

INCH-POUND

A-A-55195

7 April 1993

COMMERCIAL ITEM DESCRIPTION

THREAD: PARA-ARAMID, SPUN, INTERMEDIATE MODULUS

The General Services Administration has authorized the use of this Commercial Item Description in preference to MIL-T-44100.

Abstract. This Commercial Item Description covers spun, para-aramid, intermediate modulus, thread used for machine and hand sewing. The thread is intended for use in sewing aramid materials for construction of protective combat clothing and other flight safety equipment. Type I typifies normal performance thread, whereas, Type II typifies higher performance thread for use on end-items that require use of a smaller sized sewing needle.

Classification. The thread shall be in the following types:

- Type I - Normal performance
- Type II - High performance

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Defense Personnel Support Center, Clothing and Textiles Directorate, Attn: DPSC-FSSD, 2800 South 20th Street, Philadelphia, PA 19101-8419, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 8310

DISTRIBUTION STATEMENT A.

Approved for public release;  
distribution is unlimited.

Salient Characteristics. The staple fibers shall be made from para-aramid filament having a linear density of 1.5 denier per filament, and shall not carbonize at a temperature below 675°F. The color (shade) shall be as specified in the applicable end-item document or in the contract or purchase order. The shade of the end item thread, after removal of finish according to AATCC 132, when applicable, shall match the specified applicable shade standard. Unless otherwise specified, the direction of the twist for single ply shall be "S" and for the plied thread shall be "Z". The thread shall average not more than one full thread knot per 8 ounces. The thread shall have a soft finish and shall contain only the minimum amount of lubricant to facilitate sewing. Only non-staining and non-flame propagating finishes commonly used shall be permitted as sewing finishes unless prior approval is obtained from the Contracting Officer. The thread shall be put-up in one continuous length per holder and shall be so wound that each turn and layer are free from entanglement.

Table I Physical requirements - Type I

Nominal Tex	Plies Final	Yards/pound		Breaking Strength (pounds,min)		Elongation Maximum (percent)
		Min	Max	Initial (Natural)	After Heat Aging (Natural & Dyed)	
39	2	11,970	13,230	6.0	1.80	6
59	3	7,980	8,820	8.5	3.00	6
78	4	5,700	6,300	12.0	3.25	6
98	5	4,560	5,040	16.0	4.75	6
118	6	3,990	4,410	19.0	5.75	6
138	7	3,420	3,780	22.0	6.50	6

Table Ia Physical requirements - Type II

Nominal Tex	Plies Final	Yards/pound		Breaking Strength (pounds,min)		Elongation Maximum (percent)
		Min	Max	Initial (Natural)	After Heat Aging (Natural & Dyed)	
14	2	31,500	35,000	2.0	0.5	6
16	2	27,700	29,500	3.0	1.0	6
20	2	23,000	25,200	5.0	2.0	6
39	2	11,900	13,200	9.0	3.0	6
59	3	7,980	8,800	14.0	4.0	6
78	4	5,700	6,300	20.0	6.0	6
107	3	4,000	4,300	27.0	8.0	6
125	3	3,650	4,000	31.0	9.0	6
142	4	3,100	3,600	35.0	10.0	6

Table II End item tests

Characteristic	Requirement	Test Method	
Fiber identification	Para-aramid spun intermediate modulus		<u>1/</u>
Number of plies	Tables I and Ia	Visual	<u>2/</u>
Length per pound	Tables I and Ia	ASTM D1907	
Denier per filament	1.5	ASTM D1577	
Melting Point of Synthetic Fibers	Above 675 <sup>o</sup> F	FED STD 191-1534	
Shade match	<u>3/</u>		<u>4/</u>
Colorfastness: Laundering (after 3 cycles)	<u>5/</u>	AATCC 61	<u>6/ 7/ 12/</u>
Breaking strength Initial	Tables I and Ia	ASTM D2256	<u>8/</u>
After heat aging	Tables I and Ia	ASTM D2256	<u>9/</u>
Elongation	Tables I and Ia	ASTM D2256	<u>10/</u>
Direction of twist	Plied "Z"	ASTM D1423	<u>1/</u>
	Single "S"	ASTM D1423	<u>1/</u>
Composition of plastic tubes			<u>1/ 11/</u>

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

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

3/ The shade of the end item thread, after removal of finish, when applicable, shall match the specified applicable shade standard. For other shades, address the contracting activity issuing the invitation for bids or request for proposal.

