



SLOVENSKI STANDARD
oSIST prEN IEC 61300-2-34:2023
01-oktober-2023

Optični spojni elementi in pasivne komponente - Osnovni preskusni in merilni postopki - 2-34. del: Preskusi - Odpornost proti topilom in onesnaženim tekočinam

Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-34: Tests - Resistance to solvents and contaminating fluids

iTeh STANDARD PREVIEW

Lichtwellenleiter – Verbindungselemente und passive Bauteile – Grundlegende Prüf- und Messverfahren – Teil 2-34: Tests – Beständigkeit gegen Lösungsmittel und verschmutzende Flüssigkeiten

Dispositifs d'interconnexion et composants passifs fibroniques - Procédures fondamentales d'essais et de mesures - Partie 2-34: Essais - Résistance aux solvants et aux fluides contaminants

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SECRETARIAT: Japan	SECRETARY: Mr Shigeru Tomita
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.
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TITLE: Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 2-34: Tests - Resistance to solvents and contaminating fluids

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NOTE FROM TC/SC OFFICERS:

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS – BASIC TEST AND MEASUREMENT PROCEDURES –**Part 2-34: Tests – Resistance to solvents and contaminating fluids**

FOREWORD

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IEC 61300-2-34 has been prepared by subcommittee 86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics. It is an International Standard.

This third edition cancels and replaces the second edition published in 2009. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) revision of title;
- b) general revision of syntax, orthography and terminology;
- c) classification of test procedure and applicable fluids, bringing document in line with IEC 61753-1;
- d) severities of test.

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

Draft	Report on voting
86B/XX/FDIS	86B/XX/RVD

87

88 Full information on the voting for its approval can be found in the report on voting indicated in
89 the above table.

90 The language used for the development of this International Standard is English.

91 This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in
92 accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available
93 at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are
94 described in greater detail at www.iec.ch/publications.

95 A list of all the parts in the IEC 61300 series, under the general title *Fibre optic interconnecting
96 devices and passive components – Basic test and measurement procedures*, can be found on
97 the IEC website.

98 The committee has decided that the contents of this document will remain unchanged until the
99 stability date indicated on the IEC website under webstore.iec.ch in the data related to the
100 specific document. At this date, the document will be

- 101 • reconfirmed,
102 • withdrawn,
103 • replaced by a revised edition, or
104 • amended.

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FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS – BASIC TEST AND MEASUREMENT PROCEDURES –

Part 2-34: Tests – Resistance to solvents and contaminating fluids

1 Scope

The purpose of this part of IEC 61300 is for testing the resistance to solvents and contaminating fluids on fibre optic interconnecting devices, passive components and protective housings and their functionality.

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.

IEC 61300-1, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 1: General and guidance*

IEC 61300-2-38, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-38: Tests – Sealing for pressurized fibre optic closures*

IEC 61300-3-1, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-1: Examinations and measurements – Visual examination*

IEC 61300-3-4, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-4: Examinations and measurements – Attenuation*

IEC 61300-3-6, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-6: Examinations and measurements – Return loss*

IEC 61753 (all parts), *Fibre optic interconnecting devices and passive components – Performance standards*

IEC 62005 (all parts), *Fibre optic interconnecting devices and passive components – Reliability*

ISO 1817, *Rubber, vulcanized, or thermoplastic – Determination of the effect of liquids*

3 Terms and definitions

No terms and definitions are listed in this document.

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

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

142 4 General description

143 This test method covers the effects on the properties of fibre optic interconnecting devices,
144 passive components and protective housings when coming in contact with fluids in an
145 intentional or unintentional way. Testing is performed to ensure resistance of a device under
146 test (DUT) to liquids to which could be exposed during storage or operation and is carried out
147 by exposing the DUT in a specified fluid, or group of fluids, for a specified period at a specified
148 temperature. A separate DUT shall be used with each test fluid. Properties are measured prior
149 to and after exposure to the fluid.

150 This test method contains two procedures, A and B:

- 151 • Procedure A

152 DUT is immersed in a test fluid for 30 s, removed and then exposed to the test temperature,
153 for the test duration specified in table 1;

- 154 • Procedure B

155 DUT is immersed in a test fluid while being exposed for the test duration and to the test
156 temperature specified in Table 1.

157 The selected procedure shall be based on the relevant IEC 61753 performance standard.

158 **WARNING** – Intended users of this procedure are cautioned that tests of this nature may involve
159 the use of certain hazardous material, operations and equipment. In particular, some of the
160 fluids that may be used are flammable or may constitute health hazards, or both. Test
161 temperatures shall be at least 10 °C below the flashpoint of any fluid being used. Open flame
162 heat sources should not be used with any organic solvents. Test personnel shall consult the
163 relevant material's safety data sheet of each used fluid and wear the recommended personal
164 protection clothing and equipment for handling highly toxic or flammable products when
165 necessary.

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166 5 Apparatus

167 5.1 Containers

168 A container of suitable volume made of a material that will not interact with the testing fluid shall
169 be used for each test fluid. Example materials for the test vessel are boro-silicate glass or
170 stainless steel. Vessels shall be of sufficient size and capacity to permit the DUT to be immersed
171 until it is fully covered in the selected fluid without violating other physical constraints (e.g.
172 minimum cable bend radius).

