ICS 19.040, 31.190 SLOVENSKÁ TECHNICKÁ NORMA Január 2020

STN	**Skúšanie vplyvu prostredia Časť 2-69: Skúšky Skúška Te/Tc: Skúšanie spájkovateľnosti elektronických súčiastok a dosiek s plošnými spojmi metódou zmáčacích váh (meranie sily) Zmena A1**	**STN EN 60068-2-69/A1** 34 5791

Environmental testing - Part 2-69: Tests - Test Te/Tc: Solderability testing of electronic components and printed boards by the wetting balance (force measurement) method

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 12/19

STN EN 60068-2-69 z októbra 2017 sa bez tejto zmeny A1 môže používať do 24. 7. 2022.

Obsahuje: EN 60068-2-69:2017/A1:2019, IEC 60068-2-69:2017/AMD1:2019

129847

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60068-2-69:2017/A1

August 2019

ICS 19.040; 31.190

English Version

Environmental testing - Part 2-69: Tests - Test Te/Tc: Solderability testing of electronic components and printed boards by the wetting balance (force measurement) method (IEC 60068-2-69:2017/A1:2019)

Essais d'environnement - Partie 2-69: Essais - Essai Te/Tc: Essai de brasabilité des composants électroniques et cartes imprimées par la méthode de la balance de mouillage (mesure de la force) (IEC 60068-2-69:2017/A1:2019)

Umgebungseinflüsse - Teil 2-69: Prüfungen - Prüfung Te/TC: Prüfung der Lötbarkeit von Bauelementen der Elektronik und Leiterplatten mit der Benetzungswaage (Kraftmessung) (IEC 60068-2-69:2017/A1:2019)

This amendment A1 modifies the European Standard EN 60068-2-69:2017; it was approved by CENELEC on 2019-07-24. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment 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 CEN-CENELEC Management Centre or to any CENELEC member.

This amendment 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 91/1566/FDIS, future IEC 60068-2-69/A1, prepared by IEC/TC 91 "Electronics assembly technology" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60068-2-69:2017/A1:2019.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2020-04-24
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2022-07-24

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 60068-2-69:2017/A1:2019 was approved by CENELEC as a European Standard without any modification.

IEC 60068-2-69

Edition 3.0 2019-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

AMENDMENT 1
AMENDEMENT 1

Environmental testing – Part 2-69: Tests – Test Te/Tc: Solderability testing of electronic components and printed boards by the wetting balance (force measurement) method

Essais d'environnement – Partie 2-69: Essais – Essai Te/Tc: Essai de brasabilité des composants électroniques et cartes imprimées par la méthode de la balance de mouillage (mesure de la force)

IEC 60068-2-69:2017-03/AMD1:2019-06(en-fr)

IEC 60068-2-69

Edition 3.0 2019-06

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

ICS 19.040; 31.190 ISBN 978-2-8322-0000-0

FOREWORD

This amendment has been prepared by IEC technical committee 91: Electronics assembly technology.

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

FDIS	Report on voting
91/1566/FDIS	91/1580/RVD

Full information on the voting for the approval of this amendment can be found in the report on voting indicated in the above table.

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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

Table 3 – Pin diameter and solder pellet mass

Pin diameter mm	Solder pellet mass mg
1	5 ± 0,5
2	25 ± 2,5
3,2	100 ± 10
4	200 ± 10

Replace the last sentence of the 2nd paragraph with following sentence:

Refer to C.5.1.1 c) regarding the concave aluminium body head.

8.2.3 Solder globule wetting balance procedure

Replace the 2nd paragraph with the following:

Select the appropriate pin diameter for the component to be tested. Recommended pin diameters are given in Table 7.

Replace the 2nd sentence of the 6th paragraph with the following:

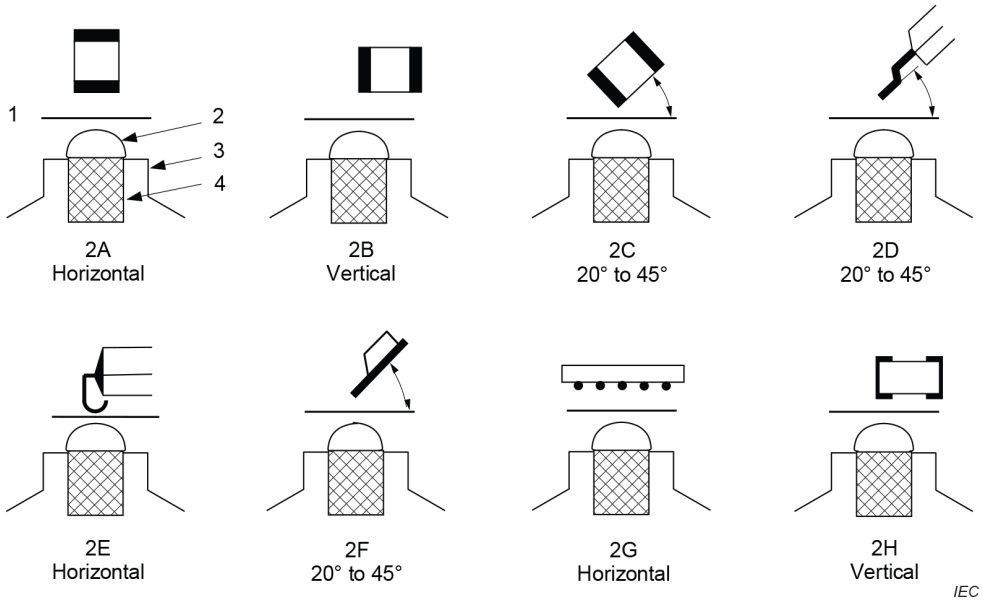
High-activated rosin base as specified in 7.2.1 shall be applied to the solder globule.

