

NOT MEASUREMENT SENSITIVE
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MIL-DTL-81736B(AS)  
18 February 2011  
SUPERSEDING  
MIL-DTL-81736A(AS)  
25 August 2006

## DETAIL SPECIFICATION

### TAPE, TEXTILE, NYLON, LANDBASED ARRESTING GEAR, 8-INCH

This specification is approved for use by the Naval Air Systems Command and is available for use by all Departments and Agencies of the Department of Defense.

#### 1. SCOPE

1.1 Scope. This specification covers an 8-inch nylon tape having a breaking strength of not less than 150,000 pounds for use on landbased arresting gear.

#### 2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification 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 of documents cited in sections 3 and 4 of this specification, whether or not they are listed.

##### 2.2 Government documents.

2.2.1 Specifications and standards. The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

Comments, suggestions, or questions on this document should be addressed to: Commander, Naval Air Warfare Center Aircraft Division, Code 4L8000B120-3, Highway 547, Lakehurst, NJ 08733-5100 or emailed to <a href="mailto:michael.sikora@navy.mil">michael.sikora@navy.mil</a> . Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <a href="https://www.assist.daps.dla.mil">https://www.assist.daps.dla.mil</a> .
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DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-PRF-131 - Barrier Materials, Watervaporproof, Greaseproof, Flexible, Heat-Sealable

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-1480 - Color Codes for Webbing, Textile; Manufacturers' Identification

(Copies of these documents are available online at <https://assist.daps/dla.mil/quicksearch/> or <https://assist.daps.dla.mil> or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

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.

NAVAL AIR SYSTEMS COMMAND

NAVAL AIR ENGINEERING CENTER (NAEC) SYSTEM SPECIFICATION

NAEL (SI) MISC. 08462 - Sewn Loop Production Testing Of Eight Inch Purchase Tape Assembly

NAVAL AIR ENGINEERING CENTER (NAEC) DRAWINGS

NAEC Drawing 506733 - Purchase Tape Assembly  
NAEC Drawing 510534 - Purchase Tape Assembly  
NAEC Drawing 613516 - Purchase Tape Assembly  
NAEC Drawing 508306 - Reel, Tape Assembly

(Copies of these documents are available from the Commander, Naval Air Warfare Center Aircraft Division, Code 4.8, Highway 547, Lakehurst, NJ 08733.)

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CODE OF FEDERAL REGULATIONS

FEDERAL TRADE COMMISSION (FTC)

16 CFR Part 303 - Rules and Regulations under the Textile  
Fiber Products Identification Act

(Copies of these documents are available online at <http://www.ftc.gov> from the Federal Trade Commission, 600 Pennsylvania Avenue, Washington, DC 20580.)

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

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS (AATCC)

AATCC 61 - Colorfastness to Laundering

(Copies of these documents are available from [www.aatcc.org](http://www.aatcc.org) or AATCC, PO Box 12215, Research Triangle Park, NC 27709-2215.)

ASTM INTERNATIONAL

ASTM D276 - Standard Test Method for Identification of Fibers in Textiles.  
(DoD adopted)

ASTM D885 - Standard Test Methods for Tire Cords, Tire Cord  
Fabrics, and Industrial Filament Yarns Made from  
Manufactured Organic-Base Fibers. (DoD adopted)

ASTM D1423 - Standard Test Method for Twist in Yarns by the Direct-  
Counting. ( DoD adopted)

ASTM D1777 - Standard Test Method for Thickness of Textile Materials.

ASTM D1907 - Standard Test Method for Linear Density of Yarn (Yarn  
Number) by the Skein Method. (DoD adopted)

ASTM D2256 - Standard Test Method for Tensile Properties of Yarns by the  
Single-Strand Method. (DoD adopted)

ASTM D2257 - Standard Test Method for Extractable Matter in Textiles.  
(DoD adopted)

ASTM D3773 - Standard Test Methods for Length of Woven Fabric.  
(DoD adopted)

ASTM D3774 - Standard Test Methods for Width of Textile Fabric.  
(DoD adopted)

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- |            |   |   |
|------------|---|---|
| ASTM D3775 | - | Standard Test Method for Fabric Count of Woven Fabric. (DoD adopted)                                |
| ASTM D3776 | - | Standard Test Methods for Mass Per Unit Area (Weight) of Fabric. (DoD adopted)                      |
| ASTM D4974 | - | Standard Test Method for Hot Air Thermal Shrinkage of Yarn and Cord Using a Thermal Shrinkage Oven. |

(Copies of these documents are available from [www.astm.org](http://www.astm.org) or ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

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, 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 Materials.

3.1.1 Yarn material composition. The yarn used in the manufacture of the tape shall be composed of non-recycled Nylon 6,6 fibers. The Nylon 6,6 fibers shall have a tenacity of 8.7 grams per denier minimum. The Nylon 6,6 fibers shall be polyamide prepared from a process using hexamethylene diamine and adipic acid, or its derivatives, and shall have a minimum melting point of 244 °C (see 6.2h and 6.5). This requirement is not applicable to the manufacturer's colored identification yarns.

