SVENSK STANDARD SS-EN 60068-1

Fastställd	Utgåva	Sida	Ansvarig kommitté
2001-11-30	1	1 (1+29)	SEK TK 104

Miljötålighetsprovning – Del 1: Allmänna regler och vägledning

Basic environmental testing procedures – Part 1: General and guidance

Som svensk standard gäller europastandarden EN 60068-1:1994. Den svenska standarden innehåller den officiella engelska språkversionen av EN 60068-1:1994.

Nationellt förord

Europastandarden EN 60068-1:1994*)

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 60068-1, Sixth edition, 1988 - Basic environmental testing procedures Part 1: General and guidance**

jämte

Corrigendum, 1988 och **Amendment No. 1, 1992**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 60068, utgåva 3, 2000, gäller ej fr o m 2001-11-30.

*) EN 60068-1:1994 ikraftsattes 2001-11-30 som SS-EN 60068-1 genom offentliggörande, d v s utan utgivning av något svenskt dokument.

ICS 19.040

Denna standard är fastställd av SEK Svensk Elstandard,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
Postadress: SEK, Box 1284, 164 29 KISTA
Telefon: 08 - 444 14 00. *Telefax*: 08 - 444 14 30
E-post: sek@elstandard.se. *Internet*: www.elstandard.se

Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a säkerhet, prestanda, dokumentation, utförande och skötsel av elprodukter, elanläggningar och metoder. Genom att utforma sådana standarder blir säkerhetskraven tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

SEK är Sveriges röst i standardiseringsarbetet inom elområdet

SEK Svensk Elstandard svarar för standardiseringen inom elområdet i Sverige och samordnar svensk medverkan i internationell och europeisk standardisering. SEK är en ideell organisation med frivilligt deltagande från svenska myndigheter, företag och organisationer som vill medverka till och påverka utformningen av tekniska regler inom elektrotekniken.

SEK samordnar svenska intressenters medverkan i SEKs tekniska kommittéer och stödjer svenska experters medverkan i internationella och europeiska projekt.

Stora delar av arbetet sker internationellt

Utformningen av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

Standardiseringsarbetet inom SEK är organiserat i referensgrupper bestående av ett antal tekniska kommittéer som speglar hur arbetet inom IEC och CENELEC är organiserat.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

Var med och påverka!

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

SEK Svensk Elstandard
Box 1284
164 29 Kista
Tel 08-444 14 00
www.elstandard.se

EUROPEAN STANDARD

NORME EUROPEENNE

EUROPÄISCHE NORM

EN 60068-1

October 1994

ICS 19.040

Supersedes HD 323.3.1 S2:1988

Descriptors: Electricity, components, equipment, environmental testing, definitions, standard conditions, climatic sequence, climatic classification, procedures, components specifications writing, equipment specifications writing

ENGLISH VERSION

Environmental testing
Part 1: General and guidance
(IEC 68-1:1988 + corrigendum 1988 + A1:1992)

Essais d'environnement
Partie 1: Généralités et guide
(CEI 68-1:1988 + corrigendum 1988 + A1:1992)

Umweltprüfungen
Teil 1: Allgemeines und Leitfaden
(IEC 68-1:1988 + corrigendum 1988 + A2:1992)

This European Standard was approved by CENELEC on 1994-09-01. 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

Ref. No. EN 60068-1:1994 E

FOREWORD

At the request of the 78th Technical Board of CENELEC, the International Standard IEC 68-1:1988, its corrigendum October 1988 and amendment 1:1992 were submitted to the CENELEC Unique Acceptance Procedure (UAP) in January 1994 for acceptance as a European Standard.

The text of the reference document was approved by CENELEC as EN 60068-1 on 1 September 1994.

This European Standard replaces HD 323.1 S2:1988.

The following dates were fixed:

- latest date of publication of an identical national standard	(dop)	1995-10-01
- latest date of withdrawal of conflicting national standards	(dow)	1995-10-01

Annexes designated "normative" are part of the body of the standard. In this standard, annex ZA is normative.

ENDORSEMENT NOTICE

The text of the International Standard IEC 68-1:1988, its corrigendum October 1988 and amendment 1:1992 was approved by CENELEC as a European Standard without any modification.

ANNEX ZA (normative)

OTHER INTERNATIONAL PUBLICATIONS QUOTED IN THIS STANDARD WITH THE REFERENCES OF THE RELEVANT 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.

