VOLUME 4 AIRCRAFT EQUIPMENT AND OPERATIONAL AUTHORIZATIONS

CHAPTER 14 GENERAL OPERATING AND FLIGHT RULES—MAINTENANCE ISSUES

Section 14 Flammability Testing of Interior Materials Used in Repairs and Alterations

4-14-14-1 OBJECTIVE. This section provides guidance to aviation safety inspectors (ASIs) regarding flammability testing of materials used in repairs and alterations of aircraft interiors.

4-14-14-3 GENERAL. The primary audience for this guidance is Flight Standards District Office (FSDO), certificate management office (CMO), International Field Office (IFO), headquarters (HQ), and regional personnel who are responsible for certificate management, oversight, and policy. Inspector responsibility is limited to normal surveillance activity to ensure compliance with regulatory policy.

4-14-14-5 BACKGROUND.

A. Flammability Testing. Flammability testing is necessary for repairs and alterations to interior materials and components if required in the aircraft certification basis and/or the operating rule. The Type Certificate Data Sheet (TCDS) (or aircraft specification) for the specific aircraft identifies the certification basis. This generally includes materials used in crew, passenger, and cargo compartment interiors, and other materials identified in the certification basis. Title 14 of the Code of Federal Regulations (14 CFR) part 43, § 43.13(b) requires, in part, that each person maintaining or altering aircraft shall do that work in such a manner and use materials of such a quality that the condition of the aircraft will be at least equal to its original or properly altered condition with respect to qualities affecting airworthiness. The person authorized by § 43.7 to approve an aircraft for return to service after repair or alteration is responsible for determining that the materials used are suitable and meet applicable requirements.

B. Maintenance. Flammability testing of material specimens is not maintenance. Flammability testing is comparable to chemical and physical destructive testing of other material specimens used in aircraft repairs and alterations (e.g., aluminum and steel), which is also not considered maintenance. As such, flammability testing is not work performed on the material to return it to “at least its original or properly altered condition.” A flammability test determines whether a material or component meets the regulatory requirements of the aircraft airworthiness standards, so it may be used as part of a design, repair, or alteration. Flammability testing is not maintenance in accordance with part 43, and authorizing a repair station to perform these tests under 14 CFR part 145 is not appropriate.

C. Approval. The Federal Aviation Administration (FAA) does not approve or certificate flammability test facilities.

4-14-14-7 REGULATIONS, LEGAL RULINGS, AND GUIDANCE.

Specific flammability testing requirements can be found in appendix F of the respective parts. Flammability testing is set forth in the airworthiness standards such as parts 23 and 25, not in the rules governing maintenance set forth in part 43.

**B. Definitions.** Title 14 CFR part 1, § 1.1 defines maintenance as the “inspection, overhaul, repair, preservation, and the replacement of parts,” but excludes preventive maintenance.

**C. Performance Rules.** Section 43.13(b) requires, in part, that each person maintaining or altering aircraft shall do that work in such a manner and use materials of such a quality that the condition of the aircraft will be at least equal to its original or properly altered condition with respect to qualities affecting airworthiness.

**D. Maintenance Providers.** Pursuant to 14 CFR part 145, § 145.201, a certificated repair station may only “perform maintenance, preventive maintenance, or alterations in accordance with part 43 on any article for which it is rated and within the limitations in its operations specifications.” Per § 145.61, limited ratings are only for maintenance and alteration of a “particular type of airframe, powerplant, propeller, radio, instrument, or accessory,” or if a repair station performs only “specialized maintenance requiring equipment and skills not ordinarily performed under other repair station ratings.” Accordingly, flammability testing is not maintenance that one may conduct in accordance with part 43, and authorizing a repair station to perform these tests under a limited rating is not permissible.

**E. Legal Interpretations.** The FAA has concluded that flammability testing is not a maintenance function set forth in part 43. The purpose of a flammability test is to ensure that a material conforms to the requirements of the airworthiness standards, so one may use it as part of a design, maintenance, or alteration.

**F. Approval of Data.** Aircraft Certification Offices (ACOs) and specifically authorized Designated Engineering Representatives (DERs) may approve technical data collected from flammability testing. In addition, an Organization Designation Authority (ODA), following procedures approved by the FAA, may approve flammability test data for major repairs or major alterations.

