

AEROSPACE MATERIAL SPECIFICATION

Issued NOV 1996
Revised JAN 2006
Superseding AMS 2980

Carbon Fiber Fabric and Epoxy Resin Wet Lay-Up Repair Material Part 0 - Introduction

RATIONALE

AMS 2980 is revised to include the relevant PRI documentation references and the PRI rules to manage the qualification process through the Qualified Product Group (QPG). The PRI QPL AMS 2980 has been included as part of the Technical Specification System.

FOREWORD

This Technical Specification is prepared by the Air Transport Association/International Air Transport Association/Society of Automotive Engineers, Inc. (ATA/IATA/SAE) Commercial Aircraft Composite Repair Committee - Repair Material Task Group (CACRC-RMTG). The purpose of this specification is to obtain a common Technical Specification for the wet lay-up repair materials for carbon fiber-reinforced epoxy structures conforming to the requirements of the Original Equipment Manufacturers (OEM).

TABLE OF CONTENTS

1.	SCOPE	2
1.1	Field of Application	2
2.	APPLICABLE DOCUMENTS	2
2.1	PRI Publications	2
3.	MATERIAL QUALIFICATION	2
3.1	Organization Involved	2
3.2	Qualification Rules	3
4.	FORMAT OF THE DOCUMENT	3
4.1	Technical Specification	4
4.2	Material Specification	4
4.3	PRI QPL AMS 2980	4
4.4	Individual Product Sheet	4
FIGURE 1	Schematic Illustration of the Technical Specification System.	5

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be reaffirmed, revised, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2006 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

TO PLACE A DOCUMENT ORDER:
Tel: 877-606-7323 (inside USA and Canada)
Tel: 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: custsvc@sae.org
SAE WEB ADDRESS: <http://www.sae.org>

1. SCOPE:

This document (Technical Specification) gives information about qualification rules and the relation between the different specification parts involved, such as Technical Specification (TS), Material Specification (MS), and Purchasing Specification (PS). The link to material qualification and qualified products is presented.

1.1 Field of Application:

This document is only applicable to carbon fiber fabric materials and epoxy or modified epoxy laminating resins used for wet lay-up repair of carbon fiber composite structures.

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 PRI Publications:

Available from Performance Review Institute, 161 Thornhill Road, Warrendale PA 15086-7527 or www.pri-network.org.

PD 2000 Governance and administration of an industry managed product qualification program.

PD 2001 Manufacturer request for product approval and qualification process.
PRI QPL AMS 2980 Qualified product list of AMS 2980.

3. MATERIAL QUALIFICATION:

3.1 Organizations Involved:

CACRC-QPG (Commercial Aircraft Composite Repair Committee-Qualified Product Group) is a mandated body designated by the PRI (Performance Review Institute) Qualified Product Management Council (QPMC) in accordance with PRI PD 2000.

The members of the CACRC QPG are the members of the CACRC RMTG (Repair Materials Task Group).

The CACRC QPG operates in accordance with PD2000.

Material manufacturer - The manufacturer that produces the end product to be tested in the qualification program, i.e. the fiber manufacturer, the weaver and the resin manufacturer. They shall follow the application process specified in PD2001.

OEM - Original Equipment Manufacturer, certified by airworthiness authorities.

3.2 Qualification Rules:

- 3.2.1 Organization: Material qualification in accordance with this document (TS), review of qualification results, approval, reapproval, and recertification of qualification for QPL listing shall be in accordance with PD 2000. a. Screening and qualification testing is the responsibility of the material manufacturer.

In addition to the qualification program, the OEM may require additional design-related testing before the qualified material combination can be approved for repair of carbon fiber composite structures. This additional testing is the responsibility of the material manufacturer unless otherwise agreed with OEM involved.

- 3.2.2 Technical: In accordance with the requirements of this TS the qualification rules are:

- a. The fiber source, woven fabric source and resin system source shall be qualified as a unique composite material combination.
- b. After successful qualification the composite material combination shall be listed in the PRI QPL AMS 2980.
- c. Any other combinations of fiber, fabric and resin not mentioned in the PRI QPL AMS 2980 are not qualified.

For qualification, four important items shall be completed:

- a. Audit of supplier in accordance with ISO 9000 or equivalent
- b. Reporting of the material manufacturing process (Process Control Document)
- c. Testing of the material performance (qualification program)
- d. Specifying production quality control and batch release requirements

4. FORMAT OF THE DOCUMENT:

The Technical Specification system is illustrated in Figure 1 and consists of the following:

4.1 Technical Specification:

- a. The TS specifies all requirements for screening and qualification for base materials and the material combinations.
- b. AMS 2980 - Introduction - gives an explanation about the aim of this TS system, the relation between the specification parts involved and qualified products.
- c. AMS 2980/1 - General Requirements - specifies the general requirements. It gives the requirements and test methods for qualification of a fiber, fabric and resin as well as that for the material combination.
- d. AMS 2980/2 - Qualification Program - specifies the material qualification program for the base materials as well as the material combination.

4.1 (Continued):

The purchasing specifications (PS) are part of the TS and give specific information about the batch release and delivery requirements for the base materials:

AMS2980/3 TS-PS Carbon Fiber Fabric specifies the requirements for the carbon fiber and fabric material.

AMS2980/4 TS-PS Resin specifies the requirements for resin systems.

4.2 Material Specification:

AMS 2980/5: The MS gives, for a certain material group, the material requirements with regard to the properties of the base materials as well as the material combination for screening and qualification.

4.3 PRI QPL AMS 2980

The PRI QPL AMS 2980 lists the qualified material combinations. A material combination originates from one carbon fiber manufacturer, one fabric source and one epoxy resin manufacturer.

4.4 Individual Product Sheet:

The IPS lists the batch release requirements for the fabric and the resin of each combination . The IPS is an appendix of the QPL.