

Measuring Dissolved Oxygen

Introduction

Welcome to the Measuring Dissolved Oxygen learning module. This section contains a short video that provides information on the following topics:

- How to collect a water sample
- How to measure the concentration of dissolved oxygen (DO) in a water sample using a DO kit

After completing this module you should be able to perform the following:

- Identify a DO kit and its parts
- Collect a water sample
- Use a DO kit to measure the concentration of dissolved oxygen in a water sample

To begin the module, click the **Next** button at the bottom right of the screen.

Measuring Dissolved Oxygen

Identifying a dissolved oxygen kit and its parts

SCORE volunteers measure dissolved oxygen (DO) using a DO kit, like the one shown on your screen. Before learning how to measure DO, take a moment to identify the different parts of a DO kit.

Measuring Dissolved Oxygen

Procedures

The dissolved oxygen (DO) kit used by SCORE volunteers employs a colorimetric analysis. Colorimetric analysis means that a range of numeric values are assigned to a range of colors. The analysis involves adding chemicals to a sample of water that cause the water to change to a distinctive color. The color of the water is then visually compared to color standards that represent a known concentration of dissolved oxygen in milligrams per liter (mg/L), or parts per million (ppm). The color standards for this kit are illustrated in the graphic shown on your screen.

To begin, use a plastic beaker to obtain a sample of water approximately one foot below the water's surface. The water sample should be obtained with minimal amount of mixing with air. The best way to do this is to start with the beaker in a vertical position, open end facing downward, 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 and set it down.

Now open the DO kit and remove the 25 milliliter plastic cup. Gently submerge the plastic cup in the beaker until it is full. Pour off any water above the 25 milliliter mark.

Now remove the plastic ampoule cracker from the kit and place it in the plastic cup. Carefully remove a new oxygen ampoule from the storage box. The ampoule should contain a small amount of clear solution. This solution is the chemical reagents which will cause the color change.

Place the ampoule pointed end down in the plastic cracker. Grip the handles of the cracker with two fingers and use your thumb to press on the base of the ampoule. This action is 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.

Mix the contents of the ampoule thoroughly by gently inverting the tube and allowing the bubble to travel from end to end several times.

Try it yourself!

Fill the ampoule with a sample of water by snapping the ampoule's tip. Click on the **Next** button when you are ready to move on.

Good job!

Now, mix the contents of the ampoule thoroughly by inverting the tube and allowing the bubble to travel from end to end several times. Click on the **Continue** button when you are ready to move on.

After mixing the sample, carefully wipe all liquid from the side of the ampoule, and set it inside the case. Close the lid and wait at least two minutes to allow the chemical reagents to fully react with oxygen in the water sample.

Retrieve the ampoule and stand directly beneath a bright source of light. While holding the color comparator nearly horizontal to the ground, 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 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.

Try it yourself!

Determine the DO concentration of your water sample by moving the ampoule with water sample between the color standards until the best color match is found. Enter and check your answer below.

Excellent!

Please click on the **Continue** button.

When finished, be sure to dispose of the ampoule in the waste bottle provided. Dry all contents of the DO kit, and place them in the case and close the lid.

Measuring Dissolved Oxygen Review

Congratulations! You have completed the Measuring Dissolved Oxygen learning module. In this section you learned about the following topics:

- How to collect a water sample
- How to measure the concentration of dissolved oxygen (DO) in a water sample using a DO kit

You should now be able to perform the following:

- Identify a DO kit and its parts
- Collect a water sample
- Use a DO kit to measure the concentration of dissolved oxygen in a water sample

To choose another module, click the drop-down menu at the top of the screen.