

## Accelerated moisture resistance – Unbiased autoclave

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INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION



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# Withdrawn

JESD22-A102-B

# JEDEC STANDARD

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## Accelerated Moisture Resistance - Unbiased Autoclave

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### JESD22-A102-B

(Revision of Test Method A102-A - previously published in JESD22)

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ELECTRONIC INDUSTRIES ASSOCIATION

ENGINEERING DEPARTMENT



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# Withdrawn

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

ACCELERATED MOISTURE RESISTANCE –  
UNBIASED AUTOCLAVE

## FOREWORD

A PAS is a technical specification not fulfilling the requirements for a standard, but made available to the public and established in an organization operating under given procedures.

IEC-PAS 62172 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
47/1472/PAS	47/1505/RVD

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**TEST METHOD A102-B  
ACCELERATED MOISTURE RESISTANCE - UNBIASED AUTOCLAVE**

(From JEDEC Council Ballot JCB-90-32, formulated under the cognizance of JC-14.1 Committee on Reliability Test Methods for Packaged Devices. )

**1. PURPOSE**

The "Accelerated Moisture Resistance Test" is performed for the purpose of evaluating the moisture resistance of nonhermetic packaged solid state devices. It employs severe conditions of pressure, humidity and temperature that accelerate the penetration of moisture through the external protective material (encapsulant or seal) or along the interface between the external protective material and the metallic conductors that pass through it. This test is destructive; it may\* be used for qualification, lot acceptance and as a product monitor.

**2. APPARATUS**

The test requires a pressure chamber capable of maintaining a specified temperature, pressure and relative humidity.

**2.1 Devices Under Stress**

Devices under stress shall\*\* be no closer than 3 cm from the internal chamber surface, and must\*\*\* not be subjected to direct radiant heat from heaters.

**2.2 Ionic Contamination**

Ionic contamination of the test apparatus and storage chamber shall be controlled to avoid test artifacts.

**2.3 Distilled or Deionized Water**

Distilled or deionized water with a minimum resistivity of 1 megohm-cm at room temperature shall be used.

\* The word may is to be understood as permissive.

\* \* The word shall is to be understood as mandatory.

\* \* \* The word must is cautionary in the sense that the stated action is essential to successful achievement of a purpose.

### 3. TEST CONDITIONS

The test conditions consist of a temperature, vapor pressure, relative humidity and duration specified by a letter code.

#### 3.1 Temperature and Relative Humidity

Temperature (Dry Bulb) (°C)	Relative Humidity* (%)	Vapor Pressure (psig)
121 ± 1	100	1.5 ± 1

\*For information only.

#### 3.2 Duration

The test conditions and durations are shown below. The conditions of temperature and pressure shall not be interrupted for more than one hour after each 24 hour interval, unless interim readouts are specified in the applicable procurement document.

<u>TEST CONDITION</u>	<u>DURATION (HOURS)</u>	
A	24	(-0, +2)
B	48	(-0, +2)
C	96	(-0, +5)
D	168	(-0, +5)
E	240	(-0, +8)
F	336	(-0, +8)

### 4. PROCEDURE

The test devices shall be mounted in a manner which exposes them to the specified conditions of temperature, humidity and pressure. Exposure of devices to excessively hot, dry ambients shall be avoided, particularly during stress ramp-up, ramp-down and the pre-readout drying period.

#### 4.1 Test Duration

The test duration interval begins when the chamber reaches the temperature and vapor pressure specified in 3.1, and ends at the beginning of ramp-down.

## 4.2 Readout

Electrical tests shall be performed not sooner than two hours, and not later than 48 hours, after the end of the ramp-down with room temperature testing done first in the sequence of testing. Condensed moisture on the exterior surface of the device package may be wiped off, but cleaning of the device package is not allowed. The device leads may be mechanically cleaned to make electrical contact.

## 4.3 Interim Readout

For interim readouts, when specified in the applicable procurement document, devices shall be returned to stress within 96 hours of the end of ramp-down.

**NOTE:** The use of interim readouts may produce test results that differ from the results of continuous testing for the same total time period.

## 4.4 Handling

Suitable hand-covering shall be used to handle devices and test fixtures. Contamination control is important in any highly-accelerated moisture stress test.

## 5. FAILURE CRITERIA

A device will be considered to have failed the accelerated moisture resistance test, if parametric limits are exceeded, or if functionality cannot be demonstrated under nominal and worst-case conditions as specified in the applicable procurement document or data sheet.

## 6. SAFETY

Follow equipment manufacturer's recommendation and local safety regulations.

## 7. SUMMARY

The following details shall be specified in the applicable procurement document:

- (a) Test condition letter.
- (b) Measurements after test.
- (c) Sample size - acceptance number.
- (d) Time(s) of interim readout(s), if required.