

PURCHASE DESCRIPTION SOCKS, CHEMICAL PROTECTIVE

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

1. SCOPE

1.1 Scope. This purchase description covers the requirements for a chemical protective sock. The sock is referred to as the Joint Service Lightweight Integrated Suit Technology (JSLIST) Integrated Footwear System (IFS).

1.2 Classification. The sock will be produced in one class and one type, and in the sizes in 1.2.1.1.

1.2.1 Sock. The IFS is defined as one sock. The IFS will be packaged in pairs for shipping and for issue.

1.2.1.1 Schedule of sizes. The IFS will be produced in the following sizes (see 6.2).

Extra Small (XS)

Small (S)

Medium (M)

Large (L)

Extra Large (XL)

Extra-Extra Large (XXL)

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4 and 5 of this purchase description. This section does not include documents cited in other sections of this purchase description or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3, 4 and 5 of this purchase description, whether or not they are listed.

Beneficial comments (recommendations, additions, deletions, clarifications) and any pertinent data which may be of use in improving this document should be addressed to: Procurement Contracting Officer at DLA Troop Support, Clothing and Textiles Directorate, 700 Robbins Avenue, Philadelphia, PA 19111-5096. Only the Contracting Officer from the procuring activity can make changes to contractual requirements cited in this document.

2.2 Government documents.

2.2.1 Specifications and 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 cited in the solicitation or contract (see 6.2).

STANDARDS

COMMERCIAL ITEM DESCRIPTIONS

A-A-50199 Thread, Polyester Core, Cotton or Polyester-Covered

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-STD-129 Department of Defense Standard Practice Military Marking for Shipment and Storage

(Copies of this document are available online at <http://quicksearch.dla.mil>.)

2.2.2 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 of these documents are those cited in the solicitation or contract (see 6.2).

DEPARTMENT OF THE ARMY

TOP 8-2-501 Permeation and Penetration Testing of Air-Permeable, Semi-permeable, and Impermeable Material with Chemical Agents or Simulants (Swatch Testing)
TOP 8-2-503 Low Volatility Agent Permeation (LVAP) Swatch Testing

(Copies of these documents are available online at <http://www.dtc.army.mil>).

DEFENSE LOGISTICS AGENCY

Palletization Instruction

(Copies of this document are available through the Defense Logistics Agency at <http://www.dla.mil/Portals/104/Documents/LandAndMaritime/V/VS/PalletizationRqmtWPMClause.pdf>.)

2.3 Non-Government publications. The following document(s) form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract (see 6.2).

AMERICAN SOCIETY FOR QUALITY CONTROL

ANSI/ASQ Z1.4 Sampling Procedures and Tables for Inspection by Attributes

(Copies of these documents are available online at www.asq.org)

ASTM INTERNATIONAL

ASTM D751 Standard Test Methods for Coated Fabrics
ASTM D1777 Standard Test Method for Thickness of Textile Materials
ASTM D1974 Standard Practice for Methods of Closing, Sealing, and Reinforcing
Fiberboard Boxes
ASTM D2582 Standard Test Method for Puncture-Propagation Tear Resistance of Plastic
Film and Thin Sheeting
ASTM D3776 Standard Test Method for Mass per Unit Area (Weight) of Fabric
ASTM D3886 Standard Test Method for Abrasion Resistance of Textile Fabrics (Inflated
Diaphragm Apparatus)
ASTM D5034 Standard Test Method for Breaking Strength and Elongation of Textile
Fabrics (Grab Test)
ASTM D5118 Standard Practice for Fabrication of Fiberboard Shipping Boxes
ASTM D6193 Standard Practice for Stitches and Seams

(Copies of these documents are available online at <http://www.astm.org>)

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO 15496 Textiles - Measurement of Water Vapour Permeability of Textiles for the
Purpose of Quality Control

(Copies of this document are available online at <http://www.iso.org>).

NATIONAL FIRE PROTECTION AGENCY

NFPA 1975 Standard on Emergency Services Work Clothing Elements

(Copies of this document are available online at <http://www.nfpa.org>)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein (except for related specification sheets), 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 Qualification. Socks furnished under this purchase description shall be products that are manufactured by the manufacturer authorized by the qualifying activity for listing on the applicable list of qualified manufacturers (see 6.7) before contract award. Production Qualification Test (PQT)

(see 4.2 and 6.3) requirements are those requirements that the IFS must meet in order to be considered a qualified source.

3.2 First article. When specified (see 6.2), samples shall be subjected to first article inspection in accordance with 4.3 and 6.4.

3.3 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.4 Materials. The materials for the sock shall conform to applicable specifications, standards, and drawings required herein (see 2.2 and 2.3). Equivalent materials or components shall not be used unless authorized by the procuring activity. Equivalent materials or components may require testing prior to authorization.

3.4.1 Selectively permeable membrane. The socks shall be made of a selectively permeable membrane (SPM) material, suitable to meet the requirements of Table I when tested in accordance with Table VI. There is only one source for the material system and the tape (see 6.7). The face side of the material is gray and the wrong side of the material is green.

3.4.1.1 Laminate. The material used for the sock shall be W.L. Gore part number KSGZ103100A. No other material shall be used without authorization from the contracting authority.

3.4.1.2 Tape. The seam-sealing tape used for the sock shall be W.L. Gore part number 6CSAJ022BLKNM. No other tape shall be used without authorization from the contracting authority.

3.4.1.3 Thread. The thread used for the IFS front, toe and back seams shall meet the requirements of A-A-50199, Type II Tex 40. Thread used to attach the cuff to the sock shall be the same type.

3.4.2 Physical and chemical property requirements. The SPM material system shall conform to the physical and chemical property requirements listed in Table I when tested in accordance with Table VI. The cuff material is not tested for chemical properties.

[illegible]

Table I. IFS requirements. – Continued

Parameter	Target Performance	Number of replicates	Section 4 Verification
Dimensional Stability	Shrink no more than 5% after two (2) laundering cycles. Not be stretched or distorted in shape due to laundering treatments or wear.	Per test protocol	4.5.1.2
Breaking Strength	Average: 100 lbf. (Min) Individual Specimens, no more than two below: 75 lbf (Min)	8 One per sock	4.5.1.5.1
Seam Strength	Average Value: 65 lbf (Min) Individual Specimens, no more than two below: 50 lbf	8 One per sock	4.5.1.5.2
Leakage	No more than one bubble every seven seconds from the same location	4	4.5.1.5.3
Puncture Propagation Tear	Average Upper: 7 lbf (Min) Individual Specimens - Upper, no more than two below: 5 lbf	8 One per sock	4.5.1.5.4
Hydrostatic Resistance	Average Value: 95 psi (Min) Individual Specimens, no more than two below 75 psi	8 One per sock	4.5.1.5.5
Water Vapor Permeability	Average Value: 3,800 g/m ² /24 hr (Min) Individual Specimens, no more than two below: 3,000 g/m ² /24 hr	5 One per sock	4.5.1.5.6
Usage Tracking	Supply a method for tracking the number of laundering cycles, wear hours, and service life hours	Per test protocol	4.5.1.7.5
Packaging	Contain one pair of IFS in an individual package that identifies the content's size by a method readable by individuals in MOPP4.	Per test protocol	4.6.1

MOPP – Military Oriented Protective Posture (number following indicates the level)

IDK – Individual Decontamination Kit

CT – Contamination multiplied by time

JP-8 – Jet Propulsion fuel number 8

DEET - N, N-Diethyl-meta-toluamide (insect repellent)

3.5 Components.

3.5.1 Knit cuff. The cuff shall be made of a knit material from the source specified in 6.7, or equivalent (see 6.9).

3.5.2 Thread. The thread for stitching is polyester, size 40, 2 ply polyester core thread conforming to A-A-50199. The thread shall be water repellent treated as specified in MIL-T-3530. The color of the thread shall be black.