Table 7 – Recommended solder globule wetting balance test conditions

In the header row, replace "Pin size" *with* "Pin diameter" *and replace* "Globule mass" *with* "Solder pellet mass".

Figure 4 – Immersion conditions for solder globule method

Replace Figure 4 with the following new figure:



Key

1	Horizontal line	2	Solder globule
3	Globule support block	4	Iron pin

Figure 4 – Immersion conditions for solder globule method

8.2.4.1 Test specimen

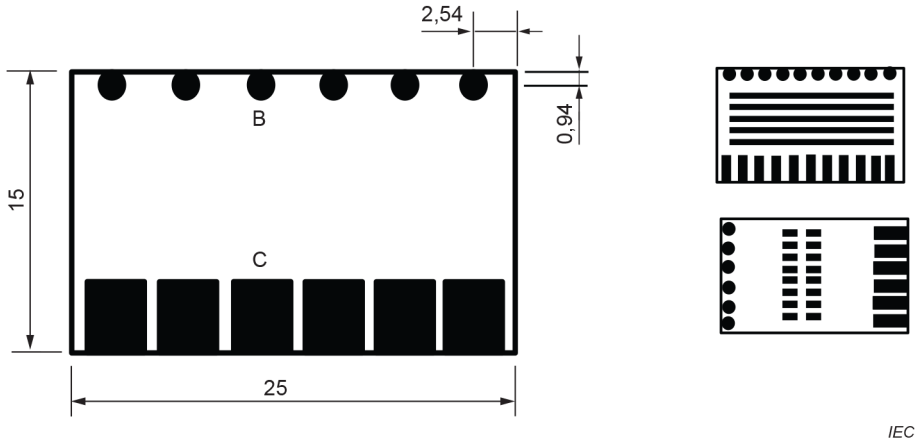
Replace the content with the following:

The test specimen shall be a full board, a section of a board or the test specimen as specified in the relevant specification. If the relevant specification does not specify the test specimen, the test specimens shown in Figure 5 may be used.

Figure 5 – Suggested wetting balance test specimens and soldering immersion

Replace Figure 5 with the following new figure:

Dimensions in millimetres



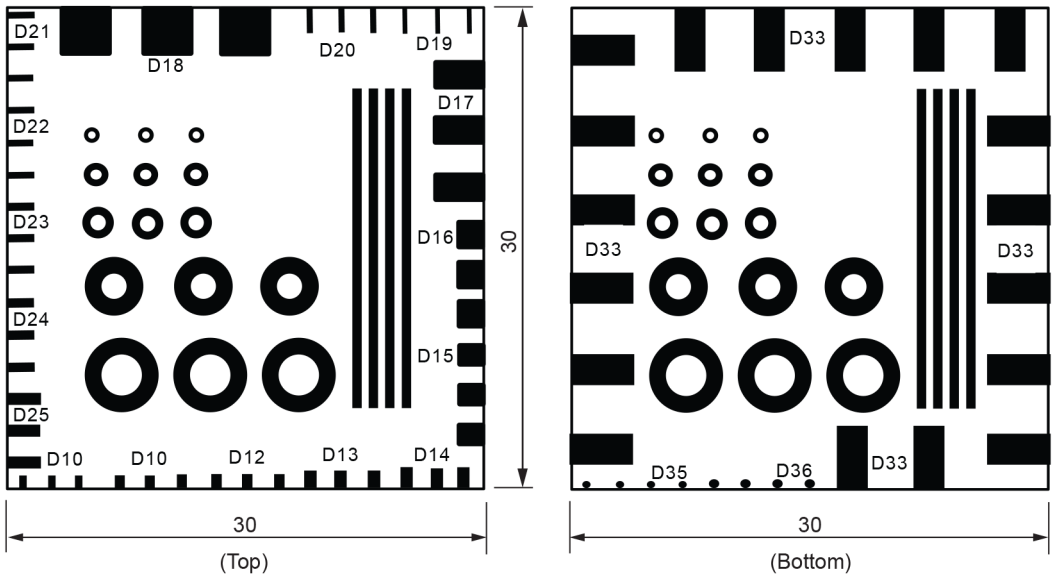
NOTE The figures on the right-hand side show the alternative configurations.

