



Forest Service
U.S. DEPARTMENT OF AGRICULTURE

National Technology & Development Program

Specification 6170-4L CHAPS, CHAIN SAW, M-2025

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RECORD OF CHANGES (to this revision)

Change	Reason
Name	New design
1.2. Classification Removed Size 28 - 28-inches long	Improved alignment with industry standard ASTM F-1897
2.1.2.1. Drawings Revised drawings and patterns	Improved alignment with industry standard ASTM F-1897
3.2.9.1 Label	Changed USDA FOREST SERVICE SPECIFICATION 6170-4K to 4L.
Globally	Reflect technical drawing change, from MTDC-823 & -824 to NTDP-1186
Globally	Reflect Nylon webbing change, MIL-PRF-17337G
3.2.5 Material and Components, Binding Tape	Restrict color of binding tape to black.

CONTENTS

1. SCOPE AND CLASSIFICATION	1
1.1. Scope	1
1.2. Classification	1
1.3. Interpretations and definitions	1
1.3.1. Interpretation	1
1.3.2. Definitions	1
2. APPLICABLE DOCUMENTS	1
2.1. Government documents	1
2.1.1. Specifications and standards	1
2.1.2. Other Government documents	2
2.2. Non-government publications	2
2.2.1. Aerospace Industries Association (AIA)	2
2.2.2. American Society For Quality (ASQ)	2
2.2.3. American Society for Testing and Materials (ASTM)	2
2.2.4. National Fire Protection Association (NFPA)	3
2.2.5. National Motor Freight Traffic Association, Inc., Agent	3
2.2.6. Parachute Industry Association (PIA)	3
2.3. Order of precedence	3
3. REQUIREMENT	3
3.1. First article	3
3.1.1. NFPA 1950 (1977)	3
3.2. Materials and components	3
3.2.1. Woven aramid cloth	4
3.2.2. Needled aramid felt cloth	4
3.2.3. Cloth, outer shell, tool kit main body, flap, and wedge pocket	5
3.2.4. Nylon webbing	5
3.2.5. Binding tape	5
3.2.6. Thread, nylon	5
3.2.7. Plastic buckles	5
3.2.8. Snap fastener	5
3.2.9. Labels	5
3.2.10. End user instructions	6
3.3. Construction	6
3.3.1. Stitches, seams, and stitchings	6
3.3.2. Pad construction	7
3.3.3. Snap fastener setting	7
3.3.4. Fusing ends of webbing and tape	7

3.3.5. Location marks.....	8
3.3.6. Repairs	8
3.3.7. Piecing	8
3.3.8. Replacement of nonconforming components	8
3.3.9. Coated cloth surface	8
3.4. Markings	8
3.5. Dimensions	8
3.6. Patterns	8
3.7. Deviations and waivers	8
3.8. Workmanship.....	8
3.9. Metric products	8
3.10. Recovered materials	9
4. QUALITY ASSURANCE PROVISIONS	9
4.1. Responsibility for inspection.....	9
4.1.1. Responsibility for compliance.....	9
4.1.2. Responsibility for dimensional requirements	9
4.1.3. Certification of compliance	9
4.2. Sampling for inspections and tests.....	9
4.3. Quality conformance inspections	9
4.3.1. Component and material inspection	10
4.3.2. Certification.....	11
4.3.3. In-process inspection	12
4.3.4. End item examination.....	12
4.4. Packaging inspection.....	17
4.5. Tests	17
4.5.1. Aramid cloth tests.....	17
5. Packaging	18
5.1. Preservation	18
5.1.1. Folding	19
5.2. Packaging.....	19
5.3. Packing.....	19
5.4. Marking.....	19
5.4.1. Special marking	19
6. Notes.....	19
6.1. Intended use	19
6.2. Acquisition requirements	19
6.3. First article	20
6.4. Types of cloth.....	20

6.5. Suggested sources of supply	20
6.5.1. Woven aramid cloth	20
6.5.2. Nylon 6/6 plastic hardware	21
6.6. End user instructions	21
6.7. Standard shade sample	21
6.8. Notice	21
6.9. Preparing activity	21
6.10. Information to prospective bidders	21

1. SCOPE AND CLASSIFICATION

1.1. Scope

This specification covers the requirements for orange, nylon-covered, aramid chain saw chaps.

1.2. Classification

The chaps shall be of one type in the following sizes, as specified (see 6.2):

Size 32 - 32 inches long

Size 36 - 36 inches long

Size 40 - 40 inches long

1.3. Interpretations and definitions

1.3.1. Interpretation

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

1.3.2. 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

2.1.1. Specifications and standards

The following specifications and standards 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 proposal. 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, Building 4D, 700 Robbins Ave., Philadelphia, PA 19111-5094. Copies of USDA Forest Service specifications are available from the preparing activity, see 6.9.

2.1.1.1. Specifications

2.1.1.1.1. Federal

A-A-59826 - Thread, Nylon

2.1.1.1.2. Military

MIL-DTL-32439 Type III, Class III Cloth, Duck, Textured Nylon

MIL-DTL-32075 - Label: For Clothing, Equipage, and Tentage (General Use)

MIL-PRF-17337G- Webbing, Textile, Woven Nylon

MIL-DTL-10884 - Fasteners, Snap

2.1.1.2. Standards

2.1.1.2.1. Federal

FED-STD-191 - Textile Testing Methods or equivalent test methods (see Table 7)

FED-STD-376 - Preferred Metric Units for General Use by the Federal Government

2.1.1.2.2. Military

MIL-STD-129 – Military Marking for Shipment and Storage

2.1.2. Other Government documents

The following other Government documents form a part of this specification to the extent specified herein. Unless otherwise specified, the issues shall be those in effect on the date of the solicitation.

2.1.2.1. Drawings

2.1.2.1.1. USDA Forest Service

Copies of Forest Service drawings are available from the preparing activity, 6.9.

NTDP-1186 - Chaps, Chain Saw, M-2025

2.1.2.2. Laws and regulations

Copies are available from the Federal Trade Commission, Pennsylvania Ave. at Sixth St. N.W., Washington, DC 20402-9328.

Rules and Regulations Under the Textile Fiber Products Identification Act

2.2. 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.