3.1.1.1 Yarn fibers. The yarn fibers shall be free from sizing, loading, delustrants, or other adulterants, and shall not be bleached or pre-dyed in any manner or by any process (see 6.2h and 6.5). This requirement is not applicable to the manufacturer's colored identification yarns.

3.1.1.2 Brightness. The yarn shall be described as "bright" or "super bright." The brightness description of the polymer indicates that the polymer has not been "delustered." A yarn fiber containing no more than 0.025 percent Titanium dioxide (TiO<sub>2</sub>) can be characterized as bright or super bright (see 6.2h and 6.5). This requirement is not applicable to the manufacturer's colored identification yarns.

3.1.1.3 Heat and light resistance. The Nylon 6,6 polymer formulation shall provide protection from damage caused by exposure to heat and ultraviolet (sun) light (see 6.2h and 6.5). This requirement is not applicable to the manufacturer's colored identification yarns.

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3.1.1.4 Adulterants. The Nylon fiber and yarn shall be free of any chemicals specifically used to increase fiber or yarn diameters (see 6.2h and 6.5). This requirement is not applicable to the manufacturer's colored identification yarns

3.1.1.5 Yarn properties. The yarn shall meet the physical property requirements of table I when tested as specified in table III (see 6.2h and 6.5). This requirement is not applicable to the manufacturer's colored identification yarns.

TABLE I. Nylon 6,6 yarn physical properties.

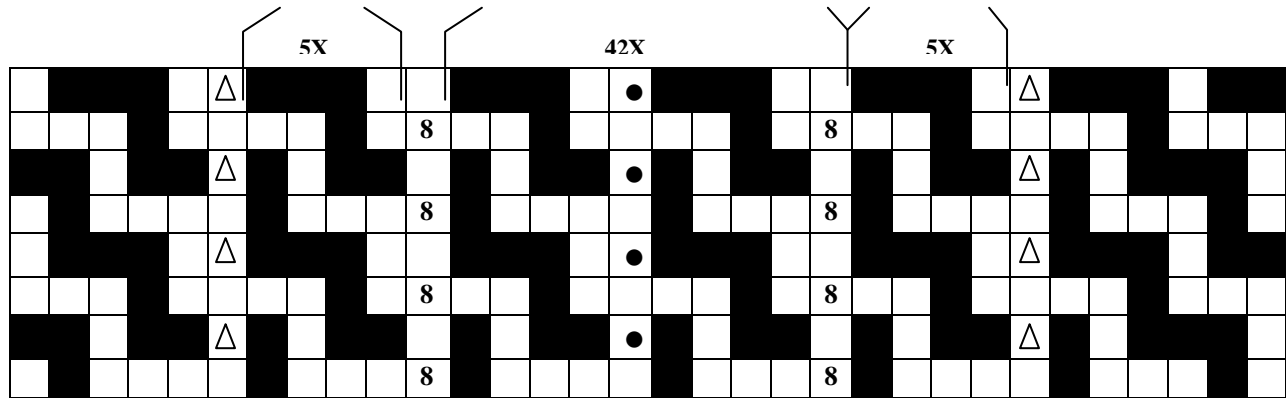
CHARACTERISTIC	REQUIREMENT		
	YARN SIZE		
	840 Denier	1260 Denier	2520 Denier
Elongation @ 10 lbs, %	$9.6 \pm 1.0$	$8.2 \pm 1.0$	-----
Tenacity, G/Denier	$\geq 8.7$	$\geq 8.7$	$\geq 8.7$
Finish on yarn, %	$0.85 \pm 0.4$	$0.85 \pm 0.4$	$0.85 \pm 0.4$
Shrinkage, %	$7.0 \pm 1.6$	$6.2 \pm 1.6$	$5.6 \pm 2.5$
Denier, Denier	$840 \pm 32$	$1260 \pm 44$	$2520 \pm 100$

3.1.1.6 Yarn breaking strength. When tensile tested (see table III), the breaking strength of the nylon yarn used in the manufacture of arresting tapes shall meet the requirements specified in ASTM D2256, Option A, Single Unplied Yarns, Condition 1 Ambient Air (see 6.2h, 6.5 and 6.6). Each manufacturer whose yarn is used in arresting tape production shall meet this requirement. This requirement is not applicable to the manufacturer's colored identification yarns.

3.1.1.7 Yarn size and ply. Yarns of different denier or ply shall not be intermixed within the binder, stuffer, or ground components of the tape. The stuffer and ground shall have the same denier and ply; however, the denier and ply may vary among the binder and ground (see 6.2h and 6.5). For example: the specification permits the use of 840 or 1260 denier yarn for the ground; using both deniers within the ground is not permitted; however, 840 denier yarn can be used for the binder and 1260 for the ground. This requirement is not applicable to the manufacturer's colored identification yarns.

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3.2 Weave. The weave shall be as shown on figure 1.

KEY TO MARKS:

●	STUFFER 36 ENDS (Minimum)		BODY	
△	STUFFER 28 ENDS	8	BINDER	2 AS 1

FIGURE 1. Weave configuration.

