INCH-POUND

MIL-C-41824C
28 November 1989
SUPERSEDING
MIL-C-41824B
15 November 1976

MILITARY SPECIFICATION

CLIMBERS, SKI, SNOW AND ICE TRAVERSING EQUIPMENT (SITE)

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

1. SCOPE

1.1 Scope. This specification covers one type and size of nylon ski climber.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

FEDERAL

DDD-L-20	-	Label: For Clothing, Equipage, and Tentage, (General Use)
PPP-B-26	-	Bag, Plastic, (General Use)
PPP-B-636	-	Boxes, Shipping, Fiberboard

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: U.S. Army Natick Research, Development, and Engineering Center, Natick, MA 01760-5014 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 8465

MILITARY

MIL-L-35078 - Loads, Unit: Preparation of Semiperishable Subsistence Items; Clothing, Personal Equipment and Equipage; General Specification For

STANDARDS

FEDERAL

FED-STD-191 - Textile Test Methods

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129 - Marking for Shipment and Storage
MIL-STD-147 - Palletized Unit Loads
MIL-STD-731 - Quality of Wood Members for Containers and Pallets

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Naval Publications and Forms Center, (ATTN: NPODS), 5801 Tabor Avenue, Philadelphia, PA 19120-5099.)

2.1.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

DRAWINGS

U.S. ARMY NATICK RESEARCH, DEVELOPMENT, AND ENGINEERING CENTER

2-10-128 - Climbers, Ski, Snow and Ice Traversing Equipment (Site)
2-10-130 - Chape, Loop, Assembly

(Copies of drawings are available from the U.S. Army Natick Research, Development, and Engineering Center, ATTN: STRNC-EMSS, Natick, MA 01760-5014.)

2.2 Non-Government publications. The following document forms a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

D 3951 - Standard Practice for Commercial Packaging

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103-1187.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a 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. When specified (see 6.2), a sample shall be subjected to first article inspection (see 6.3) in accordance with 4.3.

3.2 Guide samples. Guide samples, when furnished, are solely for guidance and information to the contractor (see 6.4). Variations from this specification may appear in the sample, in which case this specification shall govern.

3.3 Materials. The materials shall be as specified herein and as specified on Drawing 2-10-128 and all subsidiary drawings and parts lists (PLS) pertaining thereto. It is encouraged that recycled material be used when practical as long as it meets the requirements of this specification.

3.3.1 Laminate. The laminated cloth for the 72-1/4 by 2-1/4 inch body of the climber shall be as follows (see 6.5). Top layer consists of a nylon pile woven onto a nylon ground fabric. This layer is bonded to a cotton cloth base layer by a polyurethane adhesive film. The exposed surface of the cotton cloth shall be completely covered with the adhesive specified in Parts List 2-10-128. In order to protect the adhesive, the surface upon which the adhesive has been applied shall be completely covered with a plastic release liner. This plastic liner shall extend approximately 1/2 inch beyond the side edges of the climber body.

Pile:

Warp ends per inch (minimum) - 48 (in 24 rows)
Tufts per square inch (minimum) - 432
Material - 100 percent nylon
Height - Not less than 5/32 inch before finishing, measured as a total thickness of the fabric from the back of the ground to the tip of the cut pile tuft.

Ground:
Warp ends per inch (minimum):
Tight warp - 24
Slack warp - 24
Picks per inch (minimum) - 54
MAterial - 100 percent nylon

Pile Fabric:
Color - Natural
Weight per square yard (minimum) - 20 ounces
Weave - Tight pile or "W" binding, with pile binding on three picks and weave repeating on six picks. Ground constructed with tight and slack warps using one tight warp end to each slack warp end (see 6.5).
Thickness of pile panned, with coating and polyurethane adhesive film - .075 to .095 inches.

Polyurethane adhesive film:
Material - 100 percent polyurethane film
Weight per square yard (minimum) - 6 ounces

Base Cloth:
Material - 100 percent cotton
Weight per square yard (minimum) - 5 ounces

The pile shall be given a permanent panned finish with the pile laying in warpwise direction so that the finished ski climber will offer resistance to backward motion. Pile shall be so panned that the set of the pile will not change through constant wetting of fabric. The pile fabric may be woven full width and each climber strip shall be finished to a width of 2-1/4 ± 1/32 inches.

Testing shall be as specified in 4.4.1.1.

3.4 Design and construction. The design and construction of the ski climber shall be as specified herein and as shown on Drawing 2-10-128 and all subsidiary drawings and parts lists (PLS) pertaining thereto.