173 5.2 Fluids

174 Fluids used shall be in accordance with the relevant IEC 61753 performance standard or 62005
175 reliability document. **Error! Reference source not found.** give examples of fluids that may be
176 used for this evaluation; other liquids can be used by specific request.

177 5.3 Heat source

178 A suitable heat source capable of achieving and maintaining the specified temperatures within
179 ± 2 °C of the required setting shall be used.

180 5.4 Temperature controlled equipment

181 If the specified period of time for liquid exposure is longer than one hour, or to dry the DUT
182 after exposure, a temperature-controlled oven or an environmental test chamber shall be used
183 in order to keep the test temperature stable. See 6.4 and 6.5.

184 **6 Procedure**

185 **6.1 DUT preparation**

186 The preparation of the DUT shall be in accordance with the relevant IEC 61753 performance
187 standard or 62005 reliability document. If cables are fitted, they shall be long enough to exit the
188 test medium. Where no cables are fitted, blanking plugs shall be inserted.

189 **6.2 Preconditioning**

190 Clean the mechanical and optical alignment parts of the DUT according to the manufacturer's
191 instructions.

192 Unless otherwise stated, maintain the DUT under standard atmospheric condition according to
193 IEC 61300-1 for 2 h minimum.

194 **6.3 Initial examinations and measurements**

195 Perform initial examinations according IEC 61300-3-1 and measurements as required by the
196 relevant IEC 61753 performance standard or 62005 reliability document.

197 For optical properties measurement, the equipment and measurement methods shall be
198 according IEC 61300-3-4 for attenuation and 61300-3-6 for return loss measurement. The
199 optical performance measurement shall be performed at the wavelength(s) specified in the
200 relevant IEC 61753 performance standard or 62005 reliability document. When sealing
201 performance is requested to be evaluated, for devices such as sealed closures and hardened
202 connectors, the equipment and measurement method shall be according IEC 61300-2-38. For
203 free breathing protective housings (that are not able to hold a permanent overpressure or
204 underpressure), the test shall be carried out on material slabs.

205 **6.4 Conditioning**

206 **6.4.1 Procedure A**

207 For each specified fluid, prepare a vessel with sufficient fluid such that the DUT can be
208 adequately immersed just underneath the surface. Immerse the DUT for 30 s in the fluid, then
209 remove the DUT from the fluid. For large DUTs or high viscosity fluids such as jellies, that are
210 not practical to be immersed, brush the test fluid in an homogenous manner all over the DUT
211 external area. Allow to drain-off the excess of test fluid for 2 min and, immediatly after this step,
212 set the DUT inside the temperature-controlled equipment to be exposed to the test temperature
213 and the period of time specified in Table 1.

214 DUTs of the same type and material, although exposed to different test fluids, can be ambiented
215 inside the same temperature-controlled equipment.

216 **6.4.2 Procedure B**

217 For each specified fluid, prepare a vessel with sufficient fluid such that the DUT can be
218 adequately immersed just beneath the surface.

219 Immerse the DUT while maintaining the fluid temperature during the period of time specified in
220 Table 1. This may require to put the vessel with the DUT immersed inside a temperature-
221 controlled equipment.

222 In the case of volatile fluids, it is sometimes necessary to add additional amounts of fluid (heated
223 to the test temperature) during the test in order to keep the DUT immersed.

224 6.5 Recovery

225 6.5.1 Procedure A

226 After the exposure period of time at the designated test temperature, remove the DUT from the
227 temperature-controlled equipment and maintain it under standard atmospheric conditions
228 according to IEC 61300-1 for 1 h minimum.

229 6.5.2 Procedure B

230 At the end of the immersion period, remove the DUT and wipe off surplus fluid.

231 Where applicable as defined in Table 1, dry the DUT in a temperature-controlled equipment at
232 an appropriate temperature for a defined period. Remove the DUT from the temperature-
233 controlled equipment and maintain it under standard atmospheric conditions according to
234 IEC 61300-1.

235 6.6 Final examinations and measurements

236 Upon completion of the test, the DUT(s) shall be visually examined in accordance to
237 IEC 61300-3-1 and all necessary observations recorded as specified in the relevant IEC 61753
238 performance standard or IEC 62005 reliability document. Ensure no swelling and shrinkage of
239 materials, loss of adhesive bonding between bonded surfaces, corrosion of metallic parts,
240 softening of materials, cracks in material, degradation of optical characteristics, etc, have
241 occurred.

242 Unless otherwise specified, the functional measurements shall be accomplished at the standard
243 atmospheric conditions as defined in IEC 61300-1. When optical measurements are required,
244 the equipment and measurement methods shall be according IEC 61300-3-4 for attenuation
245 and 61300-3-6 for return loss measurement. When sealing performance is requested to be
246 evaluated, the equipment and measurement method shall be according IEC 61300-2-38.

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247 In the case of contamination, appropriate disposal of contaminated water is necessary and local
248 regulations can apply. Follow the recommendations and warnings indicated in IEC 61300-2-38.

249 7 Severity

250 7.1 General

251 The severity consists of a selection of the test fluid, exposure duration and the fluid exposure
252 temperature.

253

254 Table 1 shows the specified test severities in relation to the performance categories. It is
255 recommended to verify the test severities with the relevant IEC 61753 performance standards
256 or IEC 62005 reliability documents for the normative values.

257