

INCH-POUND

A-A-59826A

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SUPERSEDING

A-A-59826

03 March 2009

## COMMERCIAL ITEM DESCRIPTION

### THREAD, NYLON

The General Services Administration has authorized the use of this commercial item description as a replacement for all federal agencies.

1. **SCOPE.** This commercial item description covers the requirements for nylon thread used for hand and machine sewing.

2. **CLASSIFICATION.** The following Types and Classes of threads are as specified.

#### 2.1 Types.

Type I - Twisted, unbounded, multiple cord, soft finish

Type II - Twisted, bonded, multiple cord

Type III - Bonded, monocord

Type IV - Hand-sewing twist, waxed finish

Type V - Buttonhole twist, hand-sewing, waxed finish

Type VI - Tailoring, twisted multiple cord, soft finish

Type VII - Quilting thread, coreless cocoon bobbins and top thread, twisted multiple cord, soft finish

#### 2.2 Classes.

Class A - Normal purpose

Class B - Non-wicking (Type I or II)

2.3.1 Classes references. In end item documents where no Class designation "A", "B" is indicated, the requirements for Class "A" shall apply.

Comments, suggestions, or questions on this document should be addressed to: DLA Troop Support Standardization Team, 700 Robbins Avenue, Philadelphia, PA 19111-5096. Since contact information can change, you may want to verify the currency of the address information using Acquisition Streamlining and Standardization Information System (ASSIST) online database <https://assist.dla.mil>.

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## 3. SALIENT CHARACTERISTICS.

3.1 Description. All threads shall be bright, high tenacity continuous multifilament nylon yarn. The thread shall have a melting point of not less than 472°F and conform to the applicable requirements specified in Tables I through X. The bonding agent used in Types II, III threads shall be colorless. Unless otherwise specified, the direction of the final twist shall be “Z” except that number sizes of Types I, II and VII threads when used for sole stitching of footwear, or coreless bobbins and top threads for quilting shall be "S" or "Z". The final twist for Type IV shall be “S”.

3.2 Physical requirements. The finished thread shall conform to the applicable physical characteristics as specified in Tables I through Tables I-6 for Types and Classes, when tested as specified in Table II.

TABLE I. Physical characteristics - Types I.

Tex	Government Letter size or Number size	Plies	Breaking strength, lbs. (min.)	Elongation, % (max.)
16	00	2	1.8	30
21	A	3	2.8	30
30	AA	2 or 3	4.0	30
45	B	2 or 3	6.0	30
70	E	3	9.0	30
90	F	3 or 4	11.8	30
135	FF	3	17.5	35
210	3	3	27.0	35
270	4	3	36.0	35
350	5	3	45.0	35
400	6	3	54.0	35
600	8	3	72.0	35

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TABLE I-1. Physical characteristics - Type II.

Tex	Government Letter size or Number size	Plies	Breaking strength, lbs. (min.)	Elongation, % (max.)
16	00	2	1.8	30
21	A	3	2.8	30
30	AA	2 or 3	4.0	30
45	B	2 or 3	6.0	30
70	E	3	9.0	30
90	F	3 or 4	11.8	30
135	FF	3	17.5	35
210	3	3	27.0	35
270	4	3	36.0	35
350	5	3	45.0	35
400	6	3	54.0	35
600	8	3	72.0	35

TABLE I-2. Physical characteristics - Type III.

Tex (Sizes)	Government Letter size or Number size	Plies	Breaking strength, lbs. (min.)	Elongation, % (max.)
16	00	1	1.8	35
27	A	1	2.8	35
35	AA	1	4.0	35
45	B	1	6.0	35
70	E	1	9.0	35
90 or 105	F	1	11.8	35
135	FF	1	17.5	35
150	3	1	24.0	35
270	4	1	36.0	35
350	5	1	45.0	35
400	6	1	54.0	35
600	8	1	72.0	35

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TABLE I-3. Physical characteristics – Type IV.

Tex (Sizes)	Government Letter size	Plies	Breaking strength, lbs. (min.)	Elongation, % (max.)
35	A	2	3.5	35
45	C	2	5.7	35

TABLE I-4. Physical characteristics - Type V.

Tex (Sizes)	Government Number size	Plies	Breaking strength, lbs. (min.)	Elongation, % (max.)
180	6	3	20.0	35
150	8	3	16.0	35
135	10	3	14.0	35

TABLE I-5. Physical characteristics - Type VI.

Tex (Sizes)	Government Letter size	Plies	Breaking strength, lbs. (min.)	Elongation, % (max.)
24	0	2 or 3	2.8	35
30	B	2 or 3	4.0	35
90	F	3 or 4	10.0	35

TABLE I-6. Physical characteristics - Type VII.

