

# Measurement of biochemical oxygen demand (bod)

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**Objective** To determine the amount of oxygen necessary for biological oxidation of wastewater effluent and determine the amount of oxygen required by bacteria while stabilizing decomposable organic matter.

**Methodology Apparatus** ; Biochemical Oxygen Demand (BOD) meter, Dissolved Oxygen bottle (DO bottle), pipette, Teflon tape, dilution water, incubator machine. **Procedure**; Add 300 ml dilute water then take DO reading immediately Closed properly and keep into the incubator (200C).

Take reading for the next 5 days Add 3 ml dilute water and fill up with dilute water until 300ml then take DO reading immediately **Figure 1** **Precaution** Samples for BOD analysis may change greatly during handling and storage. Testing should be started as quickly as possible. To reduce the changes in those samples which must be held, keep the samples at or below 4°C. Do not allow samples to freeze. Samples may be kept for no more than 48 hours before beginning the BOD test. Students assign to prevent interference from chlorine. Because chlorine is such a strong oxidizing agent, it will inhibit the growth of living bacteria in the BOD test.

Any samples containing residual chlorine must be pretreated to remove chlorine before the test is run. This is done by adding sodium sulfite to the sample. Samples with extreme pH values and samples containing disinfectants such as residual chlorine must be treated prior to testing. Caustic alkalinity or acidity can prevent bacteria from growing during the course of the BOD test. To prevent this, samples which have pH values higher than pH 8. 0 or lower than pH 6. 0 must be neutralized to pH 7. 0 before the test is performed. 3 ml sample

Results can vary widely from day to day, or even hour to hour. . From the result we found that the the BOD level in group 5 is 128mg/L, Group 4 72mg/L is quiet higher rather than Group 1 39mg/L. When BOD levels are high, dissolved oxygen (DO) levels decrease because the oxygen that is available in the water is being consumed by the bacteria. Since less dissolved oxygen is available in the water, fish and other aquatic organisms may not survive. If referred to the IWK website, BOD5 at 200C is 20mg/L for standard A and 50mg/L for standard B.

Its mean only sample from group 1 is under control and can be entitled as clean. High level of result from group 4 and 5 may resulted by the input of nitrates and phosphate. Nitrates and phosphates in a body of water can contribute to high BOD levels. Nitrates and phosphates are plant nutrients and can cause plant life and algae to grow quickly. When plants grow quickly, they also die quickly. This contributes to the organic waste in the water, which is then decomposed by bacteria. One of the major disadvantages of the BOD test is the time lag between the collection of samples and the final calculation of results.

This makes the BOD test a poor test for determining whether or not operational changes are needed. In addition, the rate and degree that organic matter in wastewater is decomposed (or oxidized) by the normal bacteria present in a sample is largely dependent on the characteristics of the organic matter. For example, some organic matter (like sugars or starches) are oxidized very easily and rapidly, and will almost always result in measurable " BOD". Other organic matter, however, is sometimes

resistant to biological oxidation, and may require special “ acclimated” bacteria to oxidize the material and to show a “ BOD”.

Although this is what actually happens in nature, it causes significant variation in BOD results from sample to sample. Conclusion, high; level of BOD reflects to the DO which it will be decrease. Which is mean the water quality if poor. References Unknown. (n. d. ). Indah Water.

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