2.2.1. Aerospace Industries Association (AIA)

Copies are available from AIA at 1250 Eye Street, N.W., Suite 1200 Washington, DC, United States, 20005-3924, website <http://www.aia-aerospace.org>.

NASM27980 - Fasteners, Snap, Style 2 (Regular Wire Spring Clamp Type)

2.2.2. American Society For Quality (ASQ)

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

Z1.4 - Sampling Procedures and Tables for Inspection by Attributes

2.2.3. American Society for Testing and Materials (ASTM)

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

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

D 3786 - Standard Test Method for Bursting Strength of Textile Fabrics—Diaphragm Bursting Strength Tester Method

D 3787 - Standard Test Method for Bursting Strength of Textiles-Constant-Rate-of-Traverse
(CRT) Ball Burst Test

D 3951 - Standard Practice for Commercial Packaging

D 5118 - Standard Practice for Fabrication of Fiberboard Shipping Boxes

D 6193 - Standard Practice for Stitches and Seams

F 1897 - Standard Specification of Leg Protection for Chain Saw Users

2.2.4. National Fire Protection Association (NFPA)

Copies are available from National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101, website www.nfpa.org.

NFPA 1950 – Standard on Protective Equipment for Technical Rescue Incidents, Emergency Medical Operations, and Wildland and Urban Interface Firefighting

2.2.5. National Motor Freight Traffic Association, Inc., Agent

Copies are available from the American Trucking Associations, Inc., 2200 Mill Rd., Alexandria, VA 22314.

National Motor Freight Classification

2.2.6. Parachute Industry Association (PIA)

Copies are available from PIA, 3833 West Oakton Street, Skokie, IL 60076, website www.pia.com.

PIA-T-5038 - Tape, Textile and Webbing, Textile, Reinforcing, Nylon

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, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENT

3.1. First article

Unless otherwise specified (see 6.2), the item 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; when a major manufacturing process 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. NFPA 1950 (1977)

The chaps shall be third party certified as complying with the National Fire Protection Association (NFPA) 1950 (1977) - Standard on Protective Clothing and Equipment for Wildland and Urban Interface Firefighting, edition in effect. Proof of this certification shall be presented at the time of first article submission.

3.2. Materials and components

Materials and components shall be as specified herein and in the referenced drawing, NTDP-1186. The materials and components shall comply with NFPA 1950 (1977).

3.2.1. Woven aramid cloth

3.2.1.1. Fiber

The fiber shall be an approved high modulus (greater than 800 grams per denier) aramid fiber. The fiber shall be virgin.

3.2.1.2. Yarn

The warp and filling yarns shall be a continuous filament, 1140 denier (nominal).

3.2.1.3. Color

The color of the aramid cloth shall be natural as produced from the fiber provided by the manufacturer. No bleach or color modifier shall be used.

3.2.1.4. Physical requirements

The physical requirements of the finished cloth shall be as specified in Table 1 when tested as specified in 4.5.1.

Table 1—Woven aramid physical requirements

Characteristics	Requirements
Weight (oz per square yard)	4.8 to 5.2
Yarns per inch warp	16 minimum
Yarns per inch fill	16 minimum
Breaking strength (lbs) warp	578 minimum
Breaking strength (lbs) fill	578 minimum
Thickness (inch)	0.009 to 0.011

3.2.1.5. Weave

The weave shall be crowfoot.

3.2.1.6. Finish

The finish shall be scoured or unscoured.

3.2.1.7. Fiber identification

The woven aramid cloth shall be labeled, ticketed, or invoiced for fiber content per the Rules and Regulations Under the Textile Fibers Products Identification Act.

3.2.2. Needled aramid felt cloth

The fiber shall be an approved aramid fiber needled for compactness and cohesion. The aramid fiber shall be virgin staple, natural color, nominal 1.5 denier precision cut 1-1/2, 2, or 3 inches in length. The finished cloth shall be made of fiber only, with no added resins or materials. The physical requirements of the needled aramid felt cloth shall be as specified in Table 2 when tested as specified in 4.5.1.

Table 2— Needled and felt aramid cloth physical requirements

Characteristics	Requirements
Weight (oz per square yard)	3.15 to 3.85
Breaking strength (lbs) warp	15 minimum
Breaking strength (lbs) fill	30 minimum
Thickness (inch)	0.057 to 0.073
Bursting strength (lb) diaphragm	120 minimum
Bursting strength (lb) ball	200 minimum

3.2.2.1. Fiber identification

The needled aramid felt cloth shall be labeled, ticketed, or invoiced for fiber content per the Rules and Regulations Under the Textile Fibers Products Identification Act.

3.2.3. Cloth, outer shell, tool kit main body, flap, and wedge pocket.

The nylon cloth shall conform to MIL-DTL-32439 Type III Class III. The color shall be orange to match the standard shade sample (see 6.7).

3.2.4. Nylon webbing

3.2.4.1. 1-1/2 inch

The 1-1/2 inch webbing shall conform to MIL-PRF-17337G, Class 2. The color shall be black.

3.2.4.2. 1-inch

The 1-inch webbing shall conform to MIL-PRF-17337G, Class 2. The color shall be black.

3.2.5. Binding tape

The binding tape shall conform to Type III, Class 2 of PIA-T-5038, 1 inch in width. The color shall be black to match the sample (see 6.7).

3.2.6. Thread, nylon

The thread shall conform to type II, class A of A-A-59826. Thread for all stitching shall be size F, thread for bartacking shall be size E, unless otherwise specified. The color for all thread shall be black.

3.2.7. Plastic buckles

The plastic buckles shall be black nylon 6/6 plastic. Where more than one source is listed, the mating components making up a single item shall be manufactured by the same company to ensure the compatibility of the components.

3.2.7.1. Buckles, 1 and 1-1/2 inch

The 1-inch buckle shall be ITW Nexus Side Release Buckle, part no. 810-1003-2099/810-1004-2099 (body/latch), National Molding Corp. Mojave Side Squeeze Buckle, part nos. 5129/5130 (male/female); or American Cord & Webbing part no. BSR-A, nylon. The 1-1/2 inch buckle shall be American Cord and Webbing, MSR, color black, part nos. 91767/91766 (female/male) or equivalent.

