



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

**GB/T 38265.15-2021**

---

**Test methods for soft soldering fluxes - Part 15: Copper  
corrosion test**

**Issued on: December 31, 2021**

**Implemented on: July 1, 2022**

---

**Issued by: State Administration for Market Regulation, China National  
Standardization Administration**

## Table of Contents

foreword

Introduction

1 Scope

2 Normative references

3 Terms and Definitions

4 Principles

5 Reagents and Materials

### 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 15 of GB/T 38265 "Test Methods for Soldering Flux": 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 is modified to adopt ISO 9455-15:2017 "Test methods for solder fluxes - Part 15: Copper corrosion test":

The technical differences between this document and ISO 9455-15:2017 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:

- \* Replace ISO 197-1 (see 5:4) with GB/T 11086 modified to adopt international standards;
- \* Replace ISO 9453 with GB/T 3131 and GB/T 20422 modified to adopt international standards (see 5:5, 8:3:1);
- \* Replace ISO 9455-1 with GB/T 38265:1 which is modified to adopt international standard (see 8:2:1);
- \* Replace ISO 9455-2 with GB/T 38265:2 which is modified to adopt international standard (see 8:2:1);
- \* Replace IEC 60068-2-78 (see 6:2) with GB/T 2423:3 which is equivalent to the international standard:

The following editorial changes have been made to this document:

- Modify the standard name to "Solder Flux Test Method Part 15: Copper Corrosion Test";
- Added references as informative citations for ease of application:

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 major science and technology projects "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 Solder", "Lead-free Solder", "Flux Classification and Performance Requirements" and "Solder Solder":

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 adopts the method of copper corrosion test to qualitatively evaluate the corrosivity of solder flux residues on the surface of copper substrates under controlled environmental conditions:

The method has the advantages of simple operation, strong applicability, accurate and reliable results, etc., and has become an important detection method in flux products:

Soldering flux test method

Part 15: Copper corrosion test

## 1 Scope

This document specifies the qualitative evaluation method for the corrosion performance of solder flux residues on the surface of copper substrates under controlled environmental conditions, including principles, reagents

and materials, equipment, preparation of test pieces, test procedures, expression of test results, test reports, 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 2423:3 Environmental Test Part 2: Test Method Test Cab: Constant Damp Heat Test (GB/T 2423:3-2016,

IEC 60068-2-78:2012, IDT)

GB/T 3131 Tin-lead solder

GB/T 11086 Terms for Copper and Copper Alloys (GB/T 11086-2013, ISO 197-1:1983, ISO 197-2:1983, ISO 197-

3:1983, ISO 197-4:1983, ISO 197-5:1980, MOD)

GB/T 20422 Lead-free solder (GB/T 20422-2018, ISO 9453:2014, MOD)

GB/T 38265:1 Test Methods for Soldering Flux Part 1: Determination of Non-volatile Matter Content Gravimetric Method (GB/T 38265:1-

2019, ISO 9455-1:1990, MOD)

GB/T 38265:2 Test Methods for Soldering Flux Part 2: Determination of Non-volatile Matter Content Boiling Point Method (GB/T 38265:2-

2019, ISO 9455-2:1993, MOD)

## 3 Terms and Definitions

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

## 4 Principles

Solder shot and flux are melted on the copper sheet test piece, and then the test piece is exposed to a controlled temperature and humidity environment to cause the test piece to corrode:

Corrosion of flux residues was evaluated by low magnification microscope: