

Copper Free 0.2

Range(s): 0-0.200 ppm Cu



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 (CaCO₃) > 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 (CaCO₃) – 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

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 μ m, 25 mm, Whatman™, 100/box

#6260 Syringe (no filter disc holder or filter discs), 30 mL, plastic



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