

Program ID #028

**Manganese Auto-Test™**

1.0 - 30 mg/L

The Orion AQUAfast IV Auto-Test kit is intended for use with the Orion AQ4000 Advanced Colorimeter. For detailed setup and measurement procedures for the Orion AQ4000, consult your colorimeter manual.

**NOTE:** Before testing, zero the Orion AQ4000 using a sealed zero vial from the Orion AQUAfast IV Zero Auto-Test kit, AQ4ZER. If the sample is colored, use the sample cup provided to dilute the sample using the following steps: 1) Add 10 mL of sample and 5 mL of DI water to the sample cup for a total of 15 mL. 2) Transfer the diluted sample to a clean, dry screw top vial from the Orion Zero Auto-Test kit and use that vial to zero the meter. 3) See the colorimeter manual for details on the Zero Procedure for the Orion AQ4000. Discard the diluted sample after the zero procedure. Repeat for each colored sample. Re-zero with the sealed zero vial before testing any colorless samples.

**Safety Information**

Read MSDS before performing the test procedure. Wear safety glasses.

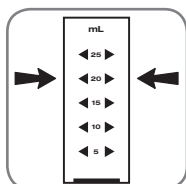
**Test Procedure**

Figure 1

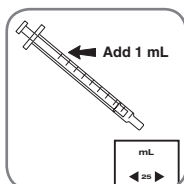


Figure 2

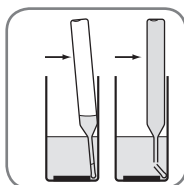


Figure 3

1. Fill the sample cup to the 20 mL mark with the sample. **See Fig 1.**
2. Using the syringe, add 1 mL of Manganese Activator Solution to the sample. Stir briefly with the tip of the cuvette. **See Fig 2.**
3. Place the cuvette in the sample cup. Snap the tip by pressing the cuvette against the side of the cup. The cuvette will fill, leaving a small bubble to facilitate mixing. **See Fig 3.**
4. Mix the contents of the cuvette by inverting it several times, allowing the bubble to travel from end to end each time. Wipe all liquid from the exterior of the cuvette.
5. Insert the cuvette into Orion AQ4000 sample chamber. Align the ▼ on the Auto-Test cuvette with the ◆ on the adapter to obtain a continuous beeping and view \*\*\*\*\* across the display. If \*\*\*\*\* and beeping is not observed, rotate cuvette right and left to initiate the measurement.
6. Immediately cover the cuvette with the cuvette cover.
7. The Orion AQ4000 will begin a 1 minute countdown. After the countdown is completed, the Orion AQ4000 will automatically proceed to the measure mode.
8. Record the concentration reading from the Orion AQ4000 display as either mg/L or ppm Mn or log measurement into the data logger by pressing the **log** key.

## Test Method

The Manganese Auto-Test employs the sodium periodate reaction.<sup>1</sup> Manganese is oxidized in the presence of sodium periodate, after buffering the sample with citrate. The purple color is directly proportional to the manganese concentration in the sample. Results are expressed in ppm (mg/Liter) Mn. Reducing agents are interferences.

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1. APHA Standard Methods, 14th ed., p. 227, method 314C (1975).

## Ordering Information

Cat. No.	Description
AC4055	Orion AQUAfast IV Manganese Auto-Test Kit
AQ4ZER	Orion AQUAfast IV Zero Vial Auto-Test Kit
AQ4CBL	Orion AQUAfast IV RS232 Cable
AQ4000	Orion AQUAfast IV Advanced Colorimeter

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