4/ Before evaluation for shade matching, the sample of thread shall be wet dry-cleaned in accordance with AATCC 132. Excess solvent shall be removed by centrifuging or wringing. The sample shall then be rinsed in distilled water at 120<sup>o</sup> to 160<sup>o</sup> F and dried at a temperature not exceeding 180<sup>o</sup> F. The dried sample shall then be conditioned for a minimum of 4 hours prior to evaluation for shade match. The thread sample shall be wound or prepared for examination in a manner similar to that for the standard shade sample. The sample shall be compared to the standard sample under artificial daylight at 7000  $\pm$ 500 K and less than a good match shall be a test failure. The sample shall also be compared to the standard sample under incandescent lamplight at 2850  $\pm$ 100 K and less than a good approximation shall be a test failure.

- 5/ The dyed and finished thread shall show fastness to laundering (after 3 cycles) equal to or better than the standard sample. When no standard sample has been established or designated as applicable to colorfastness, the dyed and finished thread shall show a fastness rating of "4" to laundering (after 3 cycles).
- 6/ The specimens must be dried after each of the 3 laundering cycles.
- 7/ The color transfer cloth evaluation shall not apply.
- 8/ At least five determinations shall be made per sample unit.
- 9/ Five specimens shall be used for the heat aging test. The specimens shall be exposed for 4 hours to a temperature of  $500 \pm 10^{\circ}\text{F}$  using a circulating air oven. Upon removal, the specimens shall be conditioned at standard atmospheric conditions for 4 hours and then tested for breaking strength as specified in ASTM D1578.
- 10/ To be determined simultaneously with breaking strength.
- 11/ The tubes shall be made of commercially acceptable plastic.
- 12/ Two to six grams of the thread, so held together to form a unit for testing. Unless otherwise specified in the procurement document, the laundering cycle of the Launder-O-Meter or similar machine shall be 30 minutes and the temperature of the container and its contents shall be maintained at  $100^{\circ} \pm 4^{\circ}\text{F}$  ( $38^{\circ} \pm 2^{\circ}\text{C}$ ).

Label/markinq. Except when commercial identification markings are specified in the invitation to bid, each holder shall have a label attached in such a manner as to remain in place and be clearly legible until all thread has been removed. The label shall be printed with the information as specified below.

Weight (net)  
Direction of twist  
Color  
Ply  
Number size  
Contract number  
Date manufactured (month and year)  
Name of contractor  
Nomenclature

Workmanship. After completion, the finished tubes of yarn shall be thoroughly cleaned, and all loose thread, lint, and foreign matter removed. The finished thread shall conform to the quality established by this Commercial Item Description. The occurrence of defects shall not exceed the applicable Acceptable Quality Level (AQL).

Product Demonstration Model. When required, offerers shall submit samples of their intended production. The Product Demonstration Model will consist of units independently developed. Product Demonstration Models will be analyzed and evaluated by the government. Evaluation criteria and basis for award are contained in the solicitation. Product Demonstration Models will be retained by the government. One (1) Product Demonstration Model approved by DPSC under the resultant contract will serve as a manufacturing standard for the corresponding production items delivered under this contract. Offerers are advised that the Product Demonstration Model does not relieve the successful offerer of his responsibility to perform in accordance with the Commercial Item Description specified above.

#### Quality Assurance

Certification. The contractor shall certify that the product offered meets the salient characteristics of this description and that the product conforms to the producer's own specifications, standards and quality assurance practices. The government reserves the right to require proof of such conformance prior to the first delivery and thereafter as may be otherwise provided for, under the provisions of the contract. Reliance on contractor QA systems 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.

Examination. Yarn tubes of lots shall be inspected in accordance with "Sampling Procedures and Tables for Inspection by Attributes", ANSI/ASQC Z1.4, published by the American Society for Quality Control.

