
**Soft soldering fluxes — Test
methods —**

**Part 14:
Assessment of tackiness of flux
residues**

Flux de brasage tendre — Méthodes d'essai —

Partie 14: Détermination du pouvoir collant des résidus de flux

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 12, *Soldering materials*.

This second edition cancels and replaces the first edition (ISO 9455-14:1991), which has been technically revised.

The main changes compared to the previous edition are as follows:

- the test report has been updated;
- this document has been editorially revised.

A list of all parts in the ISO 9455 series can be found on the ISO website.

Requests for official interpretations of any aspect of this document should be directed to the Secretariat of ISO/TC 44/SC 12 via your national standards body. A complete listing of these bodies can be found at www.iso.org.

Soft soldering fluxes — Test methods —

Part 14:

Assessment of tackiness of flux residues

1 Scope

This document specifies a qualitative method for the assessment of the tackiness of the residues of a soft soldering flux after a soldering process. The method is applicable to all fluxes, solder pastes and flux cored solder wires. The method is particularly appropriate for applications where flux residues are left *in situ* on electrical and electronic equipment.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 197-1, *Copper and copper alloys — Terms and definitions — Part 1: Materials*

ISO 9453, *Soft solder alloys — Chemical compositions and forms*

ISO 9455-1, *Soft soldering fluxes — Test methods — Part 1: Determination of non-volatile matter, gravimetric method*

ISO 9455-2, *Soft soldering fluxes — Test methods — Part 2: Determination of non-volatile matter, ebulliometric method*

ISO 9455-14:2017

<https://standards.iteh.ai/catalog/standards/iso/8f6eba02-51ca-4f49-bbb3-43ecc45d3c1a/iso-9455-14-2017>

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

4 Principle

The flux is melted on a copper sheet test piece in contact with a standard mass of solder. In the case of flux cored solders and solder pastes, a standard mass of the material is melted on the copper test piece. After the test piece has cooled to room temperature, the flux residues are tested for tackiness using chalk powder.

5 Reagents and materials

In the test, only reagents of recognized analytical quality and only distilled, or deionized, water shall be used.

5.1 Acid cleaning solution.

Add cautiously, with stirring, 75 ml of sulfuric acid ($\rho = 1,84$ g/ml) to 210 ml of water and mix. Cool, add 15 ml of nitric acid ($\rho = 1,42$ g/ml) and mix the solution thoroughly.

5.2 Degreasing solvent, such as acetone, 2-propanol or petroleum ether.

5.3 Powdered chalk.

5.4 0,5 mm thick copper sheet, phosphorus deoxidized sheet, according to ISO 197-1.

5.5 Acetone.

5.6 Solder wire, or pellets.

The solder used for the test and the test temperature shall be selected from one of the following:

- a) Sn60Pb40, according to ISO 9453, at (235 ± 3) °C;
- b) Sn96Ag3Cu0,5, according to ISO 9453, at (255 ± 3) °C;
- c) any other solder or temperature combinations as agreed between the customer and the flux supplier. For test temperatures, see [8.2](#).

6 Apparatus

Usual laboratory apparatus and, in particular, the following.

6.1 Solder bath, either circular with diameter not less than 120 mm or rectangular with dimensions not less than 100 mm \times 75 mm. The depth of the solder in the bath shall be not less than 40 mm. As a minimum, the bath temperature shall be capable of being maintained at a set temperature of the liquidus temperature of the alloy on the test plus 35 °C.

6.2 Cupping device.

This shall be fitted with a 27 mm diameter die and a 20 mm diameter ball.

6.3 Drying oven, suitable for use at (60 ± 2) °C and (110 ± 2) °C.

NOTE For liquid flux, (110 ± 2) °C is required to determine the non-volatile matter of the test flux and (60 ± 2) °C is required for [8.1.1 b](#)).

6.4 Tongs, or other suitable mechanical device, to lift the test piece from the surface of the molten solder bath.

6.5 Soft brush, with a diameter of approximately 7 mm.

7 Test pieces

From the sheet of half hard copper, approximately 0,5 mm thick ([5.4](#)), cut each test piece 50 mm \times 50 mm. Clamp each of the test pieces, in turn, centrally on to the 27 mm die of the cupping device ([6.2](#)).

Using the 20 mm diameter ball, make a depression in the centre of each test piece 3 mm deep, by forcing the ball into the die. One corner of the test piece may be bent up to facilitate handling with the tongs.