NOTICE OF CHANGE

INCH - POUND

MIL-STD-644A
NOTICE 4
10 January 1991

MILITARY STANDARD

# VISUAL INSPECTION STANDARDS AND INSPECTION PROCEDURES FOR INSPECTION OF PACKAGING, PACKING AND MARKING OF SMALL ARMS AMMUNITION

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1. THE FOLLOWING PAGES OF MIL-STD-644A HAVE BEEN REVISED AND SUPERSEDE THE PAGES LISTED:

| NEW PAGE | DATE | SUPERSEDED PAGE | DATE |
|---|---|---|---|
| 3 | 10 January 1991 | 3 | 3 March 1975 |
| 4 | 3 December 1962 | 4 | REPRINTED WITHOUT CHANGE |
| 5 | 10 January 1991 | 5 | 3 December 1962 |
| 6 | 3 December 1962 | 6 | REPRINTED WITHOUT CHANGE |

2. RETAIN THIS NOTICE PAGE AND INSERT BEFORE THE TABLE OF CONTENTS.

3. Holders of MIL-STD-644A will verify that page changes and additions indicated above have been entered. This notice page will be retained as a check sheet. This issuance, together with appended pages, is a separate publication. Each notice is to be retained by stocking points until the military standard is completely revised or canceled.

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5.1.3.3.1 Visual standards for defects 1.4 and 5 are illustrated in the appendix (figs. 15 and 16).

5.1.4 Bulk package.

5.1.4.1 the acceptable quality levels for bulk package defects shall be as follows:

| | *Percent* |
|---|---|
| *Minor* ---------- | 2.5 |

5.1.4.2 *classification of defects*.

| *Bulk package defects* | *Minor* |
|---|---|
| 1. Missing or improper fillers, tubes or---------- separators. | x |
| 2. Improper packaging of cartridges in---------- container. | x |
| 3. Missing cartridge(s) ---------- | x |

5.1.4.2.1 There are no visual standard illustrated in the appendix for bulk package.

5.1.5 Clip package.

5.1.5.1 The acceptable quality levels for clip package defects shall be as follows:

| | *Percent* |
|---|---|
| *Major* ---------- | 1.00 |
| *Minor* ---------- | 2.5 |

5.1.5.2 Classification of defects.

| *Clip, package defects* | *Minor* | *Major or Minor* |
|---|---|---|
| 1. Missing cartridge(s) | x | ---- |
| 2. Rusty, excessively oiled or otherwise defective clips* | --- | x |
| 3. Missing or torn carton (when required) | x | --- |
| 4. Missing or improper fillers or separators. | X | --- |
| 5. Improper packaging of clipped ammunition container. | X | --- |

*Defect is major if clip will not function as intended: otherwise minor. If questionable, functioning test shall be made in appropriate service weapon or magazine, whichever is applicable.

5.1.5.2.1 Visual standards for defects 3 and 4 are illustrated in the appendix (figs. 17-26).

5.1.6 Metallic linked belt package.

5.1.6.1 In some instances, metallic links show in the appendix are of a predecessor design but the visual standard is applicable to the present design.

5.1.6.2 The twist test (fig.1) and the pull test shall be performed to detect broken or soft links in the belt of linked cartridges. Links that fail as a result of these tests shall be dismantled and scrapped and the cartridges visually inspected prior to rebelting.

5.1.6.2.1 With the belt extended full length on a table, grasp one end and flip it 180 degrees to its other side. The twisting action which progressively moves along the belt to the free end has enough snap to cause failure of weak links. After the test, the belt shall be inspected for any fractured or broken links that may be present.

