

# IEC/PAS 62175

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## Marking permanency test method

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**PUBLICLY AVAILABLE SPECIFICATION**



INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION



Reference number  
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# EIA/JEDEC STANDARD

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## Test Method B107-A

### Marking Permanency

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## EIA/JESD22-B107-A

(Revision of Test Method B107 - previously published in JESD22-B)

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ELECTRONIC INDUSTRIES ASSOCIATION

ENGINEERING DEPARTMENT



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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## MARKING PERMANENCY TEST METHOD

## FOREWORD

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IEC-PAS 62175 was submitted by JEDEC and has been processed by IEC technical committee 47: Semiconductor devices.

The text of this PAS is based on the following document:

This PAS was approved for publication by the P-members of the committee concerned as indicated in the following document:

Draft PAS	Report on voting
47/1448/PAS	47/1481/RVD

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## MARKING PERMANENCY

(From Council Ballot JCB-94-29A formulated under the cognizance of JC-14.1 Committee on Reliability Test Methods for Packaged Devices)

### 1 Purpose

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

#### 1.1 Formulation of solvents

The formulation of solvents herein is considered typical and representative of the desired stringency as far as the usual coatings and markings are concerned. 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 the fumes are inhaled.

### 2 Scope

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 nondestructive and electrical or mechanical rejects may be used for the purposes of this test.

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

### 3 References

Mil-Std-883, Method 2015 "Resistance to Solvents"

### 4 Terms and definitions

#### 4.1 Solvent solution "A"

A mixture consisting of the following:

- 1) One part by volume of isopropyl alcohol, A.C.S. (American Chemical Society) reagent grade, or isopropyl alcohol according to TT-1-735, grade A or B,

and

2) Three parts by volume of mineral spirits according to TT-T-291, type 11, grade A, or three parts by volume of a mixture of 80% by volume of kerosene and 20% by volume of ethylbenzene maintained at a temperature of 20 °C to 30 °C.

#### 4.2 Solvent solution "B"

A semiaqueous based solvent, (defluxer) e.g., a terpene, aliphatic hydrocarbons, high molecular weight alcohols, etc., or any equivalent EPA (Environmental Protection Agency) approved, HCFC (Hydrochlorofluorocarbon), terpene or demonstrated equivalent. (Reference item 5 in section 6.)

#### 4.3 Solvent solution "C"

At 63 °C to 70 °C, a mixture consisting of the following:\*

- 1) 42 parts by volume of deionized water.
- 2) One part by volume of propylene glycol monomethyl ether (laboratory reagent grade).
- 3) One part by volume of monoethanolamine (laboratory reagent grade).

\*NOTE - Normal safety precautions for handling this solution (e.g., same as those for diluted ammonium hydroxide) based on OSHA (Office of Safety & Health Administration). Rules for monoethanolamine or other precautionary measures with regard to flash point, toxicity, etc.

#### 4.4 Brush

The brush shall be a toothbrush with a handle made of a nonreactive material. The brush shall have at least three long rows of hard bristles, the free ends of which shall lie substantially in the same plane. The toothbrush shall be used exclusively with a single solvent and when there is any evidence of softening, bending, wear, or loss of bristles, it shall be replaced.

#### 4.5 Brush stroke

The brush stroke for solvent resistance testing is with normal hand pressure, approximately 57 to 85 grams (2-3 ounces). The brush stroke is directed in a forward direction, across the symbolized surface of the device being tested.

## 5 Equipment

- Three brushes as defined above.
- Three containers (beakers), a minimum of 400-500 ml (one pint) in size, each made from nonreactive materials such as stainless steel, naldene, or pyrex.
- An explosion-proof hot plate capable of maintaining the solvents B and C at the temperatures defined above.

## 6 Safety precautions

Solvent solutions listed above exhibit some potential health, environment, and safety hazards. The following safety requirements and precautions are to be followed at all times.

- 1) Always work under a well-vented hood. Avoid inhalation of vapors at all times.
- 2) Safety glasses/eye protection and solvent resistant gloves must be worn at all times while performing this test.
- 3) Solutions are to be kept in covered vessels at all times when not in direct use.
- 4) Avoid contact with skin or eyes, and exposure to open flames or hot surfaces.
- 5) When using EPA approved alternative solutions for test the device manufacturer should consider the recommended temperature for cleaning specified by the solvent supplier.

## 7 Procedure

- 1) Label the three vessels, three brushes, and three tweezers, A, B, and C. Divide the test specimens into three equal groups and fill the three vessels with the appropriate solutions A, B, and C respectively.
- 2) Each test group, along with a brush, shall be totally immersed for one minute in each of the solutions.