



SLOVENSKI STANDARD
SIST EN 60068-2-75:2001
01-september-2001

Environmental testing - Part 2-75: Tests - Test Eh: Hammer tests

Environmental testing -- Part 2-75: Tests - Test Eh: Hammer tests

Umweltprüfungen -- Teil 2-75: Prüfungen - Prüfung Eh: Hammer-Prüfungen

Essais d'environnement -- Partie 2-75: Essais - Essai Eh: Essais aux marteaux

Ta slovenski standard je istoveten z: EN 60068-2-75:1997

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ICS:

19.040	Preskušanje v zvezi z okoljem	Environmental testing
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EUROPEAN STANDARD
NORME EUROPÉENNE
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EN 60068-2-75

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Supersedes EN 60068-2-62:1995 and EN 60068-2-63:1994

Descriptors: Environmental testing, test Eh: hammer tests, provisions common to all hammer tests, test Eha: pendulum hammer, test Ehb: spring hammer, test Ehc: vertical hammer

English version

Environmental testing
Part 2: Tests - Test Eh: Hammer tests
(IEC 60068-2-75:1997)

Essais d'environnement
Partie 2: Essai Eh: Essais aux marteaux
(CEI 60068-2-75:1997)

Umweltprüfungen
Teil 2: Prüfungen
Prüfung Eh: Hammerprüfungen
(IEC 60068-2-75:1997)

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This European Standard was approved by CENELEC on 1997-10-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard 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 Central Secretariat or to any CENELEC member.

This European Standard 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 50A/328/FDIS, future edition 1 of IEC 60068-2-75, prepared by IEC TC 104, Environmental conditions, classification and methods of test, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60068-2-75 on 1997-10-01.

This European Standard supersedes EN 60068-2-62:1995 and EN 60068-2-63:1994.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 1998-07-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 1998-07-01

Annexes designated "normative" are part of the body of the standard.

Annexes designated "informative" are given for information only.

In this standard, annexes A, B and ZA are normative and annexes C, D and E are informative.
Annex ZA has been added by CENELEC.

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Endorsement notice

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The text of the International Standard IEC 60068-2-75:1997 was approved by CENELEC as a European Standard without any modification.

Annex ZA (normative)**Normative references to international publications
with their corresponding European publications**

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE: When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-1	1988	Environmental testing Part 1: General and guidance	EN 60068-1 ¹⁾	1994
IEC 60721-1	1990	Classification of environmental conditions Part 1: Environmental parameters and their severities		
+ A1	1992		EN 60721-1	1995
ISO 1052	1982	Steels for general engineering purposes	-	-
ISO 2039-2	1987	Plastics - Determination of hardness Part 2: Rockwell hardness	-	-
ISO 2041	1990	Vibration and shock - Vocabulary	-	-
ISO 2768-1	1989	General tolerances Part 1: Tolerances for linear and angular dimensions without individual tolerance indications	EN 22768-1	1993
ISO 6508	1986	Metallic materials - Hardness test Rockwell test (scales A - B - C - D - E - F - G - H - K)	-	-

1) EN 60068-1 includes the corrigendum October 1988 and A1:1992 to IEC 60068-1.

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**NORME
INTERNATIONALE
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STANDARD**

**CEI
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60068-2-75

Première édition
First edition
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Essais d'environnement –

Partie 2:

Essais – Essai Eh: Essais aux marteaux

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Environmental testing –
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Part 2:

Tests – Test Eh: Hammer tests

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International Electrotechnical Commission
Международная Электротехническая Комиссия

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ENVIRONMENTAL TESTING –

Part 2: Tests –

Test Eh: Hammer tests

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The 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 the 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 National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard CEI 60068-2-75 has been prepared by IEC technical committee 104: Environmental conditions, classification and methods of test.*

This first edition of CEI 60068-2-75 replaces both IEC 60068-2-62, published in 1991 including amendment 1 (1993) and IEC 60068-2-63, published in 1991, and constitutes a technical revision.

It has the status of a basic safety publication in accordance with IEC Guide 104.

It has the status of a basic environmental testing publication in accordance with IEC Guide 108.

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

FDIS	Report on voting
50A/328/FDIS	104/39/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.