5.1.6.2.2 One end of the belt shall be attached to a suitable hook on a horizontal table and the load indicated below applied to the other end; the belt being in contact with the table during the application of the load.

| CALIBER | LOAD MIN. | LOAD MAX. |
|---|---|---|
| 5.56mm | 19 lbs. | 30 lbs. |
| 7.62mm | 25 lbs. | 35 lbs. |
| .30 | 25 lbs. | 35 lbs. |
| .50 | 100 lbs. | 115 lbs. |
| 20mm | 115 lbs. | 135 lbs. |

In lieu of a fixed load application, a testing device may be used which stretches the belts to predetermined lengths correlated with the loads prescribed above. The length of these belts shall be verified frequently: however, all M17 type linked belts shall be verified for a length of not greater than thirteen (13) feet, eight point five (8.5) inches when measured from center to center of the end primers with an applied load of 10 plus one minus O pounds. Subsequent to the test, inspection of the belts for broken and stretched links shall be performed.

5.1.6.2.3 When 20mm cartridges are belted using the M17 link a “frozen” link shall be detected by means of a flexibility test.

5.1.6 .2.3.1 The belt shall hinge freely and fold over smoothly without kinking when the belt is pulled over itself until belt is completely reversed. This procedure shall then be repeated after the belt has been reversed to assure full motion of the belt when flexed from either side and in either direction.

5.1.6 .2.3.2 A minimum of twenty five (25) cartridges per belt shall be used for this test. If packing instructions require belts of greater length, the connecting links used to lengthen the belts shall be flexed after assembling in both directions to assure free hinging.

5.1.6 .2.3.3 A “frozen” M17 link detected by means of this flexibility test is critical and shall be cause for rejection of lot.

5.1.6.3 The acceptable quality level for metallic link belt package defects shall be as follows:

| | Percent |
|---|---|
| Major | 1.00 |
| Minor | 2.5 |

5.1.6.4 *Classification of defects.*

| Metallic linked belt package defects | Major | Minor |
|---|---|---|
| 1. Ammunition packaged in wrong direction in box (Where applicable). | X | |
| 2. Double loop of link on wrong end of linked ammunition in container. (Where applicable). | X | |
| 3. Improper packaging of belt(s) in container other than defects 1 and 2. | | X |
| 4. Incorrect linking sequence | | X |
| 5. Stretched, broken or "frozen" belt* | X | |
| 6. Foreign material, oil or grease; other than required. | | X |
| 7. Defective protective finish or rust on link(s). | | X |
| 8. Malformed link(s) | X | |
| 9. Improper number of cartridges in belt(s) (exceeding 2 cartridges per belt). 20mm shall contain the specified amount. | | X |
| 10. Missing or improper fillers | | X |
| 11. Improper depth of insertion of cartridges in link(s).* | | X |
| 12. Missing, broken or malformed metallic belt end (when required). | | X |

* Defects are major for linked 20mm cartridges, except that a "frozen" link in M17 linked belt is classified as critical (see 5.1.6.2.3).

5.1.6.4.1 Visual standards for defects 5 through 8, 11 and 13 are iuulstrated in the appendix (figs. 27–56). The "frozen" belt illustrations in the appendix for defect #5 do not apply to 20mm.

5.1.7 *Bandoleer package.*

5.1.7.1 The acceptable quality levels for bandoleer package defects shall be as follows:

| | Percent |
|---|---|
| Major | 1.00 |
| Minor | 2.5 |

5.1.7.2 *Classification of defects.*

| | Major | Minor | Major or Minor |
|---|---|---|---|
| 1. Incorrect or illegible identification of bandoleer contents (type, caliber, and clip). | X | | |
| 2. Incorrect, illegible or missing ammunition lot number. | X | | |
| 3. Torn, ripped or otherwise defective bandoleer. | X | | |
| 4. Missing cartridge(s) or clip(s) | X | | |
| 5. Rusty, excessively oiled or otherwise defective clips. | | | X |
| 6. Missing or torn carton | X | | |
| 7. Missing or improper fillers or separators. | X | | |
| 8. Improper packaging of clipped ammunition in bandoleer. | X | | |
| 9. Improper pacakaging of bandoleer(s) in container. | X | | |
| 10. Missing magazine filler (when required). | X | | |
| 11. Missing safety pin (when required). | X | | |

* Defect is major if clip will not function as intended; otherwise minor. If questionable, functioning test shall be made in appropriate service weapon or magazine, whichever is applicable.