3.2.8. Snap fastener

The snap fastener shall conform to style 2, 24 line, size 1, and Number 2 finish of MIL-DTL-10884. The button shall be NASM27980-1B, the socket shall be NASM27980-6B, the stud shall be NASM27980-7B, and the eyelet shall be NASM27980-8B.

3.2.9. Labels

3.2.9.1. NFPA Label

Each pair of chain saw chaps shall have a label which shall include identification and care information. The label may be woven or nonwoven and shall meet the requirements of NFPA 1950 (1977), edition in effect. *(The following label text shall be printed in letters at least 3/32 inch in height.)*

THIS WILDLAND FIREFIGHTING AND URBAN INTERFACE FIREFIGHTING PROTECTIVE CHAIN SAW PROTECTOR MEETS THE REQUIREMENTS OF NFPA 1950 (1977), 2025 EDITION. (1/)

DO NOT REMOVE THIS LABEL! (3/)

(The following label text shall be printed in letters at least 1/16th inch in height.)

[Manufacturer's name] (2/)
[Manufacturer's address] (2/)
[Country of origin] (2/)
[Manufacturer's garment identification number, lot number, or serial number] (2/)
DATE OF MANUFACTURE: [mm/yy] (2/)
USDA FOREST SERVICE SPECIFICATION 6170-4L
SIZE: [] (2/)
CONTRACT NUMBER: [] (2/)
NSN: [] (2/)
MATERIALS CONTENT: [] (2/)
[Authorized mark of certifying organization] (2/)
DATE OF CERTIFICATION [mm/yy (as a minimum)] (2/)
CARE INSTRUCTIONS
CLEAN REGULARLY: FOLLOW END USER INSTRUCTIONS
DO NOT MACHINE WASH OR DRY!
DO NOT BLEACH!

1/ Or more current edition as applicable.

2/ The manufacturer shall insert the applicable information.

3/ When a split label is used, this legend shall appear on both labels.

3.2.9.2. Label margins

All labels shall be provided with a 1/4 ± 1/16 inch blank margin on all four sides for sewing purposes.

3.2.9.3. Date of manufacture

The date of manufacture shall be the month and year the item is manufactured (see 3.4) in an mm/yy format.

3.2.10. End user instructions

A copy of end user instructions meeting the requirements of NFPA 1950 (1977) shall be inserted into the packaging of each pair of chain saw chaps (see 5.2, 6.6, and exhibit 1). End user instructions shall be provided by the contractor.

3.3. Construction

The construction shall conform in all respects to the referenced drawing, NTDP-1186 and as specified herein.

3.3.1. Stitches, seams, and stitchings

All stitching, except bartacking, shall conform to type 301 of ASTM D 6193, 6 to 8 stitches per inch.

3.3.1.1. Type 301 stitching

Ends of stitching shall be backstitched or overstitched not less than 1 inch (1/2 inch for box-x) except where ends are turned under or caught in other seams or stitching. Thread tensions shall be maintained so there will be no loose stitching resulting in loose bobbin or top thread or excessively tight stitching resulting in puckering of the materials sewn. The lock shall be embedded in the materials sewn.

3.3.1.1.1. Repairs of type 301 stitching

Repairs of type 301 stitching shall be as follows (when making the following repairs, the ends of the stitching are not required to be backstitched):

- a. When thread breaks or bobbin runouts occur during stitching, except presewing, the stitching shall be repaired by restarting the stitching a minimum of 1 inch (1/2 inch for box-x) back of the end of the stitching.
- b. Except for prestitching, thread breaks or two or more consecutive skipped or runoff stitches noted during the inspection of the item (in-process or end item) shall be repaired by overstitching. The stitching shall start a minimum of 1 inch in back of the nonconforming area (1/2 inch on box-x), continue over the nonconforming area to a minimum of 1 inch into existing stitching. Loose or excessively tight stitching shall be repaired by removing the nonconforming stitching, without damaging the materials, and restitching in the required manner.

3.3.1.2. Bartacking

Bartacking shall be free from thread breaks and loose stitching. Unless otherwise specified, bartacks shall be as follows:

Length	Width	Stitches per bartack
1/2 ± 1/16 inch	1/8 ± 1/32 inch	28
3/4 ± 1/16 inch	1/8 ± 1/32 inch	42

3.3.1.3. 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 or more tying, overlapping, or backstitches are used to secure the ends of the stitching.

3.3.1.4. Thread ends

All thread ends shall be trimmed to 1/4 inch maximum length.

3.3.1.5. Lubrication of thread

There shall be no lubrication of the thread by any means, before or during sewing (see 4.3.2)

3.3.1.6. Stitching margins

Unless otherwise specified, all stitching margins shall be 1/8 inch.

3.3.2. Pad construction

During chap construction there shall be no sewing, tacking, or fastening of cloth layers allowed other than the stitching shown on drawing NTDP-1186.

3.3.3. Snap fastener setting

A hole shall be prepunched to receive the button and eyelet components of the snap fasteners. The hole shall be smaller than the outside diameter of the button and eyelet barrels so that the barrel must be forced through the hole. The hole shall not be punched in the setting operations with the button or eyelet barrels. The fasteners shall be securely clinched without cutting the adjacent materials and no more than three splits shall occur in the button or eyelet barrels.

3.3.4. Fusing ends of webbing and tape

All ends of nylon webbing and binding tape shall be fused before assembly for stitching. The apparatus used to fuse webbing and the binding tape ends shall provide enough heat to create a smooth edge and with the cut ends of all webbing and binding tape yarns fused together.

3.3.5. Location marks

Location marks may be drilled, providing the drill diameter does not exceed 0.076 inches (see 4.3.3). All drill holes shall be covered on the finished item. Printed markings shall not be more than 1/32 inch in width.

3.3.6. Repairs

Repairs such as mends, darns, patches, or splices are not permitted on the chaps.

3.3.7. Piecing

No piecing or splicing shall be allowed on the chaps.

3.3.8. Replacement of nonconforming components

During the spreading, cutting, and manufacturing process, components having material nonconformities or damages that are classified as nonconformities in 4.3.4.1 and 4.3.4.2 shall be removed from production and replaced with conforming and properly matched components.

