

HJ

INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

HJ 659-2013

**Water quality. Determination of cyanide and others by vacuum
testing tube-electric colorimeter**

水质 氰化物等的测定 真空检测管-电子比色法

(English Translation)

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Foreword

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, to protect the environment, this standard is formulated to ensure human health, standardize China's water environment monitoring methods, and meet the needs of water quality emergency monitoring work.

This standard specifies the determination of cyanide, fluoride, sulfide, divalent manganese, hexavalent chromium, nickel, ammonia nitrogen, aniline, Vacuum test tube method for contaminants such as nitrate nitrogen, nitrite nitrogen, phosphate and chemical oxygen demand.

This standard is the first release.

Appendix A of this standard is a normative appendix, Appendix B and Appendix C are informative appendices.

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

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

This standard was approved by the Ministry of Environmental Protection on September 18, 2013.

This standard has been implemented since September 20, 2013.

This standard is explained by the Ministry of Environmental Protection.

Determination of water quality cyanide, etc. Vacuum test tube - electronic colorimetry

1 Scope of application

This standard specifies the determination of cyanide, fluoride, sulfide, divalent manganese, hexavalent chromium, nickel, ammonia nitrogen, aniline, Vacuum test tube method for contaminants such as nitrate nitrogen, nitrite nitrogen, phosphate and chemical oxygen demand.

This standard applies to cyanide, fluoride, sulfide, bivalent in groundwater, surface water, domestic sewage and industrial wastewater.

Manganese, hexavalent chromium, nickel, ammonia nitrogen, aniline, nitrate nitrogen, nitrite nitrogen, phosphate, and chemical oxygen demand Quick analysis. Other pollutants may also be applied to this standard if they pass the verification. The verification method is shown in the informative Appendix C.

The method detection limits for the target are shown in Table 1.

Table 1 Detection limit of this method

No. Compound name detection limit (mg/L) No. Compound name detection limit (mg/L)

1 Cyanide 0.0099 Nitrite (N) 0.03

2 Fluoride 0.5 8 Divalent manganese 0.5

3 Sulfide 0.1 9 Hexavalent Chromium 0.1 4 ammonia nitrogen 0.2 10 nickel 0.2 5 phosphate 0.05 11 aniline 0.1

6 Nitrate (N) 0.7 12 CODCr 10

2 Normative references the contents of this standard refer to the following documents or their terms. For undated references, the valid version is appropriate.

Used in this standard.

HJ 589 Technical Specifications for Emergency Monitoring of Environmental Emergencies
HJ/T 91 Surface Water and Wastewater Monitoring Technical Specifications HJ/T 164
Technical Specifications for Groundwater Environmental Monitoring

3 Terms and definitions the following terms and definitions apply to this standard.

3.1 vacuum test tube vacuum test tube Made of borosilicate glass or quartz glass, with a certain degree of vacuum, built-in test reagents, automatic quantitative absorption after breaking A test tube that is subjected to a chemical color reaction with a specific reagent to be tested.

3.2 electronic colorimeter electric colorimeter the electronic colorimeter consists of a light source, a chrominance sensor, a colorimetric cell, a signal simulation system, and a display.

The chrominance sensor is a signal receiver that determines the chromaticity signal of the color of the colored compound generated by a specific chemical color reaction.

A quantity of analytical electronic instruments.

4 Principle of the method the vacuum glass detecting tube sealed with the reaction reagent is broken in the water sample, and the sample is automatically metered into the tube, and the sample is in the sample.

The analyte and the reagent react rapidly and quantitatively to form a colored compound, and the color value thereof is proportional to the content of the analyte. Chemically the functional relationship between the chrominance signal of the color reaction and the concentration of the analyte is stored in an electronic colorimeter, and the water is directly read after the measurement.

The content of the analyte in the sample.

See Appendix A for the principle of determination of each type of pollutant.

5 interference and elimination

5.1 Suspended matter or algae in water may interfere with the measurement, and interference can be eliminated by filtration or precipitation;

In the case of the case, the interference can also be eliminated by dilution.

5.2 Determine whether the chromaticity causes interference by the result of the standard recovery test. When the color of the water sample interferes with the measurement, it is determined Interference can be eliminated by dilution if the range allows.

5.3 See Appendix A for other interference and elimination methods.

6 reagents and materials Unless otherwise stated, analytically pure reagents that meet national standards were used for the analysis. Experimental water is used without target dry

Disturbed distilled or deionized water.

6.1

Special additives. solid or liquid reagents. Used to assist color reaction or eliminate interference, configuration method reference test tube use Instructions.

7 Instruments and equipment

7.1

Electronic colorimeter. LED or xenon lamp source, power-on stabilization time ≤ 10 seconds, sensor three primary color wavelength range. red.

580-750nm; green. 500-600nm; blue. 410-510nm; built-in working curve; power supply. 220v AC power supply, No. 5, 7th battery or dedicated power adapter; adapt to environmental conditions. temperature 0-40 ° C, maximum relative humidity 90% RH.

7.2

Vacuum test tube. high borosilicate or quartz glass material, vacuum. -100 ~ -80KPa, sealed a certain amount of reagents. shape Uniform, should be stored at normal temperature, low temperature or dark place according to the instructions during the warranty period.

7.3

Heating device. use 12v DC or 220v AC power supply, the temperature is set to 50-150 °C continuously adjustable, temperature precision Degree ± 0.5 ° C, suitable for test tube heating design.

7.4

Common instruments and equipment used in general laboratories.

8.1 Sample collection

Samples were collected in accordance with the relevant regulations of HJ/T 91, HJ/T 164 and HJ 589.

8.2 Preservation of samples

Samples should be measured on-site as soon as possible without the need for a fixative.

9.1 Sample Pretreatment

Determine the pH of the water sample before testing and adjust to the pH range required for the measurement according to the instructions.