3.4.1 Stitchings. All stitchings shall be as specified on Drawing 2-10-130 and subsidiary drawings pertaining thereto.

3.4.1.1 Automatic stitching. Automatic machines may be used to perform any of the stitch patterns provided the requirements for the stitch pattern, stitches per inch, and size and type of thread are met; and at least three tying, over-lapping, or backstitches are used to secure the ends of the stitching.

3.4.1.2 Thread ends. All thread ends that are visible on the finished item shall be trimmed to a maximum length of 1/4 inch.

3.4.2 Fusing of ends of nylon webbing, and ends and sides of pile fabric. All ends of nylon webbing, and ends and sides of pile fabric shall be fused. The apparatus used to fuse the webbing and pile fabric shall be capable of providing sufficient heat to provide a smooth edge and with the cut ends of the webbing and pile fabric yarns all fused together. Fusing of the webbing and pile fabric shall be accomplished during or immediately after cutting.

3.4.3 Setting of rivets. The holes shall be prepunched or predrilled to receive the rivet shank. Holes prepunched or predrilled to receive the rivet shanks shall be smaller than the outside diameter of the rivet shank so that the shank must be forced through the hole.

3.5 Marking. The identification marking shall be applied in the location shown on Drawing 2-10-128 and shall conform to type IV, class 5 of DDD-L-20. The letters "US" shall be applied in the size characters and in the location indicated on Drawing 2-10-128 and shall conform to type IV, class 9 of DDD-L-20. Fastness of the class 9 marking shall be as specified for class 5 marking.

3.6 Workmanship. The climber shall conform to the quality of product established by this specification.

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 requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor 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 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 defective material, either indicated or actual, nor does it commit the Government to accept defective 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 Certificates of compliance. When certificates of compliance are submitted, the Government reserves the right to inspect such items to determine the validity of the certification.

4.2 Classification of inspections. 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. When a first article is required (see 3.1 and 6.2), it shall be examined for the defects specified in 4.4.3 and 4.4.4.

4.4 Quality conformance inspection. Unless otherwise specified, sampling for inspection shall be performed in accordance with MIL-STD-105.

4.4.1 Component and material inspection. In accordance with 4.1, components and materials shall be inspected in accordance with all the requirements of referenced documents unless otherwise excluded, amended, modified, or qualified in this specification or applicable purchase document.

4.4.1.1 Component and material certification. A certificate of compliance may be acceptable as evidence that the laminated cloth characteristics listed in table I conform to the specified requirements when tested by the specified methods. The methods of testing specified in FED-STD-191, wherever applicable, and as listed in table I shall be followed.

TABLE I. Component and material tests

Characteristic	Requirement paragraph	Test method
Pile material:		
Warp ends per inch (min)	3.3.1	5050
Tufts per square inch (min)	3.3.1	1/
100 percent nylon	3.3.1	1/
Height of pile	3.3.1	Visual 1/ 2/
Ground material:		
Warp ends per inch (min)	3.3.1	5050
Picks per inch (min)	3.3.1	5050
100 percent nylon	3.3.1	1/

TABLE I. Component and material tests (cont'd)

Characteristic	Requirement paragraph	Test method
Pile fabric:		
Color	3.3.1	1/
Weight, oz./sq. yd. (min)	3.3.1	5041 1/
Weave	3.3.1	Visual 3/
Thickness, panned with coating	3.3.1	1/
Set of pile will not change through constant wetting of cloth	3.3.1	1/
Polyurethane adhesive film:		
100 percent polyurethane film	3.3.1	1/
Weight, oz./sq. yd. (min)	3.3.1	1/
Base cloth:		
100 percent cotton	3.3.1	1/
Weight, oz./sq. yd. (min)	3.3.1	1/

1/ The contractaor shall submit a certificate of compliance for this characteristic.

2/ Three determinations per sample unit shall be made and the results reported to the nearest 1/64 inch.

3/ One determination per sample unit shall be made and the results reported as "pass" or "fail".

4.4.2 In-process inspection. Inspection of subassemblies shall be made to ascertain that construction details which cannot be examined in the finished product are in accordance with specified requirements. In addition, inspection shall be performed to assure that the rivet holes and setting requirements have been met. The Government reserves the right to exclude from consideration for acceptance, any material or service for which in-process inspection has indicated nonconformance.

4.4.3 End item visual examination. The end items shall be examined for the defects listed in table II. The lot size shall be expressed in units of ski climbers. The sample unit shall be one ski climber. The inspection level shall be II (see 6.6).

