

0.005–0.500 mg/L Mn

HPT 291—Method 10286

Scope and application: For drinking water, mineral water, raw water and process analysis.



Test preparation

Reagent storage

Storage temperature: 15–25 °C (59–77 °F)

pH/Temperature

The pH of the water sample must be between pH 3–10.

The temperature of the water sample and reagents must be between 15–25 °C (59–77 °F).

Before starting

With colored samples, a sample-specific blank value must be considered.

High concentrations of calcium and magnesium cause low-bias results to be obtained; the water sample must then be diluted accordingly with distilled water.

Sequential analysis:

Multiple samples can be prepared as per steps 2–4. From step 5 onwards, all steps must be carried out individually for **each** sample.

Attention:

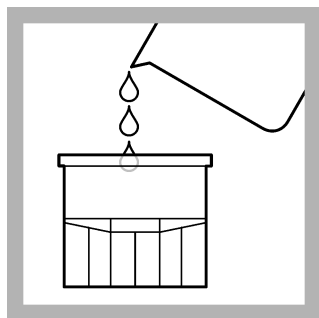
When using the L郑 341 plastic cell, insert the sealed cell with the flap to the right-hand side of the photometers DR2800, DR3800 and DR3900.

Review safety information and expiration date on the package.

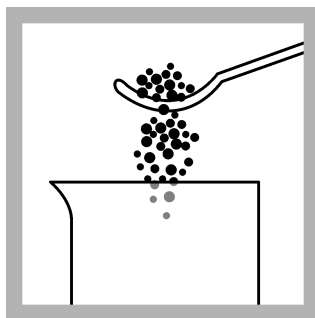
Review the Safety Data Sheets (MSDS/SDS) for the chemicals that are used. Use the recommended personal protective equipment.

Dispose of reacted solutions according to local, state and federal regulations. Refer to the Safety Data Sheets for disposal information for unused reagents. Refer to the environmental, health and safety staff for your facility and/or local regulatory agencies for further disposal information.

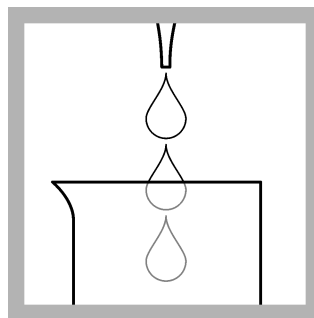
Procedure



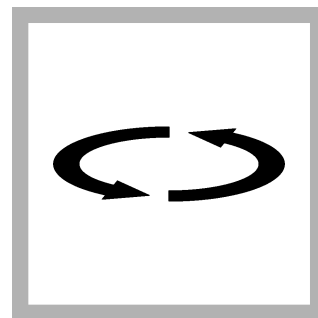
1. Blank Preparation: Fill a rectangular cell (50 mm) with sample. **Take care that there are no frothing and air bubbles!**



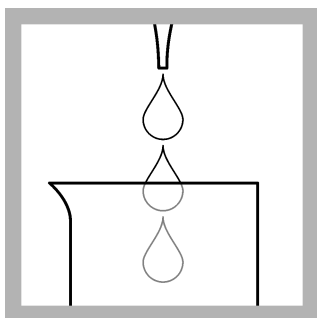
2. Prepared Sample: Add **1 level spoonful** reagent **A** into a beaker.



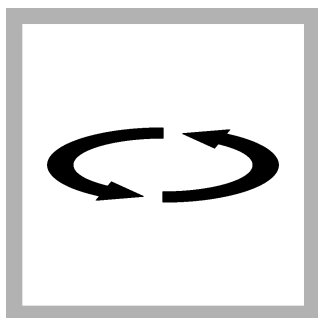
3. Pipet 10.0 mL sample.



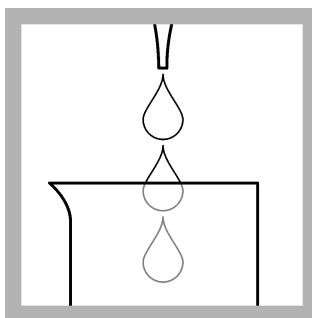
4. Swirl to mix until the reagent contents are **completely** dissolved.



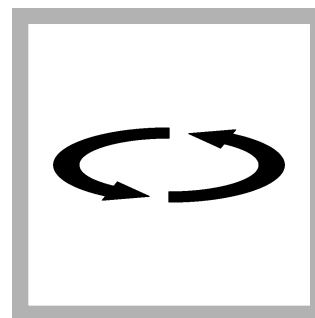
5. Pipet 1.0 mL solution B.