3.5.3 IFS care instruction sheet. The IFS care instruction sheet shall be printed on white paper in black ink. The dimensions of the sheet shall be roughly square and 4-3/4 ($\pm 1/4$) inches on each side. The lettering shall be such that the tallest letter is no smaller than 1/16-inches tall.

3.6 Sock design. The system shall be a sock. The “upper” refers to the material located between the cuff and the break in the foot. The “foot” refers to the material below the upper located between the heel and the toe. The sock (see Figure 3) shall be a one-piece item that extends to the mid-calf, finished with a knit cuff. The sock shall be sewn along the back from the cuff to the heel and along the front from the cuff to the toe, with stitching across the toe. All seams, with the exception of the attachment of the cuff to the upper, are covered with seam-sealing tape. Breaks in seam sealing tape shall be addressed by starting a new layer of tape no less than 1 inch from the break (see 3.10).

3.7 List of pattern parts. Table II is provided to ensure that the pattern set provided is complete. The component parts of the IFS shall be cut from specified materials, in accordance with Table II. The table below represents the parts needed for a pair of socks.

Table II. Pattern parts for a pair of IFS socks.

COMPUTER NOMENCLATURE	PATTERN NOMENCLATURE	CUT PARTS	MATERIAL
IFS-SOCK	SOCK PATTERN	2	SPM
N/A	KNIT CUFF	2	CUFF*

* cuff is an outsourced item (see 6.7)

3.8 Figures. Figures 1 and 2 contain required information. Minor formatting changes are allowed as long as the finished markings meet the specified size requirements. Figures 3 through 6 are furnished for information purposes only. Figure 7 contains a required sizing chart (see 3.13.2). When inconsistencies exist between the written specification and the figures the written specification shall govern.

3.9 Construction.

3.9.1 Stitches, seams, and stitching. Stitches, seams, and stitching types specified in Table III shall conform to ASTM D 6193. Deviation of the order of operations is permitted, as long as the final IFS meets all requirements of this PD. Whenever two or more methods, seams, or stitches are given for the same part of an operation, any one of them may be used. Ends of all stitching, when not caught in other seams or stitching, shall be backstitched not less than 1/2 inch.

3.9.2 Seam allowance. Unless otherwise specified, the seam allowances shall be as follows.

- a. Cuff attachment: 1/4 inch
- b. Main seam (front and back): 1/8 inch

3.9.3 Cutting and marking. The sock shall be cut in accordance with patterns furnished.

Table III. Table of operations for IFS.

No.	Description of Operation	Stitch Type	Stitches Per Inch
1.	Cutting a. Cut the bootie in strict accordance with the pattern.		
2.	Stitching a. Stitch the front seam of the bootie together with seam allowance face to face. b. Stitch the toe seam of the bootie together with seam allowance face to face. c. Stitch the back seam of the bootie together with seam allowance face to face.	301	10-12
3.	Seam Sealing a. Seam seal the toe seam. b. Seam seal along the front seam from the top of the bootie to over the toe seam. c. Seam seal along the back seam of the bootie from the top of the bootie to below the heel.		
4.	Over edge stitch the knit cuff along the top opening of the bootie face to face.	502, 503 or 505	≥8 when fully stretched

3.10 In-process repair. Repairs in socks shall be limited to replacement of affected pieces or heat pressing. No patching of sock material is permitted. Seam tape repairs shall extend one inch beyond the affected area. Only two seam tape repairs shall be permitted per sock. Loose stitches, thread breaks or runoffs shall be repaired by overlapping stitching no less than 1/2 inch on each side.

3.11 Finished dimensions. Each size outer sock shall conform to the finished dimensions shown in Table IV, when measured in accordance with 3.11.1. Figure 3 is provided for clarification. Measurements shall be taken using a calibrated measuring device.

Table IV. Finished IFS dimensions (inches).

IFS Size	Width A		Width B	Total Length C
	Relaxed	Minimum Expanded		
XS	3-1/2	6	6	18-1/2
S	3-1/2	6-1/2	6-1/2	19
M	3-1/2	7	7	19-1/2
L	4-1/4	7-1/2	7-1/2	20-1/4
XL	4-1/4	8	8	21
XXL	4-1/4	8-1/2	8-1/2	21-3/4
Tolerance	±1/4	±1/4	±1/4	±1/2

3.11.1 Measurement Guidance.

A. Cuff Width.

- Relaxed - Measurement shall be taken across the top opening of the cuff as is, without stretching.
- Expanded - Measurement shall be taken across the top of the cuff while being stretched. Do not extend cuff past sides of sock.

B. Upper Width. Measurement shall be taken across seam where sock and cuff are joined. Do not stretch.C. Total Length. Measurement shall be taken with flattened sock so as to create crease along outer edge. Begin measuring at cuff seam and walk measuring tape until intersecting toe seam.

3.12 Marking. Each individual item will have a label as shown in Figure 4 screen printed inside of the sock on the left side (as worn) near the cuff. The label shall be permanently and legibly marked with contrasting color, permanent type ink. Printed label shall be 4 ($\pm 1/4$) inches wide by 5 ($\pm 1/4$) inches tall.

3.13 Protective individual item storage. Two socks of the same size from the same production lot shall be laid on top of each other with the cuffs and toes in the same orientation. The pair of socks shall be folded no more than one time at or around the break in the foot. The socks shall be placed in the packaging such that no additional folds form. The IFS Information Sheet (Figure 5), printed in black ink on white paper, shall be inserted into the barrier bag prior to sealing. The socks shall be vacuum sealed in a barrier bag. The height of lettering on the IFS Care Instructions Sheet shall be 1/16 inch (minimum). The socks shall not be damaged during vacuum sealing. The vacuum-sealed barrier bag shall be firm and compact when inspected visually for defects in accordance with Table VII. Any unacceptable vacuum sealed barrier bags shall be resealed. Barrier bag marking shall be in accordance with paragraph 3.13.2.

3.13.1 Unit pack barrier bag material. When tested in accordance with Table VI, the material for the unit pack barrier bag for the IFS shall conform to the requirements given in Table V. The material shall be chemically resistant against standard chemical warfare agents. The unit pack barrier bag material shall be constructed from colored, flexible, multi-layer formable foil film with an opaque finish meeting the requirements of 3.13.1.1. The color of the unit pack barrier bag material for shall closely approximate one of the SAE-AMS-STD-595 colors identified as “Green”. As an alternate, the unit pack barrier bag may be constructed from flexible, multi-layer nylon foil film with an opaque finish, in the appropriate color, meeting the requirements of 3.13.1.2. See 6.7 for known sources of materials that have demonstrated the ability to meet these requirements. The contractor shall provide Certificates of Compliance verifying the thickness requirements specified in 3.13.1.1 and 3.13.1.2.

