

AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS 3802

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Revised

CLOTH; LIGHTWEIGHT AIRPLANE, COTTON, MERCERIZED

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1. ACKNOWLEDGMENT: A vendor must mention this specification number in all quotations and when acknowledging purchase orders.
2. APPLICATION: The material shall be suitable for covering of aircraft surfaces such as wings, fuselage, ailerons, elevators, etc. for aircraft with low wing loadings and low horsepower rating.
3. MATERIAL: This cloth shall be woven from 2-ply, combed cotton yarn.
4. REQUIREMENTS: (a) The yarn shall be reasonably free from nap breaks, broken ends, uneven threads and knots. The yarn may be mercerized under tension.

NOTE: The cloth shall be piece mercerized or similarly processed to remove the wax coating from the cotton fibers for the purpose of increasing the dope absorptive capacity of the material.

(b) The weave shall be plain (one up and one down).

(c) The number of threads shall be not less than 110 per inch in either the warp or the filling.

(d) The selvedge edges shall be flat woven with no greater tension than that of the body of the cloth.

(e) The breaking strength shall not be less than 50 pounds per inch in either the warp or filling as determined by the ravelled-strip method.

(f) The elongation shall not be greater than 13% in the warp and not greater than 11% in the filling under 44 pounds tension during the strip test. The percentage shall be based on the average of five (5) specimens.

(g) The weight of the finished cloth shall not exceed 2.6 ounces per square yard.

(h) The cloth shall not contain more than 2.5% total sizing, finishing and other non-fibrous materials and shall be chemically neutral. A de-sizing operation may be performed if necessary to reduce the sizing content to the 2.5% maximum value specified.

(i) Finishing shall consist of washing, framing and calendering. The calendering shall be sufficient to lay any nap present and shall provide a smooth, even surface.

5. TESTS: All tests shall be made in accordance with ASTM D39-39 except as follows: The test for total sizing, finishing, and other non-fibrous materials shall be made in accordance with ASTM D629-42T, using equation 3 for calculation.

6. TOLERANCES: Unless otherwise specified on the drawing or purchase order, the following tolerances apply:

<u>Width Inches</u>	<u>Tolerances Inches</u>
36	$\pm 1/2$
42	$\pm 5/8$
60	± 1
69	± 1
90	$\pm 1-1/2$

7. LENGTH OF CUT: The length of a single cut shall not be less than 40 yards except that 10% of the total yardage of one width under any contract or order may be in short lengths of from 10 to 25 yards and 10% may be from 25 to 40 yards. However, short lengths shall be rolled together and the roll properly labeled to indicate that it is composed of short lengths.

8. LENGTH OF ROLL: The cloth shall be furnished on rolls containing the following lengths:

<u>Width Inches</u>	<u>Roll Length Yards</u>
36 and 42	500 to 600
60 and 69	250 to 300
90	175 to 200

9. PACKAGING & MARKING: (a) Packaging shall be accomplished in such a manner as to insure that the cloth, during shipment or storage, will not be exposed to moisture or weathering, or harmful agents of any kind.

(b) Each package shall be permanently and legibly marked to give the following information:

CLOTH: LIGHTWEIGHT AIRPLANE, COTTON, MERCERIZED

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YARDAGE _____

WIDTH _____

DATE OF MANUFACTURE _____

ORDER NUMBER _____

MANUFACTURER'S NAME _____

10. APPROVAL: A manufacturer shall not supply material to this specification until samples are approved by the purchaser and, after approval, the materials and/or the methods of manufacture shall not be changed without written permission from the purchaser. Results of tests on incoming shipments shall be essentially equal to those on the approved samples.