



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 38265.11-2021

**Test methods for soft soldering fluxes - Part 11: Solubility of
flux residues**

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foreword

This document is in accordance with the provisions of GB/T 1:1-2020 "Guidelines for Standardization Work Part 1: Structure and Drafting Rules of Standardization Documents"

drafted:

This document is part 11 of GB/T 38265 "Solder Flux Test Methods": GB/T 38265 has released the following parts:

- Part 1: Gravimetric method for determination of non-volatile matter content;
- Part 2: Boiling point method for the determination of non-volatile matter content;
- Part 5: Bronze mirror test;
- Part 10: Test methods for the spreading of the wetting properties of solder fluxes;
- Part 11: Solubility of flux residues;
- Part 13: Determination of flux spatterability;
- Part 14: Evaluation of the adhesiveness of flux residues;
- Part 15: Copper corrosion test;
- Part 16: Wetting balance method for wetting properties of solder fluxes:

This document uses the redrafted method to amend ISO 9455-11:2017 "Test methods for solder fluxes - Part 11: Flux residues"

solubility":

Compared with ISO 9455-11:2017, this document has more structural adjustments:

Appendix A lists this document and ISO 9455-11:

2017 chapter number comparison list:

The technical differences between this document and ISO 9455-11:2017 and their reasons are as follows:

--- Regarding normative reference documents, this document has made adjustments with technical differences to adapt to the technical conditions of our country and the circumstances of the adjustment:

The situation is reflected in Chapter 2 "Normative References", and the specific adjustments are as follows:

- * Added reference to GB/T 678 (see 5:3);
- * Added reference to GB/T 2040 (see 5:5:1);
- * Removed ISO 9454-1:

The following editorial changes have been made to this document:

- Modify the standard name to "Flux Test Method Part 11: Solubility of Flux Residues";
- Added reference GB/T 15829:

Please note that some content of this document may be patented: The issuing agency of this document assumes no responsibility for identifying patents:

Introduction

As a key supporting material in the soldering process, solder flux has a decisive influence on the quality of soldered joints:

In the implementation of the strong foundation project, the national science and technology major project "core electronic devices, high-end general-purpose chips and basic software products" and "super large-scale

Technology research and development of core electronic devices, high-end chips and integrated circuit complete sets of technology in the "Special Project for Molded Integrated Circuit Manufacturing Equipment and Complete Sets of Technology"

Among them, solder flux is the key basic material, and it is of great significance to formulate the test method standard for its quality performance evaluation:

Since 2001, my country has successively promulgated and implemented "Tin-Lead Soldering Materials", "Lead-Free Soldering Materials", "Solder Flux Classification and Performance Requirements" and "Solder Soldering Materials":

As an important component of the solder, solder flux is not only important for the

solderability and processability of the solder

It is also critical to the environment, reliability of solder joints and applications: GB/T 38265 "Solder Flux Test Method" is a

General test method standard, it is proposed to consist of the following parts:

- Part 1: Gravimetric method for determination of non-volatile matter content;
- Part 2: Boiling point method for the determination of non-volatile matter content;
- Part 3: Determination of acid value by potentiometric titration and visual titration;
- Part 5: Bronze mirror test;
- Part 6: Determination of halide (excluding fluoride) content;
- Part 8: Determination of zinc content;
- Part 9: Determination of ammonia content;
- Part 10: Test methods for the spreading of the wetting properties of solder fluxes;
- Part 11: Solubility of flux residues;
- Part 13: Determination of flux spatterability;
- Part 14: Evaluation of the adhesiveness of flux residues;
- Part 15: Copper corrosion test;
- Part 16: Wetting balance method for wetting properties of solder flux;
- Part 17: Surface insulation resistance comb brush test and electrochemical migration test of flux residues;

This document is a qualitative evaluation method for the solubility of solder flux residues in selected solvents:

It has the advantages of accuracy and reliability, and has become an important detection method in solder flux products:

Soldering flux test method

Part 11: Solubility of flux residues

1 Scope

This document specifies a method for qualitative evaluation of the solubility of solder flux residues in selected solvents, including principles, reagents and materials, instrument design

Preparation, test procedures, expression of test results, test report, etc:

This document applies to type 1 solder fluxes as defined in GB/T 15829:

2 Normative references

The contents of the following documents constitute essential provisions of this document through normative references in the text: Among them, dated citations

documents, only the version corresponding to that date applies to this document; for undated references, the latest edition (including all amendments) applies to this document:

GB/T 678 Chemical reagent ethanol (anhydrous ethanol) (GB/T 678-2002, ISO 6353-2:1983, NEQ)

GB/T 2040 Copper and Copper Alloy Sheets

3 Terms and Definitions

There are no terms and definitions that need to be defined in this document:

4 Principles

The pre-fluxed brass test plate is heated to the brazing temperature, and then immersed in the selected solvent after holding for a certain period of time to dissolve the flux residue:

The degree of solubility of flux residues is indicated by measuring the current flow between the pit cleaning area and the electrical probe tip:

5 Reagents and Materials

5:1 Pickling solution

Carefully add 75 mL of sulfuric acid (1:84 g/mL) to 210 mL of distilled or deionized water, stirring while adding: After cooling,

Then add 15mL of nitric acid (1:42g/mL) and mix well:

5:2 Solvents

Solvent for dissolving flux residues, recommended by the flux manufacturer or supplier:

5:3 Ethanol

Analytical grade reagents that meet the requirements of GB/T 678:

5:4 Oil-based crayons

Used to prevent the diffusion of the solder flux during the test: