



**SLOVENSKI STANDARD**  
**oSIST prEN IEC 61810-7-36:2023**  
**01-oktober-2023**

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**Električni releji - Preskusi in meritve - 7-36. del: Požarna ogroženost**

Electrical relays - Tests and Measurements - Part 7-36: Fire hazard

iTeh STANDARD PREVIEW  
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**Ta slovenski standard je istoveten z: prEN IEC 61810-7-36:2023**

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OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: <input type="checkbox"/>  Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: <input type="checkbox"/> EMC <input type="checkbox"/> ENVIRONMENT <input type="checkbox"/> QUALITY ASSURANCE <input type="checkbox"/> SAFETY	
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TITLE:

**Electrical relays – Tests and Measurements – Part 7-36: Fire hazard**

PROPOSED STABILITY DATE: 2025

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**Electrical relays - Tests and Measurements -**

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**Part 7-36: Fire hazard**

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65 The International Standards of the IEC 61810 have been prepared by IEC technical committee  
 66 94: All-or-nothing electrical relays.

67 **This document is a CDV based on the observations of CC files on 94\_844e\_CD. The red text has**  
 68 **changed from the document of 94\_844e\_CD.**

69 The text of this International Standard is based on the following documents:

CD	CC
94/844/CD	94/929/CC

70

71 Full information on the voting for the approval of this International Standard can be found in the  
 72 report on voting indicated in the above table.

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

74 A list of all parts of IEC 61810 series, published under the general title *Electromechanical*  
75 *elementary relays*, can be found on the IEC website.

76 This International Standard is to be used in conjunction with IEC 61810-1:2015.

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

- 80 • reconfirmed,
- 81 • withdrawn,
- 82 • replaced by a revised edition, or
- 83 • amended.

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## 84 Electrical relays - Tests and Measurements -

### 85 Part 7-36: Fire hazard

#### 86 1 Scope

87 This part of IEC 61810-7 is used for testing all kind of relays within the scope of technical  
88 committee 94 and shall evaluate their ability to perform under expected conditions of  
89 transportation, storage and all aspects of operational use.

90 The object of this part is to define a standard test method to measure fire hazard of all materials  
91 susceptible to fire hazard.

#### 92 2 Normative references

93 The following documents are referred to in the text in such a way that some or all of their content  
94 constitutes requirements of this document. For dated references, only the edition cited applies.

95 IEC 60695-2-10:2021, *Fire hazard testing - Part 2-10: Glowing/hot-wire based test methods - Glow-*  
96 *wire apparatus and common test procedure*

97 IEC 60695-2-11:2021, *Fire hazard testing - Part 2-11: Glowing/hot-wire based test methods - Glow-*  
98 *wire flammability test method for end-products*

99 IEC 60695-2-12:2021, *Fire hazard testing - Part 2-12: Glowing/hot-wire based test methods - Glow-*  
100 *wire flammability index (GWFI) test method for materials*

101 IEC 60695-2-13:2021, *Fire hazard testing - Part 2-13: Glowing/hot-wire based test methods - Glow-*  
102 *wire ignition temperature (GWIT) test method for materials*

103 IEC 60695-11-5: 2016, *Fire hazard testing - Part 11-5: Test flames - Needle-flame test method -*  
104 *Apparatus, confirmatory test arrangement and guidance*

105 IEC 61810-7-0, *All-or-nothing electrical relays - Tests and Measurements - Tests: General and*  
106 *Guidance*

#### 107 3 Terms and definitions

108 For the purposes of this document, the terms and definitions given in IEC 61810-1, IEC 61810-  
109 7-0 and the following apply.

110 ISO and IEC maintain terminological databases for use in standardization at the following  
111 addresses:

- 112 • IEC Electropedia: available at <http://www.electropedia.org/>
- 113 • ISO Online browsing platform: available at <http://www.iso.org/obp>

#### 114 4 Test procedure

##### 115 4.1 General

116 Fire hazard test is to ensure that under defined conditions the relay will not cause ignition of  
117 parts, or that a combustible part ignited by the test has a limited duration or extent of burning  
118 without spreading fire by flames or burning/glowing particles falling from the specimen.

119 The testing shall be conducted in accordance with one or both of the following tests:

120 a) Glow-wire test as described in IEC 60695-2-10, IEC 60695-2-11, IEC 60695-2-12  
121 and IEC 60695-2-13 as appropriate.

122 b) Needle flame test as described in IEC 60695-11-5.

## 123 **4.2 Glow-wire Test**

### 124 **4.2.1 Purpose**

125 Simulating the effect of thermal stress which can be produced by heat sources such as glowing  
126 parts and overloaded components, in order to assess the risk of fire.

### 127 **4.2.2 Procedure**

#### 128 **4.2.2.1 Preconditioning**

129 If not otherwise specified in the relevant specification, **the preconditioning shall be done as**  
130 **bellows.**

131 a) **Glow-wire flammability test for end-products: Clause 7 of IEC 60695-2-11:2021.**

132 b) **Glow-wire flammability index (GWFI) test for materials: Clause 7 of IEC 60695-2-12:2021.**

133 c) **Glow-wire ignition temperature (GWIT) test for materials: Clause 7 of IEC 60695-2-13:2021.**

#### 134 **4.2.2.2 Glow-wire flammability test for end-products**

135 Glow-wire flammability test method for end-products is according to IEC 60695-2-11.

136 It is preferred to select the following positions for the glow-wire test points of end products and  
137 the schematic diagram (or picture) of the position of glow-wire can be added in the test report.

138 a) The position on the relay case close to the contacts;

139 b) The position on the relay base close to the contact terminals.

140 Note 1 to entry: The position of bottom side for PCB relays is not mandatory. a12-e797-4532-98cl-

#### 141 **4.2.2.3 Glow-wire flammability index (GWFI) test for materials**

142 Glow-wire flammability index (GWFI) test method for materials is according to IEC 60695-2-  
143 12.

#### 144 **4.2.2.4 Glow-wire ignition temperature (GWIT) test for materials**

145 Glow-wire ignition temperature (GWIT) test method for materials is according to IEC 60695-  
146 2-13.

### 147 **4.2.3 Conditions to be specified**

148 The following details shall be adopted:

149 a) The glow-wire is heated to the test temperature specified in the relevant product  
150 standard. This temperature shall be chosen one of the temperatures shown in Table 1 of  
151 IEC 60695-2-11 according to the purpose.

152 Note 1 to entry: The minimum test temperature is 650°C.

153 b) Test specimens

154 Glow-wire test specimens for end-products shall apply to IEC 60695-2-11 when the relay is  
155 either too small (see definition of small parts in 3.15 of IEC 60695-2-11) or of an inconvenient  
156 shape to carry out the test, the test is made using a specimen of the respective material from  
157 which the relay is manufactured.

158 Glow-wire test specimens for material shall apply to IEC 60695-2-12 and IEC 60695-2-13. The  
159 dimensions of the planar sections of the test specimens shall be at least 60 mm in length and  
160 60 mm in width (measured inside the clamping areas) and shall be provided in all thicknesses  
161 under consideration. The preferred values include 0,4 mm±0,05 mm, 0,75 mm±0,1 mm, 1,5



162 mm±0,15 mm, 3,0 mm±0,2 mm, or 6,0 mm±0,4mm and the test specimen shall have a thickness  
163 equal to the nearest preferred value that is no thicker than the relevant part.

164 For complex parts with various thickness, both the maximum and the minimum thickness need to be considered  
165 and all the preferred value involved in this range shall be tested.

166 c) Number of test specimens

167 Number of test specimens shall apply to IEC 60695-2-11, IEC 60695-2-12 and IEC 60695-2-13.

168 d) Test apparatus are described in IEC 60695-2-10 and in IEC 60695-11-5. Positioning of the  
169 test apparatus apply to IEC 60695-2-11.

## 170 **4.3 Needle flame test**

### 171 **4.3.1 Purpose**

172 The purpose of the needle flame test is to assess the fire hazard of electrotechnical equipment,  
173 its subassemblies and components, and of solid insulating materials and other combustible  
174 materials through simulation of the effect of small flames which may result from fault conditions  
175 within the equipment.

### 176 **4.3.2 Procedure**

177 If not otherwise specified in the relevant specification, the preconditioning of test specimens  
178 shall be done according to Clause 8 of IEC 60695-11-5:2016.

179 The test procedure is specified in 9 of IEC 60695-11-5. At the beginning of the test, the test  
180 flame shall be positioned so that at least the tip of the flame is in contact with the surface of the  
181 specimen which is most likely to be affected by flames resulting from normal use or from fault  
182 conditions. During the test, the burner must not be moved. The test flame is removed  
183 immediately after the specified time.

### 184 **4.3.3 Conditions to be specified**

185 The needle flame test is carried out in accordance with IEC 60695-11-5, and the following  
186 details shall be adopted:

187 a) The duration of application of the test flame on the specimen is (30 + 1) s. For relay volumes  
188 up to 1 000 mm<sup>3</sup> a reduction to (10+1) s may be chosen, however;

189 b) The test specimen shall apply to IEC 60695-11-5;

190 c) Test apparatus are described in IEC 60695-11-5.

## 191 **5 Evaluation**

### 192 **5.1 Glow-wire test**

#### 193 **5.1.1 Glow-wire flammability test for end-products**

194 Glow-wire flammability test criteria for end-products is according to IEC 60695-2-11.

#### 195 **5.1.2 Glow-wire flammability index (GWFI) test for materials**

196 Glow-wire flammability index (GWFI) criteria for materials is according to IEC 60695-2-12.

#### 197 **5.1.3 Glow-wire ignition temperature (GWIT) test for materials**

198 Glow-wire ignition temperature (GWIT) criteria for materials is according to IEC 60695-2-13.

### 199 **5.2 Needle flame test**

200 According to the evaluation of test results in 11 of IEC 60695-11-5, and after the test, the white  
201 pinewood board shall not show traces of burning; changes in color of the white pinewood board  
202 are ignored.

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## Annex T

### Informative

#### Test report

The test report shall contain all the information necessary to reproduce the test. In particular, the following shall be recorded:

- a) a reference to IEC 61810-7-36;
- b) the test temperature;
- c) test specimens description (the dimension and color of test specimens, etc.);
- d) the glow-wire test points of end products.

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