

INTERNATIONAL STANDARD



BASIC SAFETY PUBLICATION

Environmental testing – iTeh Standards
Part 2-78: Tests – Test Cab: Damp heat, steady state
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Part 2-78: Tests – Test Cab: Damp heat, steady state

Essais d'environnement –
Partie 2-78: Essais – Essai Cab: Chaleur humide, essai continu

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ENVIRONMENTAL TESTING –

Part 2-78: Tests – Test Cab: Damp heat, steady state

FOREWORD

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International Standard IEC 60068-2-78 has been prepared by technical committee 104: Environmental conditions, classification, and methods of test.

This second edition cancels and replaced the first edition, published in 2001 and constitutes a technical revision.

This edition includes editorial and format changes with respect to the previous edition:

- The test chamber from IEC 60068-3-6 has been introduced.

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

FDIS	Report on voting
104/582/FDIS	104/588/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.

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

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

A list of all the parts in the IEC 60068 series, under the general title *Environmental testing*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site 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- withdrawn,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.

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INTRODUCTION

This part of IEC 60068 provides a test method of high humidity at constant temperature without condensation on the specimen over a prescribed period. This test is performed to evaluate the specimen as it is influenced by the absorption and diffusion of moisture and moisture vapour.

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ENVIRONMENTAL TESTING –

Part 2-78: Tests – Test Cab: Damp heat, steady state

1 Scope and object

This part of IEC 60068 establishes a test method for determining the ability of components or equipment to withstand transportation, storage and use under conditions of high humidity.

The object of this standard is to investigate the effect of high humidity at constant temperature without condensation on a specimen over a prescribed period.

It is applicable to small equipment or components as well as large equipment, and can be applied to both heat-dissipating and non-heat-dissipating specimens.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

IEC 60068-3-6, *Environmental testing – Part 3-6: Supporting documentation and guidance – Confirmation of the performance of temperature and humidity chambers*

IEC Guide 104, *The preparation of safety publications and the use of basic safety publications and group safety publications*

3 Terms and definitions

None.

4 General test procedure

4.1 Test chamber and measuring system

The temperature and humidity chamber shall be constructed and verified in accordance with specifications IEC 60068-3-6.

The chamber and measuring system shall be such that

- sensing devices can be located in the working space to monitor the temperature and humidity,

NOTE For heat-dissipating specimens, the temperature and humidity near the specimen may be influenced by the effect of heat dissipation from the specimen.

- condensed water is drained from the chamber and not re-used unless purified,
- no condensed water from the walls and roof of the test chamber can fall on the specimen(s),

- water utilized to maintain humidity levels has electrical conductivity of not more than 20 $\mu\text{S}/\text{cm}$,
- the specimen under test shall not be subjected to radiant heat from the chamber conditioning devices,
- injected moisture, when applicable, is injected remotely from the specimen and without being directly on it,
- the volume of the test chamber is at least five times the total volume of the specimen under test,
- a mounting device, when used, has minimum influence on the heat and humidity exchanges between specimen and surrounding conditions, unless otherwise specified in the relevant specification.

4.2 Severity

The test severity is defined by a combination of temperature, relative humidity (RH) and total test duration. Unless otherwise specified in the relevant specification, temperature and RH severities may be selected from the following:

Table 1 – Temperature and relative humidity

Temperature $^{\circ}\text{C}$	Relative humidity % RH
30 ± 2	93 ± 3
30 ± 2	85 ± 3
40 ± 2	93 ± 3
40 ± 2	85 ± 3

Preferred test durations are: 12 h, 16 h, 24 h; 2 days, 4 days, 10 days, 21 days or 56 days.

The total temperature tolerance of ± 2 K is intended to take account of absolute errors in the measurement, slow changes of temperature and temperature variations of the working space. However, in order to maintain the RH within the required tolerances, it is necessary to keep the temperature difference between any two points in the working space at any moment within narrower limits. The required humidity conditions will not be achieved if such temperature differences exceed 1 K. It may also be necessary to keep short-term fluctuations within $\pm 0,5$ K to maintain the required humidity.

4.3 Pre-conditioning

The relevant specification may call for pre-conditioning.

4.4 Testing procedure

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

In certain cases the relevant specification may allow the introduction of the specimen in the chamber when this is already in the condition prescribed for the test; however, condensation on the specimen shall always be avoided. This can be obtained for small specimens by pre-heating them to the chamber temperature.

Adjust the temperature in the chamber to the prescribed severity. In order to avoid condensation on the specimen, control the specimen temperature or allow the specimen to reach the temperature first and then adjust the humidity in the chamber to the prescribed severity.