

# Manganese Vacu-vials® Kit

**K-6503:** 0 - 30.0 ppm (Prog. # 110)

## Instrument Set-up

For CHEMetrics photometers, follow the **Setup and Measurement Procedures** in the operator's manual. For spectrophotometers, set the wavelength to 520 nm. A sealed ZERO ampoule is supplied in this kit for zeroing when the sample is colorless and not turbid. For improved accuracy with colored or turbid samples, Sample Zeroing Accessory Pack, Cat. # A-0503 is recommended. Using the sample cup, snap the tip of the A-0503 ampoule in the sample (see figure 2 below). Invert the ampoule to mix. Dry the ampoule and use it in place of the supplied ZERO ampoule to zero the instrument.

## Test Procedure

1. Fill the sample cup to the 20 mL mark with the sample to be tested (fig. 1).
2. Using the syringe, add 1 mL of A-6501 Activator Solution. Stir to mix the contents of the cup.
3. Place the Vacu-vial ampoule, tip first, into the sample cup. Snap the tip. The ampoule will fill leaving a bubble for mixing (fig. 2).
4. To mix the ampoule, invert it several times, allowing the bubble to travel from end to end.
5. Dry the ampoule. Obtain a test result **1 minute** after snapping tip.
6. Insert the Vacu-vial ampoule into the photometer, flat end first, and obtain a reading in ppm (mg/Liter) manganese (Mn).

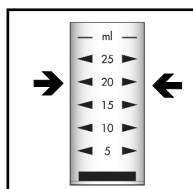


Figure 1

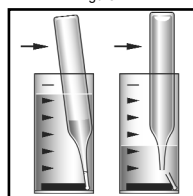


Figure 2

**NOTE:** If using a spectrophotometer that is not pre-calibrated for CHEMetrics products, then use the **equation below** or the **Concentration Calculator** found under the Support tab at [www.chemetrics.com](http://www.chemetrics.com).

$$\text{ppm} = 5.61 (\text{abs})^2 + 35.48 (\text{abs}) - 0.19$$

## Test Method

The Manganese Vacu-vials®<sup>1</sup> test kit employs the periodate chemistry.<sup>2</sup> Soluble manganous compounds are oxidized by periodate in a slightly acidic solution to form permanganate ion. The resulting pink color is proportional to the manganese (Mn) concentration in the sample.

Permanganate ( $\text{MnO}_4^-$ ) develops approximately 25% more color with this reagent than other forms of manganese, causing a high bias. If the sample is known to contain manganese in the form of permanganate only, multiplying test results by 0.8 will improve the accuracy of the results.

1. Vacu-vials is a registered trademark of CHEMetrics, Inc. U.S. Patent No. 3,634,038

2. APHA Standard Methods, 14th ed., Method 314C (1975).

## Safety Information

Read SDS (available at [www.chemetrics.com](http://www.chemetrics.com)) before performing this test procedure. Wear safety glasses and protective gloves.

Visit [www.chemetrics.com](http://www.chemetrics.com) to view product demonstration videos.  
Always follow the test procedure above to perform a test.



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