3.3 Color. The color of the as-woven tape shall be the natural color of the nylon yarn and be uniform throughout the tape. The tape color after resin treatment (see 3.8) shall be black.

3.4 Construction and physical properties. The nylon tape shall conform to the construction and physical properties in table II. These requirements are not applicable to the manufacturer's colored identification yarns.

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TABLE II. Physical properties.

CHARACTERISTIC	REQUIREMENT	CONDITION
Width, inches	8.0 ± 0.062	resin treated
Thickness, inches	0.344 +0.005 0.344 -0.010	resin treated
Weight, ounces/yard (max)	52.25	resin treated
Breaking strength, pounds (min)	150,000 <sup>1/</sup>	as woven
Stiffness, pounds for one inch deflection:	75 +20 75 -10	as woven
Ends in warp (min)		as woven
Ground	387	
Binder	86	
Stuffer	1568	
Filling, yarns per inch (min)	13	as woven
Yarn size and ply, denier (min)		as woven
Ground		
840	6	
1260 (alternate)	4	
2520 (alternate)	2	
Binder		
840	5	
Stuffer		
840	6	
1260 (alternate)	4	
2520 (alternate)	2	
Filling		
840	8	
Ply twist, turns per inch		as woven
Ground	0.5 - 1.5	
Binder	1.0 - 2.0	
Stuffer	0.5 - 1.5	
Filling	0.5 - 1.5	

<sup>1/</sup> A failure at or above 150,000 pounds tension or a jaw break at or above 150,000 pounds shall be considered acceptable. In lieu of pulling tapes to complete failure, test may be stopped at 153,000 pounds tension. A failure below 150,000 pounds tension or jaw break below 150,000 pounds shall be considered unacceptable.

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3.5 Tape roll.

3.5.1 Length of roll. Unless otherwise specified in the contract or order, the length of each production tape roll shall be as specified in NAEC Drawing 613516, 506733, or 510534, as applicable (see 6.2).

3.5.2 Tape installation on reel. The tape shall be installed on a reel as shown on the applicable NAEC Drawing 506733, 613516, or 510534.

3.5.2.1 Tape installation procedure. When installing tape on reel, it shall be installed over barrier material conforming to MIL-PRF-131, class 1 which has been wrapped around the periphery of the reel hub. The barrier material shall also cover the sides of the tape reel (inside of the shipping reel) with two additional feet of paper in excess of the reel side diameters to permit sealing two sides together all around the reel (see figure 2). The additional barrier material shall permit the opening and re-sealing of the barrier paper if examination of or work on the tape is required. Sealing process for barrier material shall not injure the tape. After installing the tape on reel and covering the barrier material, wooden cleats shall be installed around the edge of the reel, as shown on the applicable NAEC Drawing 506733, 613516, or 510534.

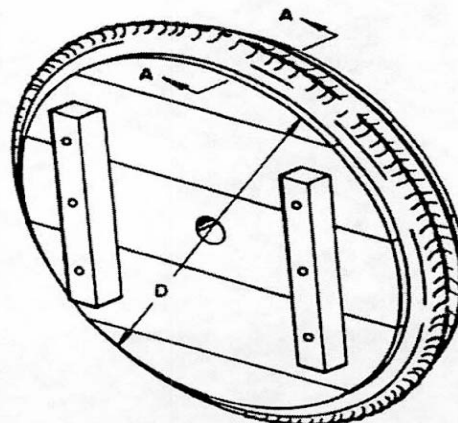
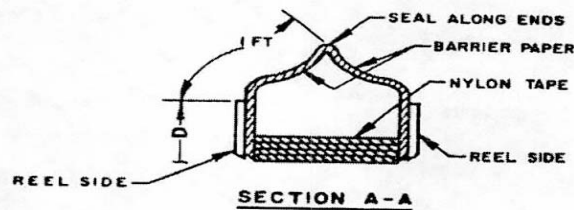


FIGURE 2. Barrier material placement on reel.



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3.5.2.2 Marking. Each reel shall be durably and legibly marked as follows:

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NAEC Part No.

Stock No.

Manufacturer's Identification Number for the Material Contract or Order No.

Date of Manufacture

Name of Contractor

Name of Manufacturer (if not the same as contractor)

3.5.2.3 Reel manufacture. The reel shall be manufactured as shown on NAEC drawing 508306. NAEC assigns new part numbers to Drawing 508306 for lengths not specified on the applicable NAEC Drawing 506733, 613516, or 510534.

### 3.6 Identification.

3.6.1 Manufacturer's identification. The binder wrap shall have at the center of the tape, two ends dyed to match the shade assigned to that manufacturer in accordance with MIL-STD-1480. A manufacturer not listed in MIL-STD-1480 shall apply for assignment of color coding (see 6.2e and 6.4). The colorfastness of this yarn shall be rated as "Fair" or "Good" when tested as specified in 4.5.

3.7 Fiber identification. Each roll of tape shall be labeled, ticketed, or invoiced for fiber content in accordance with 16 CFR Part 303.

