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CCS H13



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

GB/T 10574.9-2017

Replacing GB/T 10574.9-2003

**Methods for chemical analysis of tin-lead solders - Part 9:
Determination of aluminium content - Graphite furnace atomic
absorption spectrometric method**

锡铅焊料化学分析方法 第9部分：铝量的测定 电热原子吸收光谱法

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Quarantine of the People's Republic of China;
Standardization Administration of China**

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Foreword

GB/T 10574 "tin-lead solder chemical analysis method" is divided into 14 parts.

- Part 1. Determination of tin content potassium iodate titration;
- Part 2. Determination of the amount of antimony Malachite green spectrophotometry and potassium bromate titration;
- Part 3. Determination of bismuth content by flame atomic absorption spectrometry;
- Part 4. Determination of iron content 1,10-phenanthroline spectrophotometry;
- Part 5. Determination of arsenic; Arsenic antimony molybdenum blue spectrophotometry;
- Part 6. Determination of copper content by flame atomic absorption spectrometry;
- Part 7. Determination of silver content flame atomic absorption spectrometry and potassium thiocyanate potentiometric titration;
- Part 8. Determination of zinc content by flame atomic absorption spectrometry;
- Part 9. Determination of aluminum content by electrothermal atomic absorption spectrometry;
- Part 10. Determination of cadmium content Flame Atomic Absorption Spectrometry and Na₂ EDTA titration;
- Part 11. Determination of phosphorus content crystal violet - vanadium molybdovanadophosphoric acid spectrophotometry;
- Part 12. Determination of sulfur content; high frequency combustion infrared absorption spectrometry;
- Part 13. Determination of antimony, bismuth, iron, arsenic, copper, silver, zinc, aluminum, cadmium, phosphorus and gold content Inductively coupled plasma atomic emission Spectrum method

1 Scope

GB/T 10574.9-2017 is the Chinese national standard on methods for chemical analysis of tin-lead solders - part 9: determination of aluminium content - graphite furnace atomic absorption spectrometric method, in the field of metallurgy. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 14 October 2017 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 May 2018.

Classification: ICS 77.120.60, CCS H13. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

GB/T 10574 provisions of this part of the tin-lead solder in the determination of the amount of aluminum. This section applies to the determination of the amount of aluminum in tin-lead solder. Measurement range. 0.0003% ~ 0.010%. This section is for arbitration analysis.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version applies to this article Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 8012 cast tin-lead solder

3 Method summary

The sample was decomposed with hydrobromic acid, hydrogen peroxide and hydrochloric acid in a dilute hydrochloric acid medium at 309.3 nm of the electrothermal atomic absorption spectrometer with a plug Man (or deuterium lamp) subtracts the background absorbance and measures the absorbance of aluminum.

4 Reagent

Unless otherwise stated, the analytical waters are all Grade 1 waters. After all the vessels used in the experiment were thoroughly soaked in hydrochloric acid (1.19), they were washed with water.

4.1 Hydrochloric acid (mos grade).

4.2 Nitric acid (mos level).

4.3 hydrobromic acid Purified by sub-boiling distillation with analytical hydrobromic acid ($\geq 40.0\%$). Hydrogen peroxide (BV III level).

4.5 Hydrochloric acid (14).

4.6 aluminum standard stock solution Weigh 1.0000g aluminum metal ($w_{Al} \geq 99.99\%$), placed in 250mL high-type beaker, add 10mL salt Acid (4.1) and 3mL of nitric acid (4.2), cover the watch glass, low temperature heating on a hot plate to completely dissolve, remove, cool, wash the watch glass with water And cup wall, remove the watch glass, move into 1000mL volumetric flask, add 25mL hydrochloric acid (4.1), diluted with water to the mark, and mix. This solution 1 mL contains 1 mg aluminum.

4.7 Aluminum standard solution A. Pipette 10.00mL aluminum standard stock solution (4.6) in 200mL volumetric flask, add 10mL hydrochloric acid (4.1), Dilute to the mark with water and mix well. 1 mL of this solution contained 50 μg of aluminum.

4.8 aluminum standard solution B. Pipette 5.00mL aluminum standard solution (4.7) in 100mL volumetric flask, add 5mL hydrochloric acid (4.1), diluted with water Release to the mark, mix well. This solution 1 mL contains 2.5 μg of aluminum.

4.9 Cotton wool - pulp, treated with hydrochloric acid (4.5) 4 times.