

**HJ**

**ENVIRONMENTAL PROTECTION STANDARD OF THE  
PEOPLE'S REPUBLIC OF CHINA**

**中华人民共和国国家环境保护标准**

HJ 535-2009

Replace GB 7479-1987

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**Water quality—Determination of ammonia  
nitrogen—Nessler's reagent spectrophotometry**

**水质 氨氮的测定 纳氏试剂分光光度法**

**Issued on Dec 31, 2009**

**Implemented on Apr 01, 2010**

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**Issued by the Ministry of Environmental Protection**

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## Contents

<b>Foreword</b> .....	1
<b>1 Scope of application</b> .....	1
<b>2 Methods and principles</b> .....	1
<b>3 Interference and elimination</b> .....	1
<b>4 Reagents and materials</b> .....	2
<b>5 Instruments and equipments:</b> .....	4
<b>6 Samples</b> .....	4
<b>6.1 Sample collection and storage</b> .....	4
<b>6.2 Sample pretreatment</b> .....	4
<b>7 Procedures of analysis</b> .....	5
<b>7.1 Calibration curve</b> .....	5
<b>7.2 Sample determination</b> .....	5
<b>7.3 Blank test</b> .....	6
<b>8 Calculation of results</b> .....	6
<b>9 Precision</b> .....	6
<b>10 Quality warranty / quality controls</b> .....	6

# Announcement on Ministry of Environmental Protection of People's Republic of China

No. 77      2009

In order to carry out *ENVIRONMENTAL PROTECTION LAW OF THE PEOPLE'S REPUBLIC OF CHINA*, to protect the environment and ensure human health, and five standards such as *Air and exhaust gas—Determination of ammonia—Nessler's reagent spectrophotometry* etc are approved as national environmental protection standard and issued.

Titles and numbers of standard are as following:

1. HJ 533-2009 *Air and exhaust gas—Determination of ammonia—Nessler's reagent spectrophotometry*;
2. HJ 534-2009 *Ambient air—Determination of ammonia—Sodium hypochlorite - salicylic acid spectrophotometry*;
3. HJ 535-2009 *Water quality—Determination of ammonia nitrogen-Nesslers reagent spectrophotometry*;
4. HJ 536-2009 *Water quality—Determination of ammonia nitrogen-Salicylic acid spectrophotometry*;
5. HJ 537-2009 *Water quality —Determination of ammonia nitrogen—Distillation -neutralization titration*.

Above standards are implemented since April 01, 2010, published by China Environmental Science Press, visit on [bz.mep.gov.cn](http://bz.mep.gov.cn).

Since implementation date, following national environment protection standards are abolished, the title and number of standards as following:

1. GB/T 14668-93 *Air quality—Determination of ammonia—Nesslers reagent colorimetric method*;
2. GB/T 14679-93 *Air quality —Determination of ammonia —Sodium salicylate-sodium hypochlorite spectrophotometric method*;
3. GB 7479-87 *Water quality—Determination of ammonium-Nessler*;
4. GB 7481-87 *Water quality—Determination of ammonium; Spectrophotometric method with salicylic acid*;
5. GB 7478-87 *Water quality—Determination of ammonium; Distillation and titration method*

Hereby notified.

**December 31, 2009**

## Foreword

In order to carry out *ENVIRONMENTAL PROTECTION LAW OF THE PEOPLE'S REPUBLIC OF CHINA* and *Water Pollution Prevention and Control Law of the People's Republic of China*, to protect the environment and ensure human health, to regulate the monitoring methods of ammonia nitrogen in water, this Standard is formulated.

This Standard specifies the determination of ammonia nitrogen—Nessler's reagent spectrophotometry.

This Standard is revised for GB 7479-87 *Water quality; Determination of ammonium-Nessler*.

This Standard is first issued on 1987, original draft unit is Jiangsu Environment Monitoring Center, main changes of this Standard are as follows:

- Changed the title of standard from *Water quality; Determination of ammonium-Nessler* to *Water quality-Determination of ammonia nitrogen-Nessler's reagent spectrophotometry*.
- Add of optical path (10mm to 20mm) of cuvette, reduce of detection limit of method, enlarge of applicable of scope of method. Stipulated lower limit and upper limit of determination.
- Cancelled visual colorimetry.
- Regulated and adjusted the structural and format of standard.
- Add of NOTICE on main reagent and key procedure of sample pretreatment.
- Combined calculation formula of results

Since implementation date of this Standard, GB 7479-87 *Water quality; Determination of ammonium-Nessler* approved and published by original National Environmental Protection Department on March 14, 1987.

This Standard is proposed by Science Standard Department of Environmental Protection Department.

Chief draft unit of Standard: Shenyang Environment Monitoring Center.

This Standard is approved by Environmental Protection Department on December 31, 2009.

This Standard is issued on April 1, 2010.

This Standard is interpreted by Environmental Protection Department.

# Water quality—Determination of ammonia nitrogen—Nessler's reagent spectrophotometry

**Warning:** The mercury bichloride ( $\text{HgCl}_2$ ) and mercury iodide ( $\text{HgI}_2$ ) are extremely toxic substance, which should be prevented to contact with skin and oral cavity.

## 1 Scope of application

This standard specifies the Nessler reagent spectrophotometry for determination of ammonia nitrogen in water.

This standard applies to determination of ammonia nitrogen in surface water, groundwater, domestic sewage and industrial wastewater.

When the water sample volume is 50mL and the 20mm cuvette is used, the detection limit of this method is 0.025 mg/L, the determination lower limit is 0.10mg/L, and the determination upper limit is 2.0mg/L(expressed in N).

## 2 Methods and principles

The ammonia in the free state or ammonia nitrogen in form of ammonium ions can be reacted with Nessler reagent to generate light red and brown complex compound, the absorbance of the complex compound is directly proportional to the ammonia nitrogen content, and the absorbance should be measured at a wavelength of 420nm.

## 3 Interference and elimination

If water samples contain suspended solids, residual chlorine, calcium and magnesium, and other metal ions, sulfide and organic substance, it can produce interference, if containing such substances, it should be properly treated to eliminate the impact on the determination.

If there is residual chlorine in the sample, it can be removed through addition of the appropriate amount of sodium thiosulfate solution, and check if residual chlorine is divisible with starch - potassium iodide test paper. When color developing, adding an appropriate amount of potassium sodium tartrate solution can eliminate the interference of calcium, magnesium and other metal ions. If the water sample is cloudy or has colors, it can be treated with pre-distillation or flocculant precipitant method.

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