

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 634

METHODS OF TEST
FOR GENERAL PURPOSE ELECTRICAL CABLES
WITH COPPER CONDUCTORS FOR AIRCRAFT

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BRIEF HISTORY

The ISO Recommendation R 634, *Methods of Test for General Purpose Electrical Cables with Copper Conductors for Aircraft*, was drawn up by Technical Committee ISO/TC 20, *Aircraft*, the Secretariat of which is held by the British Standards Institution (BSI).

Work on this question by the Technical Committee began in 1960 and led, in 1962, to the adoption of a Draft ISO Recommendation.

In May 1965, this Draft ISO Recommendation (No. 807) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies:

Argentina	Israel	Switzerland
Belgium	Italy	U.A.R.
Brazil	Japan	United Kingdom
Canada	Netherlands	Yugoslavia
Chile	Portugal	
Czechoslovakia	Republic	
France	of South Africa	
Germany	Spain	

No Member Body opposed the approval of the Draft.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in November 1967, to accept it as an ISO RECOMMENDATION.

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METHODS OF TEST FOR GENERAL PURPOSE ELECTRICAL CABLES WITH COPPER CONDUCTORS FOR AIRCRAFT

1. SCOPE

This ISO Recommendation describes the tests suitable for establishing the compliance of general purpose electrical cables with copper conductors for aircraft with the performance requirements stated in ISO Recommendation R 474, *Performance Requirements for General Purpose Electrical Cables with Copper Conductors for Aircraft*. They are intended for use as a basis for specifying tests in the relevant national specifications where the national type approving authorities consider that existing tests are inadequate.

The tests are classified as follows:

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

I. TYPE TESTS ONLY

2. RESISTANCE TO TYPICAL AIRCRAFT FLUIDS

- 2.1 The object of this test is to check that the cable will not be affected in such a way as to cause failure in service or undue difficulties in servicing by any of the fluids with which it is likely to come into contact on modern aircraft.
- 2.2 Separate cable samples should be bent into a loop of a diameter approximately fourteen times the overall diameter of the cable and immersed each in one of the following fluids, with the ends clear of the fluid, for not less than 20 hours, at a temperature such as is likely to be experienced in service for the particular fluid:
 - (a) Aviation fuels;
 - (b) Lubricating oils (including ester-based oils);
 - (c) Hydraulic fluids (including ester-based hydraulic fluids);
 - (d) De-icing fluids.
- 2.3 After immersion, the samples should be wiped, straightened and cooled to a temperature of $20 \pm 5^\circ\text{C}$, and then subjected to a bend of 360° round a mandrel having a diameter of not more than fourteen times the overall diameter of the cable. After this treatment, the diameter of the cable should not have increased by more than 5%. There should be no cracking, splitting or other deterioration of the outer coverings and the samples should withstand a voltage test of 1500 V r.m.s. and a frequency at any value from 25 to 100 Hz inclusive, for at least 1 minute without breakdown in water.

3. AGEING IN AIR AT HIGH TEMPERATURE, FOLLOWED BY A BEND TEST AT ROOM TEMPERATURE AND AN INSULATION TEST WHILE IMMersed IN WATER

- 3.1 The object of this test is to check that there is no cracking of the outer coverings of the cable during bending after heating and that the cable will not break down electrically due to displacement of the conductor resulting from deformation of the insulation at high temperature with the conductor under a tensile load. In addition, the test is designed to check that there is no deterioration of the conductor surface as a result of the insulation having been aged at a high temperature.