5.1.7.2.1 Visual standards for defects 2 through 4 are illustrated in the appendix (figs. 57–66). Defects 6 and 7 (figs. 17–26). Defects 8 and 9 (figs. 67–69).

5.1.7.3 In addition to the above inspection, when linked ammunition is packaged in cartons in bandoleers, the inspection procedures shall also include those listed under 5.1.6, Metallic linked belt package.

5.2 **Packaged and sealed container.** *Phase II.*

5.2.1 *Waterproof envelopes.*

5.2.1.1 The acceptable quality levels for envelope defects shall be as follows:

| | Percent |
|---|---|
| Major | 1.0 |
| Minor | 2.5 |

5.2.1.2 *Classification of defects.*

| Envelope defects | Major | Minor |
|---|---|---|
| 1. Torn, ripped, or improperly sealed envelope. | X | |
| 2. Incorrect, illegible or missing ammunition lot number. | X | |
| 3. Other markings incorrect, missing or illegible. | | X |

5.2.2 *Gasket sealed ammunition boxes.*

5.2.2.1 *Box leak test.*

5.2.2.1.1 Tap water at ambient temperature shall be used in the bell jar for the box leak test (fig.2).

5.2.2.1.2 Each box of the inspection sample shall be submerged under water in the bell jar with the cover of the box toward the inspector. The bell jar shall be closed and a pressure differential, as specified for the particular box packed, established. The cable attached to the lid shall be snapped to release trapped air bubbles on the box. When turbulence in the water has ceased, the box shall be observed for a period of 15 seconds.

5.2.2,1.3 Any escape of air from the interior of a box under the conditions of paragraph 5.2.2.1.2 constitutes a leaker. However, for the purpose of acceptance inspection, a leaker is one which permits the escape of a total of five or more bubbles from one or more leaking areas during the observation time of 15 seconds.

5.2.2.1.4 The location of the leak(s) (cover, bottom, side, side seam, or gasket), shall be reported.

5.2.2.2 The acceptable quality levels for gasket sealed ammunition box defects shall be as follows:

Physical characteristics, paint and markings:

| | Percent |
|---|---|
| Major | 1.00 |
| Minor | 2.5 |

Gasket sealing:

| | |
|---|---|
| Major | 1.0 |

5.2.2.3 Classification of defects. Gasket sealed ammunition box defects.

| *Physical characteristics* | *Major* | *Minor* |
|---|---|---|
| 1. Incorrectly closed and secured box | x | --- |
| 2. Severe dents, buckles, or other damage | --- | x |
| 3. Scratches or abrasions exposing bare metal. | --- | x |
| *Markings* | | |
| 4. Incorrect, illegible, or missing ammunition lot number. | x | --- |
| 5. Other markings, incorrect, missing, or illegible. | --- | x |
| 6. Incorrect pain or ink | --- | x |
| *Gasket sealing* | | |
| 7. Leaker as de fined | x | --- |

5.3 Overpacks and overpack contents. Phase III.

5.3.1 Wirebound/wooden boxes.

5.3.1.1 Bar coding shall be applied to the wirebound/wooden box in accordance with MIL-STD-129 or the applicable marking drawing. The bar code must be machine readable.

