

AEROSPACE
MATERIAL
SPECIFICATION

AMS 3789

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CLOTH, TWILL
Nylon Warp, Rayon Filling

1. SCOPE:

1.1 Form: This specification covers two types of a twill nylon/rayon in the form of cloth.

1.2 Application: Primarily for use in the fabrication of functional clothing (Air Police) by the Department of Defense.

1.3 Classification: Cloth shall be of the following types:

Type I - Durable water-repellant finish

Type II - Durable water-repellant finish with a polyurethane coating on the reverse side

2. APPLICABLE DOCUMENTS: The following documents form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods

2.2 U.S. Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120, except as specified in 2.2.4.

2.2.1 Federal Specifications:

PPP-P-1133 - Packaging and Packing of Synthetic Fiber Fabrics

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2.2.2 Federal Standards:

FED-STD-4 - Glossary of Fabric Imperfections
FED-STD-191 - Textile Test Methods
FED-STD-595 - Colors

2.2.3 Military Standards:

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes

2.2.4 Other Publications: Available from Federal Trade Commission, Washington, DC 20580.

Textile Fiber Products Identification Act, Rules and Regulations

3. TECHNICAL REQUIREMENTS:

3.1 Material: The warp yarn shall be 200 denier trilobal nylon. The filling yarn shall be 14/2s spun viscose rayon.

3.2 Properties: Finished cloth shall conform to the requirements of Table I and the following; tests shall be performed on the product supplied and in accordance with specified test methods insofar as practicable:

3.2.1 Color: Shall be Air Force Blue 1157 in accordance with FED-STD-595.

3.2.1.1 Matching: The color of the finished cloth shall match the standard sample under natural daylight or artificial daylight having a color temperature of 7500° K and shall be a good approximation to the standard sample under incandescent lamplight at 2800° K.

3.2.1.2 Colorfastness: The finished cloth shall show fastness to wet dry cleaning, crocking, perspiration, and light equal to or better than the standard sample. When no standard sample has been established or designated as applicable to colorfastness, the finished cloth shall show "good" fastness to wet dry cleaning, perspiration, and light and shall show a Munsell Value for crocking not less than 8.5.

3.2.2 Weight: Shall be not less than 8.3 oz per sq yd (280 g/m²), determined in accordance with FED-STD-191, Method 5041.

3.2.3 Width: Shall be not less than 45 in. (1140 mm) exclusive of selvage.

3.2.4 Weave: Shall be a 3 up and 1 down, 4 harness left twill.

3.2.5 Finish: Both Types I and II shall be given a durable fluorocarbon type antisoiling treatment. Type II cloth shall be given a 3/4 oz per sq yd (23 g/m²) polyurethane coating on the reverse side.

3.2.6 Nonfibrous Materials: The total chloroform-soluble and water-soluble material content of the finished cloth shall not exceed 4%, determined in accordance with FED-STD-191, Method 2611.

3.2.7 pH: The pH value of the finished cloth shall be 5.0 - 8.5, determined in accordance with FED-STD-191, Method 2811.

3.2.8 Visual Yard-by-Yard Examination: Each roll in the inspection sample shall be examined on the face side only for defects defined in FED-STD-4. All defects visible at a normal inspection distance of 3 ft (1 m) shall be scored and assigned demerit points (See 3.2.8.1). No linear yard (linear metre) from any one roll within the sample shall be penalized more than 4 points. The lot shall be unacceptable if the points per 100 sq yd (85 m²) of the total yardage exceeds 75 points. The lot shall be unacceptable if the points per 100 sq yd (85 m²) of two or more individual rolls exceeds 15.0 points. If one roll exceeds 15.0 points per 100 sq yd (85 m²), a second sample shall be examined only for individual roll quality. The lot shall be unacceptable if one or more rolls in the second sample exceeds 15.0 points per 100 sq yd (85 m²). Point computation shall be as follows:

$$\frac{\text{Total points scored in sample} \times 3600}{\text{Width of cloth, in.} \times \text{total length, yd, inspected}} = \text{Points per 100 sq yd}$$

$$\frac{\text{Total points scored in sample} \times 100,000}{\text{Width of cloth, mm} \times \text{total length, m, inspected}} = \text{Points per 100 m}^2$$

3.2.8.1 Demerit Points: Shall be assigned as follows:

Defects up to 3 in. (75 mm) in any dimension	1 point
Defects over 3 to 6 in. (75 to 150 mm), incl, in any dimension	2 points
Defects over 6 to 9 in. (150 to 225 mm), incl, in any dimension	3 points
Defects over 9 in. (225 mm) in any dimension	4 points

3.2.8.1.1 The following defects, when present, shall be scored 4 points for each yard (m) in which they occur:

Bowed or bias filling exceeding 2-in. (50-mm) deviation from normal alignment
 Baggy, ridgy, or wavy cloth
 Objectionable odor
 Width less than specified
 Uneven weaving
 Tight selvage
 Tight warp end

3.3 Quality: Cloth, as received by purchaser, shall be clean, evenly woven, as free from foreign materials as commercially practicable, and free from imperfections detrimental to usage of the cloth.

3.3.1 Acceptance quality levels (AQL) for the cloth shall be as specified by purchaser.