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

GB/T 2441.4-2010

Replacing GB/T 2441.4-2001

**Determination of urea -- Part 4: Iron content. 1,
10-Phenanthroline spectrophotometric method**

尿素的测定方法 第4部分：铁含量 邻菲啰啉分光光度法

(English Translation)

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Foreword

GB/T 2441 "Determination of urea" is divided into nine sections.

- Part 1. total nitrogen content;
- Part 2. biuret content spectrophotometry;
- Part 3. Moisture Karl Fischer method;
- Part 4. iron content - Phenanthroline spectrophotometric method;
- Part 5. alkalinity volumetric method;
- Part 6. Water-insoluble content - Gravimetric method;
- Part 7. particle size sieving;
- Part 8. sulphate content Visible turbidimetric method;
- Part 9. methylene diurea content spectrophotometry.

This section GB/T 2441 Part of.

The partial modification of the use of ISO 6685. 1982 (E) "industrial chemicals common method determination of iron content - Phenanthroline spectrophotometric method." this part of ISO 6685. 1982 (E) technical differences are as follows.

- Reagents and reagent solution on the part of solution concentration were modified;
- Instrument absorption cell modified to 3cm or 1cm.

This Part replaces GB/T 2441.4-2001 "Determination of urea Determination of iron content - Phenanthroline spectrophotometric method." this section compared with the GB/T 2441.4-2001 main changes are as follows.

- Remove the ISO foreword.

This part is proposed by the China Petroleum and Chemical Industry Association.

This part of the National Standardization Technical Committee and soil conditioners Fertilizers (SAC/TC105) centralized.

This section drafted by. National Fertilizer Quality Supervision and Inspection Center (Shanghai).

1 Scope

This section GB/T 2441 regulations using phenanthroline spectrophotometric determination of iron content in industrial use of urea.

This section applies to the determination of iron content of urea from ammonia and carbon dioxide synthetically produced.

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.

HG/T 2843 fertilizer products for chemical analysis commonly used standard titration solution, standard solution, reagent solution and indicator solution Principle 3 with ascorbic acid test solution of ferric ions are reduced to divalent iron ions, at a pH of 2 to 9 (the pH value of the selection criteria 4.5), a divalent iron ions with phenanthroline generated orange-red complexes, the absorption wavelength at 510nm, absorbance was measured with a spectrophotometer.

4 Reagents and solutions

The following part-corrosive reagents and solutions, the operator should be careful! If spilled on the skin, immediately wash with water or suitable Way to deal with severe cases should be treated immediately.

As used in this section reagent solution and water, in the specifications and method of preparation is not specified, it shall comply with the provisions of HG/T 2843's.

4.1

hydrochloric acid solution, 11;

4.2

ammonia solution, 11;

4.3

acetic acid - sodium acetate buffer solution, pH~4.5;

4.4

ascorbic acid solution, 20g/L (the solution lifespan 1Od);

4.5

phenanthroline solution, 2g/L;

4.6

iron standard solution, 0.100mg/mL;

4.7

iron standard solution, 0.010mg/mL, iron standard solution (4.6), diluted 10 times, only to use that day.

5 Instruments

5.1

usually laboratory instruments;

5.2

Spectrophotometer with 3cm or 1cm absorption cell.

6 Step, Analysis

Do two parallel determination of sample.

Draw standard curve 6.1

6.1.1 Preparation of standard colorimetric solution

As shown in Table 1, seven 100mL flask, were added to a given volume of iron standard solution (4.7).