3.8 Resin treatment of tape. The tape shall be impregnated with resin Spraylat TR-5418-3 or equivalent as approved by the engineering authority (see 6.8), containing 3 parts per hundred (PHR) carbon black (based on 100 parts resin) to be used for pigmentation and sunlight protection. The resin shall be applied from water dispersion, dried and cured to form a firm, adherent and even deposit or coating on the yarns of the tapes. A verification procedure shall be established to prohibit a tape temperature of greater than 300 °F at any point during the drying process. Once established, variation from this procedure shall require re-establishment of the verification procedure.

3.8.1 Extractable matter. The extractable matter from the resin treated webbing shall be not less than 4 and shall be not greater than 8.5 percent by weight.

3.9 Workmanship. The finished tape shall be uniform in quality, free from foreign matter and irregular defects that can adversely affect usage or durability.

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## 4. VERIFICATION

4.1 Classification of inspections. The inspection requirements specified herein are classified as conformance inspection (see 4.2).

4.2 Conformance inspection. Conformance inspections shall consist of all the visual examinations and tests specified in 4.5 through 4.6.4.2 (see 6.7).

4.3 Sampling for conformance inspection. Sampling for conformance inspection shall be determined in accordance with 4.3.1 through 4.3.4.1 and as specified in table III.

4.3.1 Sampling plan A. Tests shall be conducted on every production tape length.

4.3.2 Sampling plan B. Tests shall be conducted on one sample for each continuous loom run.

4.3.3 Sampling plan C. Tests shall be conducted on samples from each production lot or 10,000 pounds of yarn used in the manufacture of each arresting tape, whichever is less.

4.3.4 Sampling plan D. For this inspection, sampling shall be conducted in accordance with 4.3.4.1.

4.3.4.1 Inspection levels. The inspection levels for sampling plan D shall be as follows:

a. Yard-by-yard. A one yard unit of each production tape shall be inspected as specified in 4.6.4.1.

b. Overall. Each production tape length shall be examined for the defects specified in 4.6.4.2.

4.3.5 Sample plan E-Tape. A sample of each raw, untreated tape shall pass a minimum tensile test of 150,000 lbs. If a sample exceeds 150,000 lbs, the test may be stopped at 153,000 lbs tension in lieu of taking a sample to complete destruction. Each sample tested shall relate back to a tape serial number (see 6.2f and 6.9).

4.3.6 Sample plan E-Sewn loop production testing. A randomly selected tape from the finished production lot shall be used for production lot testing of the sewn loops in accordance with NAEL (SI) MISC NO. 08462, Section 4.2.4.

4.4 Test conditions and preparation. Unless otherwise specified in the detailed test methods herein, the physical tests contained in this specification shall be conducted in an atmosphere

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having a relative humidity not greater than 65 percent and a temperature ranging between 50 to 90 °F.

4.5 Tests.

4.5.1 Test methods. Unless otherwise specified, the examinations and tests in table III shall be conducted in accordance with the identified methods. The average of the determinations for a test specified in the specification shall meet the applicable section 3 physical and chemical requirements of this specification. Failure of any sample of tape to conform to the requirements specified in section 3 shall be cause for rejection of the lot represented.

TABLE III. Test and test methods.

Sampling Plan	Test	Test Method
A	Width, treated	ASTM D3774, Option A
A	Thickness, treated	ASTM D1777, Option B <u>4/</u>
A	Weight, treated	ASTM D3776, Option B
A	Length, treated	ASTM D3373, Option C
A	Breaking strength, as woven	4.5.2
B	Ends in warp, as woven Ground Binder Stuffer	Visual Visual Visual
B	Filling, yarns per inch, as woven	ASTM D3775
B	Yarn ply, as woven Ground Binder Stuffer Filling	Visual Visual Visual Visual
B	Ply Twist, turns per inch, as woven Ground Binder Stuffer Filling	ASTM D1423 <u>1/</u> ASTM D1423 <u>1/</u> ASTM D1423 <u>1/</u> ASTM D1423 <u>1/</u>
B	Weave, as woven	Figure 1
B	Stiffness, as woven	4.5.3
C	Colorfastness to laundering, as woven	AATCC 61 <u>2/</u>
C	Melting Point, as woven	ASTM D276 <u>3/</u>
C	Denier, as woven	ASTM D1907, Option 1 <u>3/</u>

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TABLE III. Test and test methods – Continued.

Sampling Plan	Test	Test Method
C	Filament count, as woven	Visual
D	Classification of Defects, as woven Yard-by-yard Overall	4.6.4.1 4.6.4.2
E	Tape Tensile Strength	4.3.5
E	Sewn Loop Tensile Strength	4.3.6
Nylon 6,6 yarn		
-----	Elongation @ 10 lbs, %	ASTM D885
-----	Tenacity, G/Denier	ASTM D885
-----	Finish on yarn, %	ASTM D2257
-----	Shrinkage, %	ASTM D4974
-----	Denier, Denier	ASTM D885
-----	Yarn breaking strength	ASTM D2256, Option A, Single Unplied Yarns, Condition 1 Ambient Air <u>5/</u>

1/ Five samples each of the ground, binder, stuffer, and filler yarns from woven tape shall be tested.

