

CCS Z 16

HJ

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

HJ 1182-2021

**Water quality Determination of chromaticity Dilution factor
method**

水质 色度的测定 稀释倍数法

(English Translation)

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1 Scope of application

This standard specifies the dilution factor method for the determination of water color.

This standard applies to the determination of the chromaticity of domestic sewage and industrial wastewater.

The detection limit and the lower limit of determination of the method were 2 times.

2 Normative references

This standard refers to the following documents or clauses thereof. For dated references, only the dated version applies to this standard.

For undated references, the latest edition (including all amendments) applies to this standard.

HJ 91.1 Technical Specification for Wastewater Monitoring HJ 1147 Electrode method for determination of pH value of water quality

3 Terms and Definitions

The following terms and definitions apply to this standard.

chroma

The apparent color resulting from dissolved and undissolved suspended solids was determined with the original sample supernatant after sedimentation for 15 min.

4 Principles of the method

The sample is diluted to the point where there is no visual sensory difference compared with water, and the intensity of the color is expressed as the ratio of the total volume after dilution to the original volume, and the unit is times.

5 Reagents

Water. Deionized or pure water.

6 People, environment and equipment

6.1

Personnel. The inspectors must have normal vision, have the ability to accurately distinguish colors, and must not have color vision impairment or color blindness. Detector should be proficient in the basic knowledge and measurement steps of colorimetric measurement, and be able to correctly identify and describe samples.

6.2

Measurement background. The color of the walls of the experimental room should be white, and the testing personnel should wear white lab coats.

6.3

Colorimetric tube with stopper. 50 ml, 100 ml, the inner diameter is the same, colorless and transparent, and the bottom is uniform without shadow.

6.4

Light source. Natural light may be used in well-lit conditions. Otherwise, the measurement should be performed under a light source. The light source is fluorescent lamp or LED lamp, the light emitted by the two light sources is required to be cool white. The two lamps are placed side by side without any obstruction under the lamps, and the length of each lamp is at least 1.2 m.

The light source is suspended 1.5 m to 2.0 m above the experimental table. When the light source is turned on, all other light sources in the room should be turned off. Fluorescent lamp power ≥ 40 W or LED light power ≥ 26 W.

6.5

Volumetric flask. 100 ml.

6.6

Graduated cylinder. 25 ml, 100 ml, 250 ml.

6.7

pH meter. Accuracy ± 0.1 pH units or higher.

6.8

Sampling bottle. 250 ml brown glass bottle with stopper and ground mouth.

6.9

Common laboratory instruments and equipment.

7.1 Sample Collection and Storage

Samples were collected in accordance with the relevant regulations of HJ 91.1. The samples should be refrigerated below 4 °C, protected from light, and measured within 24 h after collection. For samples with poor biodegradability, such as dye and pigment wastewater, can be refrigerated for 15 d.

7.2 Preparation of test specimens

Pour the sample into a 250 ml measuring cylinder (6.6), let it stand for 15 min, and pour out the non-settling part of the upper layer as a sample for measurement.

7.3 Color description

Take the sample (7.2) and pour it into a 50 ml stoppered colorimetric tube (6.3) to the 50 ml mark, and place the stoppered colorimetric tube vertically on the white surface.

On the surface, observe the liquid column vertically downward. Describe the color characteristics of the sample in words. color (red, orange, yellow, green, blue, purple, white, gray, black), Shade (colorless, light, dark), transparency (transparent, cloudy, opaque).

7.4 Determination of pH value

According to HJ 1147, the pH value of water samples was measured.

8.1 Primary dilution

Accurately pipette 10.0 ml of sample (7.2) into a 100 ml colorimetric tube (6.3) or a 100 ml volumetric flask (6.5), and dilute with water (5).

To the 100 ml scale, after mixing, observe according to the visual colorimetric method (8.3). If there is still color, continue to take 10.0 ml of the diluted sample, Dilute 10 times again, and so on, until it is just indistinguishable from water (5), record the number of dilutions n.

8.2 Natural times dilution

Take the sample from the n-1th primary dilution with a graduated cylinder (6.6), and dilute it by natural multiples from small to large according to the dilution method in Table 1.

After each dilution, observe according to the visual colorimetric method (8.3) after mixing, stop the dilution when it is just indistinguishable from water (5), and record Dilution factor D1.

8.3 Visual Colorimetry

Pour the diluted samples (8.1, 8.2) and water (5) into a 50 ml colorimetric tube (6.3) with a stopper to the 50 ml mark, respectively.

The color tube is placed vertically on the white surface, and the liquid column is observed vertically downward to compare the color of the sample and water (5).

9.1 Result calculation

The dilution factor D of the sample is calculated according to formula (1).

$$nD D = x (1)$$

In the formula. D -- the dilution ratio of the sample;

n -- the number of primary dilutions;

D1 -- dilution factor.

9.2 Result representation

The results are expressed as dilution factor values. Report the color characteristics and pH value along with the sample colorimetric.

10 Precision

9 personnel measured the actual water samples of 4 types of slaughtering, dyes, pigments and sewage treatment plants respectively, and the relative standards among the personnel the deviations were 14%, 22%, 12%, and 15%, respectively.

11 Quality Assurance and Quality Control

Regularly use the "Color Vision Check Chart" to check the color vision of the personnel, and the correct rate of the inspectors' answers to the questions should reach 100%.