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Nitrification inhibitor

For inhibiting nitrification in the determination of Biochemical Oxygen Demand (BOD_n) manometric method with respirometer

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The determination of the biochemical oxygen demand (BOD_n) is of high importance especially in waste water monitoring. The BOD_n is a parameter for the degradation of organic materials by microorganisms, which consume oxygen during aerobic respiration processes. Organic carbon is metabolized into carbon dioxide and water under oxygen consumption (respiration).

The BOD_n is usually determined within 5 days (= BOD₅) and is specified in mg/L. The analysis takes place in a closed system with defined sample volume. Nitrificants also consume oxygen during the metabolisation from ammonium (NH₄⁺) via nitrite (NO₂⁻) to nitrate (NO₃⁻). This consumption is not included in the BOD_n and therefore the nitrification has to be suppressed by the addition of a nitrification inhibitor (allylthiourea = ATU). The inhibitor concentration in the sample should be at least 5 mg/L.^[1, 2, 3]

Principle

The resulting CO₂ is removed from the gas phase by the addition of a CO₂ absorber (NaOH or KOH). NaOH or KOH react with CO₂ to form the corresponding carbonate. Continuous removal of CO₂ during further oxygen consumption results in a measurable negative pressure which can be converted into mg/L BOD^[1, 2, 3].

Reagents

Store this reagent under exclusion of light and at a storage temperature of +4 ... +8 °C. At correct storage this reagent is stable until the imprinted expiry date. Avoid contamination of the solution after opening. Store reagent protected from frost and direct light (sun, UV light).

Product stability

This product should not be used if any of the following points occurs:

- Implausible BOD values because of ageing of the solution.
- Product is contaminated.
- Exp. Date has passed.
- There are other signs of deterioration.

Risks and Safety

Please observe the necessary precautions for use of laboratory reagents. Applications should be performed by expert personnel only. Follow the national and laboratory internal guidelines for work safety. Wear suitable protective clothing and disposable gloves while handling.



For additional safety information please refer to the information on the label and the corresponding Safety Data Sheet (SDS).

Download by QR-Code or link: www.sds-id.com/100197-6

Contents/Main Components

- 032851-0030: 1x 30 mL Nitrification inhibitor for BOD
- 032851-0100: 1x 100 mL Nitrification inhibitor for BOD

Sample Material

The water to be examined should be analyzed within 2 hours but not more than 6 hours (in cold storage).

General information [1, 2, 3, 4]

For analysis use a commercially available respirometer. Check manufacturer's instructions for specific system requirements, sample volume, instrument operating characteristics and calibration.

To avoid differences in concentration due to sedimentation the sample has to be homogenized pre-analytically.

Continuous vigorous stirring during the whole measuring period guarantees optimal oxygen exchange between liquid phase and gas phase.

The amount of nitrification inhibitor needed is dependent on the used sample volume. The sample volume and the corresponding number of drops of the reagent can be determined by estimation of the expected BOD value.

The following table is given as guideline and is based on the specifications of common respirometer: ^[1, 2, 5]

Expected BOD value [mg/L]	Used Sample Volume [mL]		ATH-Reagent
			Drops
0 ... 40	428	... 432	10
0 ... 80	360	... 365	10
0 ... 200	244	... 250	5
0 ... 400	157	... 164	5
0 ... 800	94	... 97	3
0 ... 2000	43.5	... 56	3
0 ... 4000	21.7	... 22.7	1

The sample volume should be chosen so that the oxygen content in the bottle is not a limiting factor. With expected high BOD values the corresponding sample volume should be low in order to ensure a sufficient amount of oxygen in the gas phase.

Product information
Nitrification inhibitor for BOD

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032851-PR01



Notes

This product information exclusively relates to the product described in this leaflet. In particular, this product information cannot be applied to similar reagents from other manufacturers.

Periodically check for updates of this product information on our website.

Instruction for Use

For professional use only.

To avoid errors, the use of qualified personnel is carried out. National guidelines for work safety and quality assurance must be followed.

The used equipment must comply with the state of technology and the laboratory requirements.

All samples and used tubes/vials must be marked clearly identifiable to exclude any confusion.

Support / Information service

For methodological and technical support, please contact us by E-Mail at support@bioanalytic.de (German, English).

Periodically check for updates of this product information on our website.

Feedback

Information from users can be reported to support@bioanalytic.de (German, English).

Suggestions for further developments will be considered.

Waste Management

Please observe your national laws and regulations.

Used and expired solutions must be disposed of in accordance with your local regulations.

Inside the EU, national regulations apply that are based on the current, amended version of Council Directive 67/548/EEG on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances.

Decontaminated packaging can be disposed of as household waste or recycled, unless otherwise specified.

Literature & Footnotes

Legends for the graphic symbols and tags used follow relevant norms or are available on our internet pages.

- [1] BSB-Fibel "Bestimmung des Biochemischen Sauerstoffbedarfs (BSB)"
- [2] Applikationsbericht "Bestimmung des biochemischen Sauerstoffbedarfs (BSB)"
- [3] M. Sakuth, "Bestimmung des Biochemischen Sauerstoffbedarfs im Abwasser", 2012.
- [4] J. C. Young, G. T. Bowman, S. M. Kamhawy, T. G. Mills, M. Patillo, R. C. Whittemore "5210 Biochemical Oxygen Demand (BOD)", 2001.
- [5] The values are given as guideline and are based on the specifications of common respirometers. The sample volume actually required may vary for different devices. Therefore verify the information prior to analysis in the user manual.
- [6] Standard Methods 5210D "Biochemical Oxygen Demand (BOD) Respirometric Method"
- [7] Deutsche Einheitsverfahren DEV-H55 "Bestimmung des biochemischen Sauerstoffbedarfs nach n Tagen (BSBn) in einem Respirometer"