

<b>STN</b>	<b>Tavivá na mäkké spájkovanie Skúšobné metódy Časť 17: Skúška na stanovenie izolačného odporu povrchu strhávaním a skúška elektrochemickej migrácie zvyškov taviva (ISO 9455-17: 2024)</b>	<b>STN EN ISO 9455-17</b>  05 5602
------------	---	--

Soft soldering fluxes - Test methods - Part 17: Surface insulation resistance comb test and electrochemical migration test of flux residues (ISO 9455-17:2024)

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. 06/24

Obsahuje: EN ISO 9455-17:2024, ISO 9455-17:2024

Oznámením tejto normy sa ruší  
STN EN ISO 9455-17 (05 5602) z decembra 2006

**138803**

Úrad pre normalizáciu, metrológiu a skúšobníctvo Slovenskej republiky, 2024  
Slovenská technická norma a technická normalizačná informácia je chránená zákonom č. 60/2018 Z. z. o technickej normalizácii v znení neskorších predpisov.

EUROPEAN STANDARD

EN ISO 9455-17

NORME EUROPÉENNE

EUROPÄISCHE NORM

January 2024

ICS 25.160.50

Supersedes EN ISO 9455-17:2006

English Version

## Soft soldering fluxes - Test methods - Part 17: Surface insulation resistance comb test and electrochemical migration test of flux residues (ISO 9455-17:2024)

Flux de brasage tendre - Méthodes d'essai - Partie 17:  
Essai au peigne et essai de migration électrochimique  
de résistance d'isolement de surface des résidus de flux  
(ISO 9455-17:2024)

Flussmittel zum Weichlöten - Prüfverfahren - Teil 17:  
Bestimmung des Widerstandes der  
Oberflächenisolierung, Kammprüfung und  
elektrochemische Migrationsprüfung von  
Flussmittelrückständen (ISO 9455-17:2024)

This European Standard was approved by CEN on 2 January 2024.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard 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 CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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

**EN ISO 9455-17:2024 (E)**

<b>Contents</b>	<b>Page</b>
<b>European foreword.....</b>	<b>3</b>

## **European foreword**

This document (EN ISO 9455-17:2024) has been prepared by Technical Committee ISO/TC 44 "Welding and allied processes" in collaboration with Technical Committee CEN/TC 121 "Welding and allied processes" the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by July 2024, and conflicting national standards shall be withdrawn at the latest by July 2024.

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

This document supersedes EN ISO 9455-17:2006.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

## **Endorsement notice**

The text of ISO 9455-17:2024 has been approved by CEN as EN ISO 9455-17:2024 without any modification.



# International Standard

**ISO 9455-17**

## Soft soldering fluxes — Test methods —

### Part 17: Surface insulation resistance comb test and electrochemical migration test of flux residues

*Flux de brasage tendre — Méthodes d'essai —*

*Partie 17: Essai au peigne et essai de migration électrochimique  
de résistance d'isolement de surface des résidus de flux*

**Second edition  
2024-01**

**ISO 9455-17:2024(en)****COPYRIGHT PROTECTED DOCUMENT**

© ISO 2024

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

Published in Switzerland

© ISO 2024 – All rights reserved

**ISO 9455-17:2024(en)****Contents**

	Page
<b>Foreword</b> .....	<b>iv</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Principle</b> .....	<b>1</b>
<b>5 Reagents</b> .....	<b>2</b>
<b>6 Apparatus</b> .....	<b>2</b>
<b>7 Inspection of test coupons</b> .....	<b>8</b>
7.1 Surface plating.....	8
7.1.1 Slivering (thin metal overhang on etch runs).....	8
7.1.2 Plating nodules.....	9
7.1.3 Plating pits.....	9
7.2 Surface laminate.....	9
<b>8 Sample preparation</b> .....	<b>9</b>
8.1 Preparation of the flux test solution.....	9
8.1.1 Liquid flux samples.....	9
8.1.2 Solid flux samples.....	9
8.1.3 Flux-cored solder wire or preform samples.....	9
8.1.4 Solder paste samples.....	10
8.1.5 Paste flux samples.....	10
8.2 Preparation of the test coupons.....	10
8.2.1 Sample identification.....	10
8.2.2 Test coupons.....	10
8.2.3 Test coupon pre-cleaning.....	11
<b>9 Procedure</b> .....	<b>11</b>
9.1 Methods for connecting test coupons.....	11
9.1.1 Board circuitry layout.....	11
9.1.2 Preconditioning of SIR test coupons prior to processing (optional).....	13
9.2 Fluxing and soldering test patterns.....	13
9.2.1 Liquid and solid flux samples and flux-cored solder wire samples.....	13
9.2.2 Soldering using wave solder system.....	13
9.2.3 Soldering using static solder pot.....	13
9.2.4 Solder paste samples.....	14
9.2.5 Paste flux samples.....	14
9.3 Cleaning.....	14
9.4 SIR measurement.....	15
9.4.1 High-resistance measurement system verification.....	15
9.4.2 Test coupon measurements.....	15
9.5 Electrochemical migration test.....	15
<b>10 Assessment</b> .....	<b>16</b>
<b>11 Precision</b> .....	<b>16</b>
<b>12 Test report</b> .....	<b>16</b>
<b>Annex A (informative) SIR testing guidance</b> .....	<b>18</b>
<b>Annex B (informative) Surface insulation resistance comb test and electrochemical migration test of flux residues — Qualification test report</b> .....	<b>20</b>
<b>Bibliography</b> .....	<b>22</b>

## ISO 9455-17:2024(en)

### 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](http://www.iso.org/directives)).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents). ISO shall not be held responsible for identifying any or all such patent rights.

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

For an explanation of 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 [www.iso.org/iso/foreword.html](http://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*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 121, *Welding and allied processes*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 9455-17:2002), which has been technically revised.

The main changes are as follows:

- in [Clause 1](#) the applicability was clarified;
- in [6.5](#) the test coupon was aligned with IPC B53 from IEC 61189-5-501;
- in [9.5](#) the duration of the test was changed from 21 days to 1 000 h.

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

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html). Official interpretations of ISO/TC 44 documents, where they exist, are available from this page: <https://committee.iso.org/sites/tc44/home/interpretation.html>.



# Soft soldering fluxes — Test methods —

## Part 17:

# Surface insulation resistance comb test and electrochemical migration test of flux residues

## 1 Scope

This document specifies a method of testing for deleterious effects that can arise from flux residues after soldering or tinning test coupons. The test is applicable to type 1 and type 2 fluxes, as specified in ISO 9454-1, in solid or liquid form, or in the form of flux-cored solder wire, solder preforms or solder paste constituted with eutectic or near-eutectic tin/lead (Sn/Pb) or Sn95,5Ag3Cu0,5 or other lead-free solders as agreed between user and supplier (see ISO 9453).

This test method is also applicable to fluxes for use with lead-containing and lead-free solders. However, the soldering temperatures can be adjusted with agreement between tester and customer.

## 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 5725-2, *Accuracy (trueness and precision) of measurement methods and results — Part 2: Basic method for the determination of repeatability and reproducibility of a standard measurement method*

ISO 9454-1, *Soft soldering fluxes — Classification and requirements — Part 1: Classification, labelling and packaging*

IEC 61189-5-501, *Test methods for electrical materials, printed boards and other interconnection structures and assemblies — Part 5-501: General test methods for materials and assemblies — Surface insulation resistance (SIR) testing of solder fluxes*

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**