Barrier bags shall have a tear, nick, or “V” notch, one-eighth ($1/8$) ($+1/16$) inch deep in at least one edge, 2 ($\pm 1/2$) inches from the end of the bag. The barrier bag shall have three sides sealed, with the approximate inside dimensions of 9-1/4 ($+1/2$) inches by 11 ($+1/2$) inches for all sock sizes and outside dimensions of 10-1/4 ($+1/2$) inches by 12-3/4 ($+1/2$) inches prior to sealing. These dimensions allow for a 1/2-inch seal width on all sides after the contents are inserted.

3.13.1.1 Formable foil material. The formable foil film shall be constructed as follows:

0.0012 inch Oriented Polypropylene
 Adhesive layer
 0.00175 inch Aluminum Foil
 Adhesive layer
 0.003 inch Cast Polypropylene

3.13.1.2 Nylon foil material. The nylon foil film shall be constructed as follows:

60g nylon
 0.0005 inch Polyethylene
 0.00035 inch Aluminum Foil
 0.004 inch polyolefin coextrusion

Table V. IFS unit pack barrier bag material requirements.

Characteristic	Requirement	Section 4 Reference
Water vapor transmission rate	0.30 g/cm ² / 24 hrs. (max)	4.5.1.6.1
Tensile strength	Machine – 24 lb. (min) Cross Machine – 20 lb. (min)	4.5.1.6.2
Tear resistance	Machine – 140 grams (min) Cross Machine – 100 grams (min)	4.5.1.6.3
Seal strength	10 lb. / in (min)	4.5.1.6.4
Ultraviolet resistance	No alligating or detrimental degradation to the sample after 250 hours of exposure.	4.5.1.6.5
Chemical agent resistance, 10 g/m ² HD		4.5.1.6.6
New	< 1.0 (µg/cm ²)	
After decontamination with M295	< 2.0 (µg/cm ²)	

3.13.2 Barrier bag markings. The IFS shall be packaged with one pair in each barrier bag that identifies the content's size by a method readable by individuals in Mission Oriented Protective Posture (MOPP) 4. The markings shall be printed onto the packaging or printed onto an adhesive label and the label shall be attached to the barrier bag such that it does not lift or fall off after exposure to weather or cleaning. The barrier bag shall be labeled with the information outlined in Figure 1, as applicable to the item contained in the barrier bag, on the face side of the barrier bag. The sizing chart in Figure 7 shall be printed on the back of the barrier bag. The height of lettering on the label will be no smaller than 1/4 inch and the color of the lettering shall be black. Markings denoted with X below will be printed when the bags are made. Markings denoted by # below will be stamped or applied with labels during IFS packaging. Superscript numbers are references to notes below the figure; they shall not be printed on bags.

NSN: ^{1/}	XXXX-XX-XXX-####
CAGE CODE:	XXXXXX
NOMENCLATURE/ITEM DESCRIPTION:	SOCKS, CHEMICAL PROTECTIVE
U/I: ^{2/}	PR
SIZE	###
CONTRACT NUMBER	XXXXXXXXXXXXXX
MFR:	XXXXXXXXXXXXXX
MILITARY PRESERVATION	Level A
INSPECTION/TEST DATE (MM/YYYY):	##/#### ^{3/}
LOT NUMBER: ^{4/}	#####
MFG DATE (MM/YYYY): ^{5/}	##/####

Figure 1. Barrier bag label.^{1/} National Stock Number^{2/} Unit of Issue^{3/} MFG Date + 5 years (calculated date to be entered)^{4/} See 3.15 for lot numbering guidance^{5/} Manufacture Date shall be the month and year the first IFS in the lot is produced.

3.13.2.1 Barrier bag safety warning. The following text shall be printed below the information from Figure 1 on the front of the barrier bag. This text shall be in all upper case and text size shall be no smaller than 1/8 inch.

SAFETY WARNING: CHEMICAL PROTECTIVE SOCKS ARE NOT INTENDED TO BE WORN DIRECTLY AGAINST SKIN. IF THE CHEMICAL PROTECTIVE SOCKS ARE EXPOSED TO AQUEOUS FILM-FORMING FOAM (AFFF) OR ARE SUSPECTED TO HAVE BEEN EXPOSED TO AFFF, REPLACE THEM IMMEDIATELY. FAILURE TO REPLACE THE CHEMICAL PROTECTIVE SOCKS MAY RESULT IN ILLNESS, SERIOUS INJURY OR DEATH. DO NOT WEAR SOCKS PAST EXPIRATION DATE OR AFTER ALL CIRCLES ARE MARKED OUT.

3.13.2.2 Unit pack barrier bag sealing. Each individual pair of IFS, from the same production lot, shall be folded and individually placed in a unit pack barrier bag (see 3.13). The unit pack barrier bag material shall show no evidence of delamination, degradation, or foreign odor when heat sealed or fabricated into bags. Each unit pack barrier bag shall have air evacuated from ambient pressure (0 inches of mercury gauge reading) to a vacuum of 20-24 inches of mercury and be heat sealed while maintaining the specified vacuum. The closure shall be heat sealed to a minimum seal strength of 10 pounds per linear inch when tested in accordance with 4.5.1.6.4. Closures may be made by dielectric, impulse, or ultrasonic process and shall be 3/16 to 1/2 inch wide, uniform and smooth. The sealed unit pack barrier bag shall not show evidence of leakage when examined after 24 hours.

3.13.2.2.1 Reseal/retest of unit pack barrier bag. IFS removed from their unit pack barrier bags for sampling requirements shall show no evidence of damage when inspected visually in accordance with

4.6.1. A non-defective IFS within a damaged unit pack barrier bag shall be resealed as described in 3.13.2.2. Dimensional requirements of 3.13.1 do not apply to bags resealed after sampling.

3.14 Shipping containers. Packaged IFS shall be packed in a fiberboard shipping container, constructed in accordance with style RSC, type CF, class domestic, variety DW, grade 275 of ASTM D5118/D5118M. The inside dimensions of each shipping container shall approximate ($\pm 1/2$ inch); 23-1/2 inches in length, 15-1/2 inches in height and 16 inches in width, sufficient to accommodate the one hundred (100) bagged IFS. The IFS in protective individual storage bags shall be packed flat. All voids shall be filled with commercial grade kraft paper. The use of materials composed of the highest percentage of recovered materials practical is encouraged. Each container shall be securely closed in accordance with ASTM D1974.

3.14.1 Shipping container markings. Shipping containers shall be marked with the information in Figure 2. Lettering size shall be no smaller than 1/2 inch for all lettering other than lot numbering, which shall be 3/4 inch in height. Markings may be printed or stamped directly on the container or may be printed on a label that is securely attached. Markings denoted with X below will be printed when the boxes are made. Markings denoted by # below will be stamped or applied with labels during IFS packing. Superscript numbers are references to notes below the figure; they shall not be printed on boxes.

NSN: ^{1/}	XXXX-XX-XXX-####
CAGE CODE:	XXXXX
NOMENCLATURE/ITEM DESCRIPTION:	SOCKS, CHEMICAL PROTECTIVE
U/I: ^{2/}	PR
CONTRACT NUMBER	XXXXXXXXXX
MFR:	XXXXXXXXXXXXXXXX
MILITARY PRESERVATION	Level A
INSPECTION/TEST DATE:	##/#### ^{3/}
LOT NUMBER: ^{4/}	#####
MFG DATE: ^{5/}	##/####
SIZE	###
QUANTITY: ^{6/}	###

Figure 2. Shipping container markings.

