

# MANGANESE-LOW RANGE

## PAN METHOD • CODE 3658-01-SC

| QUANTITY | CONTENTS                     | CODE    |
|----------|------------------------------|---------|
| 4x30 mL  | *Hardness Buffer Reagent     | *4255-G |
| 30 mL    | *Manganese Indicator Reagent | *3956-G |
| 15 mL    | *Sodium Cyanide, 10%         | *6565-E |
| 1        | Pipet, 0.5 mL, plastic       | 0369    |
| 1        | Pipet, 1.0 mL, plastic       | 0354    |

\*WARNING: Reagents marked with an \* are considered hazardous substances. To view or print a Material Safety Data Sheet (MSDS) for these reagents see MSDS CD or our web site. To obtain a printed copy, contact us by e-mail, phone or fax.

Manganese is present in ground water in the divalent state due to the lack of oxygen. In surface waters manganese may be in various oxidation states as soluble complexes or as suspended compounds. Manganese is rarely present in excess of 1 mg/L. It may cause an objectionable taste or cause staining problems in laundry, but manganese levels normally encountered in water seldom produce any health hazard.

Manganese is removed from water by various means including chemical precipitation, pH adjustment, aeration, superchlorination and the use of ion exchange resins.

**APPLICATION:** Drinking and surface waters; domestic and industrial wastewaters.

**RANGE:** 0.00–0.70 ppm Manganese

**METHOD:** PAN (1-[2-Pyridylazo]-2-Naphthol) forms a red complex with Manganese ( $Mn^{2+}$ ) at a pH of 10 to 11.

**SAMPLE HANDLING & PRESERVATION:** Manganese may oxidize readily in neutral water and precipitate from solution. It may adhere to or be absorbed by container walls, especially glass. Acidified samples can be stored in plastic.

**INTERFERENCES:** None. Test is quite specific.

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## PROCEDURE

1. Press and hold **ON** button until colorimeter turns on.
2. Press **ENTER** to start.
3. Press **ENTER** to select TESTING MENU.
4. Select ALL TESTS (or another sequence containing 55 Manganese L) from TESTING MENU.
5. Scroll to and select 55 Manganese L from menu.
6. Rinse a tube (0290) with sample water. Fill to the 10 mL line with sample.
7. Insert tube into chamber, close lid and select SCAN BLANK.
8. Remove tube from colorimeter. Use the 1.0 mL pipet (0354) to add 2.0 mL (two measures) of \*Hardness Buffer Reagent (4255). Swirl to mix.
9. Add 2 drops of \*Sodium Cyanide, 10% (6565). Cap and mix.
10. Use the 0.5 mL pipet (0369) to add 0.5 mL of \*Manganese Indicator Reagent (3956). Cap and mix.
11. Immediately insert tube into chamber, close lid and select SCAN SAMPLE. Record result.
12. Press **OFF** button to turn colorimeter off or press **EXIT** button to exit to a previous menu or make another menu selection.

NOTE: For best possible results, a reagent blank should be determined to account for any contribution to the test result by the reagent system. To determine the reagent blank, follow the above test procedure to scan a distilled or deionized water blank. Then follow the above procedure to perform the test on a distilled or deionized water sample. This test result is the reagent blank. Subtract the reagent blank from all subsequent test results of unknown samples. It is necessary to determine the reagent blank only when a new lot number of reagents are obtained.