



JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS K 0806 : 1997

**Automatic chemical oxygen demand
meter**

ICS 71.040.40

Descriptors : oxygen demand, measuring instruments, automatic control systems,
freshwater, trade effluents, water resources

Reference number : JIS K 0806 : 1997 (E)

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This translation has been made based on the original Japanese Industrial Standard revised by the Minister of International Trade and Industry through deliberations at Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law:

Date of Establishment: 1990-01-01

Date of Revision: 1997-07-20

Date of Public Notice in Official Gazette: 1997-07-22

Investigated by: Japanese Industrial Standards Committee

Divisional Council on Environment

JIS K 0806:1997, First English edition published in 1998-02

Translated and published by: Japanese Standards Association
4-1-24, Akasaka, Minato-ku, Tokyo, 107-8440 JAPAN

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Printed in Japan

Automatic chemical oxygen demand meter

1 Scope This Japanese Industrial Standard specifies the automatic meter (hereafter referred to as "meter") for measuring the chemical oxygen demand (COD) of the water in public water region such as rivers, lakes or marshes, and waste water issued from plants, factories, or others.

Remarks 1. The normative references to this Standard are listed in Attached Table 1.

2. In this Standard, the units and numerical values shown in { } are based on the traditional units, and appended for informative reference.

2 Matters in common The matters in common shall conform to JIS K 0102.

3 Definitions For the purpose of this Standard, the definitions given in JIS K 0102, JIS K 0211 and the following definitions apply.

- (1) **sample** Water prepared by pretreatment that the water of rivers, lakes or marshes, or waste water from plants or factories is filtered through a strainer, and then introduced into a meter.
- (2) **solution for calibration** This is compounded to show the same indicated values on COD concentration as that in sample, and the following are used.
 - (a) **solution for zero calibration**
 - (b) **solution for span calibration**
- (3) **zero drift** The fluctuation given by indicated value at the minimum scale of the meter within a certain period.
- (4) **span drift** The fluctuation given by indicated value corresponding to scale span of the meter within a certain period.
- (5) **glucose test solution** Test solution prepared by dissolving D(+)-glucose in water.

4 Principle The measurement principle of this meter conforms to 17 [Oxygen demand by potassium permanganate at 100 °C (COD_{Mn})] of JIS K 0102. That is, add silver nitrate solution and sulfuric acid into sample, add 5 mmol/l potassium permanganate solution, heat it in a boiling water bath for 30 min, obtain the demanded amount of potassium permanganate, and express it with equivalent amount of oxygen. In some cases, heating is carried out in an oil bath.

Remarks : The measurement period of a meter shall be within 1 h.

5 Measurable range The measurable range of meter (hereafter referred to as "range") is from 0 mgO/l to 20 mgO/l.

Remarks : When sample is diluted, the range larger than this value can be got depending on dilution ratio. The range that matches 17 of JIS K 0102 is 0.5 mgO/l to 11 mgO/l.

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6 Rated voltage and rated frequency The rated voltage of meter shall be single phase a.c. 100 V, and the rated frequency be 50 Hz, 60 Hz, or 50 Hz/60 Hz.

7 Performance The performance of a meter shall conform to Table 1 when being tested according to 9.

Table 1 Performance of meter

Item	Performance	Testing method
Repeatability	Within ± 5 % of the maximum scale	9.4 (1)
Zero drift	Within ± 5 % of the maximum scale	9.4 (2)
Span drift	Within ± 5 % of the maximum scale	9.4 (3)
Glucose test	(a) Within ± 5 % of the maximum scale (b) Within ± 5 % of the maximum scale	9.4 (4)
Stability to voltage fluctuation	Within ± 5 % of the maximum scale	9.4 (5)
Insulation resistance	2 M Ω or more	9.4 (6)
Withstand voltage	No unusualness	9.4 (7)

8 Construction

8.1 Generality of construction The construction of a meter shall conform to the following each item.

- (1) It has correct shape, and its assembling and the finish of each part are satisfactory and rigid.
- (2) There is no apprehension to generate danger at usual operation, and it works safely and smoothly.
- (3) Each part does not easily take place mechanical or electrical trouble, and does not produce dangerous condition.
- (4) It is constructed not to bring hindrance to the operation of the meter due to wetting with water, splash of water, and dew condensation.
- (5) The part contacting with heat generating part such as heater is constructed so as not to result in the deformation or change of function by heat.
- (6) When it is maintained or checked, it shall be easily carried out without any dangers.

8.2 Composition The meter shall be composed of, as shown in Fig. 1, measuring part, reaction-vessel part, determination part, and reagent storing part.

8.3 Measuring part This part is for measuring a definite quantity of sample and reagents, and for providing them into a reaction-vessel part, and composed of a sample introducing tube, reagent introducing tube, measuring meter for sample, and measuring meter for reagent.