^{1/} National Stock Number

^{2/} Unit of Issue

^{3/} MFG Date + 5 years (calculated date to be entered)

^{4/} See 3.15 for guidance

^{5/} Manufacture Date

^{6/} Not to exceed 100

3.15 Production lot numbering. Each production lot of IFS shall contain no more than one lot of SPM. Lot numbers shall be assigned in the following manner: The first three characters shall identify the manufacturer. The next two digits shall identify the year of production. The next character shall identify the month of manufacture; A=January, B=February, C=March, etc. The letter "I" is not used,

and therefore J=September, K=October, L=November and M=December. The next three digits shall identify the interfix number. The next character shall be a dash. The last three digits shall identify the manufacturer's production lot. For example, a sample production lot number assigned for the first lot numbered by use of the above procedures using a March 2006 manufacture date would be MFR06C001-001.

3.16 Radio Frequency Identification (RFID). RFID shall be done in accordance with MIL-STD-129. Passive RFID tags must be affixed at the case (shipping and exterior container) and pallet (palletized unit load) levels.

3.17 Palletization. Palletization shall be per requirements set forth in the Palletization Instruction (see 2.2.2).

3.18 Lot size. The production lot size for manufacture of the IFS shall be from 2,000 to 10,000 pairs (4,000 to 20,000 socks). Any deviation from this range, other than to complete a delivery order in which the last production lot requires less than 2,000 pairs of IFS, will be authorized only with prior approval of the Government.

The selectively permeable material will serve as the key component for identifying an IFS lot. Each lot of IFS will be manufactured from only one lot of selectively permeable material. The manufacturer will be required to maintain material component records of all materials for no less than 10 years and provide those records to the JEFS' mailbox (smblogcompscst@usmc.mil) upon request.

3.19 Toxicity. The finished IFS shall not present a health hazard and shall show compatibility with prolonged, direct skin contact when tested as specified in 4.5.1.3.1. Chemicals recognized by the Environmental Protection Agency as human carcinogens shall not be used.

3.20 Workmanship. The sock system shall conform to the quality of product established by this purchase description. The end item shall not exhibit any of the critical defects in Table VII.

4. VERIFICATION.

4.1 Classification of inspection. The inspection requirements specified herein are classified as follows:

- Qualification Inspection (QI) (See 4.2)
- First Article Inspection (FAT) (See 4.3)
- Conformance Inspection (CI) (See 4.4)

4.1.1 Inspection conditions. All inspections shall be performed in accordance with all the requirements of referenced documents, unless otherwise specified, excluded, amended, modified or qualified in this purchase description or applicable procurement documents (see 6.2).

4.1.2 In-process inspection. Socks shall be inspected at appropriate times during the production process to ensure that they have no defects. Defects (Table VII) identified in a sock during production shall be cause for repair or rejection of the sock.

Table II. IFS Testing.

Section 3 Reference	Parameter	Section 4 Verification	Test Method	QI	FAT	CI
Table I	Protect the Warfighter from liquid/vapor chemical agents – HD 10 g/m ² challenge New (unlaundered) Laundered (2X) Hydraulic Fluid (unlaundered)	4.5.1.1	TOP 8-2-501	 X X X	 X X X	 X X
Table I	Protect the Warfighter from liquid/vapor chemical agent – TGD 10 g/m ² challenge New (unlaundered) Wet Sweat (unlaundered)	4.5.1.1	TOP 8-2-501	 X X	 X X	 X
Table I	Protect the Warfighter from liquid/vapor chemical agents – VX 10 g/m ² challenge	4.5.1.1	TOP 8-2-503	X		
Table I	Dimensional Stability	4.5.1.2	Per protocol	X	X	
3.11	Finished Dimensions	4.5.1.4.1	Measurement	X	X	X
Table I	Breaking Strength	4.5.1.5.1	ASTM D 5034	X	X	X
Table I	Seam Strength	4.5.1.5.2	ASTM D 751	X	X	X
Table I	Leakage	4.5.1.5.3	See 4.5.1.5.3	X	X	X
Table I	Puncture Propagation Tear	4.5.1.5.4	ASTM D 2582	X	X	X
Table I	Hydrostatic Resistance	4.5.1.5.5	ASTM D 751	X	X	X
Table I	Water Vapor Permeability	4.5.1.5.6	ISO 15496	X	X	X
Table I	Material Weight	4.5.1.5.7	ASTM D3776	X		
Table I	Thickness	4.5.1.5.8	ASTM D1777	X		
Table I	System Weight	4.5.1.5.7	ASTM D3776	X		
Table I	Protection after contamination: Sweat Seawater Immersion JP-8 Hydraulic Fluid 5% bleach solution DEET IDK	4.5.1.1	TOP 8-2-501	X		

Table VI. IFS testing. Continued

Section 3 Reference	Parameter	Section 4 Verification	Test Method	QI	FAT	CI
Table I	Melting	4.5.1.3.2	ASTM D751	X		
Table I	Health hazards	4.5.1.3.1	USAPHC Review	X		
Table V	Unit Pack Barrier Bag Testing	4.5.1.6	Per protocol	X	X	

4.2 Qualification inspection. Periodically, the Government may conduct a PQT program to solicit and potentially qualify new sources of material for use in the IFS. Qualification inspection (QI) shall consist of the examinations and tests specified in Table VI. The qualification inspection shall be unacceptable if the applicable requirements referenced in Table VI are not met.

4.2.1 Qualification inspection samples. See 6.3 for information pertaining the Qualification Inspection samples.

4.3 First article inspection. The first article inspection shall consist of the examination and tests described in 4.3.2 and 4.3.3, and in the FAT column of Table VI, to determine that the production item conforms to the requirements of this purchase description. First article inspections will be performed when specified in the contract (see 6.2). The first article inspection shall be unacceptable if the requirements referenced in Table I are not met.

4.3.1 First article samples. First Article inspection will be performed when specified in individual delivery orders placed under the contract. The first article samples shall consist of 30 socks (15 pairs of socks) with a distribution of sizes that represents proportionally all sizes included in the contract. Samples shall be made from the patterns and equipment representative of that which the contractor intends to use for production of the item, properly marked and bagged in accordance with 3.13 for first article examinations and tests.

4.3.2 First article examination. Each first article sample shall be examined for all defects specified in Table VII. When specified, the manufacturer shall submit the quantity of items as specified in the contract (see 6.2). Presence of any critical defect, or more than 2 major defects, or more than five combined (major and minor) defects will be cause for rejection of First Article samples.

4.3.3 First article tests. Following the first article examination (see 4.3.2) conducted by the Government, the first article samples shall be subjected to First Article Testing and will be tested in accordance with Table VI. The failure of any test shall be cause for rejection of the First Article.

