International Standard

ISO 12224-1

Solder wire, solid and flux-cored — Specification and test methods —

Part 1: Classification and performance requirements

Fils d'apport de brasage tendre, pleins et à flux incorporé — Spécifications et méthodes d'essai —

Partie 1: Classification et exigences de performance

Second edition
2024-05

Reference number
ISO 12224-1:2024(en)

© ISO 2024



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
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword ... **iv**

1 Scope ... **1**

2 Normative references ... **1**

3 Terms and definitions ... **1**

4 Classification and designation ... **1**
4.1 Solder alloy designation ... 1
4.2 Flux classification ... 2
4.3 Designation of flux-cored solder wire ... 2

5 Requirements ... **2**
5.1 Solder alloy composition of solid and flux-cored solder wire ... 2
5.2 Flux composition of flux-cored solder wire ... 2
5.3 Flux content ... 2
5.4 Dimensions and tolerances ... 3
5.5 Copper corrosion test ... 3
5.6 Influence of flux vapours on insulation resistance (applicable only to flux-cored solder wires containing type 1 and type 22 fluxes) ... 4

6 Sampling ... **4**
6.1 Sampling for chemical analysis of the solder ... 4
6.2 Sampling for tests to determine the properties of the flux core (i.e. tests as described in the ISO 9455 series) ... 4
6.3 Sampling for tests to determine the flux content and the diameter of the flux-cored solder wire ... 4

7 Marking, labelling and packaging ... **4**

Annex A (normative) **Method for the solvent extraction of the flux from flux-cored solder wire** ... **6**

Annex B (normative) **Measurement of mean diameter of wire** ... **9**

Annex C (informative) **Guidance on the use of test methods** ... **10**

Bibliography ... **11**

© ISO 2024 – All rights reserved

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 document 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).

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. 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.

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 12224-1:1997), which has been technically revised.

The main changes are as follows:

— Table 1: greater nominal contents added;

— former 5.5 and Table 3 deleted because the spread test is not commonly used;

— former 5.6.1 deleted because the test method was withdrawn;

— 6.1: reference to ISO 10564, which has been withdrawn, replaced by a recommended method;

— in Table A.1 the column for method D was deleted;

— in Table C.1 withdrawn standards were deleted and flux types were grouped;

— designations aligned with ISO 9454-1.

A list of all parts in the ISO 12224 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. Official interpretations of ISO/TC 44 documents, where they exist, are available from this page: https://committee.iso.org/sites/tc44/home/interpretation.html.

© ISO 2024 – All rights reserved

Solder wire, solid and flux-cored — Specification and test methods —

Part 1: Classification and performance requirements

1 Scope

This document specifies a coding system for the classification and designation of solid and flux-cored solder wire, and the performance requirements to be met by flux-cored wire and its constituents. Requirements for sampling, labelling and packaging are also specified.

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

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

ISO 9455-15, *Soft soldering fluxes — Test methods — Part 15: Copper corrosion test*

ISO 9455-17, *Soft soldering fluxes — Test methods — Part 17: Surface insulation resistance comb test and electrochemical migration test of flux residues*

ISO 12224-2, *Solder wire, solid and flux-cored — Specification and test methods — Part 2: Determination of flux content*

3 Terms and definitions

No terms and definitions are listed in this document.

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Classification and designation

4.1 Solder alloy designation

The solder alloy used for solid wire, and for the solder component of flux-cored solder wire, shall be designated in accordance with the solder alloy designations given in ISO 9453.

© ISO 2024 – All rights reserved