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YS

**NONFERROUS METALS INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

YS/T 746.8-2010

**Methods for chemical analysis of lead-free tin-based solders.
Part 8: Determination of arsenic content. Molybdenum antimony
arsenate blue spectrometric method**

无铅锡基焊料化学分析方法 第8部分：砷含量的测定 砷锑钼蓝分光光度法

(English Translation)

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Foreword

YS/T 746 "non-Pb-based solder chemical analysis method" is divided into 17 parts.

- Part 1 Determination of tin content Coke sexual gallic acid Covering - lead nitrate titration method
- Part 2 of silver content - Flame atomic absorption spectrometry and potentiometric titration with potassium thiocyanate
- Part 3 of copper content - Flame atomic absorption spectrometry and titration with sodium thiosulfate
- Part 4 of lead content - Flame Atomic Absorption Spectrometry
- Part 5 of bismuth content - Flame atomic absorption spectrometry and titration Na₂EDTA
- Part 6 of antimony content - Flame Atomic Absorption Spectrometry
- Part 7 Determination of iron content by flame atomic absorption spectrometry
- Part 8 of arsenic content of arsenic, antimony molybdenum blue spectrophotometric method
- Part 9 Determination of zinc content by flame atomic absorption spectrometry and titration Na₂EDTA Part 10 Determination of aluminum content --- first electrothermal atomic absorption spectrometry
- Part 11 of cadmium content - Flame Atomic Absorption Spectrometry
- Part 12 Determination of indium titration Na₂EDTA
- Part 13 Determination of nickel content by flame atomic absorption spectrometry
- Part 14 Determination of the phosphorus content of the first crystal violet - heteropoly acid phosphovanadomolybdate spectrophotometry
- Part 15 Determination of germanium content salicylfluorone spectrophotometry
- Part 16 Determination of rare earth Arsenazo III spectrophotometry

--- Part 17 silver, copper, lead, bismuth, antimony, iron, arsenic, zinc, aluminum, cadmium, nickel, indium content was measured by inductively coupled plasma optical emission Spectroscopy this section 8.

This section is in accordance with GB/T 1.1-2009 given rules drafted.

The non-ferrous metal part by the National Standardization Technical Committee (SAC/TC243) centralized.

This section is drafted. Yunnan Tin Group Co., Ltd.

This section participating units. Red Exit Inspection and Quarantine, indium Yunnan Hualian Zinc Limited.

1 Scope

YS/T 746 This standard specifies the method for determination of lead-free tin-based solders in arsenic content.

This standard applies to the determination of lead-free tin-based solders in arsenic content. Measurement range. 0.0050% - 0.1000%.

2 Method summary

Samples with sulfuric acid, hydrogen peroxide dissolved in dilute sulfuric acid medium with stannous chloride, zinc metal arsenic is reduced to arsine gas, gas escape Body with iodine absorbed and oxidized to pentavalent. Arsenic and antimony, arsenic and antimony paramolybdate generated blue molybdenum blue complex in sulfuric acid medium, for spectrophotometric Meter measuring the absorbance at 700nm.

3 Reagents

Unless otherwise indicated in the analysis using only recognized as analytical grade reagents and distilled or deionized water or equivalent purity.

3.1

arsenic-free zinc particles ($\phi 3 \sim \phi 7\text{mm}$).

3.2

sulfate ($\rho 1.84$).

3.3

Hydrogen peroxide (30%).

3.4

sulfate (11).

3.5

sulfate (16).

3.6

hydrochloride (rho19g/mL).

3.7

hydrochloride (11).

3.8

tartaric acid solution (300g/L).

3.9

stannous chloride solution (400g/L). Weigh 40g of stannous chloride ($\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$) in 200mL beaker, add 80mL hydrochloric acid (3.6), cover the dish table, micro heat of solution is completely clear, and cooled to room temperature, hydrochloric acid (3.7) diluted to 100mL, and mix.

3.10

absorption solution. Weigh 1g and 5g potassium iodine tablets mixed, dissolved in water and diluted to 500mL.

3.11

ascorbic acid solution (30g/L). with the preparation.

3.12

ammonium molybdate solution (40g/L).

3.13

antimony potassium tartrate solution (4.5g/L).

3.14

Sodium hydroxide solution (200g/L).

3.15

color solution. Take 50mL sulfuric acid (3.5), 25mL ascorbic acid solution, 20mL ammonium molybdate solution, 5mL antimony potassium tartrate solution Liquid mix. The time is now equipped with.

3.16

arsenic standard stock solution. Weigh 0.1320g pre-drying to a constant weight of arsenic

trioxide (reference reagent) at 105 °C to 150mL Beaker, sodium hydroxide solution and 10mL dissolved, 5mL of sulfuric acid (3.4), 0.5mL of hydrogen peroxide heated to boiling for 10min, cooled to Room temperature. Moved into 1000mL volumetric flask, dilute with water to volume, and mix. This solution 1mL arsenic 100μg.