4.4 Conformance inspection. Production lot samples will be subjected to testing in accordance with Table VI to ensure that production items meet purchase description requirements prior to acceptance by the Government. The sample unit shall be one (1) pair of socks marked and packaged in accordance with 3.13. The presence of any critical defects will be cause for rejection of the lot. The Government will conduct Conformance Inspections (CI) on completed and packaged sock pairs submitted for acceptance, consisting of inspections specified in 4.4.1 and Conformance Inspection Testing (CI) as specified in 4.5. The Defense Contract Management Agency (DCMA) Quality

Assurance Representative (QAR) will randomly select 36 pairs of IFS from each lot, twelve (12) of which will be submitted for CI and twenty-four (24) for shelf-life extension testing (see 4.6.3). The sampled items shall cover the lots entire production period with samples taken near the beginning, middle and end of each production run as determined by when the socks are packed in boxes. Sizes included in the CI and surveillance sampling shall be representative of the size distribution in the lot. CI will be conducted in accordance with 4.5.

4.4.1 Individual critical defect examination. The Contractor shall examine 100 percent of the items for the critical defects listed in Table VII. Any item found to contain a critical defect shall be rejected and shall not be included in the production quantities.

4.4.2 Visual examination. Sampling for visual examination shall be in accordance with ANSI/ASQ Z1.4. The Government will visually examine the selected samples for defects listed in Table VII. The lot size shall be expressed in pairs of IFS items. The sample unit for inspection shall be one sock, but the selection shall be by pairs. Defects for pairing (e.g., differing sizes packaged together) shall be classified as a single defect. The inspection level shall be in accordance with the contract. The presence of any critical defect, or more than two major defects, or more than five combined (major and minor) defects shall be cause for rejection of the lot.

4.5 Conformance inspection testing. The Government will conduct CI tests (Table VI) on lots of manufactured IFS submitted for Government acceptance. The contractor is advised that delivery of the surveillance test quantities and delivery of the completed lots will not be authorized until the Government has determined that the IFS subjected to CI have been found to be acceptable. Physical properties will not be tested according to material orientation commonly specified as warp and fill. If any lot fails a test during CI, the laboratory conducting the testing will verify all procedures and equipment; and will validate the results. If the validation test still indicates failure, the Government contracting office shall notify the contractor, in writing, providing the test results including both individual point and summary statistics. If requested by the contractor, failed lots shall be retested at the Government's expense within 30 days of the retest samples reaching the test facility. The retest samples will be taken from the original CI samples if feasible, otherwise additional items will be randomly chosen from the entire lot. At a minimum, all failed tests will be repeated. The contractor may, upon request and space availability and at the contractor's own expense, observe the retesting of samples. Failure in initial testing shall not be cause for rejection if retest results are in compliance with the requirements set forth in Table I. Failure of such retest shall constitute failure of the lot. No socks from a failed lot may be used to fulfill the requirements of a contract or order.

4.5.1 Material and system tests.

4.5.1.1 Chemical agent resistance. The IFS will be tested for chemical agent resistance in accordance with Table VI to verify that the protection meets the criteria in Table I. Swatch testing will be conducted per TOP 8-2-501 for agents TGD and HD, and TOP 8-2-503 for agent VX in accordance with Table VI. Testing with chemical agent VX will only be conducted as part of the qualification of a new material. Sampling intervals for chemical testing will be at 6, 16 and 24 hours. System characteristics.

4.5.1.2 Dimensional stability. Material will be measured before laundering and after two (2) laundering cycles are conducted in accordance with the IFS care instructions. Measurements will be

taken along the length and width of the material. The dimensions of the item after the laundering cycles (A) will be compared to the dimensions of the same item prior to the laundering cycles (B) to calculate a percentage of shrinkage (S). Shrinkage will be calculated according to the formula $S = 100((B-A)/B)$.

4.5.1.3 Safety.

4.5.1.3.1 Health hazards. The U.S. Army Public Health Command (USAPHC) shall review data supplied by manufacturers pertaining to chemical composition, history of commercial use of the components in the marketplace, and Safety Data Sheets. Human and animal toxicity studies, as well as epidemiological information for the product, must be provided if available. USAPHC will review all data and issue a Toxicity Clearance if the product is suitable for its intended use from a standpoint of toxicity.

4.5.1.3.2 Melting. The Government will subject IFS to melt testing in accordance with ASTM D751, Standard Test Methods for Coated Fabrics as referenced in NFPA 1975, 2004 Edition, Section 8.3, Thermal Stability Test One. The test temperature will be 265° C (510° F) for a duration of 6 hours.

4.5.1.4 Integrated logistics support.

4.5.1.4.1 Logistical considerations. IFS finished dimensions and visual inspection will ensure that sizing and markings are appropriate.

4.5.1.5 Physical performance characterization. Eight individual IFS items (four pairs) from the items selected in 4.5 shall be tested for physical property performance in accordance with the specifications shown in Table I and the tests below. Failure to meet these requirements will be cause for rejection of the lot. No more than one test specimen for each test shall be cut from the same sample. For the purposes of physical property testing, sample orientation will be defined as follows. The “upper” direction describes the material orientation between the cuff and the heel. The “foot” direction describes the material orientation between the heel and the toe.

4.5.1.5.1 Breaking strength. The IFS material breaking strength shall be tested as specified in Table VI and results compared to the requirements in Table I. The number of replicates will be eight (one specimen from eight different IFS) per lot with four specimens cut in the upper direction and four specimens cut in the foot direction. Specimen size shall be 4” x 6” with the long dimension parallel to the test direction. Use 100lb. load cell.

4.5.1.5.2 Seam strength. The IFS material seam strength shall be tested as specified in Table VI and results compared to the requirements in Table I. The number of replicates will be eight (one specimen from eight different IFS) per lot.

4.5.1.5.3 Leakage. The IFS will be evaluated for leakage in accordance with, and conform to, the test apparatus and procedure described in 4.5.1.5.3.1 and the accompanying notes. Four items shall be tested. Any failure of this test shall be cause for rejection of the lot. The same four items can be used for other testing once the IFS have been dried for 24 hours.

4.5.1.5.3.1 Leakage apparatus and procedure. Using compressed air, the W. L. Gore Bootie Test Machine, Model BTMCE inflates one pair of IFS and submerges them into a water-filled tank, allowing the machine operator to observe if the IFS has any leaks. More than one bubble from the same location in seven seconds is considered a leak. Leaks from the taped areas of the sock may be heat pressed or repaired in accordance with 3.10 and the leakage testing repeated. Full Details of the BTMCE can be found in the BTMCE Operator's Manual, revision date 5 November 1998. An excerpt describing the machine operation is given in Figure 6.

4.5.1.5.4 Puncture propagation tear. The IFS material puncture propagation shall be tested as specified in Table VI and results compared to the requirements in Table I. The number of replicates will be eight (one specimen from eight different IFS) per lot. Use carriage #5 for testing samples.

4.5.1.5.5 Hydrostatic resistance. The IFS material hydrostatic resistance shall be tested as specified in Table VI and results compared to the requirements in Table I. The number of replicates will be eight (one specimen from eight different IFS) per lot. Report value to the nearest 2 psi. Specimens shall be conditioned at 70°F, 65% RH prior to testing. No restraining or supporting fabrics are to be used during the testing. Orient specimen with the black textile side towards the water.

4.5.1.5.6 Water vapor permeability. The IFS material water vapor permeability shall be tested as specified in Table VI and results compared to the requirements in Table I. The number of replicates will be five (one specimen from five different IFS) per lot.

