

Dissolved Oxygen (DO) Kit

The dissolved oxygen (DO) kit used by SCORE volunteers is a CHEMets[®] ampoules Kit K-7512. This kit employs a colorimetric analysis to determine the DO concentration in a sample of water. This type of analysis involves adding reagents to a sample of water, which produces a distinctive color, and visually comparing the sample to color standards that represent a known concentration of DO in milligrams per liter (mg/L), or parts per million (ppm).

Procedure

1. Use a plastic beaker to obtain a sample of water approximately one foot below the water's surface. Start with the beaker in a vertical position (open end facing the water) and gently submerge it into the creek or river. Once the appropriate depth is reached, carefully turn the beaker upright. Once it is full, slowly raise the beaker to the surface.
2. Open the DO kit and remove the 25 milliliter (ml) plastic cup. Gently submerge the plastic cup in the beaker until it is full. Pour off any water above the 25 ml mark.
3. Remove the plastic ampoule cracker from the kit and place it in the plastic cup.
4. Carefully remove a new oxygen ampoule from the storage box. The ampoule should contain a small amount of clear solution. Place the ampoule pointed end down in the "cracker" (which is in the small plastic cup). Grip the handles of the cracker with two fingers and use the thumb to press on the base of the ampoule (similar to using a syringe). When the tip of the ampoule snaps, the ampoule will automatically fill with the correct amount of sample, leaving a small bubble of air in the ampoule.
5. Mix the contents of the ampoule thoroughly by gently inverting the tube and allowing the bubble to travel from end to end several times.
6. Carefully wipe all liquid from the side of the ampoule, and set the ampoule inside the case. Close the lid and wait at least two minutes to allow reagents to fully react with oxygen in the water sample.
7. Retrieve the ampoule and stand directly beneath a bright source of light while holding the color comparator nearly horizontal. Place the ampoule with water sample between the color standards until the best color match is found. Do this by starting at the light colored (low DO) end of the comparator chart. Place the ampoule between the first two standards. If it is darker than the right hand standard, move it one position to the right so that it is between standards two and three. Continue in this manner until the ampoule is not darker than the right hand standard. Decide whether the ampoule is closer to the standard on its left or right and record this number. If you cannot decide, record the average of the two numbers.
8. Dispose of the ampoule in the waste bottle.
9. Dry all contents of the DO kit, and place them in the case and close lid.

Field Notes

- A water sample should be obtained with minimal amount of mixing with air.
- Be sure to handle the glass ampoule with care, as its snapped tip can be sharp.