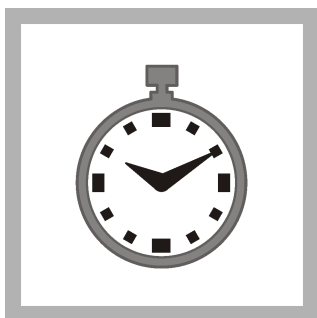
6. Swirl to mix.



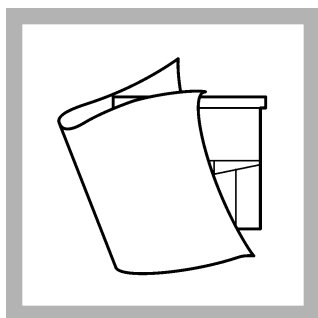
7. **Immediately** pipet 1.0 mL solution C.



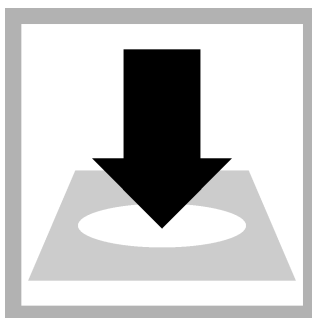
8. Swirl to mix.



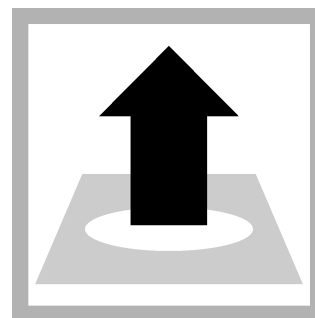
9. Allow to stand for 2 minutes.



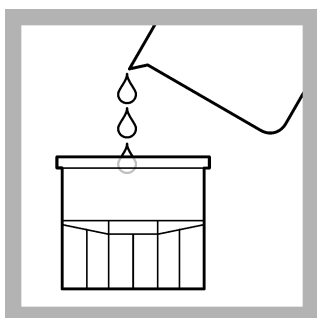
10. Thoroughly clean the outside of the blank.



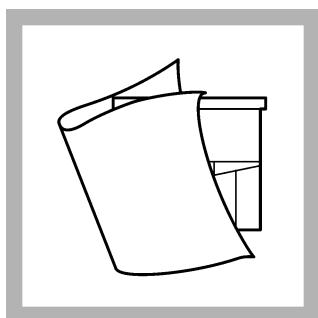
11. Insert the blank into the cell holder. Go to Stored Programs. Select the test, push **ZERO**.



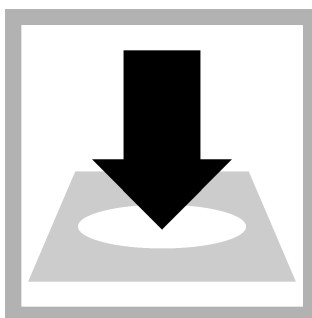
12. Remove the blank.



13. Pour the prepared sample into a second rectangular cell (50 mm). **Take care that there are no frothing and air bubbles!**



14. Thoroughly clean the outside of the cell.



15. Insert the cuvette into the cell holder. Push **READ**.

Interferences

The ions listed in the table have been individually checked against the given concentrations and do not cause interference. The cumulative effects and the influence of other ions have not been determined.

The measurement results must be subjected to plausibility checks (dilute and/or spike the sample).

Interference level	Interfering substance
1000 mg/L	Cl^- , SO_4^{2-}
500 mg/L	Ca^{2+}
100 mg/L	Mg^{2+}

Interference level	Interfering substance
50 mg/L	Cu^{2+} , Ni^{2+} , NO_3^-
20 mg/L	Al^{3+} , Co^{2+}
10 mg/L	Fe^{2+} , Fe^{3+}
2.5 mg/L	Zn^{2+} , Cd^{2+} , Cr^{6+}
0.5 mg/L	Cr^{3+} , Pb^{2+}

Summary of method

Manganese ions are reduced to Manganese(II) ions using ascorbic acid. These react in weak alkaline solutions with 1-(2-pyridylazo)-2-naphthol (PAN) to form an orange-red complex.



FOR TECHNICAL ASSISTANCE, PRICE INFORMATION AND ORDERING:
 In the U.S.A. – Call toll-free 800-227-4224
 Outside the U.S.A. – Contact the HACH office or distributor serving you.
 On the Worldwide Web – www.hach.com; E-mail – techhelp@hach.com

HACH COMPANY
 WORLD HEADQUARTERS
 Telephone: (970) 669-3050
 FAX: (970) 669-2932