

MIL-S-43180B

11 July 1975

SUPERSEDING

MIL-S-43180A

11 April 1968

MILITARY SPECIFICATION

SEALER, STEEL STRAPPING, HAND, NON-POWERED

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers hand operated, non-powered, steel strapping sealers.

* 1.2 Classification. The sealers covered by this specification shall be of the following types and sizes, as specified (see 6.2).

Type I - Heavy duty, single notch, side jaw, handles at right angle to strapping.

Size	Strapping	
	Width (inches)	Thickness (inches)
1	3/4	0.025 to 0.035
2	1-1/4	0.031 and 0.035
3	1-1/4	0.044 and 0.050

Type II - Light duty, double notch, end jaw, handles vertical to strapping.

Size	Strapping	
	Width (inches)	Thickness (inches)
1	3/8	0.010 to 0.023
2	1/2	0.010 to 0.023
3	5/8	0.010 to 0.023
4	3/4	0.015 to 0.023

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2. APPLICABLE DOCUMENTS

- * 2.1 The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

SPECIFICATIONS

FEDERAL

- PPP-B-566 - Boxes, Folding, Paperboard
- PPP-B-601 - Boxes, Wood, Cleated-Plywood
- PPP-B-636 - Boxes, Shipping, Fiberboard
- PPP-B-676 - Boxes, Setup
- PPP-T-60 - Tape: Packaging, Waterproof
- PPP-T-76 - Tape, Pressure-Sensitive Adhesive Paper (For Carton Sealing)

MILITARY

- MIL-P-116 - Preservation-Packaging, Methods of
- MIL-B-121 - Barrier Material, Greaseproofed, Waterproofed, Flexible

STANDARDS

MILITARY

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes
- MIL-STD-129 - Marking for Shipment and Storage
- MIL-STD-130 - Identification Marking of U.S. Military Property

(Copies of specifications and standards required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

- * 2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply:

American Society for Testing and Materials (ASTM)

- E-18 - Methods of Test for Rockwell Hardness and Superficial Hardness of Metal

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(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

National Motor Freight Traffic Association, Inc., Agent

National Motor Freight Classification

(Application for copies should be addressed to the American Trucking Associations, Inc., Tariff Order Section, 1616 P Street, N.W., Washington, DC 20036.)

Uniform Classification Committee, Agent

Uniform Freight Classification

(Application for copies should be addressed to the Uniform Classification Committee, Room 1106, 222 South Riverside Plaza, Chicago, IL 60606.)

3. REQUIREMENTS

3.1 Material. The material shall be of the quality normally used for the purpose in commercial practice.

- * 3.1.1 Standard product. The sealers shall, as a minimum, be in accordance with the requirements of this specification and shall be the manufacturer's standard commercial product with any added features needed to comply with the requirements of this specification. Modifications to add features shall not incorporate different parts unless such parts are used on other commercial models. Standard or modified commercial products furnished in accordance with this specification shall be identifiable by all regular manufacturer's or commercial service organizations servicing the brand involved. Service organizations shall be capable of providing complete parts and repair services on models furnished to the Government consistent with their normal commercial practices.

3.2 Construction. Sealers shall be constructed of steel and shall consist of clinching and notching jaws actuated by two handles. The mechanical advantage ratio during the actual cutting action for type I sealers shall be a minimum of 34 to 1 and for type II, 27 to 1, when tested as specified in 4.3.1. Sealer handles shall have plastic or wooden knobs or shall be all steel or aluminum. Type I and type II sealer handles shall be positioned for side or vertical operation in relation to the flat surface of the strapping, as applicable.

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- * 3.2.1 Jaw assembly components. Sealer jaw assembly components, when tested as specified in 4.3.2, shall be hardened as follows:

(1) All components shall be hardened with no visual evidence of surface cracks.

(2) Side plate and linkage components shall be heat treated to a Rockwell "C" hardness of 42 to 47 or equivalent when case hardened.

(3) Jaw, punch and pin components shall be made of through hardening steel, hardened by a through hardening process (heating, quenching and tempering) to a Rockwell "C" hardness of 48 to 58.

- * 3.3 Performance. Sealers shall join 2 thicknesses of strapping by clinching and notching applicable seals about the strapping. The sealer shall make the specified number of notches (see 1.2) on each edge for seal. The sealer jaw components shall make the joint with no fracture, tearing (excluding notches) burrs or slivers in the seal, and with no fracture, breakage or deformation of sealer jaw assembly components when tested as specified in 4.3.3.1. The joint shall not slip nor rupture under the loads specified in table I or IA, as applicable, when tested as specified in 4.3.3.2.

- * TABLE I. Load on seal joints pounds (minimum) for type I sealers and sizes of nailless, heavy duty (high tension) steel strapping, flat or formed edges

Width (inches)	Thickness (inch)					
	0.025 <u>2/</u>	0.028 <u>1/</u>	0.031 <u>2/</u>	0.035 <u>1/</u>	0.044 <u>2/</u>	0.050 <u>1/</u>
3/4	1140	1140	1425	1425		
1-1/4	-	-	2375	2375	3375	3375

1/ Hot rolled.