Tex (Sizes)	Government Letter size	Plies	Breaking strength, lbs. (min.)	Elongation, % (max.)
21	00	2	1.8	35
24	A	2 or 3	2.5	35
30	AA	3	4.0	35
50	B	2	6.0	35

NOTE: Tex numbers of Tables I through Tables I-6 are in accordance with ASTM D3832 – Standard Practice for Determining Ticket Numbers for Sewing Threads.

3.3 End item testing. The threads for all Types and Classes shall be tested in accordance with the test methods listed in Table II.

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TABLE II. Physical requirements and end item tests (all Types).

Characteristic	Requirements	Test method
Fiber identification	3.1	ASTM D276 or AATCC 20 <u>1/</u>
Visual shade matching	3.5	3.6
Melting point (min.)	3.1	ASTM D276 or AATCC 20 <u>1/</u>
Bright continuous multifilament	3.1	Visual
Tex	Tables IA through IG	ASTM D204 <u>2/</u>
Direction of twist (initial & final)	3.1	ASTM D204
Ply	Tables IA through IG	Visual
Colorfastness (all Types and Classes):		
Laundering (after 3 cycles)	3-4 (min.)	AATCC 61 3A <u>3/</u> , <u>4/</u> , <u>5/</u>
Perspiration (acid/alkaline)	3-4 (min.)	AATCC 15 <u>3/</u> ,
Light (after 40 hrs. or 170 kJ/m <sup>2</sup> nm@420 nm)	3-4 (min.)	AATCC 16.2 or 16.3 <u>3/</u>
Dry heat at 356 (± 3)°F	3-4 (min.)	AATCC 117 <u>3/</u> , <u>4/</u>
Weathering (after 340 kJ/(m <sup>2</sup> nm)@420 nm))	3-4 (min.)	AATCC 169 Opt 1 <u>3/</u>
Breaking strength, lbs.	Tables IA through IG	ASTM D204 <u>6/</u>
Elongation, %	Tables IA through IG	ASTM D204 <u>6/</u>
Resistance to wicking (Class B only)		
Initial	3.7.1	3.7.1.1
After 3 laundering cycles		

1/ In case of dispute, the ASTM method prevails

2/ Tex for all threads based on weight in grams/1,000 meters thread, per ASTM D204

3/ AATCC Evaluation Procedure 1, Gray Scale for Color Change.

4/ The color transfer cloth evaluation shall not apply.

5/ The specimen shall be dried after each laundering cycle.

6/ Except that five (5) determinations shall be made per sample unit.

3.4 Knots. Thread letter size FF and finer shall average not more than one (1) thread knot per 2-ounces for all Tex. Thread number size three (3) and heavier shall average not more than one (1) thread knot per 4-ounces for all Tex. The thread shall average not more than one (1) full thread knot or splice per 1,000 yards.

3.5 Color. The color shall be as specified in the applicable end item specification or in the contract (see 7.6).

3.6 Visual shade matching. The color and appearance of the finished thread shall match the standard sample when viewed using AATCC Evaluation Procedure 9, Option A, with sources simulating artificial daylight D75 illuminant with a color temperature of 7500 (± 200)K illumination of 100 (± 20) foot candles, and shall be a good match to the standard sample under incandescent lamplight at 2856 (± 200)K.

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3.7 Finishing materials. The finished thread shall have no chemical finishes or treatments other than those commonly used (e.g. water-repellent, etc.) on commercial threads or as specified in the contract which have been demonstrated to have no harmful effects on the fiber, including effects of prolonged storage. No finish or treatment shall be applied for the purpose of increasing breaking strength. There shall be no noticeable wicking of the treatment on the thread to adjacent material when sewn. Appropriate finishes for Type II and III shall be applied for bonding. Type IV and V thread shall be waxed for a smooth, dressed surface suitable for hand-sewing.

