

Overview

The test is suitable for the photometric determination of the chemical oxygen demand (COD). The test is equivalent to the methods EPA 410.4, APHA 5220D, DIN ISO 15705-H45 and DIN 38409-H41-1.

This test is suitable for water, wastewater and sludge.

- Measuring range:
1.0–15.0 mg/L O₂ (method 0281)
1000–15000 mg/L O₂ (method 0282)
- Number of tests: 20
- Wavelength for photometric determination: 595 / 605 / 620 nm
- Shelf life: 12 months
- Storage temperature: 15–25 °C
- Storage conditions: protected from sunlight, upright.

Method

The organic compounds of a sample are oxidized by heating the sample in a mixture of sulphuric acid and potassium dichromate. The chemical oxygen demand (COD) of a water sample is the concentration of oxygen that is equivalent to the amount of potassium dichromate consumed. The change in the potassium dichromate concentration is determined via the change in absorbance after digestion.

Interferences

The foreign materials shown here do not interfere with the test up to the indicated concentrations (in mg/L). The cumulative effect of different interfering ions has not been tested.

Data in mg/L:

- Cl⁻: 15000

Important: For samples in which the chloride content is high, shake the tube to suspend the precipitate prior to adding the sample. If the chloride content is greater than 15,000 mg/L, you must dilute the sample or use a chloride masking agent (REF 918911). Once it has reacted in the heating block, the solution must not be cloudy; turbidity can result in high COD values.

This method is not suitable for analyzing seawater.

Reagents and accessories

Contents of reagents set:

- 20 test tubes R0

Required devices:

- MACHEREY-NAGEL photometer
- MACHEREY-NAGEL heating block
- Digital piston pipette 100–1000 µL (REF 91677) with pipette tips (REF 91667)
- Safety bottle for shaking COD tubes (REF 91637)

Standards

- NANOCOD CONTROL COD 15000 (REF 92528)
- NANOCOD CONTROL Multistandard Sewage outflow 1 (REF 925011)
- NANOCOD CONTROL Multistandard Sewage (REF 925013)

Sampling and preparation

See DIN EN ISO 5667-3-A 21 and DIN 38409-H41-1.

Quality control

The measurement of a blank value and a standard is recommended before every measuring series as quality control measure.

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Quality data:

The following data were determined during production according to ISO 8466-1 and DIN 38402-A51:

- Number of LOTs: 75
- Standard deviation of the method: ± 0.08 g/L
- Coefficient of variation of the process: ± 0.92 %
- Confidence interval: ± 0.17 g/L

Specified data for procedure:

- Sensitivity (absorbance of 0.010 A corresponds to): 0.2 g/L
- Accuracy of a measurement value: ± 0.31 g/L

LOT-specific certificates are available at www.mn-net.com.

Procedure

1. Open round cell and hold slightly tilted
2. Pipette 0.2 mL of sample into test tube
3. Slowly pour 200 µL sample solution onto the tube contents (do not mix, hold cuvette at an angle)
4. Heat for 2 h at 148 °C or for 30 min at 160 °C
5. Take the tube from the heating block
6. Shake again after 10 min. while still warm
7. Cool to room temperature
8. Clean outside of test tube
9. Measure sample

Notes

We recommend QUANTOFIX® Chloride (REF 91321) as a pre-test for determining the chloride concentration.

Allow any turbidity to settle before the measurement.

Test a sample of COD-free water (REF 918993) to generate a blank value for the reagent.

When using other photometers, make sure measurements are possible in test tubes (16 mm OD) and calibrate the method.

08/2020

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