
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
(standards.iteh.ai)

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

Ta slovenski standard je istoveten z: prEN IEC 61300-2-34:2022

ICS:

| | | |
|-----------|---------------------------------------|-------------------------------------|
| 33.180.20 | Povezovalne naprave za optična vlakna | Fibre optic interconnecting devices |
|-----------|---------------------------------------|-------------------------------------|

oSIST prEN IEC 61300-2-34:2022 **en**



86B/4639/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER:
IEC 61300-2-34 ED3

DATE OF CIRCULATION:
2022-09-02

CLOSING DATE FOR VOTING:
2022-11-25

SUPERSEDES DOCUMENTS:
86B/4502/CD, 86B/4538A/CC

| | |
|---|---|
| IEC SC 86B : FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS | |
| 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. |
| FUNCTIONS CONCERNED: <input type="checkbox"/> EMC <input type="checkbox"/> ENVIRONMENT <input type="checkbox"/> QUALITY ASSURANCE <input type="checkbox"/> SAFETY | |
| <input checked="" type="checkbox"/> SUBMITTED FOR CENELEC PARALLEL VOTING | <input type="checkbox"/> NOT SUBMITTED FOR CENELEC PARALLEL VOTING |
| <p>Attention IEC-CENELEC parallel voting</p> <p>The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting.</p> <p>The CENELEC members are invited to vote through the CENELEC online voting system.</p> | |

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:

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

PROPOSED STABILITY DATE: 2032

NOTE FROM TC/SC OFFICERS:

| | | | |
|----|---|--|----|
| 1 | CONTENTS | | |
| 2 | FOREWORD..... | | 3 |
| 3 | 1 Scope | | 5 |
| 4 | 2 Normative references..... | | 5 |
| 5 | 3 Terms and definitions..... | | 5 |
| 6 | 4 General description..... | | 5 |
| 7 | 5 Apparatus..... | | 6 |
| 8 | 5.1 Containers..... | | 6 |
| 9 | 5.2 Fluids | | 6 |
| 10 | 5.3 Heat source..... | | 6 |
| 11 | 5.4 Temperature controlled equipment | | 6 |
| 12 | 6 Procedure | | 6 |
| 13 | 6.1 DUT preparation..... | | 6 |
| 14 | 6.2 Preconditioning | | 6 |
| 15 | 6.3 Initial examinations and measurements | | 6 |
| 16 | 6.4 Conditioning | | 6 |
| 17 | 6.5 Recovery..... | | 7 |
| 18 | 6.6 Final examinations and measurements | | 7 |
| 19 | 7 Severity..... | | 7 |
| 20 | 7.1 General | | 7 |
| 21 | 7.2 Exposure and drying duration..... | | 8 |
| 22 | 7.3 Test fluids | | 8 |
| 23 | 8 Details to be specified and reported | | 9 |
| 24 | Bibliography | | 10 |
| 25 | | | |
| 26 | Table 1 – Preferred test durations..... | | 8 |
| 27 | Table 2 – Recommended test temperatures..... | | 8 |
| 28 | Table 3 – Preferred drying durations | | 8 |
| 29 | Table 4 – General use fluids | | 8 |
| 30 | Table 5 – ISO 1817 test fluids..... | | 9 |
| 31 | | | |
| 32 | | | |
| 33 | | | |

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

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

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

This third edition cancels and replaces the second edition published in 2009. It constitutes a general revision. The main changes from the previous edition are as follows:

- a) revision of title
- b) general revision of document content
- c) classification of applicable fluids, bringing document in line with IEC61753-1;
- d) severities of test.

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

| | |
|---------------|------------------|
| FDIS | Report on voting |
| 86B/XXXX/FDIS | 86B/XXXX/RVD |

86
87 Full information on the voting for the approval of this standard can be found in the report on
88 voting indicated in the above table.

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

90 The French version of this standard has not been voted upon.

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

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

- 97 • reconfirmed,
98 • withdrawn,
99 • replaced by a revised edition, or
100 • amended.

101

102

iTeh STANDARD PREVIEW (standards.iteh.ai)

[oSIST prEN IEC 61300-2-34:2022](https://standards.iteh.ai/catalog/standards/sist/1e7d76b6-af4d-4c4d-a861-805c913c9df4/osist-pren-iec-61300-2-34-2022)

<https://standards.iteh.ai/catalog/standards/sist/1e7d76b6-af4d-4c4d-a861-805c913c9df4/osist-pren-iec-61300-2-34-2022>

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

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

109 1 Scope

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

113 2 Normative references

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

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

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

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

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

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

127 IEC 61753 series, *Fibre optic interconnecting devices and passive components performance*
128 *standards*

129 IEC 62005 series, *Reliability of Fibre optic interconnecting devices and passive components*
130 *(all parts)*

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

132 3 Terms and definitions

133 No terms and definitions are listed in this document.

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

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

138 4 General description

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

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

147 - Procedure A. DUT immersed in a test fluid during 30 s and afterwards exposed to a specified
148 temperature over a specified period of time;

149 - Procedure B. DUT exposed to a test fluid at a specified temperature over a specified period
150 of time.

151 **WARNING** – *Intended users of this procedure are cautioned that tests of this nature may involve*
152 *the use of certain hazardous material, operations and equipment. In particular, some of the*
153 *fluids that may be used are flammable or may constitute health hazards, or both. Test*
154 *temperatures shall be at least 10 °C below the flashpoint of any fluid being used. Open flame*
155 *heat sources should not be used with any organic solvents. Test personnel shall consult the*
156 *relevant material's safety data sheets when necessary.*

157 **5 Apparatus**

158 **5.1 Containers**

159 A boro-silicate glass or stainless steel vessel of suitable volume for each test fluid shall be used.
160 Vessels shall be of sufficient size and capacity to permit the DUT to be immersed until it is fully
161 covered in the selected fluid without violating other physical constraints (e.g. minimum cable
162 bend radius).