3.7.1 Non-wicking finish (Class B). Class B thread shall have a uniformly applied commercial nontoxic non-wicking finish. The use of compounds containing mercury in any form shall not be used. The finished thread shall resist the wicking of water initially and after three (3) laundering cycles for a period of not less than two (2) hours, when tested as specified in 3.7.1.1 and 3.7.1.2

3.7.1.1 Initial vertical resistance to wicking. The thread shall be water repellent treated so that the treated thread shall resist the wicking of water for a period of not less than two (2) hours when tested as follows: The test specimen shall consist of a 20 strand skein of thread in one continuous 30 yard length made on a 54-inch periphery skein reel or other suitable device for preparing the specimen. The skein shall be reeled under enough tension to cause the strands in the skein to lie uniformly, side by side, on the reel. The finishing end of the skein shall be tied to the starting end of the skein in such a manner that the knot will not add additional length to the reel skein. The skein shall be hung over the movable crossbar of a laboratory stand with the end hanging over the vessel. The movable crossbar shall rise 28-inches or more above the base. A nonferrous 3/4 to 7/8-ounce weight shall be placed in the lower catenary of the skein to keep it taut and straight. The skein shall be arranged so that the strands are touching each other in flat ribbon form. The vessel shall be filled to a depth of at least 5-inches with distilled water at a room temperature, which has been mixed with 0.05 percent blue food coloring (salt and wetting agent free). A piece of blotting paper (square) shall be attached by means of a paper clip or similar clamp to one (1) full side (20 strands) of the skein, 3-inches above the lower catenary of the skein. The position of the crossbar shall be adjusted so that when the skein is hung freely in the liquid, 2-inches of the skein will be immersed in the liquid and the lower edge of the blotter is 1-inch above the liquid surface. The skein shall then be slowly lowered into the dyebath and the time of entry shall be noted. Depending on the dimensions of the vessel and the length of the crossbar, several specimens can be tested at the same time in the same dyebath by hanging the skeins sufficiently apart on the crossbar. The skein shall be exposed for two (2) hours. The blotter shall be examined for wetting or staining at least every hour. The test shall be terminated whenever staining or wetting of the blotter is observed within the two (2) hour duration. Staining or wetting before the 2-hour time frame shall constitute a failure.

3.7.1.2 Accelerated laundering procedure. Thread shall be laundered in accordance with AATCC 61, procedure 2A 120°F, except use 10 steel balls with small canister and drying between each cycle (3 cycles). The test specimen shall consist of a 20-strand skein of thread in one continuous 30-yard length made on a 54-inch periphery skein reel. The skein shall be folded flat then twisted around its long axis for a total of 25 turns by use of a twist tester or other suitable device in the same direction as that of the final ply twist of the thread. The two (2) ends shall be brought together and the folded skein allowed to back twist on itself. The ends shall be tied off to prevent

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untwisting during laundering. At the end of the laundering period, the specimen shall be removed from the canister and rinsed thoroughly in running water at a temperature of 104°F to 113°F and agitated occasionally during rinsing. Care should be exercised to insure that all traces of detergent are removed. The specimen shall then be extracted or wrung and oven dried at a temperature of 221°F to 230°F until thoroughly dry. Repeat procedure two (2) more times, undo the tied ends from skein, untwist skein and conduct procedure specified in 3.7.1.1.

3.8 Toxicity. The finished thread shall not present a health hazard and shall show compatibility with prolonged, direct skin contact when tested as specified in 5.3. Chemicals recognized by the Environmental Protection Agency (EPA) as human carcinogens shall not be used.

3.9 Put-up. Unless otherwise specified, the thread shall be put-up on holders such as commercial spools, cones, tubes, or bobbins as specified in the contract. The thread shall be wound around the specified holder in one (1) continuous piece, so that each turn and layer is free of entanglement. The outside ending of the thread shall be secured to prevent unwinding, loosening, or slippage during handling, shipping, or storage.

3.9.1 Looper and bobbin color identification. Spools, cones, tubes used for needle, looper, and bobbin thread shall be color coded in accordance with Table III to identify the thread. Bobbins may be colored with markers, other permanent means or stated color on storage box.

TABLE III. Looper and bobbin color identification.

Letter size <u>1/</u> , <u>3/</u>	Color	Number size <u>2/</u> , <u>3/</u>	Color
00	White	3	Grey
A	Pink	4	Dark Blue
AA	Black	5	Orange
B	Light Gray	6	Brown
E	Yellow	8	Lime Green
F	Light Blue	--	--
FF	Dark Green	--	--

1/ These colors will be used for all Tex (sizes) that apply to this Government Letter size.

2/ These colors will be used for all Tex (sizes) that apply to this Government Number size.

3/ Non-wicking threads in any sizes shall be so designated on label along with Green ring securely affixed to top of spool. Pre-made bobbins may be colored with markers, other permanent means or stated color on storage box.

3.10 Labeling. Each thread holder shall have a label, adhered securely so as to remain in place and be clearly legible until all thread has been removed. The label shall be printed and include information related to length in yards or weight of cone, direction of twist, color, Tex size, name of thread manufacturer, and nomenclature specifying fiber type and construction. Type and Class, stock number, date of manufacture (month and year) shall be on the label.

