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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Connectors for electronic equipment – Tests and measurements – Part 20-1: Fire hazard tests – Test 20a: Flammability, needle-flame

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Connecteurs pour équipements électroniques – Essais et mesures – Partie 20-1: Essais relatifs aux risques du feu – Essai 20a: Inflammabilité, brûleur-aiguille

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CONNECTORS FOR ELECTRONIC EQUIPMENT – TESTS AND MEASUREMENTS –

Part 20-1: Fire hazard tests – Test 20a: Flammability, needle-flame

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International Standard IEC 60512-20-1 has been prepared by subcommittee 48B: Connectors, of IEC technical committee 48: Electromechanical components and mechanical structures for electronic equipment.

This standard cancels and replaces Test 20a of IEC 60512-9, issued in 1992. The structure of IEC 60512 series is explained in IEC 60512-1-100.

The text of this standard is based on the following documents:

FDIS	Report on voting
48B/2160/FDIS	48B/2195/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the IEC 60512 series, under the general title *Connectors for electronic equipment – Tests and measurements*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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CONNECTORS FOR ELECTRONIC EQUIPMENT – TESTS AND MEASUREMENTS –

Part 20-1: Fire hazard tests – Test 20a: Flammability, needle-flame

1 Scope and object

This part of IEC 60512, when required by the detail specification, is used for testing connectors within the scope of technical committee 48. It may also be used for similar devices when specified in a detail specification.

The object of this standard is to detail a standard method to determine the flammability of a connector when exposed to a needle-flame under specified conditions.

The needle-flame test is intended to simulate the effect of small flames which may result from fault conditions within the equipment, i.e. the intensity of the ignition source used is of a similar order to that of an accidentally overheated or burning single electronic component.

2 Normative references

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The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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IEC 60695-11-5, *Fire hazard testing – Part 11-5: Test flames – Needle flame test method – Apparatus, confirmatory test arrangement and guidance*

3 Preparation of the specimen

The specimen shall consist of an unwired connector, mounted and provided with contacts as specified in the detail specification.

4 Test method

The test shall be carried out in accordance with IEC 60695-11-5.

A wooden board covered with a single layer of tissue paper shall be placed underneath the specimen to be tested as described in IEC 60695-11-5.

The position of the specimen and the point of application of the flame shall be as specified in the detail specification.

The burner shall be mounted at an angle of approximately 45° so that any drops from the specimen can fall freely on the underlying layer (see Figure 1). For the same reason, it is desirable to specify the position of the specimen to be slightly inclined (approximately 80°).

In the case of edge application, the flame shall be applied not less than 10 mm from the nearest corner, unless otherwise specified by the detail specification.

The burner is lit away from the specimen and the length of the flame is adjusted to 12 mm ± 1 mm. The burner is then brought into the test position so that the specimen penetrates the flame by approximately 2 mm. A vertical distance of 7 mm to 9 mm between the tip of the burner and the surface/edge to be tested is adequate for this purpose, but in the case of application to a vertical surface, a horizontal distance of approximately 5 mm between the tip of the burner and the surface to be tested is necessary.

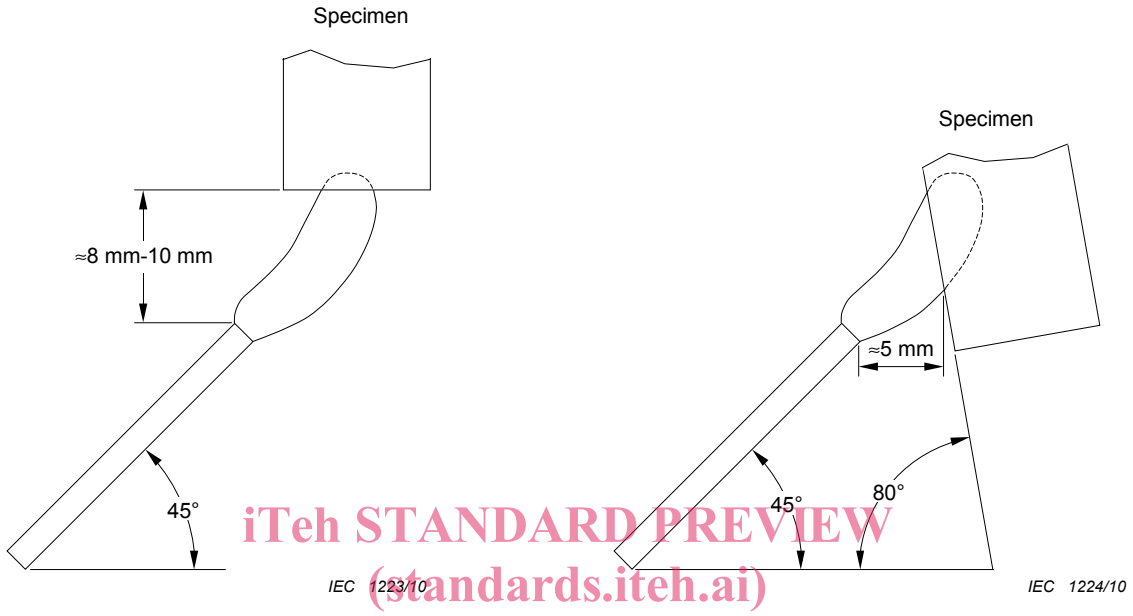

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Figure 1a) Test position (example) **Figure 1b) Test position (example)**

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Figure 1 – Needle-flame test

The detail specification for the connector shall specify the severity (duration of application) to be used.

Preferably, one of the following durations of application of the test flame given in IEC 60695-11-5 shall be prescribed:

5 s	10 s
20 s	30 s
60 s	120 s

The tolerance for all values is 0/-1 s.

At the end of the duration of the application, the flame is removed from the specimen.

5 Requirements

After removal of the burner, the specimen shall preferably not continue to burn. If it continues to burn, the burning time shall not exceed the maximum limit specified in the detail specification.

In no case shall any material drops ignite the underlaying tissue paper.

6 Details to be specified

When this test is required by the detail specification, the following details shall be specified:

a) number and variant of the specimens to be tested;
b) mounting of the specimen;
c) severity (duration of the application of the flame);
d) point of application of the flame;
e) maximum burning time;
f) any deviation from the standard test method and/or conditions.

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