**G. FAA Order 8110.37.** Existing guidance in the current edition of FAA Order 8110.37, Designated Engineering Representative (DER) Handbook, Flammability Testing of Interior Materials, states: “A DER with authority to witness flammability tests... must know how the material or part will be installed on an end product and must identify that use on FAA Form 8110-3. For certification projects, a DER makes this finding of compliance per an approved test plan and using a conformed test article that represents the final configuration. For a specific repair or alteration, a DER makes this finding of compliance per an acceptable method as agreed upon by the managing ACO, which will include a defined test process and means to ensure test article conformity. Form 8110-3 may not be used by a DER to attest to compliance with 14 CFR [part 23, § 23.853; part 25, § 25.853; part 27, § 27.853; and part 29, § 29.853] or other material flammability test to support lot or quality control testing or in support of [Technical Standard Order Authorization] TSOAs.”
4-14-14-9 GUIDANCE.

A. Authorization. The regulations set forth test procedures, but do not state who has authorization to perform the tests or collect the data. Any person who can perform the testing to the requirements of the applicable airworthiness standard may accomplish flammability testing. The FAA will not approve or certificate persons to perform flammability testing. An ACO, DER, or ODA must approve test data as part of the approved technical data required to support a major repair or major alteration. As with any maintenance or alteration, the person who approves the aircraft for return to service is responsible for doing that work in such a manner and using materials of such a quality that the aircraft worked on will be at least equal to its original or properly altered condition.

B. Material Specimen Tests. Material specimen tests may not be representative of the material configuration installed in the aircraft, and may not be sufficient to determine that the complete repair or alteration meets all requirements. For example, the flammability characteristics of a seat or interior panel material alone may be different from the material as installed on the part with foam, insulation, adhesive, etc. Consult the applicable regulation for test criteria for showing compliance to the rule.

C. Ratings and Capabilities. The FAA will not authorize limited ratings for flammability testing, and repair stations must not add flammability testing to the capabilities lists.

D. Field Approval. ASIs should not field approve flammability test data for materials.

4-14-14-11 FLAMMABILITY TEST DOCUMENTATION. The following are methods for approval of flammability test data:

A. Data for Major Repairs and Alterations. Test data for major repairs and alterations must receive approval by one or a combination of the following alternatives:

1) DERs use FAA Form 8110-3, Statement of Compliance with Airworthiness Standards, only to approve flammability test data associated with specific certification projects (design approvals), major repairs, and major alterations. This form is not for quality assurance or material certification.

2) Appropriately authorized ODAs use FAA Form 8100-9, Statement of Compliance with Airworthiness Standards, to approve flammability test data for major repairs or major alterations only for a specified product (by make, model, and serial number).

3) A letter from an ACO approves specific flammability test data.

B. Approval for Return to Service. FAA Form 8130-3, Airworthiness Approval Tag, is for approval for return to service of products and parts, not material testing or certification. A flammability test is not work performed on the material to return it to “at least its original or properly altered condition” in accordance with the current edition of FAA Order 8130.21, Procedures for Completion and Use of the Authorized Release Certificate, FAA Form 8130-3, Airworthiness Approval Tag.
C. Acceptable Data for Minor Repairs or Alterations. When a repair or alteration is not major and does not require FAA-approved technical data, the flammability testing documentation should be acceptable to the FAA and meet the requirements of the person approving the aircraft for return to service. The documentation should provide evidence that the tests complied with FAA standards and include the test results necessary to show compliance. For minor repairs and alterations, test data that shows compliance with the aircraft’s certification basis is acceptable without ACO, DER, or ODA findings or approvals. Certification of Conformance statements (or similar) may not be adequate. The test data must include specifics such as burn length, flame time, burn rate, glow time, etc., as required by the regulations.

D. Data Approval Considerations. Data development should include an evaluation of the entire interior repair or alteration to determine the type of data approval required. The FAA does not allow piece-maling or a series of “minor” determinations in order to circumvent the requirement for approved data for the overall repair or alteration.

E. Aircraft Records. The owner/operator is not required to keep flammability test data for minor repairs and minor alterations in the aircraft records after approval for return to service by an authorized person.

4-14-14-13 REFERENCES, FORMS, AND JOB AIDS.

A. References (current editions):

- Title 14 of the Code of Federal Regulations and predecessor regulations (Civil Aviation Regulations (CAR) and Aeronautical Bulletins).
- 14 CFR part 91, § 91.613; part 121, § 121.312; and part 135, § 135.170.
- FAA Order 8110.37, Designated Engineering Representative (DER) Handbook.
- FAA Order 8110.113, Approval of Flammability Test Data in Support of Major Repairs or Major Alterations.

B. Forms. None.

C. Job Aids. None.

RESERVED. Paragraphs 4-14-14-15 through 4-14-14-25.