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

IEC Publication	Date	Title	EN/HD	Date
50(301)	1983	International Electrotechnical Vocabulary (IEV) - Chapter 301: General terms on measurements in electricity	-	-
50(302)	1983	Chapter 302: Electrical measuring instruments	-	-
50(303)	1983	Chapter 303: Electronic measuring instruments	-	-
68-2-14	1984	Basic environmental testing procedures Part 2: Tests - Test N: Change of temperature	HD 323.2.14 S2*	1987
68-2-20	1979	Test T: Soldering	HD 323.2.20 S3*	1988
68-2-27	1987	Test Ea and guidance: Shock	EN 60068-2-27	1993
68-2-38	1974	Test Z/AD: Composite temperature/humidity cyclic test	HD 323.2.38 S1	1988
68-2-47	1982	Mounting of components, equipment and other articles for dynamic tests including shock (Ea), bump (Eb), vibration (Fc and Fd) and steady-state acceleration (Ga) and guidance	EN 60068-2-47	1993
68-2-48	1982	Guidance on the application of the tests of IEC publication 68 to simulate the effects of storage	HD 323.2.48 S1	1988

---

* HD 323.2.14 S2 includes A1:1986 to IEC 68-2-14
HD 323.2.20 S3 includes A1:1986 + A2:1987 to IEC 68-2-20

IEC Publication	Date	Title	EN/HD	Date
68-3-1	1974	Part 3: Background information Section One - Cold and dry heat tests		
68-3-1A	1978	First supplement	HD 323.3.1 S1	1988
68-4	1987	Part 4: Information for specification writers - Test summaries	-	-
160	1963	Standard atmospheric conditions for test purposes	-	-
271	1974	List of basic terms, definitions and related mathematics for reliability	-	-
529	1976	Classification of degrees of protection provided by enclosures	EN 60529	1991
695	series	Fire hazard testing	HD 444 EN 60695	series series
721-1	1981*	Classification of environmental conditions - Part 1: Classification of environmental parameters and their severities	-	-
721-2	series	Part 2: Environmental conditions appearing in nature	HD 478.2	series
721-3	series	Part 3: Classification of groups of environmental parameters and their severities	HD 478.3 EN 60721-3	series series

Other publications:

Guide 104:1984 - Guide to the drafting of safety standards, and the role of committees with safety pilot functions and safety group functions

ISO 554:1976 - Standard atmospheres for conditioning and/or testing - Specifications

ISO 3205:1976 - Preferred test temperatures

---

* IEC 721-1:1990 + A1:1992 are harmonized as HD 478.1 S2:1994

CONTENTS

ENVIRONMENTAL TESTING

Part 1: General and guidance

---

1. Introduction

1.1 IEC Publication 68 contains fundamental information on environmental testing procedures and severities of tests. In addition, Part 1 contains information on atmospheric conditions for measurement and testing.

It is intended to be used in those cases where a relevant specification for a certain type of product (electrical, electromechanical and electronic equipment and devices, their sub-assemblies and constituent parts and components), hereinafter referred to as "specimen", has to be prepared, so as to achieve uniformity and reproducibility in the environmental testing of this product.

Note. — Although primarily intended for electrotechnical products, many of the environmental testing procedures in Part 2 of this publication are equally applicable to other industrial products.

The expression "environmental conditioning" or "environmental testing" covers the natural and artificial environments to which specimens may be exposed so that an assessment can be made of their performance under conditions of use, transport and storage to which they may be subjected in practice.

The requirements for the performance of specimens subjected to environmental conditioning are not covered by this publication. The relevant specification for the specimen under test defines the allowed performance limits during and after environmental testing.

When drafting a relevant specification or purchasing contract, only those tests should be specified that are necessary for the relevant specimen taking into account the technical and economic aspects.

IEC Publication 68 consists of:

a) this first Part (Publication 68-1) which deals with generalities;

Note. — Attention is drawn to Publication 68-2-48.

b) the second Part (Publication 68-2) published as separate booklets each dealing with a family of tests or a particular test or guidance for their application;

Note. — Attention is drawn to Publication 68-2-47.

c) the third Part (Publication 68-3) published as separate booklets each dealing with background information on a family of tests;

d) the fourth Part (Publication 68-4), giving information for specification writers, published in two sections of which the second, in loose-leaf form, contains summaries of all the current tests in Publication 68-2;

Note. — Fire hazard tests are separately published in IEC Publication 695.