3.3.9. Coated cloth surface

The coated side of the cloth shall face the inside of the completed chaps.

3.4. Markings

The letters "NFES", the numbers for the size, and the month and year of manufacture (see 3.2.9.3) shall be silk-screened with a black marking medium per type IV, class 9 of MIL-DTL-32075. The month and year (mm/yy) of manufacture markings shall be located on the back of the right leg positioned as the "NFES" is positioned on the front of the right leg. Unless otherwise specified, the letters and numbers in these markings shall be 2 inches high and 1 inch wide. The fastness of the class 9 markings shall be as specified for the class 5 markings. The color of the cloth components shall not be visible under the markings.

3.5. Dimensions

All dimensions except pattern sizes are finished dimensions unless otherwise specified.

3.6. Patterns

Standard patterns for textile components other than tape or belt webbing are shown full scale on drawings and provide allowances for all seams and shall be used for making working patterns. The working patterns shall be identical to Government standard patterns, which shall not be altered in any way. All parts shall be within 1/8 inch of the locations shown on the patterns.

3.7. Deviations and waivers

Deviations and waivers to the materials or construction specified herein shall not be allowed unless authorized in writing by the contracting officer.

3.8. Workmanship

All items shall conform to the quality of the product established by this document. The occurrence of nonconformities shall not exceed the applicable acceptable quality levels. There shall be no nonconformities that affect use, appearance, or serviceability. The finished chain saw chaps shall conform to NFPA 1950 (1977) requirements for protective clothing and equipment.

3.9. 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 FED-STD-376, and all other requirements of this specification are met.

3.10. Recovered materials

The contractor/offeror is encouraged to use recovered materials to the maximum extent possible per paragraph 23.403 of the Federal Acquisition Regulation (FAR).

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 or 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 this 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.

4.1.1.1. Responsibility for certification

An approved certification organization shall certify that the chain saw chaps meet the requirements of NFPA 1950 (1977). The contractor shall provide all required materials, garments, and information to the certification organization to permit such certification.

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, an 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. Certification of compliance

Unless otherwise specified, certificates of compliance shall be supplied by the manufacturer of the item, component, or material, listing the specified test method and test results obtained, may be furnished instead of actual lot-by-lot testing performed by the contractor (see 4.3.2). When certificates of compliance are submitted, the Government reserves the right to check test such items to determine the validity of the certification.

4.2. Sampling for inspections and tests

Sampling for inspections and tests shall be made per ANSI/ASQC Z1.4. The inspection level and acceptable quality level (AQL) shall be as specified. All chain saw chaps manufactured at one time shall be considered a lot for purposes of acceptance inspection and test. A sample unit shall be one pair of chain saw chaps.

4.3. Quality conformance inspections

Each end item lot shall be sampled and inspected as specified in 4.3.4.1 and 4.3.4.2. The packaging shall be inspected as specified in 4.4. Unless otherwise specified (see 6.2), the first articles submitted per 3.1

shall be inspected as specified in 4.3.4.1 and 4.3.4.2 except that packaging is not required when the first articles are presented. The presence of any nonconformity or failure to pass any test shall be cause for rejection of the first article.

4.3.1. Component and material inspection

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

4.3.1.1. Examination of aramid cloth for visual nonconformities

The required yardage shall be examined on one side only (alternating every other roll) and nonconformities classified per table 3. The nonconformities found during this examination shall be counted regardless of their proximity to each other, except where two or more nonconformities represent a single local condition of the cloth, in which case only the more serious nonconformities shall be counted. A continuous nonconformity shall be counted as one nonconformity for each lengthwise yard or fraction thereof in which it occurs. The sample unit shall be 1 linear yard of cloth. The sample size shall be based upon inspection level II. The sample size and the lot size shall be expressed in units of 1 yard each. The number of rolls from which the sample is to be selected shall be as specified below. The acceptable quality level (AQL), expressed in terms of nonconformities per hundred units (yards), shall be 4.0 for major nonconformities and 10.0 for combined major and minor nonconformities. All rolls of needled aramid felt cloth shall be examined end-to-end in front of pass through lighting for evidence of thin or thick areas.

Lot size in yards	Sample size in rolls
Up to and including 1,300 (1/)	3
1,301 through 3,200	5
3,201 through 8,000	7
8,001 through 22,000	10
22,001 through 110,000	15
110,001 and over	25

1/ If a lot contains fewer than 3 rolls, each roll shall be examined.

4.3.1.1.1. Intermediate inspection

The woven cloth and needled felt cloth shall be examined before fabrication per applicable provisions of 4.3.1.1.

Table 3—Examination of aramid cloths for visual nonconformities

Examine	Nonconformity	Major classification	Minor classification
Woven aramid cloth	Hard crease or wrinkle	-	X
	Cut, hole, or tear	X	-
	Broken or missing yarn	-	X
	An open or thin place	X	-
	Mixed yarn	-	X
	Spot or stain through the fabric, clearly visible at a normal inspection distance of 3 feet	-	X
	Woven-in waste 1/8 inch or larger in diameter	-	X
	Abrasion mark	-	X
	Baggy or woven cloth	-	X
	Any mend or darn	-	X
Needled aramid felt cloth	Any hole, cut, or break (tear)	X	-
	Crease or wrinkle embedded	X	-

	Uneven resulting in thin, thick or weak place, clearly visible at a normal inspection distance of 3 feet	X	-
	Spot or stain visible at a normal inspection distance of 3 feet	-	X
Fiber content	Fiber content label missing, label illegible or wrong text	-	X

4.3.2. Certification

Unless otherwise specified (see 6.2), as part of first article presentations and lot inspections, it shall be acceptable for the contractor to provide certificates of compliance for all materials and components in lieu of actual lot-by-lot testing, except as specified in 4.3.2.1. The contractor shall also furnish a certificate of compliance for the requirement of 3.3.1.5 prohibiting the use of thread lubricants before or during sewing. If the contractor changes component or material suppliers, a new certification based on actual test results shall be required.

