

HJ

INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

HJ 749-2015

Replacing GB/T 15555.6-1995

Solid Waste. Determination of total chromium. Flame atomic absorption spectrometry

固体废物 总铬的测定 火焰原子吸收分光光度法

(English Translation)

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Foreword

In order to implement the Environmental Protection Law of the People's Republic of China and the Law of the People's Republic of China on the Prevention and Control of

Environmental Pollution by Solid Wastes, Protect the environment, protect human health, regulate the determination of total chromium in solid waste, the development of this standard.

This standard specifies the determination of total chromium in solid waste and solid waste leachate by flame atomic absorption spectrophotometry.

This standard is for the determination of solid waste by total chromium in direct inhalation flame atomic absorption spectrophotometry (GB/T 15555.6-1995).

This standard was first published in 1995, the original standard drafting unit for the China Environmental Monitoring Station, this is the first repair Set. The main contents of this revision are as follows.

- Increased total chromium content in solid waste;
- specifies the detection limit of the method;
- a microwave digestion pretreatment method for the addition of solid waste leachate;
- refine the precision and accuracy;
- increased quality assurance and quality control requirements;
- Added caution clause;
- Increased waste disposal requirements.

Since the implementation of this standard, the original State Environmental Protection Administration in 1995 approved the release of national environmental protection standards "Determination of total chromium in solid waste Direct inhalation flame atomic absorption spectrophotometry" (GB/T 15555.6-1995).

Appendix A of this standard is a normative appendix, Appendix B is an informative appendix.

This standard is organized by the Ministry of Environmental Protection Science and Technology Standards Division.

The main drafting unit of this standard. Harbin Environmental Monitoring Center Station.

The standard verification unit. Heilongjiang Province Environmental Monitoring Center Station, Dalian Environmental Monitoring Center, Anshan City Environmental Monitoring Central Station, Changchun City Environmental Monitoring Center Station, Qiqihar City Environmental Monitoring Center Station and Daqing Environmental Monitoring Center Station.

The Environmental Protection Department of this standard approves on August 21, 2015.

This standard is implemented on October 1, 2015.

This standard is explained by the Ministry of Environmental Protection.

Determination of total chromium - Solid waste - Flame atomic absorption spectrophotometric method WARNING. Disassembly shall be carried out in a fume hood and shall be protected against contact with skin and clothing as required.

1 Scope of application

This standard specifies the determination of total chromium in solid waste and solid waste leachate by flame atomic absorption spectrophotometry.

This standard is applicable to the determination of total chromium in solid waste and solid waste leachate.

Determination of solid waste, the sample volume of 0.2 g, constant volume of 50 ml, the detection limit of 8 mg/kg, measured the limit is 30 mg/kg. Determination of solid waste leaching solution, constant volume of 50 ml, the detection limit of 0.03 mg/L, the lower limit of determination was 0.12 mg/L.

2 Normative reference documents

The contents of this standard refer to the following documents or their terms. Any annotated file that does not specify the date, its valid version Applicable to this standard.

Technical specification for SJ sample preparation for industrial solid waste Technical Specification for Hazardous Waste Identification HJ/T 299 Solid waste leaching toxicity leaching method sulfuric acid nitric acid method HJ/T 300 solid waste leaching toxicity leaching method acetic acid buffer solution method Determination of total chromium in soil - Flame atomic absorption spectrophotometric method HJ 557 Solid waste leaching toxicity leaching method Horizontal oscillation method

3 Principle of the method

Solid waste leachate or solid waste digested by acid directly into the flame atomic absorption spectrophotometer air - B in the alkene flame, the formed chromium ground atoms generate absorption at 357.9 nm or other resonant lines with an absorbance value of Mass concentration is proportional.

4 Interference and elimination

4.1

More than 7% HCl, HClO₄ on the determination of chromium have a positive interference; HNO₃ and H₃PO₄ negative interference. In the air -the interference elements in the acetylene flame are in the order of Cu > Ba > Al > Mg > Ca, Na, Sr, Zn, Sn.

And these disturbances are independent of the existence of chromium (Cr^{3+} , $\text{Cr}_2\text{O}_7^{2-}$).

4.2

Fe^{3+} produces negative interference, but has a positive interference on Cr^{6+} ; Mn, Ni only negative interference with Cr^{3+} , without interfering with Cr^{6+} of the determination. When the use of poorly combustible air - acetylene flame, Fe and Ni interference becomes smaller, but the sensitivity of chromium determination significantly decreased low. In the sample by adding 1% to 2% of ammonium chloride can eliminate Fe, Ni, Mn and other metal elements and HCl, HNO_3 and other acids Class interference. Adding 1% potassium pyrophosphate also eliminates the interference of coexisting metal components.

5 Reagents and materials

Unless otherwise stated, analytical reagents in accordance with national standards are used for the analysis, and the experimental water is freshly prepared Deionized water or distilled water.

5.1

Potassium Dichromate ($\text{K}_2\text{Cr}_2\text{O}_7$). Reference reagent.

5.2

Ammonium persulfate $[(\text{NH}_4)_2\text{S}_2\text{O}_8]$.

25.3 Ammonium chloride (NH_4Cl).

5.4

Potassium pyrophosphate ($\text{K}_2\text{S}_2\text{O}_7$).

5.5

nitric acid. $\rho(\text{HNO}_3) = 1.42 \text{ g/ml}$, excellent grade pure.

5.6

hydrochloric acid. $\rho(\text{HCl}) = 1.19 \text{ g/ml}$, excellent grade pure.

5.7

Hydrogen peroxide. $\rho(\text{H}_2\text{O}_2) = 1.11 \text{ g/ml}$, excellent grade pure.

5.8

hydrofluoric acid. $\rho(\text{HF}) = 1.18 \text{ g/ml}$, excellent grade pure.

5.9

ammonium persulfate solution. $\omega((\text{NH}_4)_2\text{S}_2\text{O}_8) = 5\%$, weighed 5.0 g ammonium persulfate (5.2) dissolved in 100 ml water in.