Society of Automotive Engineers, Inc.
400 COMMONWEALTH DRIVE, WARRENDALE, PA. 15096

AEROSPACE MATERIAL SPECIFICATION

AMS 3837A
Superseding AMS 3837
Issued 11-15-71
Revised 7-16-79

CLOTH, TYPE "S" GLASS
181 Style Fabric, Finish No. HTS-904

1. SCOPE:

1.1 Form: This specification covers "S" glass in one style of woven fabric with an HTS-904 finish.

1.2 Application: Primarily as a reinforcing material for structural plastic laminates. Suitable for use with phenolic and epoxy resin matrices.

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

2.1 SAE Publications: Available from Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods

2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM D123 - Definition of Terms Relating to Textile Materials
ASTM D579 - Woven Glass Fabrics
ASTM D1777 - Measuring Thickness of Textile Materials
ASTM D1910 - Construction Characteristics of Woven Fabrics
ASTM D2410 - Woven Glass Fabric, Cleaned and After-Finished with Chrome Complexes, for Plastic Laminates

2.3 Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Military Standards:

MIL-STD-794 - Parts and Equipment, Procedures for Packaging and Packing Of

3. TECHNICAL REQUIREMENTS:

3.1 General:

3.1.1 Color: Cloth shall be essentially white to light straw in color.

3.1.2 Finish: Immediately after filaments have been drawn from "S" glass, they shall be coated with a high-tensile-strength size, HTS-904, which will yield a product meeting the requirements of 3.1.1. The HTS-904 finish shall aid in wetting the fabric with resin and shall provide an intermediate chemical bond between the fabric and resin.

3.1.3 Yarn: Cloth shall be woven from SCG 150-1/2 yarn.

Printed in U.S.A.

3.1.4 Weave: The weave shall be an eight-harness, satin weave in which each warp and fill yarn goes under one, and over seven, then under one, and repeat. The interweaving of the warp and fill yarns shall be staggered, i.e., the No. 1 warp yarn shall go under the No. 1, No. 9, No. 17, and subsequent fill yarns, and the No. 2 warp yarn shall go under the No. 2, No. 10, No. 18, and subsequent fill yarns.

3.2 Properties: Cloth shall conform to the following requirements:

3.2.1 Weight:	8.35 - 9.05 oz per sq yd (283 - 307 g per m^2)	ASTM D1910, Small Sample Method
3.2.2 Nominal Thickness:	0.009 - 0.015 in. (0.23 - 0.38 mm)	ASTM D1777
3.2.3 Fabric Count:		ASTM D1910
Warp	55 - 59 ends per in. (per 25.4 mm)	
Fill	52 - 56 ends per in. (per 25.4 mm)	
3.2.4 HTS-904 Finish:	0.75 - 2.25%	ASTM D2410 (Specimen drying not required for this binder)
3.2.5 Breaking Strength, min:		ASTM D579 (Specimen drying not required for this binder)
Warp	500 lb per in. of width (88 kN/m of width)	
Fill	450 lb per in. of width (79 kN/m of width)	

3.3 Quality: Cloth shall be uniform in quality and condition, clean, smooth, and free from foreign materials and from imperfections detrimental to fabrication, appearance, or performance of parts.

3.3.1 Imperfections: In any 100 yd (91.4 m) of fabric supplied, there shall be no more than 10 major, or equivalent minor (2 minors = 1 major) imperfections, based on the following imperfection classification:

Imperfection	Description and Limitation	Classification
Bias or bowed filling	Distorted from horizontal by more than 3 in. (76 mm) for 38 in. (965 mm) and proportionately for all other widths	Minor
Baggy, ridgy, or wavy cloth	Clearly noticeable	Major
Cut or tear	2 in. (51 mm) or more in combined directions	Major
	Less than 2 in. (51 mm) but greater than 1/4 in. (6.4 mm) in combined directions	Minor

Imperfection	Description and Limitation	Classification
Hole	1/2 in. (12.7 mm) or more in diameter	Major
	Less than 1/2 in. (12.7 mm) in diameter	Minor
Spots, streaks, or stains	Clearly noticeable 2 in. (51 mm) or more in combined directions	Major
	Clearly noticeable less than 2 in. (51 mm) in combined directions	Minor
Tender or weak spot	Clearly noticeable 2 in. (51 mm) or more in combined directions	Major
	Clearly noticeable less than 2 in. (51 mm) but greater than 1/4 in. (6.4 mm) in combined directions	Minor
Smash	3 in. (76 mm) or more in combined directions	Major
	Less than 3 in. (76 mm) in combined directions	Minor
Broken or missing ends or picks	3 or more contiguous regardless of length or 2 contiguous more than 36 in. (914 mm) in length	Major
	2 contiguous less than 36 in. (914 mm) in length	Minor
Floats	2 in. (51 mm) or more in combined directions	Major
	Less than 2 in. (51 mm) in combined directions	Minor
Coarse or light place	Over 1/2 in. (12.7 mm) in width causing thickness outside of limits specified in 3.2.2	Minor

Imperfection	Description and Limitation	Classification
Selvage defects	Cut or torn	Major
	Curled or folded under	Minor
Crease	Hard, embedded, and folded over on self	Major
Brittle or fused area	Any	Major
Uneven finish	Thin areas where finishing compound is missing or insufficient	Major

3.4 Tolerances: Unless otherwise specified, the width shall be within ±1/2 in. (±13 mm) from that ordered.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of cloth shall supply all samples and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.5. Purchaser reserves the right to perform such confirmatory testing as he deems necessary to ensure that the cloth conforms to the requirements of this specification.

4.2 Classification of Tests: Tests to determine conformance to all technical requirements of this specification are classified as acceptance tests and as qualification tests and shall be performed on each lot.

4.2.1 For direct U.S. Military procurement, substantiating test data and, when requested, qualification test material shall be submitted to the cognizant qualification agency as directed by the procuring activity, the contracting officer, or the request for procurement.

4.3 Sampling: Shall be as follows; a lot shall be all cloth produced in a single production run under the same fixed conditions and submitted for vendor's inspection at one time:

4.3.1 Visual Examination of Rolls: 100% of each roll.

4.3.2 Fabric Tests: Samples for test shall be taken at random from each lot in accordance with Table I. Except as noted in 4.3.2.1, the number of specimens for each test shall be as specified in the applicable test procedure or, if not specified therein, not less than three.

4.3.2.1 When a statistical sampling plan and acceptance quality level (AQL) for the product has been agreed upon by purchaser and vendor, sampling shall be in accordance with such plan in lieu of sampling as in 4.3.2 and the report of 4.5.1 shall state that such plan was used.

TABLE I

SAMPLE SIZE FOR TESTS OF GLASS CLOTH

Lot Size, Yards	Sample Size, Yards
Up to 3,200, incl	2
Over 3,200 to 22,000, incl	3
Over 22,000	5