Copper Free 0.2

Range(s): 0-0.200 ppm Cu

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Procedure

Note: Glassware that has not been properly cleaned may contaminate the sample and affect test results. If metal contamination is suspected, clean glassware thoroughly before use with Nitric Acid 1N (R-0801); then rinse thoroughly with DI Water (R-0833) or sample water.

Note: Filter turbid or colored sample water before testing.

1. Turn on the Colorimeter.
2. Select a test menu (ALL TESTS, RECENT TESTS, or FAVORITES) containing Copper Free 0.2 using ◀▶.
3. Select Copper Free 0.2 using ▲▼; then press ENTER ⊙.
4. Rinse and fill two 25 mm sample cells to 10 mL mark with sample.
5. Add 5 drops Copper Free 0.2 - Reagent A to one cell; then swirl to mix thoroughly. (This will be the blank sample cell.)
6. To both sample cells, add 5 drops Copper Free 0.2 - Reagent B; then swirl to mix.
7. To both sample cells, add 0.5 mL Copper Free 0.2 - Reagent C; then swirl to mix.
8. To both sample cells, add 0.5 mL Copper Free 0.2 - Reagent D; then cap and swirl to mix thoroughly.
9. Select TIMER using ◀▶; then press ENTER ⊙.
10. Select START using ◀▶; then press ENTER ⊙. (A 3-minute [03:00] countdown will begin.)
11. When the timer beeps, select EXIT using ◀▶; then press ENTER ⊙.
12. Remove caps from sample cells. Using the 0.05 g dipper spoon, add 1 level dipper Copper Free 0.2 - Reagent E to both sample cells; then cap and swirl for 15 seconds.
13. Insert blank sample cell into sample cell compartment. Align marks per User's Manual.
14. Select ZERO using ◀▶; then press ENTER ⊙. Zero will be displayed.
15. Remove blank sample cell from sample cell compartment.
16. Insert sample cell into sample cell compartment. Align marks.
17. Select READ using ◀▶; then press ENTER ⊙. The instrument will read the sample and the result will be displayed.

Interferences

Alkalinity, Total ($CaCO_3$) > 600 ppm – negative interference
Azole (TT) > 20 ppm – negative interference
Chelants, all levels – negative interference
Chlorine > 10 ppm – negative interference
Manganese > 45 ppm – negative interference
Molybdate > 20 ppm – negative interference
Polyphosphate > 10 ppm negative interference

The following analytes were tested to the levels listed and found not to cause any interference up to the specified values:

Biguanide – 50 ppm
Bromine – 8 ppm
Chloride – 30,000 ppm
Fluoride – 80 ppm
Hardness, Calcium ($CaCO_3$) – 1000 ppm
Iron, Ferrous – 6 ppm
Iron, Total – 1 ppm
Lead – 3 ppm
Magnesium – 440 ppm
Phosphate – 100 ppm
Phosphonate (HEDP) – 20 ppm
Polymer – 10 ppm
Silica – 50 ppm
Zinc – 10 ppm

(over)

Test Method

Porphyrin

Porphyrin produces an orange complex with copper that is proportional to the concentration of free copper in a sample.

Estimated Detection Limit

4.18 ppb Cu

Precision

Using two lots of reagent and a standard solution of 100 ppb Cu, an individual analyst obtained a standard deviation with the instrument of ± 2.78 ppb Cu.

Application

Industrial Water

Ordering Info

Reagent Pack

K-8013 Copper Free 0.2
Formulated for exclusive use with Taylor's TTi® Colorimeter.

Reagent Pack Components

R-8013A Copper Free 0.2 - Reagent A
R-8013B Copper Free 0.2 - Reagent B
R-8013C Copper Free 0.2 - Reagent C
R-8013D Copper Free 0.2 - Reagent D
R-8013E Copper Free 0.2 - Reagent E

Optional Reagents & Accessories

R-0801 Nitric Acid 1N
R-0833 DI Water
#6249 Filter Disc Holder, 25 mm, Millipore™ (for 6247 & 6260)
#6257 Filter Discs, 2.5 µm, 25 mm, Whatman™, 100/box
#6260 Syringe (no filter disc holder or filter discs), 30 mL, plastic

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