

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

HJ 924-2017

**Technical requirement and test procedures for rapid COD
photometric analyzer**

**COD光度法快速测定仪技术要求及检测方法
(English Translation)**

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Foreword

In order to implement the "Law of the People's Republic of China on Environmental Protection" and the "Law of the People's Republic of China on Prevention and Control of Water Pollution", protect the environment, Protection of human health, regulate chemical oxygen demand in water (COD) spectrophotometric rapid determination of the technical requirements, the development of this standard.

This standard specifies the technical requirements, performance indicators and detection methods of COD photometric fast detector.

This standard is released for the first time.

This standard by the Environmental Protection Department of Environmental Monitoring Division and Science and Technology Standards Division to develop.

This standard was drafted. China Environmental Monitoring Station, Hebei Province Institute of Food Quality Supervision and Inspection.

This standard MEP approved on December 28, this standard since April 1, 2018 come into operation.

This standard is interpreted by the MEP.

COD spectrophotometric rapid determination of technical requirements and testing methods

1 Scope of application

This standard specifies the fast digestion based on potassium dichromate - photometric method COD rapid determination of water (hereinafter Referred to as the detector) of the

technical requirements, performance indicators and testing methods.

This standard applies to COD photometric rapid detector production, application selection and performance testing.

2 Normative references

This standard references the following documents or the terms. For undated references, the effective version applies to this standard.

GB/T 12519 analytical instruments General technical conditions HJ 828 Water quality - Determination of chemical oxygen demand dichromate method HJ/T 399 water quality chemical oxygen demand rapid digestion spectrophotometry

3 Terms and definitions

The following terms and definitions apply to this standard.

Indication error of the digestion duration Refers to the digestion device set digestion time and the actual digestion time difference.

Dissolution temperature uniformity of the digestion temperature Refers to the digestion device in the digestion hole between the highest temperature and the lowest temperature difference.

Indication error of the digestion temperature Refers to the digester set digestion temperature and the actual digestion temperature difference.

Stability of absorbance reading Refers to the use of photometric standards provided in this standard, the measured value of the air photometric value changes within a certain period of time.

4.1 Methodology

Add a certain amount of potassium dichromate solution in the sample, in a strong acid medium, silver sulfate as a catalyst, closed by high temperature After solution, the absorbance of hexavalent chromium (Cr⁶) or trivalent chromium (Cr³) was measured by spectrophotometry to determine the COD value.

4.2 Measuring range

Instrument measurement range of 15 ~ 1000 mg/L, the sample Cl⁻ concentration ≤ 1000 mg/L.

5.1 Appearance

5.1.1

Analyzer surface should not have obvious files, scratches, cracks, deformation and stains, coating the surface of the instrument should be uniform, no foaming, cracking, peeling off and abrasion, no damage and cracks on the display panel, clear characters and figures.

5.1.2

The identification of the measuring instrument shall comply with the requirements of GB/T 12519, and the nameplate shall be fixed in an appropriate and obvious place, on which should have the following logo.

- a) manufacturer's name and address;
- b) instrument name, model specifications;
- c) factory number;
- d) date of manufacture;
- e) measurement range, lower limit of quantification;
- f) Production license number.

5.2 Equipment Construction

The analyzer consists of thermostatic digestion device, digestion tube, photometer and other functional components.

5.3.1 Thermostat digestion device

5.3.1.1

should have regular reminders, temperature calibration and other functions.

5.3.1.2

should have a transparent and ventilated protective cover.

5.3.1.3

The preheating time should not exceed 20 min.

5.3.1.4

digestion time should not exceed 30 min.

5.3.1.5

heating hole depth should be higher than the digestion tube liquid height.

5.3.2 Digestion tube

5.3.2.1

Digestion tubes shall comply with the relevant requirements of HJ/T 399.

5.3.2.2

digestion tube should be made of acid-resistant glass, at 165 °C can withstand 600 kPa pressure, tube cover should be heat-resistant acid, Digestion tube and tube cover should not be any wear or tear.

5.3.2.3

If the digestion tube is used as a colorimetric tube, the part used for photometric determination should be smooth and transparent without scratches and roughness.

5.3.3 Photometer

5.3.3.1

The absorbance and concentration values should be clearly displayed.

5.3.3.2

should have data storage, access functions.

5.3.3.3

should have the curve storage, inspection, calibration function.

6 Performance requirements

COD photometric rapid determination of performance indicators should meet the requirements of Table 1.

Table 1 COD photometric rapid determination of performance indicators

Project performance test methods Digestion time indication error ± 5 s 7.5.1 Digestion temperature uniformity ≤ 3 °C 7.5.2 Digestion temperature indication error ± 3 °C 7.5.3 Absorbance indicates stability ≤ 0.005 7.5.4 Measurement repeatability COD ≥ 200 mg/L, $\leq 5\%$;
 $\leq 10\%$ when 50 mg/L $\leq$ COD ≤ 200 mg/L;
 $\pm 10.0\%$ when 50 mg/L $\leq$ COD ≤ 200 mg/L;
 ± 5 mg/L for COD 7 test method