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

GB/T 45131-2025

**Analysis of water used in boiler and cooling system - Determination of
phosphate, chloride, silicate, total alkalinity, phenolphthalein alkalinity, hardness
and iron - Spectrophotometric detection by discrete analysis systems**

锅炉用水和冷却水分析方法 磷酸盐、氯化物、硅酸盐、总碱度、酚酞碱度、硬度和铁的测定 基于间断分析系统的分光光度法

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents.

This document was proposed by the China Petroleum and Chemical Industry Federation.

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Boiler water and cooling water analysis methods Phosphate, Chloride, silicate, total alkalinity, phenolphthalein alkalinity, hardness and Iron determination based on

discontinuous analysis system Spectrophotometry Warning. Some of the reagents used in this document are toxic and corrosive. Some test procedures may lead to dangerous situations. The operator is responsible for Take appropriate safety and health measures and operate with caution

1 Scope

This document describes the use of a discontinuous analysis system for the determination of phosphates, chlorides, silicates, total alkalinity, phenolphthalein alkalinity, Method for determination of hardness and iron content.

This document is applicable to the determination of phosphate, chloride, silicate, total alkalinity, phenolphthalein alkalinity, hardness, and iron content in boiler water and cooling water.

The applicable scope of this method is. phosphate (in terms of PO_4^{3-}) 1.00mg/L~50.00mg/L, chloride (in terms of Cl^-) 10.00mg/L~ 100.0mg/L, silicate (in terms of Si) 0.10mg/L~6.00mg/L, total alkalinity 0.50mmol/L~8.00mmol/L, phenolphthalein alkalinity 0.50mmol/L~5.00mmol/L, hardness (with Ca^{2+} and Mg^{2+} as basic units) 0.50mmol/L~1.75mmol/L, iron (with Fe Calculation) 0.10mg/L~10.00mg/L.

2 Normative references

GB/T 602

GB/T 6682-2008

GB/T 6907

GB/T 6913

GB/T 14427

3 Terms and definitions

The following terms and definitions apply to this document.

3.1

By integrating automatic sampling and spectrophotometry modules, an automated system for multi-parameter interval flow analysis is realized.

4 Principle

Based on the discontinuous analysis system, the interval analysis is automatically performed according to the procedures corresponding to each test item in Appendix A to Appendix G.

The sample and reagent are added to the reaction pool for mixing and color reaction. The absorbance of the solution is measured at a certain wavelength.

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