

National Technology & Development Program

Specification 5100-610B: LINER, CARRYING CASE, FIRESHELTER

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Record	of	Revisions
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Date	Revision summary
9/1/23	Patent information updating.
	Grammar and readability edits.
	Formatted for 508 compliance.
	Changed UL to Third Part Certification Organization.

1. SCOPE

1.1. Scope.

This document covers a polyethylene liner, which is used to protect the fire shelter while it is in its carrying case.

- 1.2. Interpretations and Definitions.
- 1.2.1. Interpretation.

To carry out the provisions of this document, the word "shall" is understood to be mandatory.

1.2.2. Definitions.

Nonconformity: A departure of a quality characteristic from its intended level or state that occurs with severity sufficient to cause an associated product or service not to meet a specification requirement (per ANSI/ASQ Z1.4).

2. APPLICABLE DOCUMENTS

2.1. Government documents.

The following Government documents form a part of this document to the extent specified herein. Unless otherwise specified the revision of these documents are those in effect on the date of the invitation for bids or request for proposals. Unless otherwise indicated, copies of federal and military specifications and standards are available online at https://quicksearch.dla.mil/qsSearch.aspx or in hard copy from the Standardization Documents

Order Desk, Bldg. 4D, 700 Robbins Ave., Philadelphia, PA 19111-5094. Copies of Forest Service specifications are available from the preparing activity, see 6.6.

2.1.1. Federal Specifications

L-P-390 - Plastic, Molding and Extrusion Material, Polyethylene and Copolymers (Low, Medium and High Density)

2.2. USDA Forest Service Drawings

Copies are available from the preparing activity, see 6.6.

MTDC-1003 - Liner, Carrying Case, Fire Shelter, M-2002)

2.3. Non-Government publications.

The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those in effect on the date of the invitation for bids or request for proposals. Non-Government standards and other publications normally are available from the organizations that prepare and distribute the documents. These documents also may be available in or through libraries or other informational services.

2.3.1. ASTM

Copies are available from ASTM, 100 Barr Harbor Dr., West Conshohocken, PA 19428-2959, <u>www.astm.org</u>.

D 1974 - Standard Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes

D 3951 - Standard Practice for Commercial Packaging

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- SI-10 Standard For Use of the International System of Units(SI): The Modern Metric System (IEEE/ASTM Standard available from ASTM)
- 2.3.2. American Society for Quality (ASQ)

Copies are available from the American Society for Quality, PO Box 3005, Milwaukee, WI 53201-3005, <u>www.asq.org</u>.

- Z1.4 Sampling Procedures and Tables for Inspection by Attributes
- 2.3.3. National Motor Freight Traffic Association, Inc., Agent

Copies are available from American Trucking Association, Inc., Traffic Department, 1616 P St. NW, Washington, DC 20036, <u>www.trucking.org</u>.

National Motor Freight Classification

2.4. Order of precedence.

In the event of conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1. First article.

Unless otherwise specified, the fire shelter carrying case liner shall be subjected to first article inspection (see 6.3) in accordance with 4.3. During the term of the contract the contractor shall be required to notify the contracting officer in writing when a component, or the component supplier changes in any way; and when a manufacturing location changes. The contracting officer may at any time require the contractor to submit a new first article sample when substantive changes occur during the term of the contract.

3.1.1. Third-party certification.

The fire shelter carrying case liner shall be certified as being in compliance with this specification by a third-party certification organization. Certification testing shall be conducted as specified by 4.1.4.

- 3.2. Materials.
- 3.2.1. Body material.

The liner shall be made from high density virgin polyethylene conforming to type I, class H, grade 1, category 4 or 5 of L-P-390. Paragraph 3.2.3 of L-P-390 shall not apply. Clean, unburned material in the form of imperfect parts, tails, neck flash, or other scrap of the same composition as the virgin material and produced in the molding or finishing operation may be reground and mixed with the virgin material. When reground is mixed with the virgin material, the reground shall not exceed a level of 35 percent by weight of the blended mixture. The finished color shall be translucent white.

3.2.2. Material shrinkage.

Because of the shrinkage characteristics of plastic materials, it shall be the contractor's responsibility to compensate for this factor in mold design to produce and supply a finished product in accordance with drawing MTDC-1003.

3.3. Design and construction.

Design and construction shall conform in all respects to drawing MTDC-1003 and as specified in this document. In the event of conflict, this document shall prevail.

3.3.1. Liner body.

The liner shall be blow molded or rotational by a process in which the liner is molded in one piece and not as a result of a sheet forming operation. All parting lines shall be free from flash except that flash extending no more than 1/32 inch at the bottom pinch-off area shall be permitted. The liner shall be molded in such a manner that the material shall be distributed to conform to the general interior and exterior shape and design as shown in drawing MTDC-1003.

3.3.2. Notches.

Notches shall be cut in accordance with drawing MTDC-1003 and the cut edges shall be straight and smooth without burrs.

3.4. Thickness.

The liner shall have an average thickness of 0.055 ± 0.016 inch and a minimum thickness of 0.016 inch as determined by 4.4.3.1.1.

