



U.S. Department
of Transportation

**Federal Aviation
Administration**

Memorandum

Subject: **INFORMATION:** Proposed Policy for Flammability of
Electrical Wire Used in Part 23 Aircraft per 14 CFR, Part
23, Sections 23.853 and 23.1359; PS-ACE100-2004-
10023

Date: DRAFT

From: Manager, Small Airplane Directorate, ACE-100

Reply to
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POLICY

The Small Airplane Directorate has determined there is a need for policy on the installation of electrical wire in small airplanes. This policy covers the applicability of AC 43.13-1B for flammability of electrical wire used in part 23 aircraft. Electrical wire listed in Section 7 of AC 43.13-1B complies with §§ 23.853 and 23.1359, and it is acceptable for use in part 23 aircraft without further testing. An applicant must supply compliance data to these flammability regulations for any other electrical wire or cable.

BACKGROUND

The FAA was recently asked to clarify policy on the flammability of MIL-W 22759/16 and /18 wire and coaxial cable per MIL C-17.

AC 43.13-1B, Section 7, paragraph 11-85a, states that the wires in Tables 11-11 and 11-12 “have been determined to meet the flammability requirements of Title 14 of the Code of Federal Regulation (14 CFR) part 25, § 25.869(a)(4), and the applicable portion of part 1 of Appendix F of part 25.” Section 25.869, Fire protection: systems, paragraph (a)(4), states, “Insulation on electrical wire and electrical cable installed in any area of the fuselage must be self-extinguishing when tested in accordance with the applicable portions of part 1, appendix F of this part.” The applicable portion of appendix F of part 25 is part 1, paragraph (a)(3), which states, “Insulation on electrical wire or cable installed in any area of the fuselage must be self-extinguishing when subjected to the 60 degree test specified in part 1 of this appendix. The average burn length may not exceed three inches, and the average flame time after removal of the flame source may not exceed 30 seconds. Drippings from the test specimen may not continue to flame for more than an average of 3 seconds after falling.”

Section 23.1359 is the most severe test requirement for part 23 aircraft. It has the same test procedure, burn length, and flame times as part 1 of Appendix F of part 25. Therefore, in meeting § 25.869(a)(4), wire in AC 43.13-1B meets the most severe requirement in part 23 and exceeds the earlier flammability requirements.

Electrical wire flammability requirements vary based on aircraft category and amendment level.

For normal, utility, and acrobatic categories certified before Amendment 23-49, all parts, including wiring, are required to be flame-resistant per § 23.853 (as defined in 14 CFR, part 1).

For commuter category aircraft certified before Amendment 23-49, all materials, including wiring, must be self-extinguishing per § 23.853 and part 23, Appendix F.

For all part 23 categories included under Amendment 23-49 or later, § 23.1359 and part 23, Appendix F, requires self-extinguishing insulation on electrical wires and cables.

Effect of this Policy

The general policy stated in this document does not constitute a new regulation and the FAA would not apply or rely on it as a regulation. The FAA Aircraft Certification Offices (ACO) that certificate normal, utility, acrobatic, and commuter category airplanes, should try to follow this policy when applicable to the specific project. Whenever an applicant's proposed method of compliance is outside this established policy, it must be coordinated with the policy issuing office as a standard practice. Similarly, if the implementing office becomes aware of reasons that an applicant's proposal that meets this policy should not be approved, the office must coordinate its response with the policy issuing office.

Applicants should expect the certificating officials to consider this information when making findings of compliance relevant to new certificate actions. Also, as with all advisory material, this policy statement identifies one means, but not the only means, of compliance.

For questions and assistance on this policy, please contact Mr. Les Taylor at (816) 329-4134, by fax (816) 329-4090, or by e-mail at leslie.b.taylor@faa.gov.

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