2/ Cold rolled, heat treated.

Loads shown are applicable for joints with single notches.

Load ratings of joints with single notches based on 50 percent of the steel strapping strength.

* TABLE IA. Load on seal joints, pounds (minimum) for type II sealers and sizes of nailless, cold rolled steel strapping, flat and formed edges

Width (inches)	Thickness (inches)				
	0.010	0.015	0.018	0.020	0.023
3/8	225	335	-	450	520
1/2	300	450	-	600	690
5/8	375	565	675	750	860
3/4	-	675	-	900	1035

Loads shown are applicable for joints with double or two pair of single notches. Load ratings of joints with double or two pair of single notches based on 75 percent of the steel strapping strength.

3.4 Finish. The sealers shall be free of rust areas and shall be finished in accordance with the manufacturer's commercial practice.

3.5 Marking. Each sealer shall be permanently marked in accordance with MIL-STD-130. The marking shall include with width of the steel strapping followed by a dash and size number of the sealer.

3.6 Workmanship. The sealer shall be free of burrs or slivers, and shall have no fractured, loose, bent, or misaligned components.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. 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 Inspection. Sampling for inspection shall be performed in accordance with MIL-STD-105, except where otherwise indicated hereinafter.

4.2.1 Inspection of components and materials. In accordance with 4.1, components and materials shall be tested and inspected in accordance with all the requirements of referenced specifications, drawings, and standards unless otherwise excluded, amended, modified, or qualified in this specification or applicable purchase document.

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* 4.2.1.1 Process inspection. Examination shall be made to determine compliance with the requirements in 3.2.1 for the steel and the hardening process of the jaw, punch and pin components. Whenever a deviation is noted correction shall be made to the affected items and process.

* 4.2.2 Process testing. The jaw, punch and pin and the side plate and linkage components shall be tested for hardness and surface cracks in accordance with 4.3.2. The inspection level for the hardness shall be S-1 with an AQL of 4.0 defects and the inspection level for surface cracks shall be S-1 with an AQL of 2.5 defects expressed as defects per hundred units.

4.2.3 End product inspection. A lot shall consist of all the sealers of one type and size offered for inspection at one time. The sample unit for this inspection shall be one sealer.

4.2.3.1 Visual examination. Examination of the sealer shall be made in accordance with classification of defects in table II. The inspection level shall be II and acceptable quality level (AQL) shall be 2.5 for major defects and 6.5 for total defects expressed as defects per hundred units.

TABLE II. Classification of defects

Examine	Defect	Classification	
		Major	Minor
Finish	Rust areas		X
	Not in accordance with manufacturer's commercial practice		X
	Areas of no finish		X
Construction and workmanship	Component missing	X	
	Component loose		X
	Burrs and slivers		X
	Misalignment of component	X	
	Component fractured or bent	X	
Marking for identification	Missing, incorrect, or not legible		X

4.2.3.2 Dimensional examination. Components of the sealer shall be examined for nonconformance in dimensions. Any nonconformance shall be considered a defect. The inspection level shall be S-2 with an AQL of 2.5 defects, expressed in terms of defects per hundred units.

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* 4.2.3.3 End item testing. Each sealer shall be tested in accordance with 4.3.3.1 and failure to pass this test shall be cause for rejection of the unit. The tests as specified in 4.3.1 and 4.3.3.2 shall be performed on one production unit (see 6.4). Failure of any test shall be cause for rejection of the inspection lot.

4.2.4 Examination of preparation for delivery. An examination shall be made to determine that preservation, packaging, packing, and marking as required by section 5 of this specification are complied with. Defects shall be scored as specified in table III. The sample unit shall be one shipping container fully prepared for delivery. The lot size shall be the number of containers offered for delivery at one time. The inspection level shall be S-2 with an AQL of 4.0 defects, expressed in terms of defects per hundred units.

TABLE III. Preservation and packing defects

<u>Examine</u>	<u>Defect</u>
Markings	Omitted; incorrect; not legible; of improper size, location, sequence, or method of application
Preservation	Preservative not properly applied or missing
Materials	Component missing, damaged or otherwise defective
Weight	Gross weight exceeds requirements

4.2.5 Examination of shipping containers. When shipping containers are required to be in accordance with PPP-B-636, examination for defects of closures, waterproofing, and reinforcing shall be in accordance with PPP-B-636.

4.3 Tests.

4.3.1 Mechanical advantage test. The ratio between the respective movements of the arms and jaws of the sealer from the point where cutting of the seal starts to the close position of the jaws shall be measured. Any nonconformance with 3.2 shall constitute failure of the test.