Visual Examination. The thread shall be examined, while unwinding, for the defects listed in Table III. All defects shall be counted regardless of their proximity to each other. The lot size for holders shall be expressed in units of one holder and the sample unit shall be one holder. The inspection level for visual examination shall be S-3 and the Acceptable Quality Level (AQL) expressed in terms of defects per hundred units, shall be 2.5.

Table III Thread as Unwound Defects

Examine	Defect
Continuous length	Not in one continuous length.
Knots	Thread on a holder averages more than one thread knot per eight ounces.
Winding	Improperly or not firmly wound, resulting in kinks, knots, entangling, or slippage during unwinding, or otherwise affecting free unhampered unwinding of the thread.
Color	Uneven, apparent on successive layers or end to end.
Tackiness or adhesion	Strands adhere to each other or to holder, affecting unwinding tension.

Packaging Examination. Thread on the holder shall be examined for the defects listed in Table IV. The lot size shall be expressed in units of one holder. The inspection level shall be S-3, and the AQL, expressed in terms of defects per hundred units, shall be 2.5.

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Table IV Thread on Holder Defects  
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Examine	Defect
Identification label	Missing, incorrect, incomplete, illegible, or insecurely attached.
Type of holder	Other than specified.
Surface condition	Loose or unattached ply. Cut tear, chafe, slip, affecting strength of thread or interfering with easy location of end and initial unwinding.
Finish	Other than specified. Uneven lumpy, bare or thin spots.

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Regulatory Requirements. The offeror/contractor is encouraged to use recovered materials in accordance with Public Law 94-580 to the maximum extent practicable.

End Item Performance Testing. The end item shall be tested as indicated in Table II. The methods of testing specified, wherever applicable, shall be followed. The lot size shall be expressed in units of one holder. The sample unit shall be one wound holder or sufficient holders to provide enough thread for the applicable tests. The inspection level shall be S-1, and the AQL for each characteristic, expressed in terms of test failures per hundred units, shall be 2.5.

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Table V Sample Size for Testing  
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Lot size (tubes)	Sample size (sample units)
50 or less	10
51 to 150	15
151 to 1000	25
1001 and over	25 per thousand

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Preservation, Packing, and Marking. The preservation, packing, and marking shall be as specified in the contract or order.

Source of Government Documents. Copies of Military and Federal documents are available from:

Standardization Documents Order Desk  
Bldg. 4D  
700 Robbins Avenue  
Philadelphia, PA 19111-5094

Sources of Nongovernment Documents.

ANSI/ASQC Z1.4 - Sampling Procedures and Tables For Inspection By Attributes

(Applications for copies should be addressed to American National Standards Institute, 1430 Broadway, New York, NY 10018-3308.)

ASTM tests

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

AATCC tests

(Applications for copies should be addressed to American Association of Textile Chemists and Colorists (AATCC), P.O.Box 12215, Triangle Park, NC 27709-2215.

Custodians:

Army - GL  
Navy - NU  
Air Force - 11

Civil Agency Coordinating Activity:

GSA - FSS

Review Activities:

Army - MD  
Navy - AS  
Air Force - 20, 82, 99  
DLA - CT

Preparing Activity:  
DLA - CT

Project No.8310-0194

# STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

## INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

<b>RECOMMEND A CHANGE:</b>	1. DOCUMENT NUMBER A-A-55195	2. DOCUMENT DATE (YYMMDD) 93/4/7
3. DOCUMENT TITLE THREAD: PARA-ARAMID, SPUN, INTERMEDIATE MODULUS		
4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)		
5. REASON FOR RECOMMENDATION		
6. SUBMITTER		
a. NAME (Last, First, Middle Initial)	b. ORGANIZATION	
c. ADDRESS (Include Zip Code)	d. TELEPHONE (Include Area Code)	7. DATE SUBMITTED (YYMMDD)
	(1) Commercial (2) AUTOVON (if applicable)	
8. PREPARING ACTIVITY		
a. NAME DEFENSE PERSONNEL SUPPORT CENTER ATTN: DPSC-FSSD (12-3-D)	b. TELEPHONE (Include Area Code)	(2) AUTOVON
	215-737-8105	444-8105
c. ADDRESS (Include Zip Code) 2800 SOUTH 20th STREET PHILADELPHIA, PA 19101-8419	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22051-3466 Telephone (703) 756-2340 AUTOVON 289-2340	