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(JWES)

**Solder paste — Part 3: Test methods for
printability, viscosity, slump and tacki-
ness**

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In the event of any doubts arising as to the contents,
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Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee according to the proposal for establishment of Japanese Industrial Standard submitted by The Japan Welding Engineering Society (JWES) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law.

Consequently **JIS Z 3284:1994** has been withdrawn and partially replaced with this Standard.

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Attention is drawn to the possibility that some parts of this Standard may conflict with patent rights, applications for a patent after opening to the public or utility model rights. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying any of such patent rights, applications for a patent after opening to the public or utility model rights.

JIS Z 3284 series consists of the following 4 parts under the general title “*Solder paste* —”:

Part 1 : Kinds and quality classification

Part 2 : Test methods for solder particle shape, surface condition judgment, and particle size distribution

Part 3 : Test methods for printability, viscosity, slump and tackiness

Part 4 : Test methods for wettability, solderball and spread

Solder paste — Part 3 : Test methods for printability, viscosity, slump and tackiness

Introduction

This Japanese Industrial Standard has been prepared based on the first edition of **IEC 61189-5** published in 2006 with some modifications of the technical contents to reflect the current situation in Japan.

The portions given sidelines or dotted underlines are the matters in which the contents of the corresponding International Standard have been modified. A list of modifications with the explanations is given in Annex JB. The matters contained in Annex JA are unique contents of **JIS** that are not given in the corresponding International Standard.

1 Scope

This Standard specifies the printability test, viscosity test, slump-in-printing test, slump-in-heating test and tackiness test of the solder paste for soldering used for the wiring connection, connection of parts, etc. of electric equipment, electronic equipment, communication equipment, etc.

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

IEC 61189-5 : 2006 *Test methods for electrical materials, interconnection structures and assemblies — Part 5 : Test methods for printed board assemblies* (MOD)

In addition, 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 21-1**.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS C 5603 *Terms and definitions for printed circuits*

JIS K 5500 *Glossary of terms for coating materials*

JIS K 8839 *2-Propanol (Reagent)*

JIS R 6252 *Abrasive papers*

JIS Z 3001 (series) *Welding and allied processes — Vocabulary*

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

JIS Z 3284-1 Solder paste — Part 1 : Kinds and quality classification

NOTE : Corresponding International Standard : IEC 61190-1-2 : 2007 *Attachment materials for electronic assembly — Part 1-2 : Requirements for soldering pastes for high-quality interconnects in electronics assembly* (MOD)

3 Terms and definitions

For the purpose of this Standard, the terms and definitions given in JIS Z 3001 (series), JIS C 5603, JIS K 5500 and JIS Z 3284-1 apply.

4 Test methods**4.1 Printability test of solder paste**

The profile and dimensions of the solder paste printed in the initial printing and the continuous printing as well as the stability test and the evaluation method thereof are specified herein, which shall be as follows.

- a) **Outline of test** The standard printing pattern for printability evaluation is used, the solder paste to be evaluated is printed on a copper-clad laminate, the profile of flat surface and the thickness (distribution) of the printed solder paste as well as the stability thereof during the continuous printing are measured, and the printability is evaluated.
- b) **Equipment and instruments** The equipment and instruments shall be as follows.
 - 1) **Metal mask** The metal mask shall be the stainless steel plate of 0.2 mm in thickness.

Straight etching shall be performed on the area for pattern holes, and its arrangement shall be as shown in Figure 1 a). Also, the arrangement of pattern holes shall be as shown in Figure 1 b).

The types and dimensions of metal mask shall be as shown in Table 1.

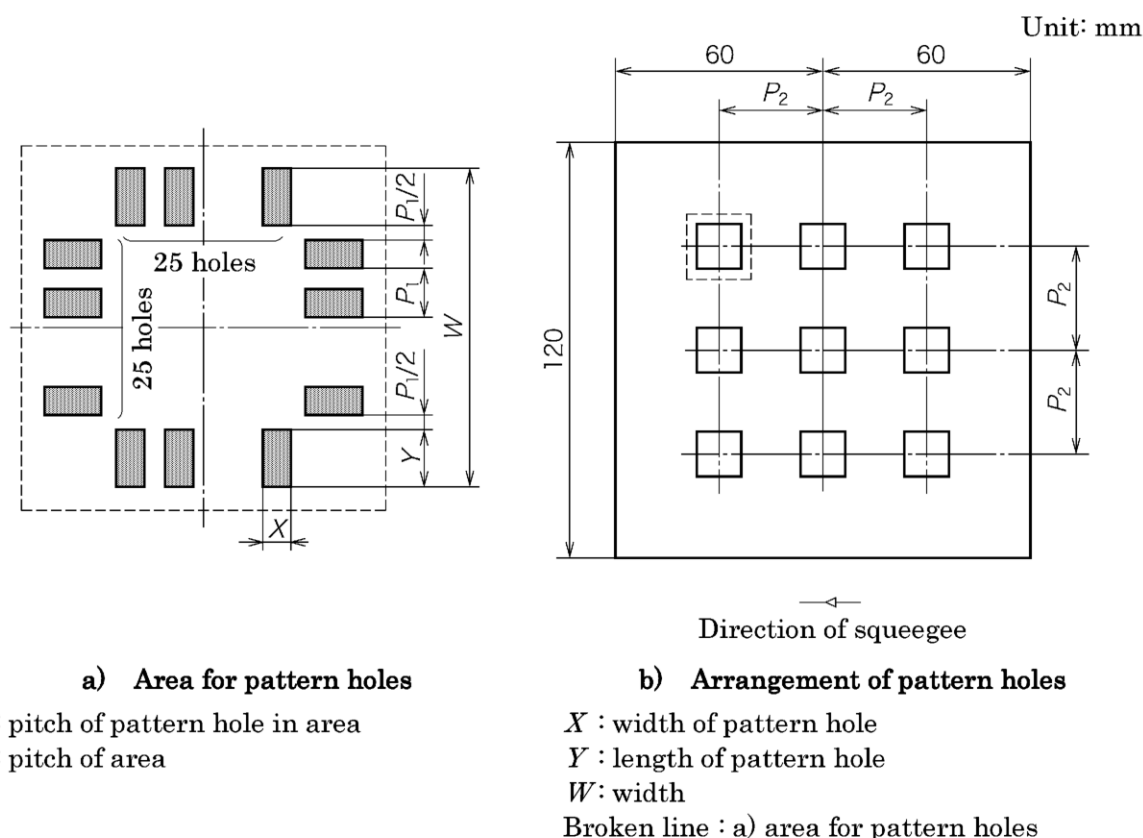


Figure 1 Pattern arrangement

Table 1 Types and dimensions of metal mask

Unit: mm

Type	Dimensions				
	P_1	X	Y	W	P_2
M1	0.80	0.40	2.0	24.40	30.0
M2	0.65	0.30	2.0	20.55	30.0
M3	0.50	0.25	2.0	16.75	30.0

- 2) Squeegee
 - 3) Spatula
 - 4) Copper-clad laminate substrate 160 mm × 160 mm × 1.6 mm in dimensions
 - 5) Printing device
 - 6) Stereo-microscope and photographing device
 - 7) Laser type displacement gauge whose laser beam diameter is 50 μm or under, or stylus type surface roughness tester
- c) **Test procedure** The test procedure shall be as follows.
- 1) Leave the solder paste as it is until it reaches the room temperature, if necessary.
 - 2) Stir the solder paste by using a spatula to make the solder paste uniform.