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Semiconductor devices - Mechanical and climatic test methods - Part 9:  
Permanence of marking (IEC 60749-9:2002)

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EUROPEAN STANDARD

**EN 60749-9**

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 2002

ICS 31.080.01

Partly supersedes EN 60749:1999 + A1:2000 + A2:2001

English version

**Semiconductor devices -  
Mechanical and climatic test methods  
Part 9: Permanence of marking  
(IEC 60749-9:2002)**

Dispositifs à semiconducteurs -  
Méthodes d'essais mécaniques  
et climatiques  
Partie 9: Permanence du marquage  
(CEI 60749-9:2002)

Halbleiterbauelemente -  
Mechanische und klimatische  
Prüfverfahren  
Teil 9: Beständigkeit der Kennzeichnung  
(IEC 60749-9:2002)

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This European Standard was approved by CENELEC on 2002-07-02. 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, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, 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 47/1604/FDIS, future edition 1 of IEC 60749-9, prepared by IEC TC 47, Semiconductor devices, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60749-9 on 2002-07-02.

This mechanical and climatic test method, as it relates to the permanence of marking, is a complete rewrite of the test contained in clause 2, chapter 4 of EN 60749:1999.

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) 2003-04-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2005-07-01

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.

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## Endorsement notice

The text of the International Standard IEC 60749-9:2002 was approved by CENELEC as a European Standard without any modification.

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SIST EN 60749-9:2004

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## 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 60068-2-45	- <sup>1)</sup>	Basic environmental testing procedures Part 2: Tests - Test Xa and guidance: Immersion in cleaning solvents	EN 60068-2-45	1992 <sup>2)</sup>

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<sup>1)</sup> Undated reference.

<sup>2)</sup> Valid edition at date of issue.

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NORME  
INTERNATIONALE  
INTERNATIONAL  
STANDARD

CEI  
IEC

60749-9

Première édition  
First edition  
2002-04

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**Dispositifs à semiconducteurs –  
Méthodes d'essais mécaniques et climatiques –**

**Partie 9:  
Permanence du marquage**

**iTeh STANDARD PREVIEW**

**(standards.iTeh.ai)  
Semiconductor devices –  
Mechanical and climatic test methods –**

SIST EN 60749-9:2004

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**Part 9:  
Permanence of marking**

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Commission Electrotechnique Internationale  
International Electrotechnical Commission  
Международная Электротехническая Комиссия

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SEMICONDUCTOR DEVICES –  
MECHANICAL AND CLIMATIC TEST METHODS –**

**Part 9: Permanence of marking**

**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 specifications, 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 IEC 60749-9 has been prepared by IEC technical committee 47: Semiconductor devices.

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

FDIS	Report on voting
47/1604/FDIS	47/1620/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 mechanical and climatic test method, as it relates to the permanence of marking, is a complete rewrite of the test contained in clause 2, chapter 4 of IEC 60749.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 3.

The committee has decided that the contents of this publication will remain unchanged until 2007. At this date, the publication will be

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

The contents of the corrigendum of August 2003 have been included in this copy.



# SEMICONDUCTOR DEVICES – MECHANICAL AND CLIMATIC TEST METHODS –

## Part 9: Permanence of marking

### 1 Scope

The purpose of this part of IEC 60749 is to test and verify that the markings on semiconductor devices will not become illegible when subject to solvents or cleaning solutions commonly used during the removal of solder flux residue from the printed circuit board assembly process.

This test is applicable for all package types. It is suitable for use in qualification and/or process monitor testing. The test should be considered non-destructive. Electrical or mechanical rejects may be used for the purpose of this test.

In general, this test of permanence of marking is in conformity with IEC 60068-2-45 but, due to specific requirements of semiconductors, the clauses of this standard apply.

NOTE 1 This procedure does not apply to laser branded packages.

Many available solvents that could be used are either not sufficiently active, too stringent, or even dangerous to humans when in direct contact or when fumes are inhaled.

NOTE 2 The composition of solvents used in this standard, is considered typical and representative of the desired stringency as far as the usual coatings and markings are concerned.

### 2 Normative references

[SIST EN 60749-9:2004](https://standards.iteh.ai/catalog/standards/sist/2a12583b-26f6-4bde-b3f2-b67bd936b78b/sist-en-60749-9-2004)

<https://standards.iteh.ai/catalog/standards/sist/2a12583b-26f6-4bde-b3f2-b67bd936b78b/sist-en-60749-9-2004>

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

IEC 60068-2-45, *Environmental testing – Part 2: Tests – Test XA and guidance: Immersion in cleaning solvents*