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Environmental testing - Part 2: Tests - Test Db and guidance: Damp heat, cyclic (12 + 12 hour cycle)

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Environmental testing
Part 2: Tests - Test Db and guidance: Damp heat, cyclic (12 + 12 hour cycle)
(IEC 60068-2-30:1980 + A1:1985)

Essais d'environnement
Partie 2: Essais - Essai Db et guide:
Essai cyclique de chaleur humide
(cycle de 12 + 12 heures)
(CEI 60068-2-30:1980 + A1:1985)

Umweltprüfungen
Teil 2: Prüfungen - Prüfung Db und
Leitfaden: Feuchte Wärme, zyklisch
(12 + 12-Stunden-Zyklus)
(IEC 60068-2-30:1980 + A1:1985)

This European Standard was approved by CENELEC on 1999-04-01. 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, Czech Republic, 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 the International Standard IEC 60068-2-30:1980 and its amendment 1:1985, prepared by SC 50B (transformed into IEC TC 104 "Environmental conditions, classification and methods of test), was approved by CENELEC as HD 323.2.30 S3 on 1987-12-03.

This Harmonization Document was submitted to the formal vote for conversion into a European Standard and was approved by CENELEC as EN 60068-2-30 on 1999-04-01.

The following date was 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) 2000-04-01

Annexes designated "normative" are part of the body of the standard.
In this standard, annex ZA is normative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60068-2-30:1980 and its amendment 1:1985 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.

Publication	Year	Title	EN/HD	Year
IEC 60068-1	1988	Environmental testing Part 1: General and guidance	EN 60068-1[1)]	1994
IEC 60068-2-28	1980	Part 2: Tests - Guidance for damp heat tests	HD 323.2.28 S1	1988

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

NORME INTERNATIONALE

INTERNATIONAL STANDARD

CEI
IEC
68-2-30

Deuxième édition
Second edition
1980

Essais fondamentaux climatiques et de robustesse mécanique

Partie 2: Essais
Essai Db et guide: Essai cyclique de chaleur humide (cycle de 12 + 12 heures)

Basic environmental testing procedures

Part 2: Tests
Test Db and guidance: Damp heat, cyclic (12 + 12-hour cycle)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

BASIC ENVIRONMENTAL TESTING PROCEDURES

Part 2: Tests — Test Db and guidance: Damp heat, cyclic (12 + 12-hour cycle)

FOREWORD

1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.
3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

PREFACE

This standard has been prepared by Sub-Committee 50B: Climatic Tests, of IEC Technical Committee No. 50: Environmental Testing.

This second edition supersedes the first edition (1969) of Test Db: Damp Heat, Cyclic (12 + 12-hour cycle).

A first draft was discussed at the meeting held in Zurich in 1977. As a result of this meeting, a new draft, Document 50B(Central Office)204, was submitted to the National Committees for approval under the Six Months' Rule in April 1978.

The National Committees of the following countries voted explicitly in favour of publication:

Australia	Israel
Austria	Italy
Belgium	Korea (Democratic People's Republic of)
Brazil	Netherlands
Bulgaria	Norway
Canada	Poland
Czechoslovakia	South Africa (Republic of)
Denmark	Spain
Egypt	Switzerland
Finland	Turkey
France	Union of Soviet Socialist Republics
Germany	United Kingdom
Hungary	

Other IEC publications quoted in this standard:

Publications Nos. 68-1: Basic Environmental Testing Procedures, Part 1: General.

68-2-28: Part 2: Tests — Guidance for Damp Heat Tests.

BASIC ENVIRONMENTAL TESTING PROCEDURES

Part 2: Tests — Test Db and guidance: Damp heat, cyclic (12 + 12-hour cycle)

INTRODUCTION

It is recommended that Test Db should be used instead of Test D of IEC Publication 68-2-4 (Test D: Accelerated Damp Heat) for testing all newly designed articles.*

1. Scope

To determine the suitability of components, equipment or other articles for use and storage under conditions of high humidity when combined with cyclic temperature changes and, in general, producing condensation on the surface of the specimen.

2. General description

This test comprises one or more temperature cycles in which the relative humidity is maintained at a high level.

Two variants of the cycle are given which are identical except for the temperature fall period; during this part of the cycle, variant 2 allows wider tolerances of relative humidity and the rate of temperature fall.

The test severity is determined by the upper temperature of the cycle and the number of cycles (see Clause 4).

Test profiles illustrating the procedure are shown in Figures 1, 2a, 2b and 3, pages 14, 15, 16 and 17.

3. Testing chamber

The chamber shall be so constructed that the conditions given hereafter may be obtained:

3.1 The temperature can be varied cyclically between 25 ± 3 °C and the appropriate upper temperature specified with the tolerance and rate of change specified in Sub-clause 6.3 and Figures 2a or 2b, as applicable.

3.2 The relative humidity in the working space can be maintained within the limits given in Sub-clause 6.3 and in Figures 2a or 2b, as applicable.

3.3 Care shall be taken to ensure that the conditions prevailing at any point in the working space are uniform and are as similar as possible to those prevailing in the immediate vicinity of suitably located temperature and humidity sensing devices. The air in the chamber should therefore be continuously stirred at a rate necessary to maintain the specified conditions of temperature and humidity.

* At the Paris meeting (1979) of IEC Sub-committee 50B, it was decided to withdraw Test D by 1st January 1983.

3.4 The specimens under test shall not be subjected to radiant heat from the chamber conditioning processes.

3.5 Water used for the maintenance of chamber humidity shall have a resistivity of not less than 500 Ωm.

Condensed water shall be continuously drained from the chamber and not used again until it has been re-purified.

Precautions shall be taken to ensure that no condensed water is allowed to fall on the specimens.

3.6 The dimensions, properties and/or electrical loading of the specimens under test shall not appreciably influence conditions within the chamber.

4. Severities

4.1 The severity of the test is defined by the combination of the upper temperature and the number of cycles.

4.2 The severity shall be chosen from the following:

a) upper temperature: 40 °C,
number of cycles: 2, 6, 12, 21, 56;

b) upper temperature: 55 °C,
number of cycles: 1, 2, 6.

5. Initial measurements

The specimens shall be visually inspected and electrically and mechanically checked, as required by the relevant specification.

6. Conditioning

6.1 The specimens shall be introduced into the chamber either in the unpacked, switched-off, ready-for-use state, or as otherwise specified in the relevant specification.

Where no specific mounting is prescribed, the thermal conduction of the mounting shall be low, so that for all practical purposes the specimen is thermally isolated.

6.2 *Stabilizing period (see Figure 1, page 14)*

The temperature of the specimens shall be stabilized at 25 ± 3 °C.*

a) either by placing the specimens in a separate chamber before introducing it into the test chamber, or,

b) by adjusting the temperature of the test chamber to 25 ± 3 °C after the introduction of the specimens and maintaining them at this level until the specimens attain temperature stability.*

During the stabilization of temperature by either method, the relative humidity shall be within the limits prescribed for standard atmospheric conditions for testing.

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* Definition of temperature stability is given in Sub-clause 4.8 of IEC Publication 68-1.