



**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

[ISO 12224-1:2024](https://standards.iteh.ai/standards/iso/3f4a7e2b-e26a-49ee-927d-19a45ba1e03f/iso-12224-1-2024)

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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

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).

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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>.

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.

4.2 Flux classification

The flux component of flux-cored solder wire shall be classified in accordance with the system, based on the main fluxing ingredients, given in ISO 9454-1.

[Annex C](#) gives guidance on the test methods appropriate for the flux types incorporated in flux-cored solder wire.

4.3 Designation of flux-cored solder wire

The designations for solid and flux-cored solder wire shall consist of the following parts:

- a) reference to this document (i.e. ISO 12224-1);
- b) the appropriate soft solder alloy designation in accordance with ISO 9453;
- c) in the case of flux-cored solder wire, the appropriate flux classification in accordance with ISO 9454-1.

The three parts of the designation shall be separated by an oblique stroke (/).

EXAMPLE 1 A solid solder wire, which corresponds to ISO 12224-1, made of 99,3/0,7 tin-copper soft solder, is designated as follows:

ISO 12224-1/Sn99,3Cu0,7

EXAMPLE 2 A flux-filled solder wire, which corresponds to ISO 12224-1, made of 99,3/0,7 tin-copper soft solder with a halogen-activated rosin filling, is designated as follows:

ISO 12224-1/Sn99,3Cu0,7/1 123

5 Requirements

5.1 Solder alloy composition of solid and flux-cored solder wire

Solid solder wire shall conform to the requirements for the appropriate alloy given in ISO 9453.

The solder component of flux-cored solder wire shall conform to the requirements for the appropriate alloy given in ISO 9453.

5.2 Flux composition of flux-cored solder wire

After solvent extraction of flux from a sample of the flux-cored solder wire, using the method given in [Annex A](#), the flux composition shall conform to the requirements for the appropriate flux type given in ISO 9454-1. The solution so obtained may be used for testing purposes.

5.3 Flux content

[Table 1](#) gives the recommended (or preferred) nominal flux contents which are generally available for flux-cored solder wire.

When tested in accordance with the method given in ISO 12224-2, the flux content of the sample shall be within the permitted range for the appropriate nominal content given in [Table 1](#).