INTERNATIONAL STANDARD

ISO 12224-2

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Flux cored solder wire — Specification and test methods —

Part 2:
Determination of flux content

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

Partie 2: Détermination de la teneur en flux

Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an international Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 12224-2 was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 12, *Soldering and brazing materials.*

ISO 12224 consists of the following parts, under the general title *Solder wire, solid and flux cored — Specification and test methods*:

— *Part 1: Classification and performance requirements*

— *Part 2: Determination of flux content*

— *Part 3: Wetting balance test*

Annex A of this part of ISO 12224 is for information only.

International Organization for Standardization
Case postale 56 • CH-1211 Genève 20 • Switzerland
Internet central@iso.ch
X.400 c=ch; a=400net; p=iso; o=isocs; s=central

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Flux cored solder wire — Specification and test methods —

Part 2:
Determination of flux content

1 Scope

This Part of ISO 12224 specifies two methods for the determination of the flux content of a sample flux cored solder wire.

2 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.

3 Apparatus and materials

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

3.2 Balance, having an accuracy of ± 0,001 g.

3.3 Porcelain crucible, capacity 30 ml.

3.4 Scraper, stainless.

3.5 Crucible tongs

3.6 Solder bath, containing solder, such as ISO 9453, grade S-Sn60Pb40, maintained at a temperature of 50 °C ± 5 °C above the liquidus temperature of the wire under test.

3.7 Tissues

3.8 Glycerol

3.9 Glass beaker, pyrex, 100 ml - 150 ml.

4 Procedure

Clean the sample length of the flux cored solder wire under test with a tissue (3.7) soaked in the degreasing solvent (3.1). Follow either method A or method B below.

4.1 Method A

Carry out the test in duplicate.

Using the balance (3.2) weigh 50 g ± 5 g of the cleaned wire to 0,001 g. Record the mass of the sample (m_1). Form the sample into a ball and transfer it to the cleaned crucible (3.3) or the beaker (3.9).

Clean the surface of the molten solder in the solder bath (3.6) by means of the scraper (3.4).

Holding the crucible or beaker with the tongs (3.5), partially immerse it in the solder bath (3.6), maintained at a temperature 50 °C ± 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 - 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 (3.1) to remove all traces of flux. Dry the pellet with a clean tissue (3.7). Using the balance (3.2) weigh the dry pellet to a constant weight to 0,001 g. Record the mass of the pellet (m_2).

4.2 Method B

Carry out the test in duplicate.

Using the balance (3.2) weigh 30 g ± 2 g of the cleaned wire to 0,001 g. Record the mass of the sample (m_1).

Transfer the solder wire to the beaker (3.9) with sufficient glycerol (3.8) to cover the sample (approximately 50 ml of glycerol).

Clean the surface of the molten solder in the solder bath (3.6) by means of the scraper (3.4).

Holding the beaker with the tongs (3.5), partially immerse it in the solder bath (3.6), maintained at a temperature 50 °C ± 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 - 15 s after the solder has melted, while turning gently.

Allow the solder to solidify and then decant as much of the flux/glycerol mixture as possible from the molten solder. Allow the solder to cool and solidify.

Remove the solder pellet and wash it in water. Clean it thoroughly with dreasing solvent (3.1) to remove all traces of flux. Dry the pellet with a clean tissue (3.7).

Using the balance (3.2) measure the mass of the dry pellet to a constant weight, to 0,001 g (m_2).

NOTE — In cases of dispute. It is recommended that the method to be used be agreed between supplier and purchaser.

5 Expression of results for both methods

Calculate the flux content of the sample wire as the percentage by mass, using the following formula:

$$\text{Flux content} = \left[\frac{m_1 - m_2}{m_1}\right] \times 100\,\%\,(m/m)$$

where

m_1 is the mass, in grams, of the flux cored solder wire used in the test;

m_2 is the mass, in grams, of the solder pellet.

If the values of the two determinations differ by more than 0,2 %, the determination shall be repeated completely.

Calculate the arithmetic mean of the two determinations.

6 Test report

The test report shall include the following information:

a) the identification of the test sample;

b) reference to this part of ISO 12224;

c) the test method used;

d) the results obtained;

e) any unusual features noted during the test;

f) details of any operation not included in this part of ISO 12224, or regarded as optional.

Annex A
(informative)

Bibliography

[1] ISO 9453: 1990, *Soft solder alloys - Chemical composition and forms*.

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Descriptors: soldering, solders, wire, tests, determination, determination of content, soldering fluxes.

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