2/ Applicable only to manufacturer's colored identification yarns.

3/ See 6.2 and 6.5.

4/ Thickness is the average of five readings. No thickness less than 0.330 inch.

5/ Yarn for this test shall be selected in accordance with 4.3.3, sampling plan C, of this specification.

4.5.2 Breaking strength. The breaking strength test shall be conducted in accordance with 4.5.2.2. The type and capacity of the tensile testing machine shall be applicable to the type of tape undergoing tests. The machine shall be adjusted so that no-load separation of the grips or pulling jaws shall be at the rate of travel specified herein. All breaking tests shall be made on full width sections of tape. Two satisfactory sample tests of each three samples tested shall meet the tape strength requirement of the specimen. Jaw breaks are a failure and shall not be a valid test.

4.5.2.1 Test grips. The test grips for holding the specimen shall be so designed that tape failure below 150,000 pounds shall not occur within the grip. The no-load rate of jaw separation shall be 4 to 8 inches per minute.

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4.5.2.2 Tape ultimate strength tests. A test specimen, 15 feet long, shall be obtained as specified in 4.5.2.3. The specimen shall be load tested.

4.5.2.3 Method of sampling for breaking strength tests. The first section of tape leaving a loom run shall have a 15-foot specimen removed from the lead end. After this, a 15-foot specimen shall be removed immediately following every other, or alternate, production tape. The rolls of tape shall be marked consecutively as they leave the loom, with the 15-foot specimens marked identically with the rolls of tape to which they apply. Test the first 15-foot specimen leaving the loom run and every 15-foot specimen thereafter. For example, the three 15-foot specimens are tested as outlined in 4.5.2.2. Then, the tests may result in one of the following seven possibilities as specified in 4.5.2.3.1 through 4.5.2.3.7 (see figure 3).

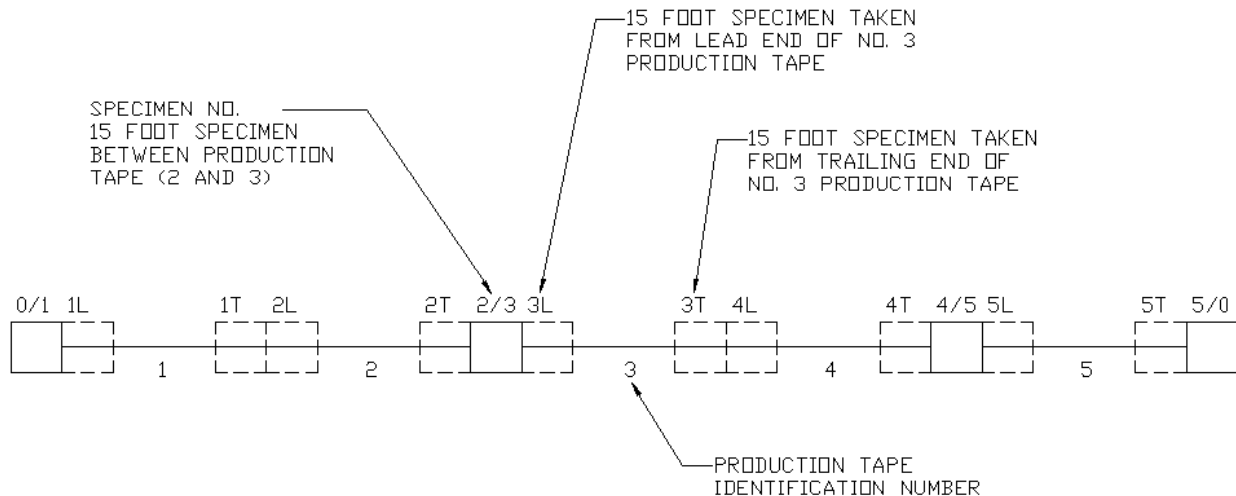


FIGURE 3. 5 -Tape loom run.

4.5.2.3.1 Test result I. If the three tape specimens pass the strength test, the four production tapes in between them are satisfactory.

4.5.2.3.2 Test result II. If the first specimen leaving the loom run fails the strength test and the other two specimens pass the strength test, the third and fourth production tapes are satisfactory, but a 15-foot specimen shall then be cut from the lead end of the first production tape and tested in order to determine if the first and second tapes are satisfactory. If this specimen passes, the first and second production tapes are satisfactory. If the specimen fails, the first production tape is unsatisfactory. A 15-foot specimen shall then be cut from the trailing end of the first production tape in order to determine if the second production tape is satisfactory.

4.5.2.3.3 Test result III. If the second specimen fails and the first and third pass the strength test, a 15-foot specimen shall be taken from the trailing end of the second production tape and

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the leading end of the third production tape. If these two specimens pass, all production tapes are satisfactory. If one or both of these specimens fail, the second and third production tapes are unsatisfactory. A 15-foot specimen shall then be taken from the leading end of the second production tape and the trailing end of the third production tape in order to determine if the first and fourth production tapes are satisfactory.