Five (5) individual 4" x 4" specimens shall be pre-conditioned at 73°F, 95%RH for 24 hours then tested per ISO 15496 with the following exception. During the 15 min equilibration period, a conditioning cup with 120 g of the saturated potassium acetate solution shall be inverted and centered on the specimen surface. Prior to placing the conditioning cup on the bath, the cup shall be gently shaken down ensuring that the potassium acetate solution evenly covers the membrane. After the 15 min equilibration period, the conditioning cup shall be removed and replaced with the measuring cup. The following calculation should be used to convert Water Vapor Permeability (WVP) to Moisture Vapor Transmission Rate (MVTR):

[Note: Units are---- MVTR in g/(m²*24hr) and WVP in g/(Pa*m²*h)]

$$MVTR = \frac{2168 * 24}{\left[\frac{1}{WVP} + \frac{1}{WVP_{app}} \right]}$$

4.5.1.5.7 Weight. The Government will measure the weight of the IFS material as well as a pair of IFS socks per ASTM D3776 or similar method. The median size in the tariff will be chosen for measurement or, in the event there is an even number of sizes, the two middle sizes will be averaged. This weight will be taken both in and out of packaging, and weights will be recorded.

4.5.1.6 Unit pack barrier bag testing. Each master production lot of unit pack barrier bag material shall be assessed for physical and chemical protective properties as cited below.

4.5.1.6.1 Water vapor transmission rate. Unit pack barrier bag materials shall be tested to determine the water vapor transmission rate in accordance with ASTM F1249 to validate the ability to meet the requirements cited in Table V.

4.5.1.6.2 Tensile strength. Unit pack barrier bag material tensile strength shall be tested in accordance with ASTM D882 to validate the ability to meet the requirements in Table V.

4.5.1.6.3 Tear resistance. Unit pack barrier bag material tear resistance shall be tested in accordance with ASTM D1922 to validate the ability to meet the requirements in Table V.

4.5.1.6.4 Seal strength. Unit pack barrier bag materials shall be tested to determine the seal strength in accordance with ASTM F88 to validate the ability to meet the requirements in Table V.

4.5.1.6.5 Ultraviolet resistance. Unit pack barrier bag material shall be exposed to ultraviolet light for a period of 250 hours in accordance with ASTM D 3218. Following exposure, the samples will be examined to ensure that they meet the requirements in Table V.

4.5.1.6.6 Chemical Resistance. Chemical protective properties of unit pack barrier bag materials shall be maintained throughout the expected life cycle, including after decontamination in accordance with Table V. Failure of any sample shall constitute failure of the lot.

4.5.1.6.6.1 Unit pack barrier bag materials without decontamination. Unit pack barrier bag materials shall be tested for a period of 24 hours against a challenge of 10 g/m² HD, in accordance with TOP 8-2-501 to validate the ability to meet the requirements in Table V.

4.5.1.6.6.2 Unit pack barrier bag material after decontamination. Unit pack barrier bag materials shall be challenged with 10 g/m² HD for a period of 24 hours, decontaminated using M295 decontamination wipe, then tested for a period of 24 hours against a challenge of 10 g/m² HD in accordance with TOP 8-2-501 to validate the ability to meet the requirements in Table V.

4.6 Visual examination.

4.6.1 Visual defect examination. Sampling for visual examination shall be in accordance with ANSI/ASQC Z1.4. The Government shall visually examine selected samples for defects listed in Table VII. Within any production lot, the presence of any critical defect, or more than two major defects, or more than five combined (major and minor) defects shall be cause for failure of the entire lot. The lot size shall be expressed in pairs of IFS socks. The sample unit shall be one sock, and the selection shall be by pairs. Defects for improper pairing (e.g. differing sizes packaged together) will be classified as a single defect. The packaged sock pairs shall be examined for the defects as specified in Table VII. Any item containing a critical defect shall be cause for failure of the lot. The packaged end item shall be examined for defects applicable to the packaging and labeling.

Table VII End-item visual defects.

Examine	Defect	Classification		
		Critical	Major	Minor
Pairing and Packaging	Different sizes packaged together		101	
	Sock packaged inside out		102	
Construction and Workmanship	Any cut, tear hole, mispick or rupture through laminate material	1		
	Any hole or mispick through the cuff material that is: ≥ 1/2 inch in length or width	2		
	< 1/2 inch in length or width		103	
	Any weakening defect such as: thin spots or abraded areas in the material. Thin spots are defined as obvious visual differences within the laminate that appear lighter or allow significantly increased light penetration.		104	
	Not clean, i.e. dirty and cannot be cleaned with a non-petroleum based cleaning agent. Any stains, spots, grease, oil, or ink.			201
	Any visible portion of the material stiffened or scorched by any process of manufacturing		105	
	Stitching or material caught in sewing, thread ends unsecured		106	
	Parts mixed from different material lots in the same pair or lot	3		
	Puckering or wrinkling at the seams, foreign matter or similar defective condition which results in a defect (See Note1)		107	
	Any repair patch on the body of the sock.	4		
	Delamination in materials or seam tape lift greater than 1/8 inch at side, end or edge	5		
	Any edge of seam tape less than 1/8 inch from seam allowance. (Note: The seam allowance may shift from side to side during the sealing process. This does not affect the serviceability of the sock.)		108	
	More than two seam tape repairs on a single sock		109	

Table VII. End-item visual defects. – continued

Examine	Defect	Classification		
		Critical	Major	Minor
Construction and Workmanship - continued	Any tape repair over 1 inch long (Note: At the end of a seam seal tape roll, the new tape application will overlap the tape end by 1 inch (splice). A second application of tape on a seam may be required. This application shall not be longer than 5 inches.)		110	
	Any open seams.	6		
	Any required stitching not covered by seam tape	7		
	Poor stitch tension at the cuff interface or broken stitches at the cuff interface		111	
Markings and Identification	Omitted, illegible, incomplete, or incorrect	8		
	Marking not in accordance with the requirements			202
	Not permanent, i.e., can be easily rubbed off with a moistened thumb		112	

Note 1: Weakening defects and general defective condition defects as identified in Table VII will be subject to further Government review if the criteria for lot rejection are met as identified in 4.6.1. The Government will consult with the manufacturer to investigate the impact of these defects. This may require further testing and/or sampling which will be dependent on the identified defect. If the investigation determines the IFS performance is still acceptable, the defects in question will no longer be identified as a defect. The lot will be found acceptable from a Visual Examination perspective when the original criteria are met.

4.6.1.1 Vacuum seal. Vacuum sealed packages will be left to rest for a period of 24 hours after sealing is completed. At the conclusion of the 24 hours, packages will be checked to ensure that they have maintained their vacuum. Any package that has not maintained vacuum will be resealed and rechecked.

4.6.2 End item dimensional examination. Samples shall be measured in accordance with Figure 3 and measurements shall be compared to Table IV. Any dimension that is not within tolerance shall be classified as a defect.

4.6.3 Shelf-life extension testing/set-aside. From every production lot, a quantity of 24 pairs of production lot samples will be randomly pulled by the DCMA Quality Assurance Representative (QAR) to be shipped to the Joint Service Set Aside Program for shelf-life extension testing. The sampled items shall cover the lot's entire production period with samples taken near the beginning, middle and end of each production run as determined by when the IFS items are packaged in boxes.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of material is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory unless stated in the previous sections of this document or in the contract.)