1.2 The following historical survey gives the significant features of this and of the earlier editions:

First edition (1954)

Contained not only the general part but also many of the individual tests which now form part of the Publication 68-2 series.

Second edition (1960)

Format changed to Publication 68-1: General. Tests published separately as Publication 68-2 series. Degrees of severity were included for all tests.

Third edition (1968)

Degrees of severity dropped, many more definitions included which were amended and added to in Amendment No. 1, December 1972, and component climatic category introduced. The recovery clause (Sub-clause 5.4) was intended to apply to normal applications so that ALL SPECIMENS would be submitted to rigidly controlled conditions, unless otherwise specified. Supplement A was issued in December 1974 to add further definitions of combined and composite tests and sequences of tests.

Fourth edition (1978)

Amendment No. 1 and Supplement A to the third edition were incorporated in this edition and an amendment to standard recovery conditions, also including further recovery conditions with wider tolerances on temperature and humidity, was added to the original Sub-clause 5.4 of the third edition.

Fifth edition (1982)

This edition comprised the text of the fourth edition with the addition of Clause 10: Significance of the numerical value of a quantity, and of an appendix giving general guidance on environmental testing.

Sixth edition (1988)

This edition contains a largely editorial revision of the fifth edition, the technical content of IEC Publication 160, which will be withdrawn, and technical amendments of Clause 7 and Appendix A.

1.3 The families of tests comprising Part 2 of this publication are designated by the following upper case letters:

A: Cold.
B: Dry heat.
C: Damp heat (steady state).
D: Damp heat (cyclic).
E: Impact (for example shock and bump).
F: Vibration.
G: Acceleration (steady state).

H: Awaiting allocation (was originally allotted to "storage" tests for which see note in Item *a)* of Sub-clause 1.1.
J: Mould growth.
K: Corrosive atmospheres (for example salt mist).
L: Dust and sand.
M: Air pressure (high or low).
N: Change of temperature.
P: Awaiting allocation (was originally allotted to "flammability" tests now being dealt with as "fire hazard" tests in IEC Publication 695).

Q: Sealing (including panel sealing, container sealing and protection against ingress and leakage of fluid).
R: Water (for example rain, dripping water).
S: Radiation (for example solar, but excluding electromagnetic).

T: Soldering (including resistance to heat from soldering).
U: Robustness of terminations (of components).
V: Awaiting allocation (was originally allocated to "acoustic noise" but "vibration, acoustically induced" will now be Test Fg, one of the "vibration" family of tests).

W: Awaiting allocation.
Y: Awaiting allocation.

The letter X is used as a prefix together with a second upper case letter providing for extension of the list of families of tests, e.g. Test XA: Immersion in cleaning solvents. The letter Z is used to denote combined tests and composite tests as follows: Z is followed by a solidus and a group of upper case letters relating to the combined or composite stresses, for example Test Z/AM: Combined cold and low air pressure tests.

If appropriate, any test may be designated as "primarily intended for components" or "primarily intended for equipment".

1.4 To provide for future expansion within a family of tests and to maintain consistency of presentation, each family of tests may be subdivided. The subdivisions are identified by the addition of a (lower case) second letter, for example:

U: Robustness of terminations and integral mounting devices
Test Ua: Subdivided as Test Ua_1: Tensile and Test Ua_2: Thrust
Test Ub: Bending
Test Uc: Torsion
Test Ud: Torque

This subdivision will be made even though only one test is published and no further tests are immediately contemplated in the relevant family.

In order to avoid confusion with numbers, the letters i, I, o and O will not be used.

1.5 See editorial footnote.

Editorial note. — "Safety pilot functions" (see IEC Guide 104) have been allocated to Sub-Committee 50A for "mechanical robustness" testing and to Sub-Committee 50B for "corrosion" testing.

2. Scope

Publication 68 includes a series of methods of environmental test and their appropriate severities, and prescribes various atmospheric conditions for measurements and tests designed to assess the ability of specimens to perform under expected conditions of transportation, storage and all aspects of operational use.

Although primarily intended for electrotechnical products this publication is not restricted to them and may be used in other fields where desired.

Other methods of environmental test, specific to the individual types of specimen, may be included in the relevant specifications.