4.3.2.1. All certificates shall include as a minimum:

- Specification, type, class, form where applicable
- Quantity purchased
- Purchase source, address, and telephone number
- Purchase date
- Lot number traceable to materials used in production
- Contract number

4.3.2.2. Certified components

The following items require a certificate of compliance:

- Woven aramid cloth (3.2.1)
- Needled aramid felt cloth (3.2.2)
- Cloth, outer shell, tool kit main body, flap, and wedge pocket (3.2.3)
- Nylon webbing 1-1/2 inch (3.2.4.1)
- Nylon webbing 1 inch (3.2.4.2)
- Binding tape (3.2.5)
- Nylon thread (3.2.6)
- Buckles 1 inch (3.2.7.1)
- Buckles 1-1/2 inch (3.2.7.1)
- Snap fastener (3.2.8)
- Labels (3.2.9)
- No thread lubricant (3.3.1.5)

4.3.2.3. NFPA 1950 (1977)

As a part of the first article submission, the contractor shall provide copies of the third-party certification to NFPA 1950 (1977).

4.3.2.4. Test values

The contractor shall provide actual test values for the characteristics of the woven aramid cloth (3.2.1), needled aramid felt cloth (3.2.2), and inner and outer shell cloth (3.2.3) for each new lot purchased. Such test reports, traceable to each lot used in the production of the chaps, shall be maintained at the inspection point specified in the contract. Copies of these test reports shall be made available to the Government representative upon request.

4.3.3. In-process inspection

An inspection shall be made at any point or during any phase of the manufacturing process to determine whether cut lengths, cut parts, markings for the location of components, and location of assembled parts follow specified requirements. This examination shall include inspection of the pad assemblies to assure that two layers of needled felt aramid cloth are assembled in alternating layers with the woven aramid cloth on top. The pads shall also be inspected for evidence of fabric nonconformities or splicing and unspecified stitching or fastening. An inspection shall be made to determine that holes drilled for location marking do not exceed 0.076-inch diameter and are placed in such a manner that each shall be covered in the finished item (see 3.3.5). Whenever nonconformance is noted, corrections shall be made to the parts affected in the lot. Components that cannot be corrected shall be removed from production.

4.3.4. End item examination

4.3.4.1. End item visual examination

The end items shall be examined for the nonconformities listed in table 4 on a lot-by-lot basis. The lot size shall be expressed in units of complete chain saw chaps. The inspection level shall be II, and acceptable quality level (AQL), expressed in terms of nonconformities per hundred units, shall be 2.5 for major nonconformities and 15.0 for combined major and minor nonconformities. Unless otherwise specified, nonconformities shall be scored on an individual basis, i.e., each seam, each stitching end, each dimension, etc.

Table 4—End item visual nonconformities

Examine	Nonconformity	Major classification	Minor classification
Nylon duck cloth	Not class specified	X	-
	Any hole (except location marks), cut, or tear	X	-
	Any abrasion mark, smash, slub, broken or missing yarn, multiple float, or open place, clearly at normal inspection distance of 3 feet	X	-
	Needle chew	X	-
	NOTE: Needle holes visible as the result of broken or skipped stitching or stitching that has been removed shall not be considered as needle chews providing that the holes are spaced as in normal stitching.		
	Color not as specified	X	-
	Any outer shell or tool kit part shaded	-	X
	Shade bar, fine or coarse filling bar	-	X
	Coating nonconforming or partially omitted	-	X
Webbing and tape	Size or type not as specified	X	-
	Color not as specified	-	X
	Any hole, cut, tear, or smash	X	-
	Abrasion mark, slub, broken end or pick	-	X
	Cut ends not fused or not fused as specified	-	X
	Not firmly and tightly woven	X	-
	Edges frayed or scalloped	X	-
	Multiple floats	-	X
Binding tape	Size or type not as specified	X	
	Color not as specified	-	X
	Loosely applied but not exposing the raw edge of the material	-	X
	Loosely applied, exposing the raw edge of the material	X	-
Thread	Not specified type, class, subclass, or size	X	-
	Any thread lubricated	-	X
	Color not as specified	-	X
Hardware, general	Any part broken, cracked, chipped, distorted, twisted, or out of shape	X	-
	Any dirt or flash	-	X
	Any deep scratch or gouge	-	X
	Gates not trimmed	-	X
	Surface not smooth	-	X
	Any pit, void, crazing, air pocket, blister, or embedded foreign matter that will affect serviceability	X	-
	Evidence of spray or jetting marks	X	-
	Not size or type specified	X	-
Buckles	Mating components not from the same manufacturer	X	-
	Male and female parts do not mate	X	-

Table 4—End item visual nonconformities

Examine	Nonconformity	Major classification	Minor classification
	Webbing incorrectly threaded through male buckle	X	-
	Male buckle upside down	X	-
	NOTE: Plastic buckles shall be latched and unlatched three times to determine whether they operate smoothly and provide a secure closure.		
Snap fasteners	Any fastener not functioning properly, i.e., fails to snap closed, provide a secure closure, or open freely	X	-
	NOTE: The fasteners shall be snapped and unsnapped twice to determine whether parts of the fastener separate freely and also effect a secure closure.		
	Clinched excessively tight, cutting adjacent material	X	-
	Clinched loosely, permitting any component to rotate freely but not to the degree that any component can be expected to become detached during use	-	X
	Clinched loosely to the degree that components can be expected to become detached during use	X	-
	NOTE: Incomplete rolled end of button or eyelet barrel is evidence of improper and insecure clinching.		
	Incorrect style	X	-
	More than three splits in eyelet or button barrels	-	X
	Hole for barrel not prepunched	-	X
Cutting	Any part not cut per patterns, directional lines on patterns, or in accordance with specification requirements	X	-
Pads	Any unspecified stitching, tacking or fastening	X	-
Open seam	Up to and including 1/2 inch	-	X
	More than 1/2 inch	X	-
	NOTE: A seam shall be classified as an open seam when one or more stitches joining a seam are broken or when two or more continuous skipped stitches or run-offs occur. On double stitched seams, a seam shall be considered open when either one or both sides of the seam are open.		
Raw edge (on edge required to be finished)	More than 1/2 inch when securely caught in the stitching	-	X
	NOTE: Raw edges not securely caught in stitching shall be classified as open seams.		
Run-off	(see open seam)	-	-
Seams and stitch type	Seam or stitch type not as specified	X	-
Bartacks	Any bartack omitted	X	-
	Any bartack not as specified or not in a specified location	-	X
	Loose stitching, incomplete, or broken	-	X

