



AEROSPACE INFORMATION REPORT

AIR5278™

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Composite and Bonded Structure Engineers:
Training Document

RATIONALE

AIR5278 has been reaffirmed to comply with the SAE five-year review policy.

1. SCOPE:

This document provides recommendations concerning the minimum knowledge and analytical skill guidelines for a composite and metal bond repair design engineer.

Teaching levels have been assigned to this curriculum to define the knowledge, skills and abilities needed to design appropriate repairs. Minimum hours of instruction have been provided to ensure adequate lecture and laboratory coverage of all subject matter. These minimums may be exceeded, and may include an increase in the total number of training hours and/or increases in the teaching levels.

2. APPLICABLE DOCUMENTS:

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1 U.S. Government Printing Office Publications:

Available from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

U.S. Code of Federal Registry 14, Part 147 (US FAA FAR) Scope

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3. STUDENT PREREQUISITES:

Student success will be in part based on the knowledge and skills normally acquired in a formal engineering program at the university level and should specifically include the following:

- Engineering mechanics of materials
- Matrix algebra
- Engineering statics
- Fundamentals of engineering and technical drawings

4. EXAMINATIONS:

Training Providers will be required to monitor student performance throughout the program. Students will be administered written exams in lecture classes and shall perform engineering analysis tasks. The minimum passing grade for all written tests shall be 70% and all grades shall be recorded in the individual's training records.

The final examination(s) covering the basic principles of composite and bonded metal repair will include a comprehensive written test (minimum 25 questions) and including engineering analysis tasks involving the repair of composites and/or bonded metal structures.

5. TEACHING LEVELS:

Levels 1 through 3 are defined in 14 CFR, Part 147. Level 4 is defined as applicable to this engineering curriculum.

5.1 Level 1:

Classroom instruction only, general knowledge and principles, no hands-on training required.

5.2 Level 2:

More in-depth than Level 1: some hands-on skill training required, still taught primarily in the classroom environment.

5.3 Level 3:

Requires knowledge of general principles and a high degree of practical applications, using hands-on training.

5.4 Level 4:

In-depth classroom discussion at the engineering level; high degree of detail and knowledge required, including applications of engineering analysis techniques.

6. CURRICULUM:

This curriculum describes the minimum subject matter to be taught by the Training Provider. Subjects may be combined, repeated, or reinforced in any order which will effectively cover the scope of this curriculum.

TABLE 1 - Table of Contents

Subject	Section Number	Hours
Introduction	1.0	1
Material properties and characteristics	2.0	6
Material handling and storage	3.0	4
Original design criteria	4.0	10
Stress analysis	5.0	16
Repair design criteria	6.0	8
Safety and environment	7.0	1
Damage assessment and inspection techniques	8.0	4
Repair techniques	9.0	24
Source documents	10.0	8
Record keeping	11.0	2
Hand tools and shop equipment	12.0	24
Fastening systems	13.0	8
Tooling and mold making	14.0	8
Total hours		124