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(JEITA)

**Environmental testing—Part 2-54:
Tests—Test Ta: Solderability
testing of electronic components
by the wetting balance method**

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4-1-24, Akasaka, Minato-ku, Tokyo, 107-8440 JAPAN

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal of revision of Japanese Industrial Standard submitted by Japan Electronics and Information Technology Industries Association (JEITA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14. Consequently **JIS C 60068-2-54:1996** is replaced with this Standard.

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Being in conformance with this Standard may come under the use of the following application of patent after opening to the public:

Title of invention: Apparatus and method for applying flux

Date of registration of establishment: 2004-05-27

It should be noted that this description does not affect to any extent the validity, the scope and the like of the above application of patent after opening to the public.

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Environmental testing—Part 2-54: Tests— Test Ta: Solderability testing of electronic components by the wetting balance method

Introduction

This Japanese Industrial Standard has been prepared based on the second edition of **IEC 60068-2-54** published in 2006 without modifying the technical contents, but adding some requirements that are unique to JIS, not included in the corresponding International Standard.

The portions underlined with dots are the matters in which the contents of the corresponding International Standard have been modified. A list of modifications with explanations is given in Annex JA.

1 Scope

This Standard outlines the solder bath wetting balance method applicable for any shape of component terminations to determine the solderability. It is especially suitable for reference testing and for components that cannot be quantitatively tested by other methods. For surface mounting devices (SMD), **IEC 60068-2-69** should be applied.

This Standard provides the standard procedures for solder alloys containing lead (Pb) and for lead-free solder alloys.

NOTE : The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows:

IEC 60068-2-54:2006 *Environmental testing—Part 2-54: Tests—Test Ta: Solderability testing of electronic components by the wetting balance method* (MOD)

The symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are IDT (identical), MOD (modified) and NEQ (not equivalent) according to **ISO/IEC Guide 21**.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. For standards with the year indication, only the editions of the indicated year shall be applied and any revisions (including amendments) made thereafter shall not be applied. For those without the indication of the year, the most recent edition (including amendments) shall be applied.

JIS C 60068-1 *Environmental testing Part 1: General and guidance*

NOTE : Corresponding International Standard: IEC 60068-1:1988 *Environmental testing—Part 1: General and guidance* and Amendment 1:1992 (IDT)

JIS C 60068-2-20:1996 *Basic environmental testing procedures—Part 2: Tests. Test T: Soldering*

NOTE : Corresponding International Standard: IEC 60068-2-20:1979 *Environmental testing—Part 2: Tests. Test T: Soldering* (IDT)

JIS Z 3282:2006 *Soft solders—Chemical compositions and forms*

3 Terms and definitions

For the purposes of this Standard, the terms and definitions, as defined in **JIS C 60068-1** and **JIS C 60068-2-20**, apply.

4 General description of the test

The specimen is suspended from a sensitive balance (typically a spring system) and immersed edgewise to a set depth in a bath of molten solder at a controlled temperature. The resultant of the vertical forces of buoyancy and surface tension acting upon the immersed specimen is detected by a transducer and converted into a signal which is continuously recorded as a function of time on a computer or a high-speed chart recorder (hereafter referred to as “recorder”). The trace may be compared with that derived from a perfectly wetted specimen of the same nature and dimensions.

Two modes of testing exist:

- The stationary mode, intended to study the solderability of a particular place on the specimen. It is this mode which is standardized in this Standard.
- The scanning mode, intended to study the homogeneity of the solderability of an extended region of the surface of the specimen. The standardization of this mode is still under consideration.

5 Description of the test apparatus

5.1 Test system

A diagram of an arrangement suitable for the test is shown in figure 1. Any other system capable of measuring the vertical forces acting on the specimen is admissible, provided that the system has the characteristics given in Annex A.

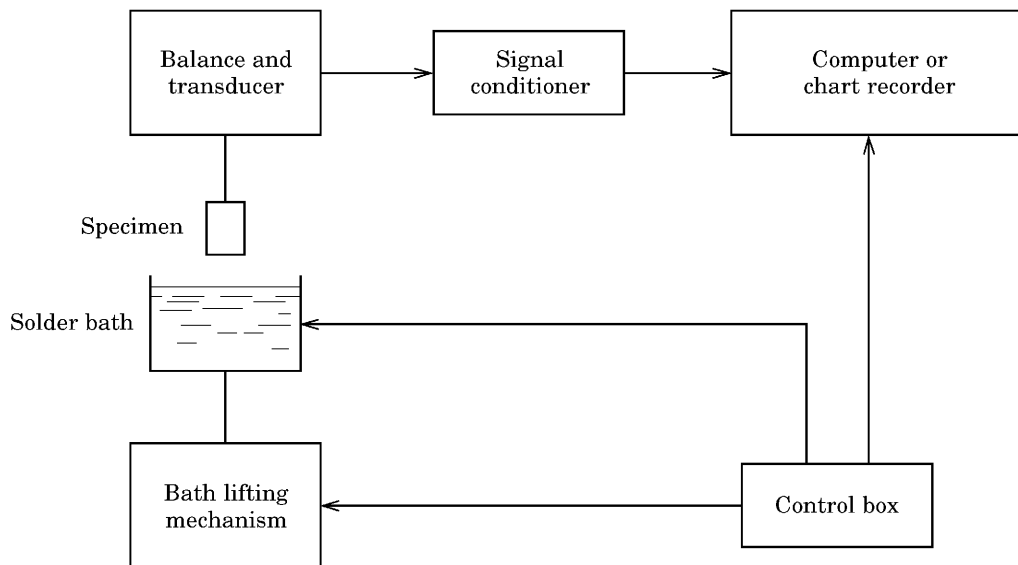


Figure 1 Test arrangement

5.2 Solder bath

The solder bath dimensions shall comply with the requirements of clause **A.7**. The material of the solder bath container shall be resistant to the relevant liquid solder alloy.

6 Preconditioning

6.1 Preparation of specimens

The specimen shall be tested in the “as-received” condition unless otherwise specified by the relevant specification. Care should be taken that no contamination, by contact with the fingers or by other means, occurs.

The specimen may be cleaned by immersion in a neutral organic solvent at room temperature, but only if required by the relevant specification; no other cleaning is permitted.

6.2 Ageing

When accelerated ageing is prescribed by the relevant specification, one of the methods of **4.5** of **JIS C 60068-2-20** shall be used.

7 Materials

7.1 Solder

7.1.1 General

Solder composition shall be specified in the relevant specification.

7.1.2 Solder alloy containing lead

The solder composition shall be either 60 % tin and 40 % lead, by mass fraction, according to Annex B of **JIS C 60068-2-20** (Sn60Pb40, according to **JIS Z 3282**) or 63 % tin and 37 % lead (Sn63Pb37, according to **JIS Z 3282**).