
INTERNATIONAL STANDARD



2156

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Aircraft — Fire-resisting electrical cables — Methods of test

Aéronefs — Câbles électriques résistant au feu — Méthodes d'essai

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up has the right to be represented on that Committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 2156 was drawn up by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, and circulated to the Member Bodies in February 1971.

It has been approved by the Member Bodies of the following countries :

Austria	Germany	South Africa, Rep. of
Belgium	Israel	Spain
Brazil	Italy	Thailand
Czechoslovakia	Japan	Turkey
Egypt, Arab Rep. of	Netherlands	United Kingdom
France	New Zealand	U.S.A.

No Member Body expressed disapproval of the document.

Aircraft — Fire-resisting electrical cables — Methods of test

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies the tests suitable for establishing the compliance of fire-resisting electrical cables for aircraft with the performance requirements stated in ISO 2155.

This International Standard is intended to serve as a basis for test specifications to be included in the relevant national standards when the Official Board of Inspection considers that existing tests are inadequate.

The tests are classified as follows :

- I Type tests only
- II Type tests and routine production tests
- III Type tests and production quality tests

2 REFERENCES

ISO 1967, *Aircraft — Fire-resisting electrical cables — Dimensions, conductor resistance and mass.*

ISO 2155, *Aircraft — Fire-resisting electrical cables — Performance requirements.*

ISO ..., *Aircraft — Electrical cables — Fire resistance test.*¹⁾

I TYPE TESTS ONLY

3 HOT CUTTING TEST

This test is designed to check that the cable, when in use, will withstand a certain compression force when placed against fixed metallic structures which are relatively sharp.

3.1 The apparatus to be used for this test is shown diagrammatically in annex C. It is installed in a temperature-controlled enclosure.

The beam is balanced by adjusting the counterweight so that the arm remains motionless when no weight is attached to it.

The edge of the square-shaped knife shall have a radius very close to 0,40 mm (1/64 in) which shall be checked regularly.

The test piece is arranged on the support of the apparatus in such a way that the knife blade is perpendicular to the axis of the cable.

3.2 The test shall be begun after the assembly of apparatus and test piece has been stabilized for at least 1 h at $260 \pm 5^\circ\text{C}$. Weights shall then be placed on the end of the beam at a minimum rate of 700 g/min (1.5 lb/min) until the core is perforated. This operation shall not last more than 1 min.

The test shall be carried out six times, and after each test the test piece shall be advanced 75 mm (3 in), always being turned in the same direction. The minimum force to be applied to the cable so that the knife reaches the core shall be specified in the relevant national standard.

4 AGEING TEST FOLLOWED BY AN INSULATION TEST WHILE IMMersed IN WATER

4.1 Two samples of cable shall be bent into U-loops, each having a maximum diameter equal to ten times the diameter of the cables for sizes No. 22 to No. 10 and fifteen times the diameter of the cables for size No. 8 and larger. The samples shall then be placed in an oven, with hot air renewed by natural draught, for 168 h at a temperature of $280 \pm 5^\circ\text{C}$. When the samples are taken from the oven at the end of this period, they shall not show any signs of splitting or cracking. The marking shall remain legible but slight discoloration is not considered as a fault.

4.2 The samples shall then be immersed in water at a temperature of $20 \pm 5^\circ\text{C}$ for 5 min with their ends protruding 100 mm (4 in) above the surface. While so immersed, they shall withstand without failure a current of 1 500 V (r.m.s) gradually applied and maintained for 1 min between the conductor and the water.

1) In preparation