Table 4—End item visual nonconformities

Examine	Nonconformity	Major classification	Minor classification
Stitch tension	Loose, resulting in a loose top or bobbin thread	-	X
	Excessively tight, resulting in puckering of material	-	X
	NOTE: Nonconformities to be scored only when the condition exists for 4 inches or more or in several areas with an accumulated distance of 8 inches or more. Applicable to individual seams.		
Stitches per inch	Up to two stitches less than minimum specified	-	X
	Three or more stitches less than the minimum specified	X	
	Two or more stitches in excess of the minimum specified	-	X
	NOTE: Variation in the number of stitches per inch caused by the operator speeding up the machine and pulling the cloth to sew over heavy seams or in turning corners, shall be classified as follows: (a) Within the minor nonconformity classification - no nonconformity (b) Within the major nonconformity classification - minor nonconformity		
Stitching margin (not otherwise classified herein)	Exceeds specified tolerance, up to 1/16 inch	-	X
	Exceeds specified tolerance, over 1/16 inch	X	
	NOTE: Nonconformities to be scored only when the condition exists for 4 inches or more or in several areas with an accumulated distance of 8 inches or more. Applicable to individual seams.		
Stitching ends	Not secured as specified (except where ends are held down by other stitching or turned under in a hem)	-	X
Thread breaks, skipped stitches, or runoffs (unless otherwise classified herein)	Not overstitched as specified	X	
	NOTE: Thread breaks or two or more consecutive skipped stitches or run-offs not overstitched shall be classified as open seams.		
Rows of stitching	Any row missing except on box stitching	X	
	On box stitching: One row of stitching omitted		X
	On box stitching: Two or more rows of stitching omitted	X	
Stitching patterns	One row of stitching omitted		X
	Two or more rows of stitching omitted	X	
	Stitch pattern not as specified	X	
Automatic stitching patterns	Stitching ends not backstitched as specified, i.e., less than three tying, overlapping, or backstitches		X

Table 4—End item visual nonconformities

Examine	Nonconformity	Major classification	Minor classification
Components and assembly	Any component omitted or not as specified or any operation omitted or not as specified (unless otherwise classified herein)	X	
	Needle chews	X	
	Any mend, darn, patch, splice, or other unauthorized repair	X	
	Any material pleated or caught in stitch line where not specified		X
Piecing	Any piecing or splicing	X	
Cleanness	Noticeable grease, oil, dirt, or ink stains		X
	Thread ends not trimmed to 1/4 inch or less		X
Identification and cleaning label	Wrong type or class	X	
	Incorrect type size or information	X	
	Not in the location specified	X	
	Incorrect label margins		X
Location markings	Drill mark exceeding size specified		X
	Drill mark not covered on the finished item		X
	Printed marking more than 1/32 inch in width or not covered by the component part		X
Marking ("NFES", size numerals, and month/year)	Omitted, incorrect, illegible, misplaced, or size of characters not as specified	X	
	Cloth color visible under black marking medium		X
	Wrong type or class	X	

4.3.4.2. End item dimensional examination

End items shall be examined for the nonconformities listed in table 5 on a lot-by-lot basis. Only those dimensions that can be evaluated without damaging or disassembling the end items shall be examined. The inspection level shall be S-3. An AQL, expressed in terms of nonconformities per hundred units, shall be 6.5 major nonconformities and 15.0 for combined major and minor nonconformities.

Table 5—End item dimensional nonconformities

Examine	Nonconformity	Major classification	Minor classification
Dimensions (overall)	Smaller than nominal dimensions less applicable minus tolerance indicated on drawings, but not smaller than nominal dimensions less twice the applicable minus tolerances	-	X
	Smaller than nominal dimensions less twice the applicable minus tolerance	X	-
	Larger than nominal dimensions and applicable plus tolerance	-	X
Component and location dimensions (not otherwise classified herein)	Not within the specified tolerance	-	X
Box-x stitching	Dimensions not as specified	-	X
Stitch margin and gauge	Not within the specified tolerance	-	X

4.4. 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 6. 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 6—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.

4.5. Tests

4.5.1. Aramid cloth tests

The methods of testing specified in FED-STD-191 or equivalent, wherever applicable and as specified in table 7 shall be followed. The physical and chemical values specified in section 3 apply to the results of the determinations made on a sample unit for test purposes as specified in the applicable test method. The breaking strength requirements apply to the average of the determinations made on all sample units (lot average). The sample unit shall be 1-1/2 continuous yards, the full width of the finished cloth. The lot size shall be expressed in units of 1 yard. The lot shall be unacceptable if one or more sample units fail to meet

any test requirement specified or if the breaking strength based on the average of all determinations (lot average) fails to meet the specified requirement. All test reports shall contain the individual values utilized in expressing the final result. The needled aramid felt sample size (number of sample units) shall be one sample per 100 yards. The woven cloth sample size (number of sample units) shall be per the following:

Lot size in yards	Sample size (units)
800 or less	2
801 through 22,000	3
22,001 and over	5

Table 7—Test methods

Characteristics	Woven cloth requirements	Needled felt requirements	FED-STD-191 test method
Fiber identification	3.2.1.7	3.2.2.1	1/
Yarn denier	3.2.1.2	3.2.2	4021
Yarn length	-----	3.2.2	1/
Yarn tenacity			
Warp	3.2.1.1	-----	4100 1/
Fill	3.2.1.1	-----	4100 1/
Color	3.2.1.3	3.2.2	1/
Weight	3.2.1.4	3.2.2	5040 2/
Yarns per inch			
Warp	3.2.1.4	-----	5050
Fill	3.2.1.4	-----	5050
Breaking strength			
Warp	3.2.1.4	-----	5104
Fill	3.2.1.4	-----	5104
Thickness	3.2.1.4	3.2.2	5030
Weave	3.2.1.5	-----	Visual 1/
Finish (scoured or unscoured)	3.2.1.6	-----	1/
Breaking strength			
Warp	-----	3.2.2	5100 3/
Fill	-----	3.2.2	5100 3/
Bursting strength 4/			
Diaphragm	-----	3.2.2	ASTM D 3786
Ball	-----	3.2.2	ASTM D 3787

1/ Unless otherwise specified, a certificate of compliance shall be submitted for the stated requirement.