TABLE II. End item visual defects

Examine	Defect	Classification Major	Minor
Fabric	Any hole, cut, or tear	101	
	Not permanent panne finish	102	
	Weak spot, smash or abrasion mark in ground material	103	
	Broken or missing ends or picks		201
	Multiple float		202
	Area of no nylon pile, 1 inch or less in any direction		203
	Area of no nylon pile more than 1 inch in any direction	104	
	Knot, kink, trash or foreign matter in pile area		204
Webbing	Any hole, cut, or tear	105	
	Not white color		205
	Not firmly or tightly woven; edge frayed or scalloped	106	
	Abrasion mark, broken end or pick, open place or multiple float		206
Hardware	Broken or malformed, failing to serve intended purpose, finish omitted, corroded, corroded areas, burrs or sharp edges	107	
Thread	Not natural color		207
Component and assembly	Any component part or required operation omitted (unless otherwise classified herein)	108	
	Needle chews	109	
	Fabric pile in wrong direction, i.e., will not offer resistance to backward motion	1/	
Cross and end straps, and loop chape	Any reversed or assembled to body on wrong side	110	
	Insecurely attached, i.e., bartack loose or misplaced failing to serve intended purpose	111	
	Rivet insecurely clinched or clinched excessively cutting the fabric	112	

TABLE II. Visual defects (cont'd)

Examine	Defect	Classification Major	Minor
Loop	Not in specified location	113	
Bartack	Not as specified or not in specified location	114	
	One or more bartacks omitted	115	
Application of adhesive	Area without adhesive, more than 1 inch in any direction	116	
	Area without adhesive, 1 inch or less in any direction		208
Cleanliness	Grease, oil stains, or backing compound on pile clearly noticeable; thread ends not trimmed throughout to 1/4 inch maximum length		209
Marking (U.S. and identification marks)	Omitted, incorrect, illegible, misplaced		210

1/ Any sample unit determined to have pile running in wrong direction shall cause the lot represented to be rejected.

4.4.4 End item dimensional examination. The end items shall be examined for conformance to the dimensions specified on the drawings. Only those dimensions that can be evaluated without damaging or disassembling the end items shall be examined. Any dimension not within the specified tolerance shall be classified as a defect. The lot size shall be expressed in units of ski climbers. The sample unit shall be one ski climber. The inspection level shall be S-3 (see 6.6).

4.4.5 Packaging examination. The fully packaged end items shall be examined for the defects listed below. The lot size shall be expressed in units of shipping containers. The sample unit shall be one shipping container fully packaged. The inspection level shall be S-2 (see 6.6).

Examine	Defect
Marking (exterior and interior)	Omitted; incorrect; illegible; of improper size, location, sequence, or method of application
Materials	Any component missing, damaged, or not as specified

Examine	Defect
Workmanship	Inadequate application of components, such as: incomplete sealing or closure of flap, improper taping, loose strapping, or inadequate stapling Bulged or distorted container
Content	Number per container is more or less than required

4.4.6 Palletization examination. The fully packaged and palletized end items shall be examined for the defects listed below. The lot size shall be expressed in units of palletized unit loads. The sample unit shall be one palletized unit load, fully packaged. The inspection level shall be S-1 (see 6.6).

Examine	Defect
Finished dimensions	Length, width, or height exceeds specified maximum requirement
Palletization	Pallet pattern not as specified Interlocking of loads not as specified Load not bonded as specified
Weight	Exceeds maximum load limits
Marking	Omitted; incorrect; illegible; of improper size, location, sequence, or method of application

5. PACKAGING

5.1 Preservation. Preservation shall be level A or Commercial, as specified (see 6.2).

5.1.1 Level A preservation. Each pair of ski climbers shall be folded to a size of approximately 11 inches in length, 3 inches in width, and 2-1/2 inches in depth. Each pair of ski climbers shall be placed in a plastic bag conforming to type I or II of PPP-B-26. The bag shall be closed in accordance with any style of PPP-B-26.

5.1.2 Commercial preservation. Ski climbers shall be preserved in accordance with ASTM D 3951.

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

5.2.1 Level A packing. Twelve pairs of ski climbers, preserved as specified in 5.1, shall be packed in a snug-fitting fiberboard shipping container conforming to style RSC-L, grade V2s of PPP-B-636. The inside of each shipping container shall be fitted with a box liner conforming to type CF, class weather-resistant, variety DW, grade V15c, of PPP-B-636. Inside dimensions of the shipping container shall be approximately 18 inches in length, 11 inches in width, and 5 inches in depth. Each shipping container shall be closed, water-proofed, and reinforced with strapping or tape banding in accordance with the appendix of PPP-B-636.

Shipping containers shall be arranged in unit loads in accordance with MIL-L-35078 for the type and class of load specified (see 6.2). Strapping shall be limited to nonmetallic strapping, except for type II, class F loads.

