



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

GB/T 14427-2017

Replacing GB/T 14427-2008

**Analysis of water used in boiler and cooling system --
Determination of iron
(English Translation)**

Issued on: September 7, 2017

Implemented on: April 1, 2018

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China, Standardization
Administration of the People's Republic of China**

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard replaces GB/T 14427-2008 "Determination of iron in boiler water and cooling water," and GB/T 14427-2008 Compared with the main technical changes are as follows.

--- Modify 1,10-phenanthroline spectrophotometric analysis steps (see 5.5, 2008 edition Chapter 7);

--- Added 4,7-diphenyl-1,10-phenanthroline spectrophotometry (see Chapter 6);

--- Increased flame atomic absorption spectrometry (see Chapter 7);

--- Increased graphite furnace atomic absorption spectrometry (see Chapter 8);

--- Added test report (see Chapter 9).

This standard uses redrafted law reference ISO 6332:1988 "Determination of iron in water 1,10-phenanthroline spectrophotometry" preparation, and ISO 6332:1988 is not equivalent to the degree of consistency.

This standard proposed by the China Petroleum and Chemical Industry Federation.

This standard by the National Standardization Technical Committee water treatment chemicals Technical Committee (SAC/TC63/SC5) centralized.

1 Scope

This standard specifies the boiler water and industrial circulating cooling water total iron, soluble total iron and soluble iron (II) determination.

This standard applies to the boiler water and cooling water determination of iron, which 1,10-phenanthroline spectrophotometry for 0.01mg/L ~ 5mg/L iron determination, the iron content higher than 5mg/L when the sample can be properly diluted before the

determination; 4,7-diphenyl-1,10 phenanthroline Spectrophotometry for the determination of iron content of 10 μ g/L ~.200 μ g/L; flame atomic absorption spectrometry for 0.1mg/L ~ 5mg/L of iron determination, the iron content higher than 5mg/L samples can be properly diluted before the determination; Graphite Furnace Atomic Absorption Spectrometry for 1 μ g/L ~ 100 μ g/L of iron determination.

This standard 1,10-phenanthroline spectrophotometry and flame atomic absorption spectrometry is also suitable for surface water, groundwater and chemical, metallurgy, Light industry, machinery and other industrial wastewater determination of iron.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version applies to this article Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 602 chemical reagent impurity standard solution preparation GB/T 603 chemical reagent test methods used in the preparation of preparations and products GB/T 4470 flame emission, atomic absorption and atomic fluorescence spectrometry terms GB/T 6682 analytical laboratory water specifications and test methods Methods for the analysis of water for boiler and cooling water - Method for the collection of water samples

3 Terms and definitions

GB/T 4470 defined terms and definitions apply to this document.

4 Rules

Caution --- The strong acids used in this standard are corrosive, and should be avoided when inhaled or in contact with the skin. Splashed body immediately with large Flush with water, serious illness should seek medical treatment immediately.

Reagents and water used in this standard, unless otherwise specified, analytical reagents should be used and in line with the provisions of GB/T 6682 Level 3 water.

Test impurities in the standard solution, preparations and products, did not indicate when the other requirements, according to GB/T 602, GB/T 603 of the rules Prepared.

5 1,10-phenanthroline spectrophotometry

5.1 Principle

The iron (II) phenanthroline complex is stable at pH 2.5 ~ 9.0, and the color intensity is proportional to the iron (II) content. In the iron containing when the amount is less than 5.0mg/L, there is a linear relationship between iron (II) concentration and absorbance. The maximum absorbance at 510nm wavelength.