4.5.2.3.4 Test result IV. If the last specimen leaving the loom run is the only one that fails the strength test, the third and fourth production tapes are the only tapes in doubt. A 15-foot specimen shall be taken from the trailing end of the fourth production tape and tested. If this specimen passes the strength test, the third and fourth production tapes are satisfactory. If the specimen fails, the fourth production tape is unsatisfactory. A 15-foot specimen shall then be taken from the leading end of the fourth production tape in order to determine if the third production tape is satisfactory.

4.5.2.3.5 Test result V. If the first and second specimens fail the strength test, a 15-foot specimen shall be taken from the trailing end of the second production tape and the leading end of the third production tape.

4.5.2.3.5.1 Case I. If one or both test specimens 2T and 3L pass the strength test, the third and fourth production tapes are satisfactory. A 15-foot specimen shall then be taken from the leading end of the first production tape and tested. If this specimen passes, the first and second tapes are satisfactory. If this specimen fails, the first production tape is unsatisfactory and the second production tape is in doubt. A 15-foot specimen shall be taken from the trailing end of the first production tape to determine if the second production tape is satisfactory.

4.5.2.3.5.2 Case II. If one or both test specimens 2T and 3L fail the strength test, the second and third production tapes are unsatisfactory. The first production tape shall be tested by taking a 15-foot specimen from the leading ends of the first and second production tapes. Both specimens shall pass the strength test in order for the first production tape to be satisfactory. The fourth production tape shall be tested by taking a 15-foot specimen from the trailing end of the third production tape.

4.5.2.3.6 Test results VI. If the second and third specimens fail the strength test, a 15-foot specimen shall be taken from the trailing end of the second production tape and the leading end of the third production tape.

4.5.2.3.6.1 Case I. If specimens 2T and 3L pass the strength test, the first and second production tapes are satisfactory and third and fourth production tapes shall be tested by taking a 15-foot specimen from the trailing end of the fourth production tape. If this specimen passes the strength test, the third and fourth production tapes are satisfactory. If the specimen fails the strength test, the fourth production tape is unsatisfactory and a 15-foot specimen then shall be taken from the leading end of the fourth production tape in order to determine if the third production tape is satisfactory.

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4.5.2.3.6.2 Case II. If one or both test specimens 2T and 3L fail the strength test, the second and third production tapes are unsatisfactory. A 15-foot specimen shall be taken from the trailing ends of the third and fourth production tapes. If one or both specimens fail the strength test, the fourth production tape is unsatisfactory. The first production tape shall then be tested by taking a 15-foot specimen from the leading end of the second production tape.

4.5.2.3.7 Test result VII. If all specimens fail, all tapes represented by that run fail.

4.5.2.3.8 Test result Sample plan E-Tape. If the raw tape sample fails, further testing as specified in 4.5.2.3 shall be conducted.

4.5.2.3.9 Test result Sample plan E-Sewn loop. If the sewn loops taken from the finished production lot fail, that production lot shall be destroyed.

4.5.3 Stiffness test. The stiffness test shall be conducted as shown on figure 4. A deflection of one inch shall result when a test load of 75 +20 pounds, or 75 -10 pounds is applied. Length of the as-woven specimen shall be 12 inches.

4.5.3.1 Test fixtures. The test fixture shall be provided by the tape supplier. The fixture consists of three pieces of 2-inch bar stock, each at least 12 inches long of a suitable material, mounted in a loading machine or device as shown on figure 4.

4.5.3.2 Test procedure. The tape specimen shall be installed with the woven edges, i.e., not the cut ends, parallel to the center lines of the two lower bars and centered in the fixture. The load shall be applied by means of the upper bar which is parallel to the lower bars and the load and deflection recorded.

4.5.4 Extractable matter. The extractable matter, inclusive of the resin deposit, shall be determined on one specimen of approximately 10 grams of the webbing. The sample, after separation of the warp and filling yarns, shall be dried to constant weight in a weighting bottle at a temperature of  $220 \pm 8$  °F. The specimen shall then be placed in a Soxhlet apparatus and after a 6-hour extraction with methyl-ethyl-ketone, or suitable substitute. The final weight of the extracted sample shall be obtained by repeating the constant weight drying conditions as specified above. The percent of extractable matter shall be calculated as follows:

$$\text{Percent extractable matter} = \frac{\text{Loss in weight on extraction}}{\text{Original dry weight on sample}} \times 100$$

4.6.4 Classification of defects. Defects found during the examination shall be classified in accordance with 4.6.4.1 and 4.6.4.2.

4.6.4.1 Yard-by-yard examination. A one-yard unit of tape as indicated in 4.3.4.1a shall be examined and visual defects classified as listed in table IV. This examination may be performed

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on the as woven tape. The defects found shall be counted regardless of their proximity to each other except where two or more defects represent a single local condition of the tape, in which case only the more serious defects shall be counted. A continuous defect shall be counted as one defect of each warpwise yard, or fraction thereof, in which it occurs.

