Method Summary

Determination of Biochemical Oxygen Demand

Scope and Range

This method is accredited to ISO 17025 for surface water, groundwater, landfill leachate and treated and untreated sewage effluents and trade effluents, including settled samples.
It is also accredited to MCerts for treated and untreated sewages and trade effluents.

Detection limit: 1 mg/l

References

Based upon Methods for the Examination of Waters and Associated Materials (MEWAM) 5 Day Biochemical Oxygen Demand (BOD5) Second Edition (with amendments to Dissolved Oxygen in water) HMSO, 1988, ISBN 0 11 752212 0.

BS 6068: Section 2.14: 1984 Determination of biochemical oxygen demand after 5 days (BOD_5).

Principle

This test is an indicator of the amount of biodegradable material present in a sample. Samples are seeded with bacteria which utilise the available organic matter as sources of carbon and nitrogen and in doing so they consume the available oxygen. The more biodegradable material present the more the oxygen will be depleted.

Preparation and Extraction:
Filtered BOD: the samples are filtered through a GF/C filter before analysis.
Settled BOD: the samples are settled for one hour and the top liquid portion removed for analysis.
Total "True" BOD: the samples are well shaken before analysis. The test is performed in duplicate using varying sample aliquot to cover as large a range of the result as possible.

Analysis:
The sample is neutralised, and an aliquot of the sample is mixed with aerated deionised water, ATU* and seeded with a bacteria.
The dissolved oxygen concentration is then measured (DO_0) with a DO electrode and meter.
The samples are incubated at 20°C for 5 days after which the dissolved oxygen is re-measured (DO_5).
The difference in the dissolved oxygen content from Day 0 to day 5 is used to calculate the amount of oxygen used by the bacteria as they digested the sample, and it is expressed as BOD in mg/l O_2.
*The standard ALS BOD method is with ATU, to provide a carbonaceous BOD result, a non-ATU BOD is available if nitrogenous oxygen demand is to be included in the BOD result.

Interferences

BOD inhibitors include heavy metals, bactericides, polythionates, herbicides and free chlorine as they inhibit oxygen uptake.
Oils can damage the DO meter membrane.