2/ Roll method.

3/ Breaking strength shall be determined per Method 5100 except that 2 by 6-inch specimens shall be cut with a die from each sample unit, five parallel to the lengthwise direction of the cloth, and five parallel to the width of the cloth. All single determinations for each direction from all sample units shall be averaged and the averages reported as to the breaking strength of the width and length as applicable.

4/ Either test method may be used.

5. PACKAGING

5.1. Preservation

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

5.1.1. Folding

With leg straps buckled and chaps lying face down, the right leg shall be folded over onto left, so "NFES" is visible. The belt shall be folded around the end of the chaps. The chaps shall be folded into thirds by folding the top third of chaps down over the middle third and bottom third over the top third.

5.2. Packaging

One pair of chaps prepared per 5.1 and folded in accordance with 5.1.1 shall be inserted into a snug-fitting clear polyethylene film bag. Bag closure shall be effected by heat-sealing, with the seal made as close as possible to the open end and excess air within the bag being expelled during the final heat-sealing closure operation. Before sealing the plastic bag, a copy of the end user instructions shall be inserted with the pair of chaps.

5.3. Packing

Ten pairs of chaps of the same size packaged as specified shall be packed in a close-fitting fiberboard box, minimum burst strength 275 psi (ECT 44). Boxes shall be 24"L x 15-1/4"W x 14-3/4"D, type CF (variety SW) or type SF, class domestic, variety SW, style OSC meeting the requirements of the latest version of ASTM D 5118. Boxes shall comply with the National Motor Freight Classification. Each box shall be closed per the latest version of ASTM D 1974, except that the inspection shall be in accordance with 4.4. In lieu of supplying boxes that are not full, at the option of the contractor, boxes of mixed content may be supplied and shall be marked as such (see 5.4.1).

5.4. Marking

In addition to any special marking (see 5.4.1) required by the contract or purchase order, shipping and unit containers shall be marked per MIL-STD-129 except that the NFES number shall be included between the NSN and nomenclature. The marking for the packaged chaps shall be imprinted directly on the polyethylene bag, printed on an adhesive label firmly attached to the polyethylene bag, or printed on a piece of plain white paper and inserted into the polyethylene bag in such a way so it is readable without opening the bag. Barcoding is required.

5.4.1. Special marking

Each shipping container packed with mixed sizes shall have two white paper labels marked or stamped with the words "MIXED SIZES" in block letters at least 1 inch high. The correct quantity of each size with its corresponding NFES number in 1/2 inch letters shall be located directly under the "MIXED SIZES" lettering. All lettering shall be clearly legible. A label shall be securely affixed to one side of the container and a second label to one end of the container.

6. NOTES

6.1. Intended use

The chain saw chaps are intended for use by workers operating chain saws. The chaps are cut resistant and provide protection for the legs.

6.2. Acquisition requirements

Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Size (32, 36, or 40).
- c. When first article samples are not required. (see 3.1, 4.3, and 6.3).
- d. When lot-by-lot testing is required in lieu of certificates of compliance (see 4.3.2).

- e. Packaging, packing and marking required in addition to specification requirements (see section 5).

6.3. First article

When first articles are required, they shall be inspected and approved under the appropriate provisions of Federal Acquisition Regulation 52.209. The first articles shall consist of one sample in each size to be produced under the contract or purchase order. These samples shall be preproduction samples. The contracting officer should include specific instructions regarding arrangements for selection, inspection, and approval of the first articles.

6.4. Types of cloth

The woven aramid cloth described herein was produced from Kevlar® 49. The needled aramid felt cloth described herein was produced from style 970 Kevlar® 29. Kevlar® 49 and Kevlar® 29 are manufactured by the E.I. Du Pont De Nemours and Co., Wilmington, DE 19898.

6.5. Suggested sources of supply

These sources are provided for convenience and may not be all sources of this material.

6.5.1. Woven aramid cloth

BGF Industries

3802 Robert Porcher Way

Greensboro, NC 27410

Clark-Schwebel, Inc.

2200 S. Murray Ave.

Anderson, SC 29622

Fiber Materials, Inc.

5 Morin St.

Biddeford Industrial Park

Biddeford, ME 04005-4497

Gentex Corp.

P.O. Box 315

Carbondale, PA 18407

Hexcel Corp.

5794 W. Las Positas Blvd.

Pleasanton, CA 94588-8781

Warwick Mills

301 Turnpike Rd.

New Ipswich, NH 03071

6.5.2. Nylon 6/6 plastic hardware

American Cord & Webbing, Inc.

88 Century Drive

Woonsocket, RI 02895

ITW Nexus

195 Algonquin Road

Des Plains, IL 60016-6197

(847) 299-2222

www.itwnexus.com

National Molding, LLC

14427 Northwest 60th Avenue

Miami Lakes, FL 33014

6.6. End user instructions

Manufacturer shall print the end user instructions (see exhibit 1) to fit on a double-sided, 8 ½" x 11" piece of paper. See 5.2 Packaging.

6.7. Standard shade sample

Color shade samples for the orange inner and outer shell cloth may be obtained from the preparing activity (6.9) upon request by the contractor.

6.8. Notice

When Government drawings, specifications, or other data are used for any other purpose other than in connection with a related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever.

6.9. Preparing activity

USDA Forest Service, National Technology and Development Program, 5785 Hwy 10 West, Missoula, Montana 59808.

6.10. Information to prospective bidders

The following items shall be furnished only to successful bidders upon contract award and when requested: color shade samples, full-size drawings, and full-size patterns. For manufacturer bidding purposes, electronic copies should be sufficient, but 11" X 17" hard copy drawings will be furnished upon request, either will contain sufficient information regarding size, shape, and quantity of material for bidding purposes. Note it is the bidder's responsibility to determine yield and waste from the provided electronic or 11" X 17" drawings and no further direction or clarification will be provided by the Government.

