SLOVENSKI STANDARD
SIST EN 60068-2-10:2005/A1:2018

01-september-2018

Okoljsko preskušanje - 2-10. del: Preskusi - Preskus J in navodilo: razvoj modela - Dopolnilo A1 (IEC 60068-2-10:2005/A1:2018)

Environmental testing - Part 2-10: Tests - Test J and guidance: Mould growth (IEC 60068 -2-10:2005/A1:2018)

Umgebungseinflüsse - Teil 2-10: Prüfverfahren - Prüfung J und Leitfaden: Schimmelwachstum (IEC 60068-2-10:2005/A1:2018)

Essais d'environnement - Partie 2-10: Essais - Essai J et guide: Moisissures (IEC 60068-2-10:2005/A1:2018)

Ta slovenski standard je istoveten z: **EN 60068-2-10:2005/A1:2018**

ICS:

19.040	Preskušanje v zvezi z okoljem	Environmental testing

SIST EN 60068-2-10:2005/A1:2018 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60068-2-10:2005/A1

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English Version

Environmental testing - Part 2-10: Tests - Test J and guidance: Mould growth (IEC 60068-2-10:2005/A1:2018)

Essais d'environnement - Partie 2-10: Essais - Essai J et guide: Moisissures
(IEC 60068-2-10:2005/A1:2018)

Umgebungseinflüsse - Teil 2-10: Prüfverfahren - Prüfung J und Leitfaden: Schimmelwachstum
(IEC 60068-2-10:2005/A1:2018)

This amendment A1 modifies the European Standard EN 60068-2-10:2005; it was approved by CENELEC on 2018-05-30. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This amendment exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 104/740/CDV, future edition 6 of IEC 60068-2-10:2005/A1, prepared by IEC/TC 104 "Environmental conditions, classification and methods of test" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60068-2-10:2005/A1:2018.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2019-02-28
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2021-05-30

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 60068-2-10:2005/A1:2018 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 60068-1:2013	NOTE	Harmonized as EN 60068-1:2014 (not modified).

IEC 60068-2-10

Edition 6.0 2018-04

INTERNATIONAL STANDARD

NORME INTERNATIONALE

BASIC SAFETY PUBLICATION
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AMENDMENT 1
AMENDEMENT 1

Environmental testing – Part 2-10: Tests – Test J and guidance: Mould growth

Essais d'environnement – Partie 2-10: Essais – Essai J et guide: Moisissures

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

ICS 19.040

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FOREWORD

This amendment has been prepared by IEC technical committee 104: Environmental conditions, classification and methods of test.

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

CDV	Report on voting
104/740/CDV	104/790/RVC

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

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

3 General description

Replace the existing Clause 3 with the following new Clause 3:

3 General description

3.1 Background

Under certain climatic and environmental conditions, micro-organisms may settle on and colonize the surface of electrotechnical equipment. Their presence or their metabolic products may not only damage the equipment itself, but may also affect the equipment's operability and serviceability. The actions of micro-organisms on equipment are influenced by two different processes: direct action in which the deterioration of material serve as a nutritive substance for the growth of the micro-organisms and indirect action in which the metabolic products of the micro-organisms generate deterioration.

The preferred method for controlling the effects of micro-organisms is by the selection of materials that do not promote growth. Also acceptable is the treatment, or hermetic sealing, of potentially vulnerable materials and components. Additionally, equipment may not need to be evaluated if it is stored and/or operated throughout its entire life, in conditions unlikely to encourage the growth of micro-organisms. Only if these cannot be achieved is it usually necessary to demonstrate the resistance of complete or partial equipment by testing.

The test procedures and severities of this document are most commonly used to evaluate the resistance of complete or partial equipment, to the damaging effects due to the presence of

micro-organisms and their metabolic products. Testing of entire equipment is usually necessary if it is critical that performance be demonstrated after exposure to adverse temperature/humidity conditions that would support the growth of micro-organisms.