Annexes A and B form an integral part of this standard.

Annexes C, D and E are for information only.

* Formely TC 50 and SCs 50A and 50B.

INTRODUCTION

Mechanical impacts likely to stress electrotechnical equipment in service can be generated by hammers of various types. For standardization purposes, the results of such testing should not depend on the type of testing apparatus and therefore, the characteristics of the various types of test hammers described in this part of IEC 60068 are intended to be as close as practicable for the same severity level.

It is important to note that both clause 3 and the test method selected from clauses 4, 5, and 6 need to be complied with in order to satisfy the requirements of this International Standard.

The severity levels are, in general, taken from IEC 60721-1.

For co-ordination purposes, it has been necessary to change certain fundamental parameters of the previous tests Ef: Impact, pendulum hammer, and Eg: Impact, spring hammer. In all cases, both sets of parameters are shown at the appropriate places in the text and will remain valid until five years from the publication of this part of IEC 60068. At that time, the values in brackets will be removed.

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ENVIRONMENTAL TESTING –

Part 2: Tests –

Test Eh: Hammer tests

1 Scope

This part of IEC 60068 provides three standardized and co-ordinated test methods for determining the ability of a specimen to withstand specified severities of impact. It is used, in particular, to demonstrate an acceptable level of robustness when assessing the safety of a product and is primarily intended for the testing of electrotechnical items. It consists of the application to the specimen of a prescribed number of impacts defined by their impact energy and applied in the prescribed directions.

This part of IEC 60068 covers energy levels ranging from 0,14 joules (J) to 50 joules (J).

Three types of test apparatus are applicable to perform these tests. Annex C provides some guidance as to this aspect.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 60068. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 60068 should investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60068-1: 1988, *Environmental testing – Part 1: General and guidance*

IEC 60721-1: 1990, *Classification of environmental conditions – Part 1: Environmental parameters and their severities*
Amendment 1, 1992

ISO 1052: 1982, *Steels for general engineering purposes*

ISO 2039-2: 1987, *Plastics – Determination of hardness – Part 2: Rockwell hardness*

ISO 2041: 1990, *Vibration and shock – Vocabulary*

ISO 2768-1: 1989, *General tolerances – Part 1: Tolerances for linear and angular dimensions without individual tolerances indicated*

ISO 6508: 1986, *Metallic materials – Hardness test – Rockwell test (scales A – B – C – D – E – F – G – H – K)*

3 Provisions common to all hammer test methods

3.1 Definitions

For the purpose of this part of IEC 60068, the terms used are generally defined in ISO 2041 or in IEC 60068-1. The following additional common definitions are also applicable for the purpose of this part of IEC 60068. Definitions specific to the tests of clauses 4 and 6 are given therein.

3.1.1 fixing point: Part of the specimen in contact with the mounting fixture at the point where the specimen is normally fastened in service.

3.1.2 equivalent mass: Mass of the striking element and any relevant portions of the test apparatus which, combined with its velocity, provides the impact energy.

NOTE – For the particular application to the pendulum hammer apparatus, see 4.1.3.

3.2 Severities

3.2.1 General

The severity is defined by the impact energy value chosen from 3.2.2, and the number of impacts according to 3.2.3.

3.2.2 Impact energy value

The impact energy value shall be one of the following, as prescribed by the relevant specification:

0,14 – 0,2 – (0,3) – 0,35 – (0,4) – 0,5 – 0,7 – 1 – 2 – 5 – 10 – 20 – 50 joules.

NOTE – Figures in brackets appear in current IEC 60068-2 standards, but will be removed five years from the date of publication of this standard.

3.2.3 Number of impacts

Unless otherwise prescribed by the relevant specification, the number of impacts shall be three per location.

3.3 Test apparatus

3.3.1 Description

Three types of test apparatus are available to perform these tests:

- the pendulum hammer;
- the spring hammer;
- the vertical hammer.

The types of test apparatus are defined in clauses 4, 5 and 6 as tests Eha, Ehb and Ehc respectively. The co-ordinated characteristics of the striking element are, in principle, similar in all three cases and are stated in table 1, in relation to the outline shown in figure 1.

Dimensions are in millimetres. Tolerances are as per class m of ISO 2768-1, unless otherwise stated.