LCW 632 Manganese for the DR1900

Procedure for 0.01 to 1.0 mg/L Mn utilizing 1-inch sample cell

Tetramethylbenzidine method (Cyanide-free method)

Introduction

LCW 632 was developed using a 50-mm sample cell. The portable spectrophotometer DR1900 cannot accommodate the 50-mm sample cells. Customers who have the DR1900 and want to use the cyanide-free manganese method can follow this application note, which uses a compatible 1-inch sample cell.

Before Starting

Collect the following:

1. LCW 632 Mn reagent set
2. Pipets, 0.2–1.0 mL and 1.0–5 mL, with corresponding pipet tips
3. Two 1-inch sample cells (PN 2495402)

Procedure

1. Select Program. See "Instrument Setup" (on reverse side) for programming instructions.
2. **Blank preparation:** Fill a sample cell with sample.
3. **Sample preparation and reaction:** In another sample cell,
   a. pipet **0.5 mL** of **Solution A**.
   b. pipet **5.0 mL** of **Sample**.
   c. pipet **0.5 mL** of **Solution B**.
   d. swirl to mix and allow to react for **5 minutes**.
   e. pipet **1.0 mL** of **Solution C**.
   f. swirl to mix and allow to react for **1 minute**.
4. Wipe the outside of the blank cell, insert into the cell holder, press **zero** and remove.
5. After the reaction period, wipe the outside of the reacted sample cell, insert into the cell holder and press **read**.
6. Results will show in mg/L Mn.



Figure 1: The DR1900 portable spectrometer is compatible with 1-inch sample cells.

Instrument Setup

Program Setup for LCW 632 Method for the Analysis of Manganese

Follow the Display prompts and Enter commands for the Mn method (0.01 to 1.0 mg/L).

Step	Display Shows	Enter	Select
1	Main Menu	User Programs	
2	User Programs	Program Options	
3	Program Options	New	
4	Program Number	Select a Program Number	**OK**
5	Program Name	For example: Mn 1-inch sample cell	**Next**
6	Program Type	Single Wavelength	**Next**
7	Units	mg/L	**Next**
8	Wavelength (nm)	450	**Next**
9	Concentration Resolution	0.001	**Next**
10	Chemical Form	Mn	**Next**
11	Calibration	Enter Formula	**Next**
12	Enter Formula	a = -0.021 b = 0.7874	**OK > Done**

Run the Test

Exit and select the Program number assigned for Mn from the User Programs Menu.

Note: For most accurate results, it is recommended that the analyst create their own calibration curve for each new lot of the reagent set.

Summary of Method

Mn^{4+} reacts with tetramethylbenzidine to form a colored complex that is measured at 450 nm.

Interferences

Oxidizing substances such as chlorine and chlorine-containing compounds will interfere directly.

For more information on interfering compounds see Method DOC312.53.94171.

Sample and Reagent Conditions

Sample pH = 4-9

Sample and reagent temperature = 15-25 °C

Store reagents at 2-8°C.

DOC042.52.20284.Jun18

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