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

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Replacing GB/T 7491-1987

**Water quality. Determination of volatile phenolic compounds.
Bromine method**

水质 挥发酚的测定 溴化容量法

(English Translation)

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Foreword

To protect the environment and protect the human body 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 Water Pollution Prevention and Control Health, standardize national environmental pollutant monitoring methods, and develop this standard.

This standard specifies the bromination capacity method for the determination of volatile phenols in industrial wastewater.

This standard is a revision of the "Bromide Capacity Method after Distillation of Water Quality Volatile Phenol" (GB 7491-87).

This standard was first published in 1987. The original standard drafting unit was Hangzhou Environmental Protection Monitoring Station. This is the first revision.

The main contents of this revision are as follows.

- clarify the scope of the standard measurement;
- Simplified the analysis steps of the bromination capacity method;
- Added precision and accuracy terms.

The national environmental protection standard "Water quality approved and issued by the former National Environmental Protection Agency on March 14, 1987 since the implementation of this standard.

Determination of volatile phenols The bromination capacity method after distillation (GB 7491-87) is abolished.

This standard was formulated by the Science and Technology Standards Department of the Ministry of Environmental Protection.

This standard is mainly drafted by. Dalian Environmental Monitoring Center.

This standard was approved by the Ministry of Environmental Protection on October 20, 2009.

This standard has been implemented since December 1, 2009.

This standard is explained by the Ministry of Environmental Protection.

Water quality - Determination of volatile phenols

1 Scope of application

This standard specifies the bromination capacity method for the determination of volatile phenols in industrial wastewater.

This standard applies to the determination of volatile phenols in industrial wastewater containing high concentrations of volatile phenol.

The detection limit of this standard is 0.1 mg/L, the lower limit of determination is 0.4 mg/L, and the upper limit of determination is 45.0 mg/L. For mass concentration higher than standard the sample having the upper limit measured can be appropriately diluted and then measured.

2 Normative references

The contents of this standard refer to the terms in the following documents. For undated references, the valid version applies to this standard.

GB 7489-87 Determination of dissolved oxygen in water - Iodometric method HJ/T 91 Surface Water and Wastewater Monitoring Technical Specifications

3 Terms and definitions

The following terms and definitions apply to this standard.

Volatile phenolic compounds A volatile phenolic compound which can be distilled off with steam and which is substituted with bromine, and the result is phenol.

4 Principle of the method

The volatile phenolic compound is distilled off by distillation and separated from the interfering substance and the fixing agent. Since the volatilization rate of phenolic compounds is it varies with the volume of the distillate, so the distillate volume must be equal to the sample volume.

In a solution containing excess bromine (produced by potassium bromate and potassium bromide), the distilled phenolic compound and bromine form tribromophenol, and One step produces bromotribromophenol. While the remaining bromine reacts with potassium iodide to release free iodine, bromotribromophenol reacts with potassium iodide to form Tribromophenol and free iodine, the free iodine released by titration with sodium thiosulfate solution, and the content of volatile phenol was calculated according to the consumption.

5 Interference and elimination

Determination of oxidizing agents, oils, sulfides, organic or inorganic reducing substances and aniline interfering phenols.

5.1 Elimination of oxidants (such as free chlorine)

The sample appeared blue on the starch-potassium iodide test paper (6.13), indicating the presence of oxidant, and an excess of ferrous sulfate (6.1) could be added.

Remove.

5.2 Elimination of sulfides

When there is a black precipitate in the sample, a drop of the sample may be placed on the lead acetate test paper (6.14). If the test paper turns black, it indicates that there is a sulfide.

presence. At this point, the sample is continuously added with phosphoric acid, and the aeration chamber is stirred and aerated until the generated hydrogen sulfide completely escapes.

5.3 Elimination of organic or inorganic reducing substances such as formaldehyde and sulfite

The appropriate amount of the sample can be separated into the separatory funnel, and the sulfuric acid solution (6.7) is added to make it acidic, and 50, 30, and 30 ml of diethyl ether (6.4) are added in portions.

To extract phenol, combine the ether layer into another separatory funnel, and add 4, 3, 3 ml of sodium hydroxide solution (6.8) in portions to carry out back extraction to make phenol the class is transferred to a sodium hydroxide solution. Combine the alkali extract, transfer to a beaker, add water to the bath to remove residual ether, then use alkali to remove the alkali the extract is diluted to the original sample volume.

At the same time, water should be used as a blank test.

5.4 Elimination of oils

After the sample is allowed to stand to separate the oil slick, follow the 5.3 procedure.

5.5 Elimination of anilines

Aniline can react with 4-aminoantipyrine to interfere with the determination of phenol, generally under acidic conditions (pH6 reagents and materials the reagents used in this standard are analytically purified according to national standards unless otherwise stated. The experimental water is newly prepared.

Distilled or deionized water.

6.1 Ferrous sulfate ($\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$).

6.2 Potassium iodide (KI).

6.3 Copper sulfate ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$).

6.4 Ethyl ether ($\text{C}_4\text{H}_{10}\text{O}$).

6.5 Hydrochloric acid. $\rho(\text{HCl}) = 1.19 \text{ g/ml}$.

6.6 Phosphoric acid solution, 19.

6.7 Sulfuric acid solution, 14.

6.8 Sodium hydroxide solution. $\rho(\text{NaOH}) = 100 \text{ g/L}$. Weigh 10 g of sodium hydroxide dissolved in water and dilute to 100 ml.