Exhibit 1
END USER INSTRUCTIONS

- (1) Pre-use information. Treat your chaps as a piece of CRITICAL safety equipment.
 - (a) Safety considerations. These chain saw chaps meet the certification, labeling and information, design, performance, and test method requirements of the following entities:
 - American Society for Testing and Materials (ASTM) International
 - ASTM F1414, *(insert specific edition in effect)*
 - ASTM F1897, *(insert specific edition in effect)*
 - National Fire Protection Association
 - NFPA 1950 (1977), *(insert specific edition in effect)*
 - (b) Limitations of use. Chain saw chaps provide a minimum level of cut resistance to a moving chain's cutter teeth by slowing, jamming, and stopping the chain. Never view the use of chain saw chaps as a substitute for good training, safety practices, and engineering controls.
 - (c) Performance. Most performance properties of the chaps cannot be tested by users in the field.
 - (d) Warranty information. The contractor warrants the chain saw chaps to be free from defects in workmanship and materials for the useful life of the garment. The warranty assumes that the garment is used by trained personnel.
- (2) Preparation for use.
 - (a) Sizing/adjustment. Chain saw chaps are available in 32-, 36- and 40-inch lengths. Chain saw chaps should be long enough to reach at least 2 inches below the boot tops. Waist and leg straps are adjustable for customized fit.
 - (b) Recommended storage practices. Clean chain saw chaps and allow them to completely air dry before storage. Ideal storage locations will protect the chaps from moisture and extended periods of UV light and heat exposure.
- (3) Inspection.
 - (a) Frequency. Complete visual inspection of chain saw chaps when issued, before each field use, following a chain saw mishap (damage may have occurred), following maintenance/cleaning, and before storage.
 - (b) Details. Visually inspect entire chain saw chap assembly (belts, straps, buckles, seams, and nylon material) for holes, abrasions, cuts, burns/melted areas, broken components, and exposed Kevlar (inner pad).
- (4) Donning/doffing.
 - (a) Donning. Don chain saw chaps by clipping buckles behind the waist and legs, while ensuring appropriate overlap of boot tops.
 - (b) Doffing. To remove chaps, unclip buckles behind the waist and legs.
 - (c) Adjusting. Adjust the waist and leg straps for a snug fit that will keep the chaps positioned correctly on the legs.

- (d) Interface issues. Chain saw chaps are an outer protective layer intended to be used in conjunction with required clothing for chain saw operations. Ensure that form, fit, and function of personal protective equipment (PPE) items do not interfere with function of other required items.
- (5) Standards/codes. Always use these chaps in conjunction with all other required PPE consistent with NFPA 1500 and 29 CFR 1910.132, "Personal Protective Equipment."
- (6) Cleaning and maintenance.
- (a) Cleaning criteria. Follow these instructions and precautions to clean chain saw chaps:
- Do not machine wash or machine dry chain saw chaps. Do not pressure wash chain saw chaps.
 - Dirt and debris. Remove with stiff bristle brush and/or spray with water.
 - Oil. For light or heavy oil, use a commercially available citrus-based product (Citrosqueeze or similar), approved to clean Nomex and Kevlar. Follow product manufacturer instructions for recommended concentration.
 - Allow chain saw chaps to line dry completely before use or storage.
- (b) Maintenance criteria. Follow these criteria and methods of repair where applicable:
- Follow all inspection and cleaning criteria.
 - Repair cuts and holes in the nylon shell as soon as possible to prevent the hole from becoming larger and to keep sawdust and petroleum products from contaminating the protective Kevlar pad.
 - Use a commercially available waterproof sealant/adhesive product (Seam Grip or similar product) to repair damage to the chaps' nylon shell. Do not allow the product to contact inner Kevlar fibers; this reduces protective performance.
 - To repair cuts shorter than ½ inch, apply a dot of sealant/adhesive (Seam Grip or similar product) over the cut, and allow to dry completely.
 - To repair holes and cuts in the nylon shell that are longer than ½ inch:
 - Cut a piece of notebook or printer paper that extends about 2 inches beyond the edge of the damage. Slip the paper inside the hole or tear in the nylon shell so the paper covers the Kevlar pad.
 - Lay the chain saw chaps on a flat, level surface, and press the nylon shell onto the piece of paper.
 - Squeeze adhesive/sealant (Seam Grip or similar product) onto the paper and onto the sides of the tear, covering all sides of the tear or cut.
 - Allow the chaps to dry completely before use or storage.
 - For detailed information on inspection, cleaning, repair and retiring guidance, see the National Wildfire Coordinating Group, Fire Shelter and Personal Protective Equipment Subcommittee website provided below.
- (7) Retirement and disposal criteria and considerations.
- (a) Retire and dispose of chain saw chaps if one or more of the following are present:
- The first layer of yellow Kevlar has been pulled through the outer nylon shell.
 - Wood chips and sawdust are evident inside the layers at the bottom of the chaps.
 - Improper repairs have been made, such as machine or hand stitching. Stitching through the pad prevents the protective fibers from moving, lowering the level of cut-through protection.
 - Chaps have been improperly cleaned. Using detergents with bleach additives decreases the level of cut-through protection. High-pressure washing may damage the polyurethane coating of the nylon shell.
 - A cut or a hole has allowed bar oil to contaminate the Kevlar pad. The oil acts as an adhesive, reducing the level of protection.
 - Any broken or non/poor functioning buckles that cannot be replaced.

For more information about chain saw chaps, contact:

National Technology and Development Program (NTDP):

U.S. Department of Agriculture (USDA), Forest Service, NTDP

5785 Highway 10 West
Missoula, MT 59808-9361
P: 406-329-3900, F: 406-329-3719

More information about chain saw chaps can be found in the tech tip “Inspecting, Cleaning, Repairing, and Retiring USDA Forest Service Chain Saw Chaps” located on the National Wildfire Coordinating Group, Fire Shelter and Personal Protective Equipment Subcommittee website: <https://www.nwcg.gov/committees/fire-shelter-and-personal-protective-equipment-subcommittee>