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

HJ 551-2016

Replacing HJ 551-2009

**Water quality-Determination of chlorine dioxide and
chlorite-Continuous iodometric method**

水质 二氧化氯和亚氯酸盐的测定 连续滴定碘量法

(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 Water Pollution, Protection of human health, regulate the determination of chlorine dioxide and chlorite in wastewater, the development of this standard.

This standard specifies the continuous titration iodometric method for the determination of chlorine dioxide and chlorite in industrial wastewater dyeing and finishing industry.

This standard is a revision of the "Determination of Chlorine Dioxide in Water Quality (Temporary)" (HJ 551-2009).

This standard was first published in 2009, the original standard drafting unit for the Beijing Environmental Protection Monitoring Center. This is the first the main contents of the amendment are as follows.

- revised standard name, scope of application, chlorine dioxide method detection limit, precautions;

- revised the standard solution of sodium thiosulfate standard solution and potassium iodate standard solution, the removal of potassium dichromate calibration method;

- the lower limit of the determination of chlorine dioxide, the detection limit of chlorite and

the lower limit of determination;

- increased interference and elimination, sample determination time and environmental conditions, precision, quality assurance and quality control, Waste treatment.

Since the implementation of this standard, the original standard "Determination of chlorine dioxide in water quality iodine method (provisional)" (HJ 551-2009) Abolished.

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

The drafting of this standard. Beijing Environmental Protection Monitoring Center, Beijing Shijingshan District Environmental Protection Monitoring Station.

The standard verification unit. Beijing Xicheng District Environmental Protection Monitoring Station, Beijing Kangju Environmental Inspection Station, Qingdao City Environment Monitoring center station, Qingdao Environmental Protection Bureau Laoshan Branch monitoring station, Beijing Chaoyang District Environmental Protection Monitoring Station, Beijing Yanqing District Environmental protection monitoring station, Beijing Shijingshan District Environmental Protection Monitoring Station, Beijing Environmental Protection Monitoring Center.

The environmental protection department of this standard approved on May 13, 2016.

This standard has been implemented since August 1, 2016.

This standard is explained by the Ministry of Environmental Protection.

Water quality - Determination of chlorine dioxide and chlorite - Continuous titration of iodine method

1 Scope of application

This standard specifies the continuous titration iodometric method for the determination of chlorine dioxide and chlorite in industrial wastewater dyeing and finishing industry.

This standard applies to the use of sub-bleaching process of textile dyeing and finishing industry emissions of chlorine dioxide and chlorite determination.

When the sampling amount was 150 ml, the detection limit of chlorine dioxide was 0.09 mg/L and the lower limit was 0.36 mg/L.

The detection limit of chlorite (based on chlorite) was 0.08 mg/L and the lower limit was 0.32 mg/L.

2 Principle of the method

Chlorine dioxide and chlorite at different pH conditions, can oxidize iodide ions to precipitate iodine. With the same sample in the middle Under the conditions of the use of sodium thiosulfate solution titration of chlorine dioxide and iodine ion reaction into chlorite precipitation of iodine, and then adjust the pH of the sample is 1 to 3, and the iodide precipitated by the reaction of the chlorite with the iodide ion is titrated with sodium thiosulfate solution.

Titration to determine chlorine dioxide and chlorite content. See reaction formula (1) and reaction formula (2).

2 I₂

1ClOIClO → (1)

O₂HHCi₂I₄HIHClO 222 → (2)

3 Interference and elimination

3.1

There are other oxygen-containing chlorides, and can react with I₂ and I⁻ to cause oxidation and reduction.

3.2

Chroma will cause interference to the titration end point. When the water samples are colored, the same water sample should be used as a reference for the titration endpoint Goods.

4 Reagents and materials

Unless otherwise stated, analytical pure chemical reagents conforming to national standards are used for analysis, and the test water is distilled water or Deionized water.

4.1

Potassium iodide (KI). Crystal.

4.2

Sulfuric acid. ρ (H₂SO₄) = 1.84 g/ml.

4.3

potassium iodate (KIO₃). excellent grade pure. Before use, should be 105 °C ~ 110 °C baking 2 h, placed in the dryer to cool to the room Warm, spare.

4.4

Sodium hydroxide (NaOH).

4.5

Potassium dihydrogen phosphate ($\text{KH}_2\text{PO}_4 \cdot 2\text{H}_2\text{O}$).

4.6

Disodium hydrogen phosphate ($\text{Na}_2\text{HPO}_4 \cdot 2\text{H}_2\text{O}$).

4.7

Sodium thiosulfate ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$).

4.8

anhydrous sodium carbonate (Na_2CO_3).

4.9

soluble starch [$(\text{C}_6\text{H}_{10}\text{O}_5)_n$].

4.10

salicylic acid ($\text{C}_7\text{H}_6\text{O}_3$).

4.11

Zinc chloride (ZnCl_2).

4.12

Sulfuric acid solution. 1:1 (v/v), prepared with sulfuric acid (4.2).

4.13

sodium hydroxide solution. $c(\text{NaOH}) = 0.1 \text{ mol/L}$.

Weigh 4 g of sodium hydroxide (4.4) in a small amount of water and dilute to 1000 ml.

4.14

Buffer solution. $\text{pH} = 7$.

34.0 g of potassium dihydrogen phosphate (4.5) and 35.5 g of disodium hydrogen phosphate (4.6) were weighed and dissolved in water.

Released to 1000 ml.

4.15

potassium iodate standard solution. $c(\text{KIO}_3) = 0.0500 \text{ mol/L}$.

Weigh 1.7835 g (accurate to 0.0001 g) potassium iodate (4.3), dissolve with water and set to 1000 ml volumetric flask, Shake well Store in a brown glass reagent bottle and keep it dark.