

Biochemical Oxygen Demand (BOD 5-Day)

Primary Importance:

The amount of oxygen consumed by bacteria in water (BOD) affects the amount of dissolved oxygen available for aquatic life. High BOD levels are associated with excessive plant growth and decay and high amounts of other organic matter in a river or stream.

Problem

High levels of organic matter and some ions (ammonia in particular) can lead to rapid exhaustion of dissolved oxygen.

Causes

- ❖ Municipal wastewater that has not been completely treated to allow decomposition of organic materials will use up oxygen supplies.
- ❖ Septic tank effluent, which is characterized by green patches of vegetation during the dry season also uses up oxygen supplies.
- ❖ Cool periods can kill some algae, and the dead algae decompose rapidly.

Instructions:

In addition to a black, light-free bottle, use the HACH Company DO test kit with Catalog No. 1469-00, Model OX-2P, for 60 mL sample.

CHECKLIST

- Black BOD bottle (or use aluminum foil around DO bottle)
- All materials required for DO test (see list on page 16)

1. In the same manner described in the DO testing instructions, lower a stoppered black (light-free) bottle below the water's surface. Once it is submerged to the appropriate depth, remove the stopper and allow water to flow into the bottle for approximately two minutes. Ensuring that no air bubbles exist, replace the stopper and remove the bottle from the water.
2. Place the biochemical oxygen demand (BOD) sample in a light free location and allow it to sit undisturbed for 5 days.
3. After 5 days, remove the BOD bottle and carefully transfer the water to a clean DO bottle until the sample overflows. Cap the DO bottle and do not pour off the water gathered around the rim. Avoid splashing, as oxygen could enter the sample through aeration. Retain the water remaining in the BOD bottle in case more sample water is needed.
4. Perform Steps 2 through 8 of the DO test. If results are <3 mg/L, follow Low-range DO test instructions.
5. Determine the BOD level by subtracting the mg/L of the BOD sample from that of the original DO sample taken 5 days prior.

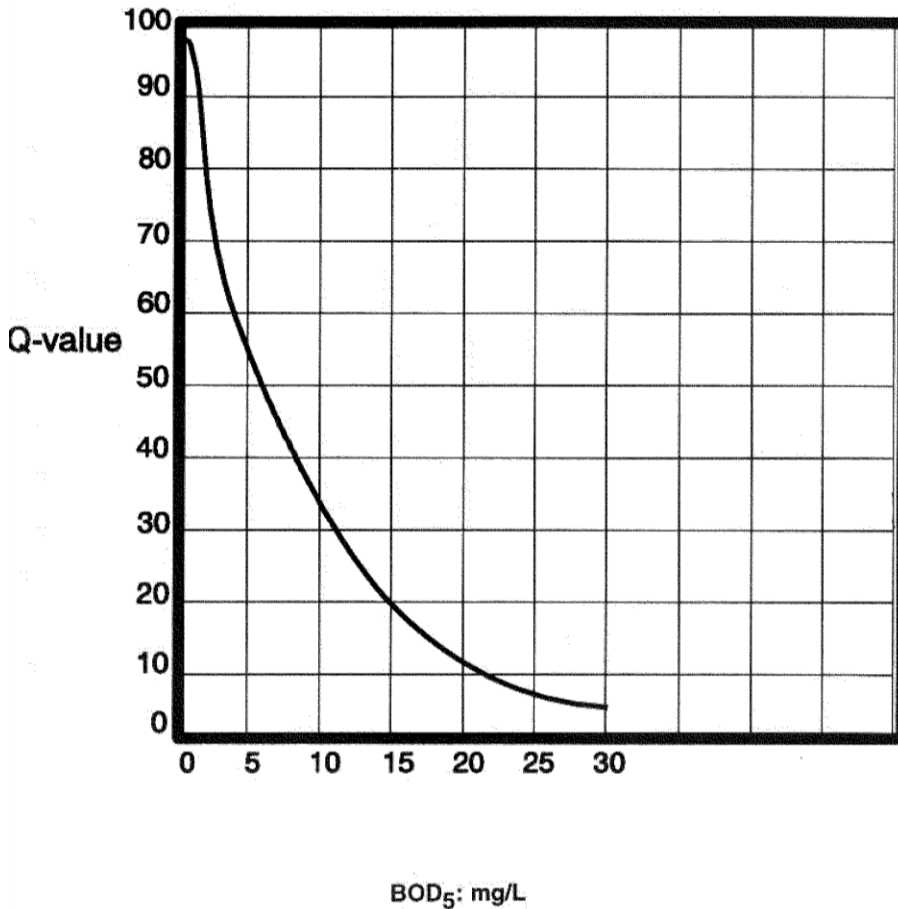
EXAMPLE:

11.5 mg/L (original DO sample) – 6 mg/L (BOD₅) = 5.5 mg/L

NOTE: Collect water samples for the BOD-5 test and the DO test on the same day. When pouring the sample from the BOD bottle to the DO bottle, pour slowly so you don't create bubbles, since this will alter your results.

TYPICAL RANGE FOR BOD = 0 to 6.3 mg/L

Biochemical Oxygen Demand Q-values



BOD (mg/L DO)	Q-Value
0	96
1	92
2	80
2.5	73
3	66
4	58
5	55
7.5	44
8	40
10	33
12.5	26
15	20
17.5	16
20	14
22.5	10
25	8
27.5	6
30	5
>30	2

Note: if BOD₅ > 30.0, Q = 2.0