3.5. Label.

The liner shall have a label with the following markings. The label shall be permanently and distinctly marked by a mold-in process in the size, depth, and location shown in drawing MTDC-1003. The letters shall be a minimum of 0.10 inch in height and raised a minimum 0.006 inch above the surface. There shall be a recycle symbol. The size of the label shall be as necessary to fit the required information.

"THIS FIRE SHELTER CARRYING CASE LINER MEETS THE REQUIREMENTS OF FOREST SERVICE SPECIFICATION 5100-610B.

"LINER, CARRYING CASE, FIRE SHELTER, M-2002 NSN 8465-01-498-3191 (2/)

FOREST SERVICE SPECIFICATION 5100-610B

[Manufacturers Name](1/) [Manufacturer's Address](1/) [Contract number](1/, 2/)

[Manufacturer's tracking number, lot number or serial number](1/)

Made in USA

[Authorizing mark of certification organization](1/) DATE OF MANUFACTURE: [mm/yy](1/)"

- 1/ Insert appropriate information.
- 2/ Required only for government contracts.

3.6. Finish.

The interior and exterior surfaces of the liner shall have a smooth and lusterless finish throughout; and shall be free of dirt, dust, grease and foreign matter. The finish shall be produced from a die which has cavity surfaces finished in vapor blast, water hone or similar satin finish and not by the application of any protective coating, lacquers or other materials.

3.7. Workmanship.

The liner shall be clean, smooth, well finished and free from bubbles, cracks, pinholes, dirt, warpage, blisters and scratches. The liner shall conform to the quality of product established by

this document. The occurrence of nonconformities shall not exceed the applicable acceptable quality levels established herein.

3.8. Metric products.

Products manufactured to metric dimensions will be considered on an equal basis with those manufactured using inch/pound units, provided they fall within the tolerances specified using conversion tables contained in the latest revision of IEEE/ASTM SI-10, and all other requirements of this specification are met.

4. QUALITY ASSURANCE PROVISIONS

4.1. Responsibility for inspection.

Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection and test requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his/her 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 this specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1. Responsibility for compliance.

All items shall meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known nonconforming material, either indicated or actual, nor does it commit the Government to accept nonconforming material.

4.1.2. Responsibility for dimensional requirements.

Unless otherwise specified in the contract or purchase order, the contractor is responsible for ensuring that all specified dimensions have been met. When dimensions cannot be examined on the end item, inspection shall be made at any point or at all points in the manufacturing process necessary to ensure compliance with all dimensional requirements.

4.1.3. Certificate of compliance.

Where certificates of compliance are submitted, the Government reserves the right to check test such items to determine the validity of the certification (see 4.4.2.1).

4.1.4. Third-party certification (3.1.1)

The contractor shall enter to an agreement with a third-party certification organization (see 6.5) to certify compliance of the Fire Shelter Carrying Case Liner to this document and to monitor the continued quality of the production. The agreement shall specifically include a follow-up program sufficient to verify continued adherence to the specifications of the contract. The contractor shall be responsible for this certification.

4.2. Classification of inspection.

The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.3).
- b. Quality conformance inspection (see 4.4).

4.3. First article inspection.

Unless otherwise specified, the first article submitted in accordance with 3.1 shall be examined in accordance with 4.4.3.1 and 4.4.3.2 of this specification and drawing MTDC-1003 for compliance with design, materials, construction, and workmanship requirements (see 6.3).

4.4. Quality conformance inspection.

Sampling for inspection shall be performed in accordance with ASQ Z1.4. Inspection levels and acceptable quality levels shall be as specified herein.

4.4.1. Inspection lots.

Inspection lots of the liner shall conform to the definition in ASQ Z1.4. A sample unit shall consist of one complete liner.

4.4.2. Component and material inspection.

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

4.4.2.1. Certification.

Unless otherwise specified, in addition to the certificates of compliance required by referenced specifications, the contractor shall provide certificates of compliance for the following:

Body material (3.2.1)

Certificates shall include the following:

Specification type, class, etc. Quantity purchased Purchase source, address, and telephone number Purchase date

4.4.3. End item inspection.

The end item shall be examined for the nonconformities listed in table 1 and in 4.4.3.1. The lot shall consist of all completely fabricated liners offered for inspection at one time. The sample unit shall be one completely fabricated liner. The inspection levels and the acceptable quality levels (AQLs) shall be in accordance with 4.4.3.2.

Examine	Nonconformity	Classification Major	Classification Minor
Quality and finish	Color not as specified	Х	
	Exterior surface of body not smooth and not lusterless throughout	X	
	Bubbles		Х
	Finish produced by application of coating, lacquer, or other organic material	X	
	Any cut, tear, hole, burn, break, crack or mend	Х	

