



AEROSPACE MATERIAL SPECIFICATION

AMS3970™/2**REV. A**

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Superseding AMS3970/2

Carbon Fiber Fabric Repair Prepreg, 120 °C (250 °F) Vacuum Curing
Part 2 - Qualification Program for Fiber, Fabric, Carbon Prepreg, Film Adhesive and
Non-Structural Glass Prepreg

RATIONALE

AMS3970/2A has been reaffirmed to comply with the SAE five-year review policy.

FOREWORD

AMS3970/2 belongs to the Technical Specification system explained in AMS3970.

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1. SCOPE

AMS3970/2 gives specific information about the qualification program for carbon fiber reinforced epoxy structural repair prepreg systems, applicable for 120 °C (250 °F) vacuum curing. The prepreg system may include an epoxy film adhesive to be applied in a co-curing process with the prepreg for joint and sandwich bonding. The need for a film adhesive shall be established during screening tests.

1.1 Field of Application

This specification is only applicable to carbon fiber fabric epoxy prepreg and if necessary, associated epoxy film adhesive.

2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

AMS3970	Carbon Fiber Fabric Repair Prepreg, 120 °C (250 °F) Vacuum Curing - Part 0 - Introduction
AMS3970/1	Carbon Fiber Fabric Repair Prepreg, 120 °C (250 °F) Vacuum Curing - Part 1 - General Requirements
AMS3970/6	Carbon Fiber Fabric Repair Prepreg, 120 °C (250 °F) Vacuum Curing - Part 6 - Carbon Fiber Fabric Reinforced Epoxy Prepreg for Repair, Plain Weave, 193 gm/m ² , Adhesive Film for Repair, Non-Structural Glass Fiber fabric Reinforced Epoxy Prepreg, 105 gm/m ²

2.2 Other Publications

See the Applicable Documents Section of AMS3970/1 for reference to all other documents listed within this part specification.

3. DEFINITIONS

Refer to AMS3970/1.

4. REQUIREMENTS

Refer to AMS3970/1 and the relevant MS (AMS3970/6). The number of specimens per test condition is specified in Table 18. Refer to Table 17 for abbreviations used.

5. QUALIFICATION

Refer to AMS3970/1. The qualification program is given in:

TABLE 1	Material Qualification Program for Carbon Fiber
TABLE 2	Material Qualification Program for Carbon Fabric
TABLE 3	Composite Batch Combinations for the Qualification Program
TABLE 4 and TABLE 5	Material Qualification Program for Uncured Carbon or Glass Prepregs and Film Adhesive
TABLE 6 through TABLE 8	Material Qualification Program for Cured Carbon or Glass Composites and Film Adhesive - Physical Properties
TABLE 9 through TABLE 15	Material Qualification Program for Composite and Bonded Joints

6. NOTES

- 6.1 A change bar (I) located in the left margin is for the convenience of the user in locating areas where technical revisions, not editorial changes, have been made to the previous issue of this document. An (R) symbol to the left of the document title indicates a complete revision of the document, including technical revisions. Change bars and (R) are not used in original publications, nor in documents that contain editorial changes only.

TABLE 1 - MATERIAL QUALIFICATION PROGRAM FOR CARBON FIBER

id	Property	Number of Batches Tested ¹	Test Method
1.1	Tensile Impregnated Yarn (σ_f , E_f , ϵ_f)	-	ISO 10618.2/B ²
1.2	Fiber Density (ρ_f)	-	ISO 10119/A
1.3	Filament Count	-	according to manufacturer
1.4	Sizing Content	-	ISO 10548/C
1.5	Linear Density	-	ISO 10120
1.6	Twist	-	ISO 1890
1.7	Filament Diameter	-	according to manufacturer
¹ No qualification tests are required. The fiber shall be a qualified material in a prepreg used by an OEM, reference AMS3970/1. Substantiating qualification data shall be provided. ² Normalize to 100% fiber volume.			

TABLE 2 - MATERIAL QUALIFICATION PROGRAM FOR CARBON FABRIC

id	Property	Number of Batches Tested ¹
2.1	Weaving Style and Yarn Count	w
2.2	Fabric Areal Mass	w
¹ No qualification tests are required. Data from batches used in the qualification program shall be provided by the fabric manufacturer. NOTE: Test methods per AMS3970/1.		

TABLE 3 - COMPOSITE BATCH COMBINATIONS FOR QUALIFICATION PROGRAM

	Base Material Batches and Batch Combinations Tested		
Prepreg Batch	1	2	3
Fiber Batch ¹	Fi1	Fi2	Fi2
Fabric Batch ²	F1	F2	F2
Prepreg Resin Batch	R1	R2	R1
Film Adhesive Batch ³	A1	A1	A1
¹ It is sufficient to test one fiber batch. ² Preferably two fabric batches (F1, F2) shall be qualification tested Fabric batch F1 is an acceptable replacement for fabric batch F2. ³ For cure specimens manufactured using a film adhesive. One film adhesive batch shall be used.			