



DETERMINATION OF THE CHEMICAL OXYGEN DEMAND (COD) IN WATER

ISO 15705:2002

INTRODUCTION

Chemical Oxygen Demand (COD) is one of the most common integral indicators of anthropogenic pollution of water bodies. COD is widely used in the analysis of natural water, to control wastewater treatment from organic various substances.

Lumex Instruments provides the method and equipment (FLUORAT-02 analyzer and TERMION thermoreactor) for accurate, easy-to-use and cost-effective COD determination using the small-scale sealed tube method (ST-COD).

MEASUREMENT RANGE

Measurement range, mg/L	Directives & standards for waste water	MAC (MPL), mg/L
Up to 1 000 (natural, drinking, and waste water)	Urban Waste Water Treatment Directive 91/271/EEC	125
	EPA Petroleum Refining Effluent Guidelines and Standards (40 CFR Part 419)	61–388
	GB 31570-2015 "Emission standard of pollutants for petroleum refining industry"	50 / 60
	India. The Environment (Protection) Rules, 1986. General standards for discharge of environmental pollutants Part A: Effluents	250

This method can be applied to all types of water: influent and effluent wastewaters, natural water, process water etc.

Samples with chlorides content higher than 1000 mg/L and/or with COD values higher than 1 000 mg/L should be diluted prior to analysis.

METHOD

Sampling should be performed in accordance with ISO 5667-3.

The COD measurement method is based on the photometric determination of residual quantities of Cr (VI) ions, or newly formed Cr (III) ions depending on the selected measurement range. Samples are oxidized in a standard manner by digesting with sulfuric acid and potassium dichromate in the presence of silver sulfate and mercury(II) sulfate. Silver is the catalyst to enable the full oxidizing of organic matter. Mercury reduces the interference caused by the presence of chloride ions.

The method fully corresponds to the standard ISO 15705:2002 and the result represents ST-COD value.

A photometric determination is performed by the FLUORAT-02 analyzer. COD value is calculated automatically and displayed by PC-operated software FLUORATE.

EQUIPMENT AND REAGENTS

The following equipment and reagents are used for analysis:

- FLUORAT-02 analyzer with FLUORATE software
- Lumex Instruments optical filters *
- THERMION thermoreactor for heating vials with samples at 150 °C.
- Vials (test tubes), (OD 16 mm) *
- Potassium hydrogen phthalate
- Potassium dichromate
- Water, Grade 3 (ISO 3696:1987)
- Sulfuric acid
- Mercury (II) sulfate
- Silver sulfate

* - included in Lumex Instruments "Chemical oxygen demand of water" set, order code **300002559**

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To get more specific information, please contact the representative by sales@lumexinstruments.com