6.1 Intended use. The sock is intended for use by combat personnel to provide protection against chemical and biological warfare agents in liquid, vapor and aerosol form.)

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of this purchase description
- b. Special provisions for verification inspection of Life Support Clothing and Equipment
- c. Sizes required (see 1.2.1.1), quantity, NSN
- d. The specific issue of individual documents referenced (see 2.2 & 2.3)
- e. When a first article is required (see 3.2, 4.3, and 6.4).
- f. Conformance Inspection acceptance quality limits
- g. Inspection conditions (see 4.1.1)
- h. Packaging Requirements (see 5.1)
- i. When Toxicity testing is required (see 3.19 and 4.9.7)
- j. Number of qualification samples (see 4.2)
- k. Number of first article samples (see 4.3)
- l. Name and address of the facilities and address of the Government activity responsible for conducting the qualification and first article inspection program.

6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Manufacturers List, whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they proposed to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or order for the products covered by this document. Information pertaining to qualification of products may be obtained from the procuring activity. A letter from the procuring activity authorizing submission of samples must be received prior to submission of any samples.

6.3.1 Qualification samples. The samples should be forwarded to the test facility set forth in the letter of authorization to submit samples in accordance with 6.3. Any information on the samples themselves citing the name of the manufacturer shall be removed or obliterated prior to submission.

The samples should be plainly identified by securely attaching durable tags marked with the following information:

- Samples for qualification inspection
- Item nomenclature; Type, class, size/length
- Manufacturer's designation or number
- Name of manufacturer.
- Submitted by (name) (date) for qualification inspection in accordance with the requirements of this document under authorization (reference authorizing letter and number) (see 6.3)

6.3.2 Retention. The retention of qualification listing should consist of periodic verification to determine compliance of the qualified IFS with the requirements of this document. Periodic verification should be by certification unless otherwise specified by the activity responsible for the Qualified Manufacturer List and should be at intervals of not more than 2 years.

6.4 First article. When first article inspection (see 4.3 and 6.2) is required, the contracting officer should provide specific guidance to offerors whether the item(s) should be a first article sample, a first production item, or a standard production item from the contractor's current inventory, and the number of items to be tested as specified in 4.3. Invitations for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection to those bidders offering a product which has been previously acquired or tested by the Government and that bidders offering such products, who wish to reply on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for pending contract. Bidders should not alternate submit bids unless specifically requested to do so in the solicitation.

6.5 Shelf life extension program. The JEFS will be the appointed authority for shelf life extension. The JSSAP will receive 24 randomly selected pairs from every lot manufactured and they will be shipped to the address below. The 24 pairs will include a sample with every manufacturing date and size manufactured in the lot. The samples will be received, documented, and disseminated to various climate controlled environments for storage.

Traffic Management Office (M94160)
1315 West Oakridge Drive
Warehouse Loading Docks 4 and 5
Albany, GA 31707-5000
(229)518-6892

6.6 Information requests. For access to information such as purchase descriptions, patterns, drawings, standard shade samples of cloth etc. go to Defense Logistics Agency (DLA) Troop Support's Clothing and Textile website for their Specification/Pattern/Drawing Request form, <https://www.troopsupport.dla.mil/Portal/sreqfrm.aspx>. Complete the request form and then submit. Requests to use equivalent materials and/or components or to make changes to the pattern should be sent to the contracting officer for approval by the Military Services.

6.7 Source of supply.

6.7.1 Sources of supply for selectively permeable materials. The selectively permeable materials used in the sock, to include the seam sealing tape, can be obtained from W.L. Gore and Associates. This is also the source for the boot leakage testing apparatus cited in 4.5.1.5.3.1.

W.L. Gore & Associates Inc.
105 Vieve's Way
Elkton, MD 21921

6.7.2 Sources of supply for knit cuff. The Nomex[®] aramid cuffs are available through:

Straus Knitting Mills
709 Industrial Parkway
St. Croix Falls, WI 54024.

The supplier's item number is NCFF50 851CA6X3 .625 for the sizes Large, Xlarge, and XXlarge. The supplier's item number is NCFF51 851CA6X3 .375 for the sizes Xsmall, Small, and Medium. The color is black.

6.7.3 Sources of supply for barrier bag material and foil bags. It has been determined that the following suppliers are capable of meeting the foil film requirements:

Cadillac Products, Inc.
5800 Crooks Road
Troy, MI 48098-2830
(248) 879-5000
www.cadprod.com

Lakeland Packaging
219 Village Landing
Fairport, NY 14450-1805
(585) 425-3490
www.lakelandpkg.com

6.8 Certificates of compliance. Certificates of compliance may be requested for any item provided under this purchase description, including barrier bag materials, packaging and any subcomponents or materials that are part of the sock system.

6.9 Equivalent item. Prior to the use of an "or equivalent" item, the suppliers are required to submit the item with supporting data to the contracting office for subsequent approval or disapproval by the responsible military agency.

6.10 Shelf life. This document covers items where the assignment of a Federal shelf life code is a consideration. Specific shelf life requirements should be specified in the contract or purchase order, and should include, as a minimum, shelf life code, shelf life package markings in accordance with MIL-STD-129 or FED-STD-123, preparation of a material quality storage standard for Type II (extendable) shelf life items, and a minimum of 85 percent shelf life remaining at time of receipt by the government. These and other requirements, if necessary, are in DoD 4120.27-M, *Shelf-Life Management Manual*. The shelf life codes are in the Federal Logistics Information System Total Item Record. Additive information for shelf life management may be obtained from DoD 4120.27-M, or the designated shelf life Points of Contact (POC). The POC should be contacted in the following order:

1. The Inventory Control Points that manage the item.
2. The DoD Service and agency administrators for the DoD Shelf Life Program.

Appropriate POCs for the DoD Shelf life Program can be contacted through the DoD Shelf Life Management website: <http://www.shelflife.hq.dla.mil/>.

6.11 Subject (key word) listing.

Chemical and Biological Warfare Agent
Clothing/Equipment, Life Support
Foot Protection
Combat
Protection