5.3.1.2 The acceptable quality levels for wirebound/wooden box defects shall be as follows:

| | Percent |
|---|---|
| Major | 1.00 |
| Minor | 2.5 |

5.3.1.3 Classification of defects. Wirebound/wooden box defects.

| *Assembly and Seal* | *Major* | *Minor* |
|---|---|---|
| 1. Unfastened outside binding wire | x | --- |
| 2. Unfastened inside binding wire | --- | x |
| 3. Missing end | x | --- |
| 4. Side, top or bottom extending beyond end cleat more than 1/8 in. | --- | x |
| End cleat extending beyond side, top or bottom more than 1/8 in. | --- | X |
| 6. Gap larger than ¼ in. between end of batten and cleat. | x | --- |
| 7. Gap larger than ¼ in. between side of batten and cleat. | --- | x |
| 8. Gap larger than ¼ in. between diagonal ends of more than one pair of cleats per box. | --- | x |
| 9. reversed or inverted end. | --- | x |
| 10. Missing or incorrectly attached seal (Box contents removable). | x | --- |
| 11. Incorrectly attached seal. (Box contents not removable). | --- | x |
| 12. Exposed sharp edge or sliver, outside surface. | x | --- |
| 13. FSN, DOD or LOT--all missing or illegible or any incorrect. | x | --- |
| 14. DOD or LOT--one missing or illegible | --- | x |
| 15. Markings other than above incorrect, missing or illegible. | --- | x |
| 16. Marking touched up or repaired with non-permissible material (crayon, chalk, etc.) | --- | x |
| *Box contents* | | |
| 17. Missing separator | x | --- |
| 18. Incorrect, missing or illegible ammunition lot number. | x | --- |
| 19. Improper packing other than 17 and 18 | --- | x |
| 20. Packed ammunition not in accordance with FSN. | x | ... |
| 21. Bar coding is missing or not readable. | x | --- |

5.3.2 Metal boxes.

5.3.2.1 The acceptable quality levels for metal box defects shall be as follows:

| | Percent |
|---|---|
| Major | 1.00 |
| Minor | 2.5 |

5.3.2.2 Classification of defects.

| Metal box defects<br>Marking | Major | Minor |
|---|---|---|
| 1. FSN, DOD or Lot--all missing or illegible or any incorrect. | X | |
| 2. DOD or Lot—one missing or illegible | | X |
| 3. Markings other than above incorrect, missing or illegible. | | X |
| 4. Marking touched up or repaired with nonpermissible material (crayon, chalk, etc.). | | X |
| *Workmanship and assembly* | | |
| 5. Box not properly closed and secured | X | |
| 6. Severe dents, buckles or other damage | | X |
| *Box contents* * | | |
| 7. Missing separtor | X | |
| 8. Incorrect, missing or illegible ammunition lot number. | X | |
| 9. Improper packing other than 7 and 8 | | X |
| 10. Packed ammunition not in accordance with FSN. | X | |

* When the metal box is the packaged and sealed container as well as the overpack, inspetcion of box contents shall be in accordance with the applicable contents of container paragraph outlined herein.

## 6. NOTICES

**6.1 Interpretation.** Any doubt as to the meaning of the provisions contained in this inspection document or any obscurity in its wording will be explained. All directions and explanations, necessary or proper to make definite and certain any procedure and give them due effect, will be given by the contracting officer.

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## 10. APPENDIX

**10.1 Visual inspection standards.** This appendix forms an integral part of MIL-STD-644 to the extent specified therein. The illustrations shown are common packaging defects found during normal inspection of container contents, Phase I. Each defect illustrated has a legend which defines the degree or extent of the nonconformance and also whether it is acceptable or unacceptable.

**10.2 Cross reference listing.** Any packaging defect may be readily associated with the pertinent "Classification of Defects" or illustration by checking the following listing.

## 20. CARTON PACKAGE

**20.1 Defect #5. Missing label or improperly sealed carton, including label printed in wrong position on carton (referenced on page 3).**

| | |
|---|---|
| (a) Misplaced label | Figure 3–4 |
| (b) Not securely fastened | Figure 5 |
| (c) Improper sealing | Figure 5 |
| (d) Improper closure | Figure 6 |

**20.2 Defect #6. Torn or ripped carton or label (referenced on page 3).**

| | |
|---|---|
| (a) Torn label | Figure 7–8 |
| (b) Torn carton | Figure 9–10 |