Copper Test Kit

CU-6 (2194100)

DOC326.97.00055

Test preparation

CAUTION: ⚠ Review the Safety Data Sheets (MSDS/SDS) for the chemicals that are used. Use the recommended personal protective equipment.

- Put the color disc on the center pin in the color comparator box (numbers to the front).
- Use sunlight or a lamp as a light source to find the color match with the color comparator box.
- Rinse the tubes with sample before the test. Rinse the tubes with deionized water after the test.
- If the color match is between two segments, use the value that is in the middle of the two segments.
- If the color disc becomes wet internally, pull apart the flat plastic sides to open the color disc. Remove the thin inner disc. Dry all parts with a soft cloth. Assemble when fully dry.
- Undissolved reagent does not have an effect on test accuracy.
- To verify the test accuracy, use a standard solution as the sample.
- High concentrations of cyanide prevent color development. If the cyanide concentration is more than 2 mg/L, add 3 drops of formaldehyde solution to the prepared sample after the free copper reagent is added. Wait 3 minutes, then read the mg/L free copper.
- The test procedure measures free copper and total dissolved copper. Free copper is the free copper ion or weakly chelated copper ion in solution. Total dissolved copper is the sum of free copper and complexed copper. Complexed (chelated) copper is copper that is tightly bound to another compound, as in the copper EDTA complex.
- Free copper is measured to determine if the concentration is toxic to fish and other aquatic species. Free copper is also measured for other types of applications to determine if the quantity of chelant is sufficient.
- Free copper in the sample reacts with bicinchoninic acid in the Free Copper Reagent Powder Pillow and a purple color develops. Complexed (chelated) copper in the sample reacts with the Hydrosulfite Reagent and additional purple color develops. The result after both reagents are added is total dissolved copper. To determine the mg/L of complexed copper, subtract the mg/L free copper from the mg/L total dissolved copper.

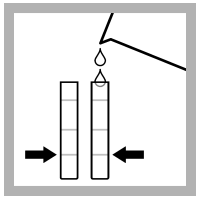
Replacement items

Description	Unit	Item no.
Free Copper Reagent Powder Pillows	100/pkg	2182369
Hydrosulfite Reagent Powder Pillows	100/pkg	2118869
Color disc, copper, 0–4 mg/L	each	9263300
Color comparator box	each	173200
Glass viewing tubes, glass, 18 mm	6/pkg	173006
Stoppers for 18-mm glass tubes and AccuVac Ampuls	6/pkg	173106

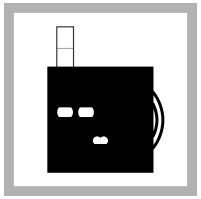
Optional items

Description	Unit	Item no.
Metals standard solution for drinking water (2.5 mg/L Cu, 1.5 mg/L Fe, 5.0 mg/L Mn)	500 mL	2833649
Formaldehyde, ACS	100 mL MDB	205932

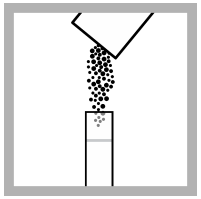
Test procedure—Copper, free and total (0–4 mg/L Cu)



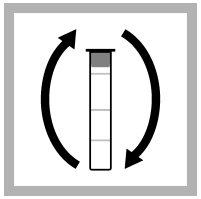
1. Fill two tubes to the first line (5 mL) with sample.



2. Put one tube into the left opening of the color comparator box.

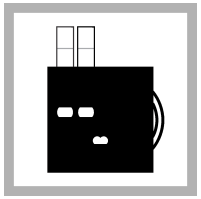


3. Add one Free Copper Reagent Powder Pillow to the second tube.

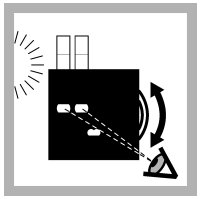


4. Put a stopper on the tube. Invert to mix.

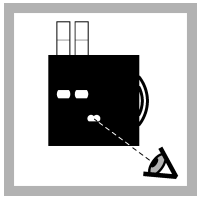
5. Wait 2 minutes. A purple color develops if free copper is in the sample.



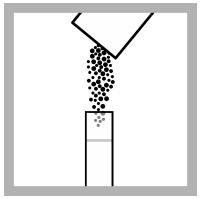
6. Put the second tube into the color comparator box.



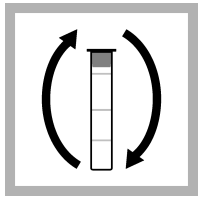
7. Hold the color comparator box in front of a light source. Turn the color disc to find the color match.



8. Read the mg/L free copper in the scale window. Record the value.

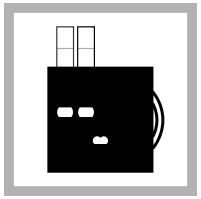


9. To determine total dissolved copper, add one Hydrosulfite Reagent Powder Pillow to the second tube.

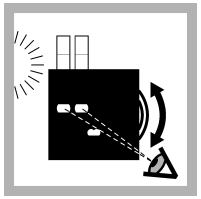


10. Put a stopper on the tube. Invert to mix.

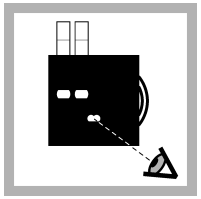
11. Wait 2 minutes.



12. Put the second tube into the color comparator box.



13. Hold the color comparator box in front of a light source. Turn the color disc to find the color match.



14. Read the mg/L total dissolved copper in the scale window.