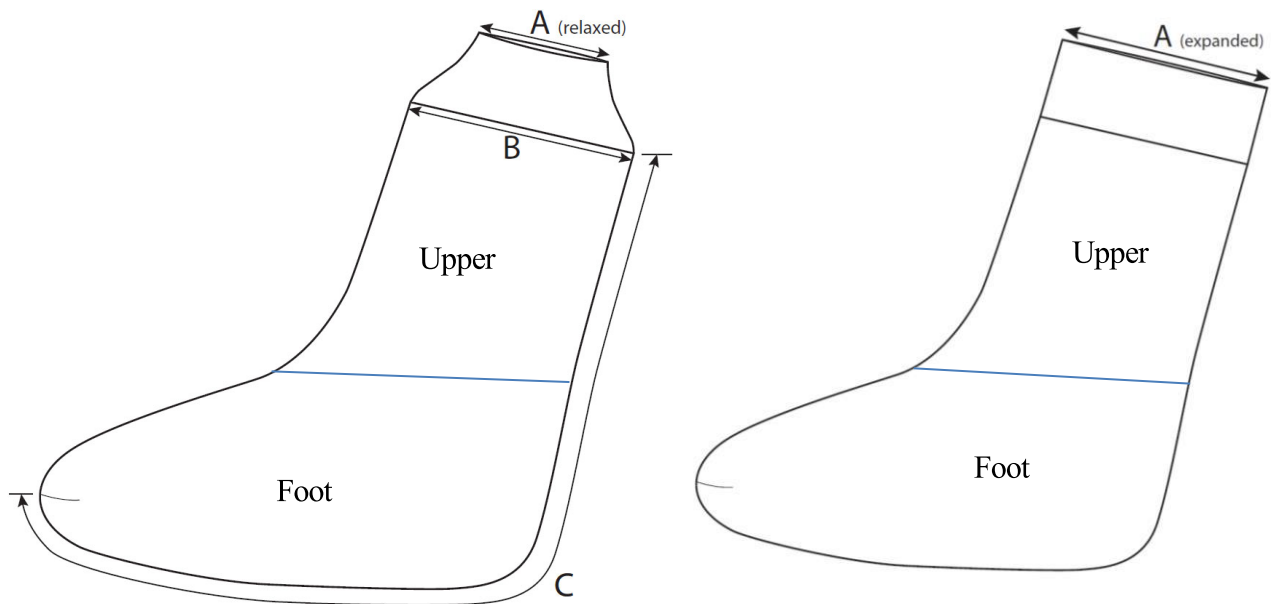


Figure 3. IFS measurement guidance.

Note: The “foot” of the sock, for the purpose of determining sampling location, is the area below a line at the break in the foot, parallel to the bottom of the sock. The “upper” is the area above that line extending to the base of the knit cuff (see 3.6).

SOCKS, CHEMICAL PROTECTIVE CONTRACT NO.: XXXXXXXXXXXXXXXX LOT NUMBER: XXXXXXXXXXXXXXXX CONTRACTOR: XXXXXXXXXXXXXXXXXXXXXXXX MFR DATE: MM/YY SIZE: XXXXXXXX NSN: XXXX-XX-XXX-XXXX		
RECORD NUMBER OF LAUNDERING CYCLE CROSS OFF NUMBER IN BOX WITH PERMANENT MARKER AFTER EACH LAUNDERING CYCLE. SOCKS MAY BE WASHED UP TO 2 TIMES.		
WEAR TIME MARK OUT A CIRCLE WITH A PERMANENT MARKER EVERY 0 TO TWO (2) HOURS OF WEAR. DO NOT WEAR SOCKS PAST EXPIRATION DATE OR AFTER 160 HOURS OF WEAR TIME. CIRCLES BELOW INDICATE 160 HOURS OF WEAR WHEN ALL CIRCLES HAVE BEEN MARKED OUT.		
EXPIRATION DATE: DATE OPENED +270 CALENDAR DAYS		
DATE OPENED	OOOOOOOOOOOOOOOOOO OOOOOOOOOOOOOOOOOO OOOOOOOOOOOOOOOOOO OOOOOOOOOOOOOOOOOO OOOOOOOOOOOOOOOOOO	EXPIRATION DATE

Note: Not to scale. IFS label measurements are 4 ($\pm 1/4$) inches wide by 5 ($\pm 1/4$) inches tall

Figure 4. IFS label (printed inside sock).

IFS CARE INSTRUCTIONS

Machine (home) laundering: Use permanent press washing cycle using warm water setting or some combination of warm temperature setting (e.g., warm/cold or warm/warm) and mild non-phosphate (liquid or powder) detergent.

Start the commercial top-load washing machine and add 1 Tbsp. of laundry detergent.

Ensure that the detergent has dissolved in the water before placing the IFS in the washing machine.

Place the IFS into the washing machine and follow normal washing procedures. The load size should not exceed 3 pounds. (3 lbs. is approximately 12 pairs of IFS)

Recommend drying the IFS at HIGH HEAT (or maximum of 150°F) setting for 20-25 minutes or until IFS are completely dry, inside and outside.

Low Heat/Delicate/Perm Press setting may also be used to dry the IFS. When using this setting, the IFS typically dry in approximately 40-45 minutes.

Annotate the laundering cycle with a permanent marker/pen on the label inside each of the IFS.

Hand washing: Use warm water and 1 Tbsp. of a mild non-phosphate (liquid or powder) laundry detergent. Dry on a rust-proof hanger until completely dry, inside and outside.

Annotate the laundering cycle with a permanent marker/pen on the label inside each of the IFS.

Navy shipboard laundering: Use the Navy hand washing method.

**DO NOT LAUNDER MORE THAN TWICE
DO NOT STARCH, BLEACH, DRY CLEAN OR PRESS IFS**

Note: IFS Information sheet should be roughly square and measure 4-3/4 (±1/4) inches

Figure 5. IFS information sheet.

Gore Bootie Test Machine Operation

1. Ensure that the BTMCE head is in the UP position. (UP/DOWN position is controlled by the two-hand, anti-tie-down knobs located on either side of the machine.)
2. Press the right foot pedal to open the right bootie gripper clamp.
3. Insert the IFS between the grippers, ensuring that the air inflation tube is inserted inside the bootie.
4. Repeat steps 2 and 3 for the left side.
5. Using the right and left inflation regulator knobs on the front control panel, adjust the inflation air pressure to one (1) psi.
6. If the IFS are not inflating properly, the gripper pressure may need to be adjusted. If necessary, use the gripper regulator knob to increase the pressure between the clamps.
7. Depress the two (right/left) knobs on either side of the machine within a half-second to move the BTMCE tester arms into DOWN position. (Note: Both hands must remain on anti-tie-down knobs until BTMCE head moves to the down position; removing the hands before the down position is reached will cause the head to reverse.)
8. Carefully observe any leakage from the IFS by watching for air bubbles along the seam tape or other surface areas. Mirrors are provided at the back and bottom of the water tank so that all sides/surfaces of the IFS may be easily viewed. To remove trapped air bubbles from the surface of the IFS(s) created during submersion, it may be necessary to raise the tester arms (see step 10 below), “swipe” or wipe down the surface of the IFS with your hands, and re-submerge.
9. **IMPORTANT!! THE IFS MUST NOT LEAK AIR BUBBLES AT A RATE GREATER THAN ONE (1) BUBBLE FROM THE SAME LOCATION PER SEVEN (7) SECONDS.** Any IFS that do not meet this specification are not considered waterproof and have failed this criteria.
10. After a successful observation and determination of IFS waterproofness, raise the tester head using the right/left side control knobs. **The control knobs must be activated simultaneously by tapping and releasing the two knobs on either side of the machine, otherwise the head will not raise.**
11. Press the right foot pedal to open the right IFS gripper and remove the IFS. Repeat for the left side.
12. When drying the IFS, no heat shall be used.

Figure 6. Leakage apparatus: W. L. Gore Bootie Test Machine, Model BTMCE excerpt.

SIZING CHART

Size	Female Shoe Size	Male Shoe Size
XS	5-6	NA
S	6.5-8	6-7
M	8.5-10	7.5 – 9
L	10.5-12	9.5 – 11
XL		11.5 – 12.5
XXL		13 and up

Figure 7. IFS sizing chart.

Custodian:

Air Force
Army
Navy - MC
DLA-CT

Preparing activity:

Navy - MC

Review activities:

Navy – NU, SH