0081 - "
9/16	.5625	+.0082 - .002
37/64	.578125	+.0083 - "
19/32	.59375	+.0084 - "
39/64	.609375	+.0084 - "
5/8	.625	+.0085 - "
41/64	.640625	+.0086 - .002
21/32	.65625	+.0086 - "
43/64	.671875	+.0087 - "
11/16	.6875	+.0088 - "
45/64	.703125	+.0088 - "
23/32	.71875	+.0089 - .002
47/64	.734375	+.009 - "
3/4	.750	+.009 - "
49/64	.765625	+.0091 - .003
25/32	.78125	+.0092 - "
51/64	.796875	+.0092 - .003
13/16	.8125	+.0093 - "
53/64	.828125	+.0093 - "
27/32	.84375	+.0094 - "
55/64	.859375	+.0095 - "

TABLE I (Con't)

DRILLED HOLE TOLERANCES

DRILL	DECIMAL	TOLERANCE
7/8	.875	+.0095 - .003
57/64	.890625	+.0096 - "
29/32	.90625	+.0096 - "
59/64	.921875	+.0097 - "
15/16	.9375	+.0097 - "
61/64	.953125	+.0098 - .003
31/32	.968750	+.0098 - "
63/64	.984375	+.0099 - "
1	1.000	+.010 - "

(TO DETACH THIS FORM, CUT ALONG THIS LINE.)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions – Reverse Side)

1. DOCUMENT NUMBER

2. DOCUMENT TITLE

3a. NAME OF SUBMITTING ORGANIZATION

4. TYPE OF ORGANIZATION *(Mark one)*

- ☐ VENDOR
- ☐ USER
- ☐ MANUFACTURER
- ☐ OTHER *(Specify)*: _____

b. ADDRESS *(Street, City, State, ZIP Code)*

5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

6. REMARKS

7a. NAME OF SUBMITTER *(Last, First, MI)* – Optional

b. WORK TELEPHONE NUMBER *(Include Area Code)* – Optional

c. MAILING ADDRESS *(Street, City, State, ZIP Code)* – Optional

8. DATE OF SUBMISSION *(YYMMDD)*

DD FORM 82 MAR 1426

PREVIOUS EDITION IS OBSOLETE.

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NOTE: This form may not be used to request copies of documents, nor to request waivers, deviations, or clarification of specification 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.

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