An alternative approach which is sometimes used is to consider only the individual materials of which an equipment is composed. This alternative approach may be particularly relevant when the primary concern is with deterioration of structural materials of the equipment rather than its operability and serviceability. In such cases, individual materials may need to be evaluated, only if previous evidence exists as to its resistance to the effects of growth of micro-organisms. The testing procedures in ISO 846 are essentially the equivalent of those set out in this document but applied to specimens comprising samples of material.

Some materials can, when buried in natural soil that has a water holding capacity, exhibit significant degradation in structural characteristics. The evaluation of such conditions are not included in this document. However, should the evaluation of material be required, Method D (soil-burial test) in ISO 846 is suggested. Similarly, if it is necessary to evaluate a material's resistance to biological growth, Method C (resistance to bacteria) in ISO 846 is suggested.

3.2 Selection of test procedure

The test procedures of this document involves exposing electrotechnical products to the action of a selection of test strains of mould spores for a period of incubation under conditions which promote spore germination and the growth of mould. At the end of the exposure, the specimens are assessed for deterioration by visual examination and, if applicable, for any change in mass or other physical properties.

This document contains two basic test procedures Variant 1 and Variant 2:

a) In Variant 1, specimens are inoculated with a mixed suspension of mould spores in the presence of an incomplete nutritive medium (without a carbon source). The mould can only grow at the expense of the specimen. If the specimens contain no nutritive component, the fungi cannot develop mycelia and there is no deterioration of the material.

b) In Variant 2, specimens are inoculated with a mixed suspension of mould spores in a (complete) nutritive solution, i.e. with a carbon source. Even if the specimen does not contain any nutritive elements, the mould can grow over the specimen and their metabolic products can attack the material. Any inhibition of the growth on the specimen shows fungal activity of the material or the presence of a fungicidal treatment.

3.3 Considerations when specifying test procedures

Surface contamination in the form of dusts, liquids, condensed volatile nutrients or grease may be deposited upon assembled specimens. This can be brought about by storage and use or transport with the product exposed to the atmosphere or handled without protective covering. This surface contamination can cause an increased colonization by fungi and may lead to greater growth and damage. An assessment of the effect of such contamination can be given by the application of test Variant 2.

Due to the difficulty of maintaining the necessary conditions in a very large chamber, large equipment may be tested as a number of sub–units. This will in any case minimize the cost of the test since several sub-units may be so similar in construction that only one of them needs to be tested.

The incubation period for determining degradation resistance of equipment is a pragmatic duration which is normally sufficient for the degradation actions of micro-organisms to become apparent. It is not necessarily related to, nor is it intended to replicate, the exposure duration of equipment to adverse temperature/humidity conditions that would support the growth of micro-organisms.

Regardless of the test variant used, specimens are inoculated with a suspension of mould spores typically by spraying. The preferred approach is by means of a supersonic aerosol

apparatus, such as that used for therapeutic treatment by inhalation. Such an approach allows a homogeneous distribution of the spores to be achieved on the surfaces of the specimen and consequently results in a high reproducibility of the test results. However, if spraying is not suitable due to the size, design or other properties of the specimen, inoculation with spore suspension by dipping or painting may be carried out, as stated in the relevant specification.

This document contains guidance on the post-test visual inspection of specimens as well as an approach for grading the extent of mould growth. If the purpose of the test is to establish degradation of the operability of electrotechnical equipment, additional electrical and/or mechanical checks will need to be specified by the relevant specification. In such cases, it may be essential that the incubation conditions of temperature and relative humidity surrounding the specimen are maintained throughout such electrical and/or mechanical checks. Additionally, controlled recovery conditions may be needed in order to prevent moisture being absorbed or lost by the specimen before undertaking any required post-test examinations. IEC 60068-1:2013, 4.4.2 indicates an approach that may be used if the specimen needs to be subjected to controlled recovery conditions.

Annex E

E.1 List of identical strains

Replace, in row 7 and fourth column of the table, "QM 9958" with "QM 9985".

Add the following new Bibliography

Bibliography

IEC 60068-1:2013, *Environmental testing – Part 1: General and guidance*

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