Symbol	Width	Length	Pad-to-pad pitch	Pad extension beyond the edge
B	1,9	round	4,0	—
C	3,18	4,52	4,0	0,51

[SOURCE: IPC 003c-4-2]

a) Test specimen for solder bath method

Dimensions in millimetres



Symbol	Width	Length
D10	0,698 5	0,899 2
D11	0,549 4	0,698 5
D12	0,800 1	1,000 8
D13	1,000 8	1,099 8
D14	0,899 2	1,399 5
D15	1,300 5	1,498 6
D16	1,600 2	1,798 3

Symbol	Width	Length
D17	1,798 3	3,200 4
D18	2,999 7	2,999 7
D19	0,170 2	1,600 2
D20	0,248 9	1,600 2
D21	0,299 7	1,600 2
D22	0,350 5	1,798 3
D23	0,399 8	1,798 3

Symbol	Width	Length
D24	0,500 4	1,798 3
D25	0,599 4	2,199 6
D33	1,899 9	3,799 8
D35	0,500 4	round
D36	0,599 4	round

[SOURCE: NPL Report MATCA(A)03, Figures 2 and 3 (TB26)]

b) Test specimen for solder globule method

Figure 5 – Suggested wetting balance test specimens for printed boards

8.2.4.2 Procedure

Replace the title with "**Printed board test procedure**".

Insert a new Subclause 8.2.4.2.1 entitled "Procedure for solder bath method" *and move the existing contents of 8.2.4.2 into this new subclause with the following modifications.*

Replace the 1st sentence of the 1st paragraph with the following:

The test specimens shall be dipped in the flux to the full depth to be soldered for 5 s to 10 s.

Replace the 1st sentence of the 2nd paragraph with the following:

Hang the specimen on the apparatus so that its lower edge is 10 mm ± 1 mm above the solder bath to preheat it for 20 s ± 1 s.

Replace the 1st and 2nd sentences of the 3rd paragraph with the following:

The flux-covered surface shall be immersed only once in the molten solder to a depth of 0,2 mm ± 0,1 mm, and the angle of immersion shall be 20° to 40°, as shown in Figure 6.

Add the following new Subclause 8.2.4.2.2.

8.2.4.2.2 Procedure for solder globule method

As per 8.2.3 with the following details:

a) pin diameter: 4 mm;
b) solder pellet mass: 200 mg;
c) flux type: high activated rosin-based flux as specified in 7.2.1;
d) dipping angle: 45°;
e) immersion depth: 0,10 mm;
f) immersion speed: 1 mm/s;
g) dwell time: 10 s.

The time sequence of the test is shown in Table 8. The test sequence time should be the least possible whilst maintaining repeatability.

10 Information to be given in the relevant specification

In list item e), replace "Globule size" *with* "Pin diameter and solder pellet mass".

B.3 Solder globule mass and pin size

Replace the title with "Solder pellet mass and pin diameter".

Replace the first three paragraphs with the following:

The solder globule wetting balance method is standardized using 4 pin diameters (4 mm, 3,2 mm, 2 mm and 1 mm) for the iron insert in the aluminium block, and 4 corresponding solder pellet masses (200 mg, 100 mg, 25 mg and 5 mg).

In general, the smaller solder pellet masses give improved discrimination with the smaller SMDs and facilitate testing of individual leads on fine-pitch devices, such as QFPs (quad flat packs) and BGAs (ball grid arrays). The 200 mg pellet mass is required for all larger SMD and multi-leaded SMD, where the 25 mg solder pellet mass has insufficient volume to completely solder the terminations. The 100 mg solder pellet mass provides a larger wetting force than the 200 mg solder pellet mass and larger thermal inertia than the 25 mg solder pellet mass. With the advent of even smaller SMDs, such as 0603M (0201), a smaller pin diameter of 1 mm, and solder pellet mass 5 mg or 2,5 mg, may be required to match these finer SMD sizes.

A list of recommended pin diameters and solder pellet masses is given in Table 7 and Annex C.

B.7.2.2 Noise level (see Clause A.1 c))

Replace, in the title, "(see Clause A.1 c))" *with* "(see Clause A.1 d))".

Bibliography

Add the following document:

NPL Report MATC(A)03, *Solderbility Measurements of PCB Pad Finishes and Geometries*, Febrary 2001. By Deborah Lea, Fredirikus Jonck and Christopher Hunt

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