5.2.2 Level B packing. Twelve pairs of ski climbers, preserved as specified in 5.1, shall be packed in a snug-fitting fiberboard shipping container conforming to style RSC-L, type CF (variety SW) or SF, class domestic, grade 275 of PPP-B-636. The inside of each shipping container shall be fitted with a box liner conforming to type CF, class domestic, variety DW, grade 275 of PPP-B-636. Inside dimensions of the shipping container shall be approximately 18 inches in length, 11 inches in width, and 5 inches in depth. Each shipping container shall be closed, in accordance with method II as specified in the appendix of PPP-B-636.

5.2.2.1 Weather-resistant fiberboard containers. When specified (see 6.2), the shipping container shall be a grade V3c, V3s, or V4s fiberboard box fabricated in accordance with PPP-B-636 and closed in accordance with the appendix of PPP-B-636.

5.2.3 Commercial packing. Ski climbers preserved as specified in 5.1, shall be packed in accordance with ASTM D 3951.

5.3 Palletization. When specified (see 6.2), ski climbers packed, as specified in 5.2.2 or 5.2.3, shall be palletized on a 4-way entry pallet in accordance with load type Ia of MIL-STD-147. Pallet types shall be type I (4-way entry), type IV, or type V in accordance with MIL-STD-147. Pallets shall be fabricated from wood groups I, II, III, or IV of MIL-STD-731. Each prepared load shall be bonded with primary and secondary straps in accordance with bonding means C and D or film bonding means F or G. Pallet pattern shall be number 8 in accordance with MIL-STD-147.

5.4 Marking. In addition to any special marking required by the contract or purchase order, shipping containers and palletized unit loads shall be marked in accordance with MIL-STD-129 or ASTM D 3951, as applicable.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The ski climbers are for attachment to the bottom of skis for additional traction in climbing hills and slopes.

6.2 Acquisition requirements. Acquisition documents must specify the following:

a. Title, number, and date of this specification.
b. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2).
c. When a first article is required (see 3.1, 4.3, and 6.3).
d. Levels of preservation and packing (see 5.1 and 5.2).
e. Type and class of unit load required (see 5.2.1).
f. When weather-resistant grade fiberboard shipping containers are required for level B packing (see 5.2.2.1).
g. When palletization is required (see 5.3).
h. Acceptance criteria required (see 6.6).

6.3 First article. When a first article is required, it shall be inspected and approved under the appropriate provisions of FAR 52.209. The first article should be a preproduction sample. The contracting officer should specify the appropriate type of first article and the number of units to be furnished. The contracting officer should also include specific instructions in acquisition documents regarding arrangements for selection, inspection, and approval of the first article.

6.4 Sample. For access to samples, address the contracting activity issuing the invitation for bids or request for proposal.

6.5 Yarn counts. Suggested but not mandatory yarn counts are as follows:

Ground warp (tight)	-	Approximately 30/2 ply nylon, natural color
Ground warp (slack)	-	Approximately 30/2 ply nylon, natural color
Ground filling	-	Approximately 30/2 ply nylon, natural color
Pile warp	-	Approximately 1/520 denier, 37 filament, nylon, natural color

6.6 Acceptance criteria. The acceptance criteria below are recommended for use. The acceptance criteria as specified in the contract or purchase order shall be binding. Unless otherwise specified, the following acceptance criteria are in accordance with MIL-STD-105.

6.6.1 For end item visual examination. An acceptable quality level (AQL), expressed in terms of defects per hundred units, of 2.5 for major defects and 10 for total (major and minor combined) defects is recommended.

6.6.2 For end item dimensional examination. An AQL, expressed in terms of defects per hundred units, of 4 is recommended.

6.6.3 For packaging examination. An AQL, expressed in terms of defects per hundred units, of 2.5 is recommended.

6.6.4 For palletization examination. An AQL, expressed in terms of defects per hundred units, of 6.5 is recommended.

6.7 Subject term (key word) listing.

Cold weather
Field equipment
Oversnow soldiers travel aid
Traction aid

6.8 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodians:
Army - GL
Navy - NU

Review activity:
DLA - CT

Preparing activity:
Army - GL

(Project 8465-0032)

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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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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions – Reverse Side)

1. DOCUMENT NUMBER	2. DOCUMENT TITLE
MIL-C-41824C	Climbers, Ski, Snow & Ice Traversing Equipment (SITE)

3a. NAME OF SUBMITTING ORGANIZATION	4. TYPE OF ORGANIZATION *(Mark one)*
	☐ VENDOR
	☐ USER
3b. ADDRESS *(Street, City, State, ZIP Code)*	☐ MANUFACTURER
	☐ OTHER *(Specify)*: _____

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