

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Connectors for electronic equipment – Tests and measurements –
Part 20-3: Fire hazard tests – Test 20c: Flammability, glow-wire**

**Connecteurs pour équipements électroniques – Essais et mesures –
Partie 20-3: Essais relatifs aux risques du feu – Essai 20c: Inflammabilité, fil
incandescent**



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**CONNECTORS FOR ELECTRONIC EQUIPMENT –
TESTS AND MEASUREMENTS –**

**Part 20-3: Fire hazard tests –
Test 20c: Flammability, glow-wire**

FOREWORD

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International Standard IEC 60512-20-3 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 20c 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/2161/FDIS	48B/2196/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 20-3: Fire hazard tests – Test 20c: Flammability, glow-wire

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 test method to determine the flammability of a connector when exposed to a glow-wire test under specified conditions.

The glow-wire test simulates thermal stresses which may be produced by such sources of heat or ignition as, for example, glowing elements or overloaded components, for short periods, in order to assess by a simulation technique the fire hazard or burning of a single electronic component.

2 Normative references

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.

[https://standards.iteh.ai/catalog/standards/sist/9cc3d7e7-2fa0-448c-ac49-](https://standards.iteh.ai/catalog/standards/sist/9cc3d7e7-2fa0-448c-ac49-60695-2-10)

IEC 60695-2-10, *Fire hazard testing – Part 2-10: Glowing/hot-wire based test methods – Glow-wire apparatus and common test procedure*

IEC 60695-2-11, *Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products*

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 60695-2-10 and IEC 60695-2-11.

A wooden board covered with a single layer of tissue paper shall be placed underneath the specimen to be tested as described in IEC 60695-2-10.

The position of the specimen and the place of application of glow-wire shall be as specified in the detail specification.

The glow-wire consists of a specified loop of nickel/chromium (80/20) wire 4 mm diameter.

A sheathed fine-wire thermocouple, having an overall diameter of 0,5 mm and wires of NiCr and NiAl with the welded point located inside the sheath, is used for measuring the temperature of the glow-wire. The glow-wire with the thermocouple is shown in Figure 1.

The test apparatus shall be so designed that the glow-wire is kept in a horizontal plane and a force of 0,8 N to 1,2 N is applied to the specimen, the force being maintained at this value when the glow-wire or the specimen is moved horizontally one towards the other over a distance of at least 7 mm.

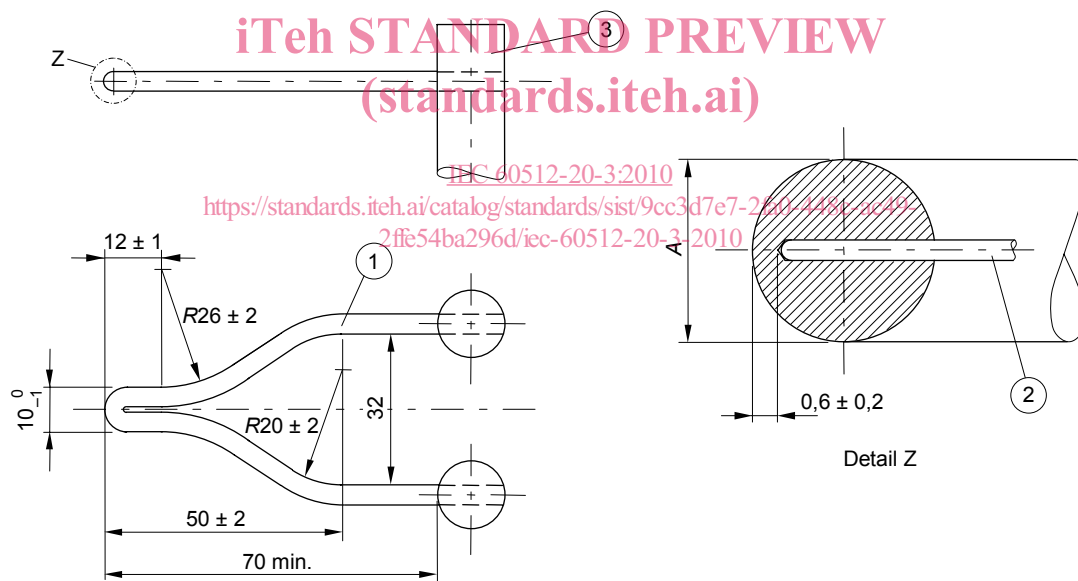
The temperature of the tip of the glow-wire and the duration of its application shall be specified in the detail specification.

Table 1 – Preferred test temperatures

Preferred test temperatures °C	Tolerances °C
550	±10
650	±10
750	±10
850	±15
960	±15

Preferred duration of application: 30 s ± 1 s.

Dimensions in millimetres



IEC 1225/10

Key

- 1 Glow-wire
- 2 Thermocouple
- 3 Stud

Glow-wire material: Nickel/Chromium (80/20)

Diameter: 4,0 mm ± 0,04 mm (before bending)

Diameter A: (After bending)

When forming the glow-wire loop, care shall be taken to avoid fine cracking at the tip.

NOTE Annealing is a suitable process for prevention of fine cracking at the tip.

Figure 1 – Glow-wire and position of the thermocouple

5 Requirements

After removal of the glow-wire, 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 underlying 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 glow-wire);
- d) point of application of the glow-wire;
- e) maximum burning time;
- f) temperature of the glow-wire tip;
- g) any deviation from the standard test method and/or conditions.

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