

ICS 11.100
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**INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

SN/T 1732.24-2020

**Pyrotechnic composition for fireworks and firecrackers - Part
24: Determination of arsenic content-Atomic fluorescence
method**

烟花爆竹用烟火药剂 第24部分：砷含量的测定 原子荧光法
(English Translation)

Issued on: August 27, 2020

Implemented on: March 1, 2021

Issued by: General Administration of Customs

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Foreword

SN/T 1732 "Pyrotechnic Reagent for Fireworks and Firecrackers" is divided into the following 24 parts.

- Part 1: Determination of barium content;
- Part 2: Determination of dichromate content;
- Part 3: Determination of zinc content;
- Part 4: Determination of copper content;
- Part 5: Determination of titanium content;
- Part 6: Determination of strontium content;
- Part 7: Determination of lead content;
- Part 8: Determination of sodium content;
- Part 9: Determination of magnesium content;
- Part 10: Determination of sulfur content;
- Part 11: Determination of potassium content;

- Part 12: Determination of red phosphorus content;
- Part 13: Determination of Boric Acid Content;
- Part 14: Qualitative detection method of dextrin;
- Part 15: Detection method of polyvinyl chloride;
- Part 16: Picric acid detection method high performance liquid chromatography;
- Part 17: Detection method of hexachlorobenzene gas chromatography;
- Part 18: Detection method of chlorinated paraffin;
- Part 19: Detection method of gallic acid by high performance liquid chromatography;
- Part 20: Determination of barium content by flame atomic absorption method;
- Part 21: Determination of lead content by flame atomic absorption spectrometry;
- Part 22: Qualitative detection of lead, chromium, cadmium, mercury and arsenic by energy dispersive X-ray fluorescence spectrometry;
- Part 23: Determination of lead, chromium, cadmium, mercury and arsenic content by inductively coupled plasma emission spectrometry;
- Part 24: Determination of Arsenic Content Atomic Fluorescence Method.

This part is part 24 of SN/T 1732.

This part was drafted in accordance with the rules given in GB/T 1.1-2020.

This part is proposed and managed by the General Administration of Customs of the People's Republic of China.

Drafting organization of this section. Nanning Customs of the People's Republic of China.

1 Scope

This section specifies the method for the determination of arsenic in pyrotechnics for fireworks and firecrackers.

This section applies to the determination of arsenic content in pyrotechnics for fireworks and firecrackers. Measuring range. arsenic content (calculated by mass fraction of arsenic) Greater than 0.1%.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this article Pieces. For undated reference documents, the latest version (including all amendments) is applicable to this

document.

GB/T 6682 Analytical laboratory water specifications and test methods GB/T 8170
Numerical rounding rules and the expression and determination of limit values

3 Principle

After the sample is properly pretreated, it is nitrified with nitric acid and hydrogen peroxide, and digested with atmospheric pressure microwave. The pentavalent arsenic that may exist in the sample Use thiourea or ascorbic acid to reduce to trivalent arsenic, then use potassium borohydride (sodium) to reduce the arsenic ion to arsine, and use argon to reduce the arsine it is loaded into the quartz atomizer and decomposed into atomic arsenic, which is excited by the emission light of the arsenic hollow cathode lamp to produce atomic fluorescence.

Under fixed conditions, the degree is proportional to the concentration of arsenic in the test solution, and it can be quantitatively detected in comparison with the standard series.

4 Reagents and materials

Unless otherwise specified, only use reagents confirmed to be analytically pure and at least Grade 3 water as specified in GB/T 6682.

4.1

Absolute ethanol.

4.2

Acetone. analytically pure, density 0.788 g/mL (25 °C).

4.3

Nitric acid. pure superior grade, density 1.420 g/mL (25 °C).

4.4

Nitric acid solution. Measure 100 mL of nitric acid (4.3) and add 500 mL of water to mix.

4.5

Hydrochloric acid. pure superior grade, density 1.189 g/mL (20 °C).

4.6 30% hydrogen peroxide. density 1.111 g/mL (20 °C).

4.7 10% ascorbic acid 10% thiourea mixture. weigh out 10.0 g of ascorbic acid and 10.0 g of thiourea, and dissolve it with 100 mL of water.

Equipped when used.

4.8

Potassium borohydride solution (1.0%). first weigh 0.5 g of potassium hydroxide into the water, and after it is completely dissolved, add the weighed 1.0 g potassium borohydride, dissolve and shake well, dilute to 100 mL, and prepare it when used.

4.9

Potassium hydroxide solution (100 g/L). First weigh 50 g of potassium hydroxide into the water, and after it is completely dissolved, dilute to 500 mL.

4.10

Hydrochloric acid solution (carrier fluid). Measure 100 mL of hydrochloric acid (4.5), and dilute to 1000 mL with water.

4.11

Arsenic standard solution (1 000 mg/L). purchase a commercially available certified standard material.

4.12

Arsenic standard solution (50 mg/L). accurately measure 5 mL of arsenic standard solution (4.11) and dilute to volume with hydrochloric acid solution (4.10) 100 mL.

4.13

Arsenic standard solution (1 mg/L). accurately measure 2 mL of arsenic standard solution (4.12), and dilute to volume with hydrochloric acid solution (4.10) 100 mL.

4.14

Arsenic standard solution (100 µg/L). accurately measure 5 mL of arsenic standard solution (4.13) and add 10 mL of 10% ascorbic acid 10% thiourea mixture (4.7), dilute to 50 mL with hydrochloric acid solution (4.10).

4.15

High purity argon. over 99.99%.

5 Instruments

5.1

Sand core crucible. No. 4.

5.2

Safety explosion-proof oven. room temperature ~ 250 °C, temperature control accuracy is ± 2 °C.