4.6.4.2 Overall examination. Examine required samples for finish, odor, and cleanliness. The finish shall be equal to approved sample, when available (see 6.3). There shall be no objectionable odor and the samples shall be clean.

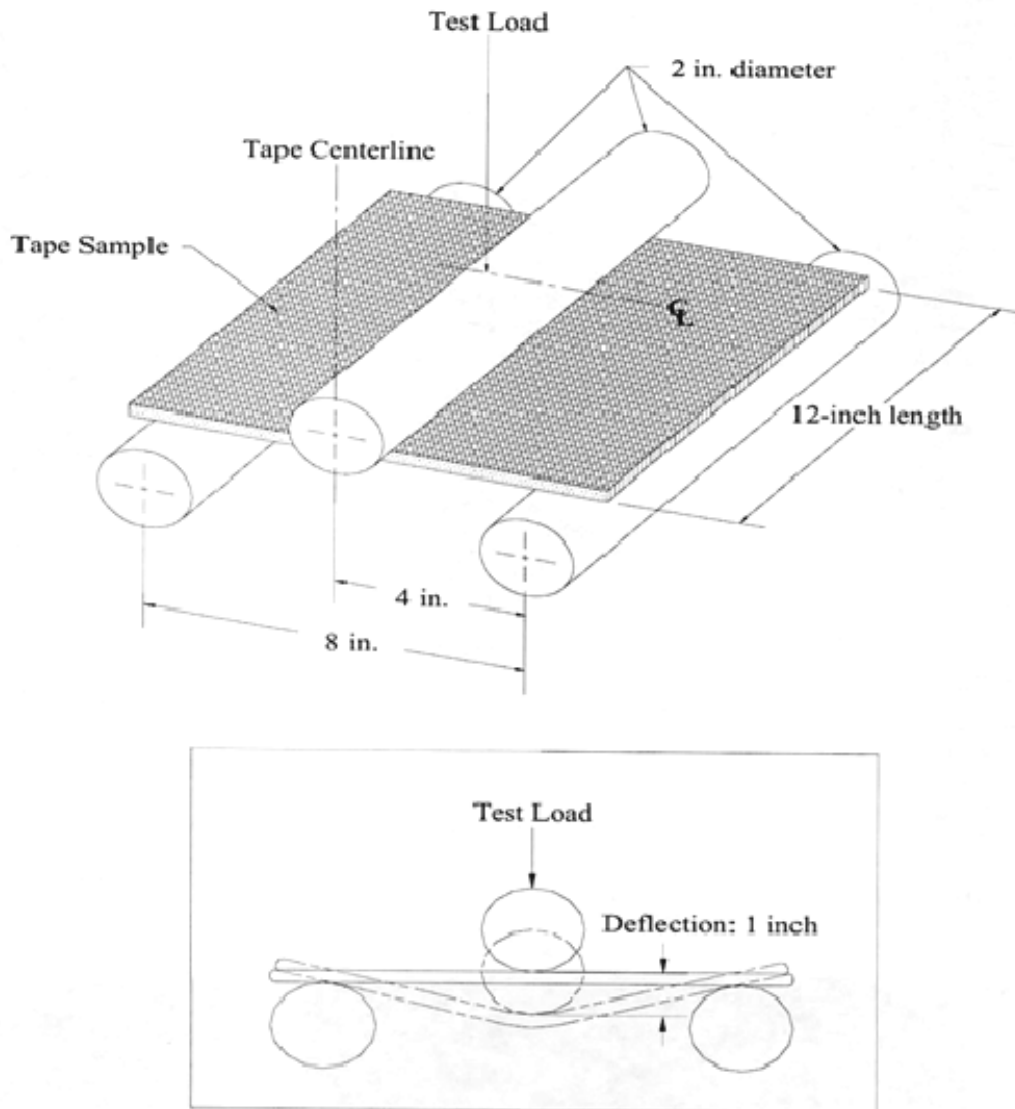


FIGURE 4. Stiffness test.



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TABLE IV. Classification of defects.

DEFECTS	DESCRIPTION	CRITICAL	MAJOR	MINOR
Abrasion marks	Resulting in the rupture of yarns, or in nap sufficient to obscure the identity of any yarn exceeding 10 percent of width, or one inch in length.	X		
Broken or missing end	Two or more regardless of length of a single end exceeding 6 inches in length. Single end under 6 inches but exceeding ¼ inch.	X		X
Broken or missing pick	Two or more regardless of extent. NOTE: The filling tie-in or joining shall not be construed as a defect of any nature.	X		
Coarse or light filling bar	Resulting in visible difference in stiffness or thickness of tape and extending for more than ¼ inch or less in the length direction.	X		
Twist or distortion	Tape will not lay flat upon application of manual pressure due to twist or distortion.			X
Cut, hole, or tear	Any cut, hole, or tear.	X		
Drop-ply	Clearly visible on more than two ends within the same length and exceeding over 9 linear inches or more.		X	
Edge loop	Forming clearly visible filling loops, or edges tied loosely to body of webbing for 2 linear inches or more.	X		

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TABLE IV. Classification of defects – Continued.