TABLE 1. Classification of nonconformities

	Weld mark, sink mark, shrink mark, dulling of surface, roughness, or abrasion		Х
	Discoloration, surface deterioration, foreign inclusion grease, orange peel, pit, rough finish or other imperfection	Х	
Design and construction	Varies from specified design and construction Not fully formed	Х	
Workmanship and assembly	Evidence body is not formed by one piece blow molded process	Х	
(general)	Evidence of poor or inadequate mold fill	Х	
	Any gate not trimmed flush with the molded surface		Х
	Component missing or operation not as specified	Х	
	Interior of opening not smooth i.e., surface shredded, chipped, scratched, abraded or otherwise impaired		Х
	Liner distorted resulting in weak spot at parting line	Х	
	Flash at bottom pinch-off area on parting line extending more than 1/32 inch		Х
	Flash appearing on other parting lines		Х
Cleanliness	Dirt, grease, dust or other foreign matter on inside or outside of liner	Х	
	Plastic shavings on the inside of liner		Х
Identification marking	Omitted, incorrect, illegible, or size of characters not as specified	Х	
_	Not in specified location	Х	
	Wording or marking other than specified	X	

4.4.3.1. Dimensional examination.

The liners shall be examined for nonconformities in wall thickness as specified in 4.4.3.1.1 and for other dimensional nonconformities as specified in 4.4.3.1.2. The sample unit for each examination shall be one liner.

4.4.3.1.1. Examination for wall thickness.

To test for wall thickness (see 3.4), make four vertical cuts from top to bottom in the corners separating the four vertical planes of the liner. Four thickness measurements shall be taken along both edges of the two larger planes at 1, 3, 5, and 7 inches below the top of the liner. The 16 measurements shall be used to determine average wall thickness. Minimum wall thickness shall be measured at the four bottom corners where four vertical planes join the horizontal plane of the liner. A failure of any sample unit to meet the requirements shall be scored as a nonconformity.

4.4.3.1.2. Examination for dimensions other than wall thickness.

For this examination, all liner dimensions other than wall thickness shall be measured. Any dimension that is not within the specified tolerances shall be classified a nonconformity.

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4.4.3.2. Inspection levels and AQLs.

The inspection levels and AQLs expressed in nonconformities per hundred units shall be as follows:

Paragraph	Inspection level	Major AQL	Total AQL
4.4.3 (table I)		4.0	10.0
4.4.3.1.1	S-3	(one class)	1.0
4.4.3.1.2	S-2	(one class)	6.5

4.5. Packaging inspection

In the lot-by-lot inspection, an examination shall be made to determine that packing and marking comply with section 5 requirements. Nonconformities shall be scored per table 2. The sample unit shall be one shipping container, fully packaged, except that it shall not be palletized and it need not be closed. Shipping containers fully packaged that have not been palletized shall be examined for nonconformities in closure. The lot size shall be the number of shipping containers in the end-item inspection lot. The inspection level shall be S-2 and the AQL shall be 2.5 nonconformities per hundred units.

Table 2—Packaging inspection

Component	Nonconformity
Markings	Omitted; incorrect; illegible; of improper size, location, sequence, or method of application.
Materials	Any component missing or not as specified.
	Any component damaged, affecting serviceability.
Workmanship	Inadequate application of components, such as incomplete closure of container flaps, improper taping, loose strapping, or inadequate stapling.
	Bulged or distorted container.
Contents	The number of items per container is more or less than required.

5. PACKAGING

5.1. Preservation.

Preservation shall be in accordance with ASTM D 3951 and as specified in the contract or purchase order and herein.

5.2. Packing.

When contracted for separately (not as a component to the Complete Fire Shelter, Regular, NSN 4240-01-498-3194 or Complete Fire Shelter, Large, NSN 4240-01-527-5248), fifty (50) liners preserved as specified, shall be packed into a 28.25"L X 23.25"W X 18.50"D fiberboard box, minimum burst strength 200 psi (ECT 32) meeting the requirements of the latest version of ASTM D 5118. Boxes shall be in compliance with the National Motor Freight Classification. Each box shall be closed in accordance with the latest version of ASTM D 1974.

5.3. Marking.

In addition to any special marking required by this specification, marking shall be in accordance with the contract or purchase order.

6. NOTES

6.1. Intended use.

The liner is designed to be inserted into fire shelter carrying cases to prolong fire shelter field life.

6.2. Acquisition requirements.

Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. When first articles are not required.
- c. Preservation, packing, and marking required in addition to specification requirements (see section 5).

6.3. First article.

First articles shall be inspected and approved under the appropriate provisions of FAR 52.209. The first article shall consist of four completed liners covered under this specification, and shall be preproduction samples. The contracting officer should specify the appropriate type of first article and the number of units to be furnished. The contracting officer should include specific instructions in all acquisition instruments regarding arrangements for selection, inspection, and approval of first articles.

6.4. 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.

6.5. Third Part Certification Organizations

Underwriter's Laboratory (UL) 12 Laboratory Drive Research Triangle Park, NC 27709-3995 919-549-1433 www.ul.com

Safety Equipment Institute (SEI) 307 Dolley Madison BLVD Suite 3A McLean, VA 22101 703-442-5732 www.seinet.org

Intertek 8600 NW 17th St., Suite 100 Miami, FL 33126 305-513-3000 www.intertek.com

6.6. Preparing activity.

USDA Forest Service, National Technology and Development Program, 5785 Highway 10 West, Missoula, MT 59808.

6.7. Patent.

This item was patented with the No.: US 7,128,207 B2. Contact the preparing activity for further details.