International Standard

ISO 12224-2

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

Part 2: Determination of flux content

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

Partie 2: Détermination de la teneur en flux

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Foreword

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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 12224-2:1997), which has been technically revised.

The main changes are as follows:

— 5.2: quartz glass crucible added;

— 5.6: Bunsen burner with tripod added;

— 7.4: method C with Bunsen burner added.

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 2: Determination of flux content

1 Scope

This document specifies two methods for the determination of the flux content of a sample flux-cored solder wire.

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*

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 Principle

A known mass of the sample of flux-cored solder wire is melted, separated from the flux medium and weighed. The flux content is calculated and expressed as a percentage by mass of the original wire.

5 Apparatus

The usual laboratory apparatus and, in particular, the following shall be used.

5.1 Balance, having a measurement uncertainty of ±0,001 g.

5.2 Porcelain or quartz glass crucible, capacity 30 ml.

5.3 Scraper, stainless steel.

5.4 Crucible tongs.

5.5 Solder bath, containing solder according to ISO 9453 maintained at a temperature of (50 ± 5) °C above the liquidus temperature of the wire under test.

5.6 Bunsen burner with tripod.

5.7 Tissues.

5.8 Glass beaker, heat resistant borosilicate glass, 100 ml to 150 ml.

6 Materials

Use only materials of recognized analytical grade and only distilled water or water of equivalent purity.

6.1 Degreasing solvent, such as propan-2-ol or the solvent recommended by the manufacturer.

6.2 Glycerol.

7 Procedure

7.1 General

Clean the sample length of the flux-cored solder wire under test with a tissue (5.7) soaked in the degreasing solvent (6.1). Follow either method A, method B or method C, as shown in the following subclauses.

7.2 Method A

Carry out the test in duplicate.

Using the balance (5.1), weigh (50 ± 5) g of the cleaned wire to 0,001 g. Record the mass of the sample, m_w. Form the sample into a ball and transfer it to the cleaned crucible (5.2) or the beaker (5.8).

Clean the surface of the molten solder in the solder bath (5.5) by means of the scraper (5.3).

Holding the crucible or beaker with the tongs (5.4), partially immerse it in the solder bath (5.5), maintained at a temperature (50 ± 5) °C above the liquidus temperature of the wire under test. Turn the crucible or beaker gently until the solder has melted into one pellet. Leave the crucible or beaker immersed in the solder bath for 10 s to 15 s after the solder has melted.

Remove the crucible or beaker from the solder bath and allow it to cool until the solder has just solidified. Pour off as much flux as possible while the flux remains warm.

Remove the pellet from the crucible or beaker. Clean it thoroughly with degreasing solvent (6.1) to remove all traces of flux. Dry the pellet with a clean tissue (5.7). Using the balance (5.1), weigh the dry pellet to a constant mass, to 0,001 g. Record the mass of the pellet, m_s.

7.3 Method B

Carry out the test in duplicate.

Using the balance (5.1), weigh (30 ± 2) g of the cleaned wire to 0,001 g. Record the mass of the sample, m_w.

Transfer the solder wire to the beaker (5.8) with sufficient glycerol (6.2) to cover the sample (approximately 50 ml of glycerol).

Clean the surface of the molten solder in the solder bath (5.5) by means of the scraper (5.3).

Holding the beaker with the tongs (5.4), partially immerse it in the solder bath (5.5), maintained at a temperature (50 ± 5) °C above the liquidus temperature of the wire under test. Turn the beaker until the solder has melted into one pellet. Leave the beaker immersed in the solder bath for 10 s to 15 s after the solder has melted, while turning gently.