DEFECTS	DESCRIPTION	CRITICAL	MAJOR	MINOR
Edge cut, torn, or frayed	Clearly visible along edge.	X		
Edge scalloped	Any indentation of edges above allowable tolerances.		X	
Floats or skips	Multiple, ½ inch or more in combined warp and filling direction or single float or skip over more than 1 inch. Multiple, less than ½ inch in combined warp or filling directions, or single float or skip over more than ½ inch, but not exceeding 1 inch if in warp, or more than ¼ inch of the width but not exceeding 1 inch if in filling.			X
Hitchback, crack, open palce	Clearly visible opening between adjoining picks, or warpwise tension area over part of the width resulting in visible light and heavy place.	X		
Jerked-in, filling, slough-off, slug	A clearly visible loop of filling pulled in at edges.			X
Kinks	More than 3 in any 9 linear inches.		X	
Knots	More than 1 knot in any 5 linear inches. One knot every 2 yards with untrimmed ends extending from surface of tape.		X	
Mispick, double pick	Two or more across the full width. Single across the full width.			X

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TABLE IV. Classification of defects – Continued.

DEFECTS	DESCRIPTION	CRITICAL	MAJOR	MINOR
Slack end	Two or more in the same length, jerked in between picks, or forming clearly visible loops on the surface.	X		
Slub or slag, gout	More than twice the thickness of the yarn (or ply, if plied).			X
Smash	Any smash.	X		
Spot, stain, or streak	Any clearly visible dirt, rust, grease, oil, spot, stain or streak.			X
Wrong draw	Extending for more than 9 inches.		X	
Identification threads	Misplaced.			X
Identification threads	Missing.	X		
END ITEM PREPARATION DEFECTS				
Marking	Omitted, illegible, location, sequence, or method of application.		X	
Materials	Any component missing. Any component damaged, affecting serviceability.	X		
Workmanship	Not uniform in quality. Contains foreign matter. Contains irregular defects. Bulging or distortion of container.		X	

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## 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 materiel 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.)

6.1 Intended use. The nylon tape covered by this specification is intended for use in land based aircraft arresting gear.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Size.
- c. Quantity desired.
- d. Length of roll required (see 3.5.1).
- e. Manufacturer's identification (see 3.6.1).
- f. Sample plan E test results, if required (see 4.3.5 and 6.9)
- g. Packaging requirements (see 5.1).
- h. Certification of yarn (see 6.5).
- i. Tape manufacturer's yarn data (see 3.1.1.6 and 6.6)

6.3 Standard sample. For access to the standard sample, address the procuring activity issuing the invitation for bids.

6.4 Assignment of color coding for manufacturer's identification. Manufacturers not listed in MIL-STD-1480 must apply to Commander, US Army Natick Research and Development Command, Natick, Massachusetts 01760 for assignment of color coding.

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6.5 Certification. A product certification is required for each lot (as defined by the manufacturer) of yarn used in the manufacture of the arresting tapes. The certification must originate from the manufacturer of the yarn, and must be traceable to the manufacturer's test data for the production lot. The certification must include the following:

Yarn Grade  
 Yarn Description  
 Yarn Size (Fiber count, Denier)  
 Yarn Breaking Strength  
 Elongation @ 10 lbs, %  
 Tenacity, G/Denier  
 Shrinkage, %  
 Type of nylon  
 Melting point  
 Filament count  
 Brightness  
 High tenacity  
 Light and heat resistant nylon yarn  
 Manufacturer Name  
 Date of Manufacture  
 Manufacturer's Production Facility  
 Product Lot Number (Product Unit Number)  
 Merge Number, etc, as designated by the yarn manufacturer  
 Mass of Production Lot

Kordsa Corporation, Industrial Grade, Nylon 6,6 yarn has been found to meet these requirements. All other manufacturers of Nylon 6,6 must be approved by NAWCAD Lakehurst, Code 4.8.2.6.

6.6 Tape manufacturer's yarn data. Yarn manufacturers' test data is not an acceptable substitute for the yarn breaking strength test. The tape manufacturer's data must include the measured breaking strength and identifying information for the yarn (i.e. manufacturer, part number, and lot number). The test results must be forwarded to NAVAIR Lakehurst, QA, code 4.8.8.8.

6.7 Responsibility for inspection. Unless otherwise specified in the contract or order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to ensure supplies and services conform to specified requirements.

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6.8 Resin. Spraylat Resin TR-5418-3 is available from the Spraylat Corporation, 716 South Columbus Avenue, Mount Vernon, NY 10550. Equivalent resins must be approved by NAVAIR code 4.8.2.6.

6.9 Sample plan E test results. The test results must be forwarded to NAVAIR Lakehurst, QA, code 4.8.8.8.

6.10 Subject term (key word) listing.

Denier  
Fiber  
Resin  
Tenacity  
Weave  
Yarn

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

Custodian:  
Navy – AS

Preparing activity:  
Navy – AS

Project 8315-2011-001

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 the ASSIST Online database at <https://assist.daps.dla.mil>.