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3.11 Workmanship. The finished thread shall conform to the quality of product established by this document. The thread shall average not more than one (1) full thread knot or splice per 1,000 yards. The occurrence of defects shall not exceed the contractor's own quality assurance standards and the quality assurance standards defined by the technical data in the bid package.

4. **REGULATORY REQUIREMENTS**. Unless otherwise specified the offer/contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with paragraph 23.403 of the Federal Acquisition Regulation (FAR).

5. **PRODUCT CONFORMANCE PROVISIONS**.

5.1 Product Conformance. The products provided shall meet the salient characteristics of this Commercial Item Description, conform to the producer's own drawings, specifications, standards, and quality assurance practices, and be the same product offered for sale in the commercial marketplace. The Government reserves the right to require proof of such conformance.

5.2 Visual examination. Thread shall be examined for the defects listed in Table IV below.

TABLE IV. Visual examination defects.

<p><u>Knots:</u> Thread letter size FF and finer shall average not more than one (1) thread knot per 2-ounces for all Tex (sizes). Thread number size three (3) and heavier shall average not more than one (1) thread knot per 4-ounces for all Tex (sizes).</p>
<p><u>Color:</u> Not as specified.</p>
<p><u>Workmanship:</u> More than one (1) full thread knot or splice per 1,000 yards; defects exceed the quality assurance standards (both contractor's and Government standards).</p>
<p><u>Labels:</u> Label missing, incorrect, or illegible. Required information missing from the label.</p>
<p><u>Packaging:</u> Not packaged in accordance with the contract or purchase order.</p>

5.3 Toxicity test. When required (see 7.6), an acute dermal irritation study and a skin sensitization study shall be conducted on laboratory animals. When the results of the studies indicate the thread is not a sensitizer or irritant, a Repeat Insult Patch Test shall be performed in accordance with the Modified Draize Procedure (see 7.2.3). If the toxicity requirement (see 3.8) can be demonstrated with historical use data, toxicity testing may not be required (see 7.6).

5.4 Acceptance criteria. Acceptance criteria shall be as specified in the contract or purchase order (see 7.6).



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6. PACKAGING

6.1 Packaging. Preservation, packing, and marking shall be as specified in the contract or order (see 7.6).

7. NOTES

7.1 Sources of Government documents.

7.1.1 Copies of Government documents are available online at <https://assist.dla.mil> or from the Standardization Document Order Desk, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

7.2 Sources for Non-Government Documents.

7.2.1 AATCC test methods are available online at <http://www.aatcc.org> or from the American Association of Textile Chemists and Colorists, P.O. Box 12215, Research Triangle Park, NC 27709-2215.

7.2.2 ASTM Standards are available online at <http://www.astm.org> or from ASTM INTERNATIONAL, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.

7.2.3 Modified Draize Procedure: Principles and Methods of Toxicology (fourth edition), A Wallace Hayes (editor), pp 1057 – 1060, 2001 are available online from <http://www.taylorandfrancis.com/> or from Taylor and Francis, 270 Madison Avenue, New York, NY 10016.

7.3 Intended use. The threads are intended for hand and machine sewing of clothing, equipage, and footwear, and in air delivery and safety equipment (Class A). Class B threads are used primarily for leather combat boots (direct molded sole), gloves and the Modular Lightweight Load Carrying Equipment (MOLLE).

7.4 Restriction. Only Type I and Type II thread are normally authorized for use in parachutes and other flight safety equipment.

7.5 Standard samples. For access to standard shade samples of thread, address the contracting activity issuing the invitation for bids or request for proposal.

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7.6 Ordering data. The contract or order should specify the following:

- a. Title, number, and date of this Commercial Item Description (CID)
- b. Type, and Class required (see 2.0)
- c. Color required (see 3.5)
- d. When toxicity testing is required (see 3.8)
- e. Put-up required if other than specified (see 3.9)
- f. Product conformance provisions (see 5.1)
- g. Acceptance criteria provisions (see 5.4)
- h. Packaging requirement (see 6.1)

7.7 Key words.

Cover, helmet  
Equipage  
Flag, Parachute  
Footwear  
Parka  
Shoe  
Streamers  
Trousers

MILITARY INTERESTS:

Custodian:

Army-GL  
Navy- NU  
Air Force- 11

CIVIL AGENCY COORDINATING ACTIVITY:

GSA-FSS

PREPARING ACTIVITY:

DLA –CT  
Agent – Army-GL

Review Activities:

Army- MD

Project Number: 8310-2016-002

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using ASSIST Online database at <https://assist.dla.mil>.