163 **5.2 Fluids**

164 Fluids used shall be in accordance with the relevant specification. Tables 4 and 5 give examples
165 of fluids that may be used for this evaluation, but other liquids can be used by specific request.

166 **5.3 Heat source**

167 A suitable heat source capable of achieving and maintaining the specified temperatures within
168 ± 2 °C of the required setting shall be used.

169 **5.4 Temperature controlled equipment**

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

173 **6 Procedure**

174 **6.1 DUT preparation**

175 The preparation of the DUT shall be in accordance with the relevant specification. If cables are
176 fitted they shall be long enough to exit the test medium. Where no cables are fitted blanking
177 plugs shall be inserted.

178 **6.2 Preconditioning**

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

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

183 **6.3 Initial examinations and measurements**

184 Perform initial examinations according IEC 61300-3-1 and measurements as required by the
185 relevant specification.

186 For optical properties measurement, the equipment and measurement methods shall be
187 according IEC 61300-3-4 for attenuation and 61300-3-6 for return loss measurement. The
188 optical performance measurement shall be performed at the wavelength(s) specified in the
189 relevant specification. When sealing performance is requested to be evaluated, the equipment
190 and measurement method shall be according IEC 61300-2-38.

191 **6.4 Conditioning**

192 **6.4.1 Procedure A**

193 Immerse the DUT for 30 seconds in the fluid, then remove the DUT from the fluid. For DUTs or
194 fluids that are not practical to be immersed, brush the test fluid in an homogenous manner all
195 over the DUT external area. Allow to drain-off the excess of test fluid for 2 minutes and
196 immediatly after this step set the DUT inside the temperature-controlled equipment to be
197 exposed to the test temperature and the period of time specified in the relevant specification.

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

200 **6.4.2 Procedure B**

201 For each specified fluid, prepare a vessel with sufficient fluid such that the DUT can be
202 adequately immersed.

203 Immerse the DUT while maintaining the fluid temperature during the period of time specified in
204 the relevant document. This may require to put the vessel with the DUT immersed, inside a
205 temperature-controlled equipment.

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

208 **6.5 Recovery**

209 **6.5.1 Procedure A**

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

213 **6.5.2 Procedure B**

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

215 Where applicable as defined in the relevant specification, dry the DUT in a temperature-
216 controlled equipment at an appropriate temperature for a defined period. Remove the DUT from
217 the temperature-controlled equipment and maintain it under standard atmospheric conditions
218 according to IEC 61300-1.

219 **6.6 Final examinations and measurements**

220 Upon completion of the test, the DUT(s) shall be visually examined in accordance to IEC 61300-
221 3-1 and all necessary observations recorded as specified in the relevant specification. Careful
222 attention shall be given to swelling and shrinkage of materials, loss of adhesive bonding
223 between bonded surfaces, corrosion of metallic parts, softening of materials, cracks in material,
224 degradation of optical characteristics, etc.

225 Unless otherwise specified in the relevant specification the functional measurements shall be
226 accomplished at the standard atmospheric conditions as defined in IEC 61300-1. When optical
227 measurements are required, the equipment and measurement methods shall be according IEC
228 61300-3-4 for attenuation and 61300-3-6 for return loss measurement. When sealing
229 performance is requested to be evaluated, the equipment and measurement method shall be
230 according IEC 61300-2-38.

231 NOTE In the case of contamination, appropriate disposal of contaminated water is necessary according to local
232 regulations. Follow the recommendations and warnings indicated in IEC 61300-2-38.

233 **7 Severity**

234 **7.1 General**

235 The severity consists of a selection of the test fluid, exposure duration and the fluid exposure
236 temperature. The severity shall be specified in the relevant specification.

237 The following preferred severities are non-mandatory severities which may be specified for this
238 procedure.

239 7.2 Exposure and drying duration

240 It is recommended to verify the test severities with the relevant IEC 61753 series performance
241 standards and IEC 62005 series reliability documents for the normative values.

242 **Table 1 – Preferred test durations**

| Test duration |
|---------------|
| 1 hour |
| 24 hours |
| 120 hours |

243

244 **Table 2 – Recommended test temperatures**

| Test temperature |
|------------------|
| 23 °C |
| 30 °C |
| 40 °C |
| 50 °C |
| 60 °C |
| 70 °C |

245 NOTE for specified test temperature of 23 °C, the standard atmospheric condition according IEC 61300-1 can be
246 applied.

247 For procedure B, after exposure the DUT shall be recovered by drying applied according to the
248 temperature and duration given in the relevant specification. In case this information is not
249 provided, typical drying durations are mentioned below.

250 **Table 3 – Preferred drying durations**

| Drying duration |
|-----------------|
| none |
| 1 hour |
| 2 hours |
| 24 hours |

251

252 The dry out temperature should be, at maximum, the temperature of the DUT service
253 environment.

254 7.3 Test fluids

255 Tables 4 and 5 provides a non-exhaustive list of recommended test fluids. The fluids listed are
256 representative of those that can be encountered in storage, installation and specific operational
257 applications. It is not intended that any DUT should be exposed to all of them.

258

Table 4 – General use fluids

| |
|--|
| Isopropyl alcohol |
| A mixture of toluene (aromatic) 30 % and iso-octane (aliphatic) 70 % (V/V) |
| A mixture of 85 % Ethanol and 15 % ISO 1817 liquid C (V/V) |
| Acetone |
| Bleaching (NaClO based) solution at 15 % by volume in water |
| HCl solution (pH 2) |
| NaOH solution (pH 12) |
| White spirit, 45 % alcohol volume |