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YS

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

YS/T 535.4-2009

Replacing YS/T 535.4-2006

**Chemical analysis methods of sodium fluoride. Part 4:
Determination of iron content. 1, 10-phenanthroline
spectrophotometric method**

氟化钠化学分析方法 第4部分：铁含量的测定邻二氮杂菲分光光度法
(English Translation)

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Foreword

YS/T 535 "chemical analysis of sodium fluoride" is divided into 10 parts.

- Part 1. Determination of the weight of water in the wet method;
- Part 2. Determination of distillation of fluorine content - thorium nitrate titration volumetric method;
- Part 3. Determination of silicon content - Molybdenum blue spectrophotometric method;
- Part 4. Determination of iron content phenanthroline spectrophotometry;
- Part 5. Determination of soluble sulfate turbidity method;
- Part 6. Determination of carbonate content - Gravimetric method;
- Part 7. Determination of acidity and law;
- Part 8. Water-insoluble content - Gravimetric method;
- Part 9. Determination of chlorine turbidity method;
- Part 10. Preparation and storage of test samples.

This is Part 4.

The partial replacement of YS/T 535.4-2006 (formerly GB/T 8158.4-1987).

This part is YS/T 535.4-2006 "Methods for chemical analysis of sodium fluoride phenanthroline spectrophotometric determination of iron content," the amendment and YS/T 535.4-2006 increased compared to the like precision and quality assurance and control content.

The non-ferrous metal part by the National Standardization Technical Committee and centralized.

This part of the Fushun Aluminum Co., Ltd., China Nonferrous Metals Industry Institute of

Standards Metrology and Quality is responsible for drafting.

This part of the Fushun Aluminum Co. drafted.

1 Scope

This section provides sodium fluoride iron content (expressed as ferric oxide) measurement method.

This section applies to iron content (expressed as ferric oxide) measured in the sodium fluoride. Measurement range (mass fraction). 0.02% ~ 0.60%.

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this part. For dated references, subsequent Amendments (not including errata content) or revisions do not apply to this section, however, encourage the parties to this part of the research agreement Whether the latest versions of these documents. For undated reference documents, the latest versions apply to this section.

YS/T 535.10-2009 Methods for chemical analysis of sodium fluoride - Part 10. Sample preparation and storage

3 Method summary

Sample decomposition with alkali fusion with hydroxylamine hydrochloride iron (III) reduction, then in pH3.5 ~ 4.5 iron (II) with phenanthroline formed Colored complex in a spectrophotometer at a wavelength of 510nm absorbance measurements.

4 Reagents

4.1

anhydrous sodium carbonate.

4.2

boric acid.

4.3

nitric acid (1 + 1).

4.4

HCl (1 + 1).

4.5

hydroxylamine hydrochloride (100g/L).

4.6

phenanthroline solution (2.5g/L).

4.7

buffer solution. 272g of water was dissolved in 500mL sodium acetate trihydrate, glacial acetic acid added 240mL (rho1.05g/mL approximately 17.4mol/L), diluted to 1L, and mix.

4.8

sodium acetate solution (500g/L).

4.9

acetic acid (19 + 1).

4.10

iron standard stock solution. Choose one of the following methods can be formulated.

4.10.1

Weigh 0.982g ferrous ammonium sulfate hexahydrate $[\text{Fe}(\text{NH}_4)_2(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}]$ in 100mL beaker, dissolved in water, add Into 20mL sulfuric acid solution (rho1.84g/mL), transferred to 1L volumetric flask, dilute with water to volume, and mix. This standard stock solution 1mL containing 0.2mg ferric oxide.

4.10.2

Weigh 0.2000g pre-ignition at 600 °C, and cooled in the dryer ferric oxide (purity 99.9%), placed 100mL beaker, add 10mL of hydrochloric acid (rho1.19g/mL), and slowly heated to dissolve, cooled, transferred to 1L volumetric flask, diluted with water to the mark, and mix. This standard stock solution 1mL containing 0.2mg ferric oxide.

4.11

Iron standard solution. Pipette 50.0mL iron standard solution (4.10), placed in 1L volumetric flask, dilute with water to volume, and mix. This standard Standard solution 1mL containing 0.10mg of iron oxide, the use of the preparation.