* 4.3.2 Hardness test. The jaw assembly components shall be tested for hardness in accordance with ASTM E-18 based on the average of three determinations of each component. Any nonconformance with 3.2.1 shall constitute failure of this test.

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4.3.3 Performance tests.

4.3.3.1 Joint. Two strips of steel strapping, as applicable shall be joined by the sealer with an appropriate seal. Any nonconformance with the requirements of 3.3 shall constitute failure of the test.

- * 4.3.3.2 Load. Two strips of steel strapping with an appropriate seal shall be joined by the sealer with the specified number of notches. A load, as applicable (see table I and IA), shall be applied on each free end of the joined straps. Any nonconformance with 3.3 shall constitute failure of this test.

5. PREPARATION FOR DELIVERY

5.1 Preservation and packaging. Preservation and packaging shall be level A or C as specified (see 6.2).

- * 5.1.1 Level A.

5.1.1.1 Preservation. All exposed, uncoated, ferrous metal surfaces of each sealer shall be cleaned process C-1 of MIL-P-116 and thoroughly dried. Surfaces, cleaned and dried as specified, shall be coated with type P-2 or P-6 preservative of MIL-P-116 and wrapped in greaseproofed barrier material conforming to type II, grade A, class 2 of MIL-B-121.

5.1.1.2 Packaging. Each sealer, preserved as specified in 5.1.1.1 shall be packaged in a snug-fitting folding paperboard box conforming to variety 2, style III, type G, class i of PPP-B-566, set up paperboard box conforming to type I, variety 2, class A, style 4 of PPP-B-676 or fiberboard box conforming to style RSL, grade W5c of PPP-B-636. The sealer shall be immobilized within the box by means of corrugated fiberboard or cushioning material. Each box shall be securely closed with 2-inch minimum width pressure-sensitive tape conforming to PPP-T-60 or PPP-T-76.

- * 5.1.2 Level C (commercial packaging). Sealers shall be packaged to afford adequate protection against deterioration or physical damage during shipment from the supplier to the first receiving activity. The package and the quantity per package shall be the same as that normally used by the supplier for retail distribution.

5.2 Packing. Packing shall be level A, B, or C as specified (see 6.2).

- * 5.2.1 Level A. Sealers of one type and size only, preserved and packaged as specified in 5.1, shall be packed in a snug-fitting shipping container conforming to style RSC, grade V2s of PPP-B-636 or overseas type, style A, B or J, grade A or B, type 2 load of PPP-B-601. Each fiberboard container

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shall be closed in accordance with method III and reinforced as specified in the appendix of PPP-B-636. Each wood container shall be closed and reinforced in accordance with the appendix of PPP-B-601. The weight of contents of each PPP-B-636 container shall not exceed 65 pounds and for each PPP-B-601 container shall not exceed 150 pounds.

- * 5.2.2 Level B. Sealers of one type and size only, preserved and packaged as specified in 5.1, shall be packed in a snug-fitting fiberboard shipping container conforming to style RSL, type CF (variety SW) or type SF, class domestic, grade 275 of PPP-B-636. Each shipping container shall be closed in accordance with method II as specified in the appendix of PPP-B-636. The weight of contents of each PPP-B-636 container shall not exceed 65 pounds.
- * 5.2.2.1 When specified (see 6.2), the fiberboard shipping container shall be a grade V3c, V3s, or V4s fiberboard box fabricated in accordance with PPP-B-636 and closed in accordance with method III as specified in the appendix of the container specification.
- * 5.2.3 Level C (commercial packing). Sealers, preserved and packaged as specified in 5.1, shall be packed in a manner to insure carrier acceptance and safe delivery at destination at the lowest transportation rate for such supplies. The quantity per shipping container shall be the same as that normally used by the supplier for retail distribution. Containers shall comply with Uniform Freight Classification Rules or National Motor Freight Classification Rules, as applicable.

5.3 Marking. In addition to any special marking required by the contract or order, interior packages and shipping container shall be marked in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. The sealers herein specified are for use for connecting steel strapping ends to form a complete steel strap around crates, boxes, et cetera, and for banding material or equipment in place on material handling vehicles, et cetera.

- * 6.2 Ordering data. Procurement documents should specify the following:
 - (a) Title, number, and date of this specification.
 - (b) Type and size (see 1.2).
 - (c) Selection of applicable levels of preservation, packaging, and packing (see 5.1 and 5.2).
 - (d) When weather-resistant grade fiberboard shipping containers are required for level B packing (see 5.2.2.1).

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6.3 The margins of this specification have been marked with an asterisk (*) to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations and relationship to the last previous issue.

- * 6.4 End item tests. Performance of the tests as specified in 4.3.1 and 4.3.3.2, should be limited to one successful demonstration of compliance to the requirements of this specification for each contract.
- * 6.5 Type I, size 4 of MIL-S-43180A was deleted for this revision.

Custodians:

Army - GL
Navy - SA
Air Force - 84

Preparing activity:

Army - GL
Project No. 3540-0093

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