

HJ

INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

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**The technical requirement for water quality automatic analyzer
of total organic carbon
(English Translation)**

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1 Scope

This Technical Requirement specifies the technical performance requirements and performance test methods for water quality automatic analyzer of total organic carbon (TOC) in surface water, industrial sewage, and municipal sewage, is applicable to the development, production, and performance inspection of such instruments.

2 Normative references

The clauses in the following documents, by reference in this Standard, constitute the clauses of this Standard. For the dated references, the subsequent amendments (not including errata content) or revisions do not apply to this Standard. However, parties which have reached an agreement according to this Standard are encouraged to study whether the latest version of these documents can be used. For the undated references, the latest version is applicable to this Standard.

GB 13193-91 Water quality - Determination of TOC by nondispersive infrared absorption method

3 Terms and definitions

The following terms and definitions are applicable to this Standard.

3.1 Sample

The surface water, industrial sewage, and municipal sewage introduced into the automatic analyzer.

3.2 Calibration solution

Calibration solution prepared to obtain the same indicated value as the sample TOC concentration. There are the following types.

3.2.1

Zero calibration solution.

and automatically reset to the state where the measurement is restarted.

7.4 When the sample or reagent cannot be introduced into the reactor, the

system can alarm through the buzzer and display the failure content. At the same time, STOP running until the system is restarted.

8 Instrument construction

8.1

General construction. The following requirements must be met.

8.1.1

The structure is reasonable. The surface and decoration of chassis casing are free from cracks, deformation, scratches, dirt, burrs, etc.. The surface coating is uniform, without corrosion, rust, falling off, and wear. The product assembly is sturdy. The parts are tightened without looseness. The buttons, switch door locks, etc. are matched with appropriateness, and the control is flexible and reliable.

8.1.2

Under normal operating conditions, it can work smoothly without safety hazards.

8.1.3

Each component is less prone to mechanical and circuit failures. There is no safety hazard in construction.

8.1.4

It shall have the performance of not affecting the operation of automatic analyzer due to water soaking, condensation, etc..

8.1.5

The heat-bonding part of a burner, etc. shall have the performance of not being deformed and changed in function due to heating.

8.1.6

It shall be easy for maintenance and check operations, without safety hazards.

8.1.7

The display is free from smudging and damage. The character strokes of the display part are uniform in brightness and clear; and there are no black- corner, black spots, rainbows, bubbles, dark display, hidden stroke, no display, blinking, etc..

8.1.8

The characters, symbols, and signs which indicate functions shall comply with the provisions of "10 Identification" of this Standard.

8.2

Construction. The automatic analyzer of TOC shall consist of a sample introduction unit, an inorganic carbon removal unit, a reactor unit, a detection unit, and units for display recording, data processing, and signal transmission.

8.3 Sample introduction unit. It refers to a connection part which sends the

sample to the reaction detection unit through the sample conduit of sample of the sample after removal of inorganic carbon is first metered and sent to the oxidation reactor with a carrier gas. For example, a slide valve with a metering tube can be used.

8.5.2.2 When injecting the sample using the continuous type, the sample after

removal of inorganic carbon is sent to the oxidation reactor at a certain flow rate.

For example, a metering pump can be used.

Note: In order to perform only the performance check of reaction detection unit, any of the above injection modes shall have a construction in which zero calibration solution, span calibration solution, etc. can be introduced by this unit.

8.5.3 Oxidation reactor - It is classified into dry and wet types.

8.5.3.1 Dry oxidation reactor. The combustion tube filled with catalysts such as

platinum-based, alumina-based, or cobalt-based catalysts is kept at 680 ~

1000°C and burns the TOC in the sample introduced by the carrier gas. Dry oxidation reactors are commonly used in two ways. One is to continuously pass the carrier gas into the combustion tube. The other is to close the combustion tube for a certain period of time, and in the state where the carrier gas is stopped being passed into, the TOC in the sample is burned and oxidized.

8.5.3.2 Wet oxidation reactor. The TOC is oxidized by applying external energy such as adding an oxidizing agent such as potassium persulfate to the sample and using ultraviolet irradiation.

8.5.4 Gas-liquid separator. It refers to the device for cooling the gas sent from oxidation reactor to remove moisture from the gas. It consists of a cooler, a condenser, and a drain trap.

8.5.5 Detector. such as nondispersive infrared gas analyzer, etc..

8.6 Display recording unit. It has the function of recording the TOC value in the display form of equal division.

8.7 Data transmission device. It has a complete data acquisition and transmission system.

8.8 Attachments. The automatic analyzer of TOC can be configured with the following attachments as needed.

8.8.1 Data processing device. It expresses the TOC value in digital form and

has data processing functions such as printing and calculation.

8.8.2 Automatic calibrator. It has the function of automatically performing the zero and span calibration of the analyzer in a certain period.

to the preheating time specified in the operating manual, the preheating operation of automatic analyzer is performed, so that the functions of each part and the display recording unit are stabilized.

9.3.2 Calibration. According to the calibration method of instrument manual,

USE 9.2.2 and 9.2.3 calibration solutions for instrument zero calibration and span calibration.

9.4.1 Repeatability error. Under the test conditions of 9.1, the zero calibration

solution is measured 6 times; and the average of the indicated values is taken as the zero value. Under the same conditions, the span calibration solution is measured 6 times; and