

HJ

INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

HJ 1215-2021

Water quality - Determination of phytoplankton - Filtration membrane-Microscope counting method

水质 浮游植物的测定 滤膜-显微镜计数法

(English Translation)

Issued on: January 1, 1970

Implemented on: January 1, 1970

Issued by: Ministry of Ecology and Environment

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1 Scope of application

This standard specifies the filter-microscopic counting method for the determination of phytoplankton in water.

This standard applies to the rapid determination of phytoplankton in surface water.

When the maximum sample filtration volume is 1000 ml, the detection limit of the method is 40 cells/L. The method detection limit calculation method is detailed in Appendix A.

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.

GB/T 14581 Technical Guidelines for Sampling of Water Quality in Lakes and Reservoirs
HJ/T 91 Technical Specification for Surface Water and Sewage Monitoring HJ 494 Water
Quality Sampling Technical Guide

3 Terms and Definitions

The following terms and definitions apply to this standard.

phytoplankton

The tiny algae that live planktonic life in water, usually phytoplankton are planktonic algae, including prokaryotic cyanobacteria and other types of eukaryotes algae.

counting unit

Select the smallest unit for counting, such as a cell, under the microscope field of view.

density of phytoplankton the number of phytoplankton cells per unit volume, cells/L.

microscope counting field A defined area in the microscope field of view used to quantitatively count phytoplankton.

4 Principles of the method

The sample passes through a filter membrane with a certain pore size, and the colonies, filaments and single-celled phytoplankton are trapped on the filter membrane.

Microscopic examination.

5 Reagents and Materials

Unless otherwise stated, analytical reagents that meet national standards were used in the analysis, and the experimental water was freshly prepared deionized water or distilled water.

5.1

Iodine (I₂).

5.2

Potassium iodide (KI).

5.3

Formaldehyde solution. w(HCHO)=37%~40%.

5.4

Lugol's iodine solution.

Weigh 60 g of potassium iodide (5.2) and dissolve it in 100 ml of water, then add 40 g of

iodine (5.1), stir well to dissolve it completely, add water Dilute to 1000 ml, transfer to a brown ground-mouth glass bottle, and store at room temperature away from light.

5.5 Microscope Immersion Oil. nD

23=1.515 or nE

23=1.518, with transparent glass drop stick.

5.6 Filter membrane. mixed cellulose ester membrane, with a diameter of 25 mm and a pore size of 0.45 μm to 3 μm .

Note: Each batch of filter membranes should be tested for hydration and oil transparency, and can only be used after meeting the requirements of hydration and transparency. Place 1 unused filter in the in a beaker of water, if the filter membrane is completely soaked with water, the filter membrane can be hydrated. Take 1 unused filter membrane and place it on a glass slide with microscope immersion oil.

If the filter membrane is completely soaked by the immersion oil, the filter membrane can be transparent.

6 Instruments and equipment

6.1

No. 25 plankton net. the diameter of the mesh is 0.064 mm, the net is conical, the net mouth is sleeved on the copper ring, and the bottom end of the net has a water outlet switch piston.

6.2

Qualitative sampling bottle. 30 ml ~ 100 ml wide-mouth polyethylene bottle.

6.3

Water collector. stainless steel or plexiglass material, cylindrical. Capacity and depth specifications to meet sampling requirements.

6.4

Quantitative sampling bottle. 1L~2L wide-mouth polyethylene bottle.

6.5

Refrigerators.

6.6

Vacuum filtration device. including funnel (diameter 25 mm, volume.200 ml), porous polyester filter membrane support plate, collection bottle, vacuum pump (relative vacuum ≤ -17 kPa, adjustable).

6.7

Glass slide. 25 mm x 76 mm.

Note: Slides and coverslips should be soaked in concentrated hydrochloric acid and ethanol before use. If possible, choose a slide or coverslip that can be used directly.

6.8

Cover glass. 25 mmx25 mm.

6.9

Teethless tissue forceps.

6.10

Slide drying plate. suitable for slides of the same specification.

6.11

Oven. 70 °C±2 °C, temperature adjustable.

6.12

Upright biological microscope or inverted biological microscope. objective lens 4x, 10x, 20x, 40x; eyepiece 10x or 15x.

6.13

Stage micrometer. also known as stage micrometer, 1 mm/100 DIV, with a division value of 0.01 mm.

Note: DIV refers to equal division, 1 mm/100 DIV means that 1 mm is divided into 100 divisions.

6.14

Whipple grid. a large square grid with a side length of 7 mm to 10 mm, divided into 100 identical Square medium, 1 medium in the center is further divided into 25 identical small squares.

Note: When the Whipple eyepiece reticle is not available, the grid-type eyepiece reticle of the same specification can also be used (that is, the grid type in which the middle grid in the center is not subdivided into 25 small grids) eyepiece reticle).

6.15

Counters.

6.16

Common laboratory equipment.