



**MONDOFIN**  
FINANCIAL ENGINEERING

# **BS BOD Measuring Device**



# BS BOD Measuring Device



The device was developed by NPO Kinematika, LLC (registered with STANDARTINFORM, FSUE (Federal State Unitary Enterprise) under the code 058.348441 under technique attested by All-Russian Research Institute of Metrological Service, FSBI (Federal State Budgetary Institution) 205-13/RA.RU.311787/2022 of 25 August 2022)

# BS BOD Measuring Device

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A special Barometric BOD Measuring Device was developed to conduct various measurements when monitoring biological waste water treatment plants.

BS BOD is a barometric system to assess biochemical oxygen demand.

The method for assessment of biochemical oxygen demand is based on the fact that reduction of concentration of oxygen dissolved in water over 5 days, which is caused by the process of biochemical oxidation of organic matters under aerobic conditions, with no exposure to light, at 20°C, induces the proportional drop in pressure in a flask with the analysed sample of water due to thermodynamic equilibrium between the sample of water and air in the flasks.



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## Light-and-dark-bottle method of analysis

RD (regulatory document) 52.24.420-2006 Methodology of measurement by light-and-dark-bottle method is the document currently in use in Russia.

This technique has a number of disadvantages, such as the labor-intensive performance of analysis operations due to the use of a large number of reagents and materials, and the high risk of human factor.

- Number of reagents used for BOD analysis - 20
- Number of measuring instruments and accessories - 28
- Number of operations for analysis of one sample - 21



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## BOD Measuring Methods

Europe and the USA use electronic devices to measure biochemical oxygen demand, which eliminate the risks, reduce the expenditures and complexity of measurements connected with the light-and-dark-bottle method.

Devices currently used worldwide:

- OxiTop (Germany)
- Quick Scan BOD Analyzer (USA)
- BODTrak (Germany)
- BOD EVO Sensor (Italy)
- CI-B5 BOD ANALYZER (China)

Considering the great demand for a simpler process used to analyse BOD, we have developed BS BOD Measuring Device.



# BS BOD Measuring Device

The tests of BS BOD Measuring Device carried out jointly with the Ministry of Ecology and Natural Resources of the Republic of Tatarstan on 30.06.2020.

Indicators	Research Method		
	OxiTop	BS BOD	<b>Light-and-dark-bottle method</b> (Laboratory of the Ministry of Ecology of the Republic of Tatarstan)
Input (Sample 1)	200	186	240 (50x dilution)
Input (Sample 2)	-	193	-
Output of Line A (Sample 1)	60	58	54 (25x dilution)
Output of Line A (Sample 2)	-	60	-
Output of Line B (Sample 1)	90	86	58 (20x dilution)
Output of Line B (Sample 2)	-	90	-



# Advantages of BS BOD Measuring Device

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## Benefits of using the barometric system as compared to other methods used to measure BOD:

1. Simplicity of use;
2. Eliminates human factor;
3. Enhances accuracy of measurements;
4. Mobility;
5. Does not require continuous maintenance;
6. The analysed sample is not subject to influence of external factors during the measurements;
7. Low cost compared to other devices available on the market:
  - OxiTop (Germany) – US\$ 4 000;
  - Quick Scan BOD Analyzer (USA) – US\$ 3 000;
  - BODTrak (Germany) – US\$ 2 800;
  - BOD EVO Sensor (Italy) – US\$ 3 800;
  - CI-B5 BOD ANALYZER (China) – US\$ 2 000;
  - **BOD BS (Russia) – US\$ 1 350;**
8. Allows conducting daily monitoring of quality of waters.



# Fields of application of BS BOD Measuring Device

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- industrial waste waters;
- domestic waste waters;
- rain and melt-waters;
- surface and underground waters;
- industrial enterprises;
- analytical laboratories;
- research centres;
- universities.

