



# Iron and Manganese Test Kit

IR-20 (146300)

DOC326.97.00081

## Test preparation

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

- Put the color disc on the center pin in the color comparator box (numbers to the front).
- Rinse the tubes with sample before the test. Rinse the tubes with deionized water after the test.
- If the color match is between two segments, use the value that is in the middle of the two segments.
- If the color disc becomes wet internally, pull apart the flat plastic sides to open the color disc. Remove the thin inner disc. Dry all parts with a soft cloth. Assemble when fully dry.
- Undissolved reagent does not have an effect on test accuracy.
- To verify the test accuracy, use a standard solution as the sample.

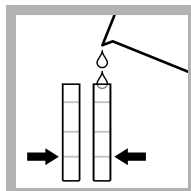
## Iron

- Use the indoor light color disc when the light source is fluorescent light. Use the outdoor light color disc when the light source is sunlight.
- If the sample contains rust or precipitated iron, fully mix the sample and then fill the tubes. Wait 2–5 minutes after the FerroVer reagent is added. Dissolved iron develops a color immediately.
- Samples that contain high levels of iron can give low results. If high iron levels are possible, dilute the sample as follows. Use a 3-mL syringe to add 2.5 mL of sample to each tube. Dilute the sample to the 5-mL mark with deionized water. Use the diluted sample in the test procedure and multiply the result by 2. Use the syringe to add 1 mL of sample to each tube. Dilute the sample to the 5-mL mark with deionized water. Use the diluted sample in the test procedure and multiply the result by 5.

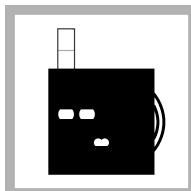
## Manganese

- Use sunlight or a lamp as a light source to find the color match with the color comparator box.
- To determine total manganese, digest the sample with heat and acid. Refer to the *Water Analysis Guide* for more information.
- The long-path adapter for the low range test shows the color in the tubes from top to bottom. Make sure the light source is above the tubes during the color match.

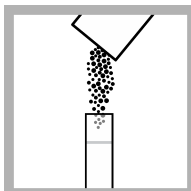
## Test procedure—Iron (0–4 mg/L Fe)



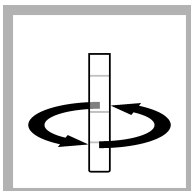
1. Fill two tubes to the first line (5 mL) with sample.



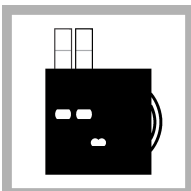
2. Put one tube into the left opening of the color comparator box.



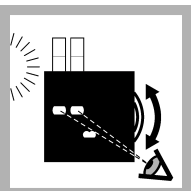
3. Add one FerroVer Iron Reagent Powder Pillow to the second tube.



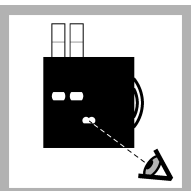
4. Swirl to mix. An orange color develops.



5. Put the second tube into the color comparator box.



6. Hold the color comparator box in front of a light source. Turn the color disc to find the color match.



7. Read the result in mg/L in the scale window.

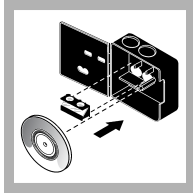
## Replacement items

Description	Unit	Item no.
FerroVer® Iron Reagent Powder Pillows, 5 mL	100/pkg	92799
Citrate Buffer Powder Pillows for Manganese, 25 mL	100/pkg	98399
Sodium Periodate Powder Pillows for Manganese, 25 mL	100/pkg	98499
Bottle, square, glass, 29 mL	6/pkg	43906
Brush, test tube	each	69000
Color comparator box	each	173200
Color disc, iron, indoor light, 0–4 mg/L	each	9262400
Color disc, iron, outdoor light, 0–4 mg/L	each	9263800
Color disc, manganese, 0–3 mg/L	each	9262700
Glass viewing tubes, 18 mm	6/pkg	173006
Long-path adapter	each	2412200
Stoppers for 18-mm glass tubes and AccuVac Ampuls	6/pkg	173106

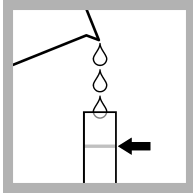
## Optional items

Description	Unit	Item no.
Iron standard solution, 1 mg/L Fe	500 mL	13949
Manganese standard solution, 1000 mg/L Mn	100 mL	1279142
Syringe, Luer-Lok® Tip, 3 mL	each	4321300
Water, deionized	500 mL	27249

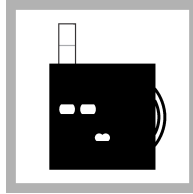
## Test procedure—Manganese (0–3 mg/L Mn)



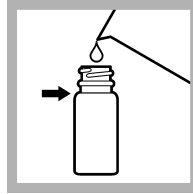
1. Install the long-path adapter in the color comparator box.



2. Fill a tube to the top line with sample.



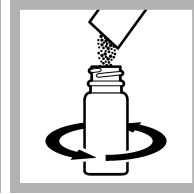
3. Put the tube into the left opening of the color comparator box.



4. Fill a bottle to the shoulder with sample.



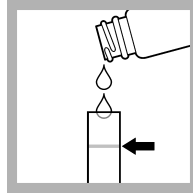
5. Add one Citrate Buffer Powder Pillow for Manganese. Swirl to mix.



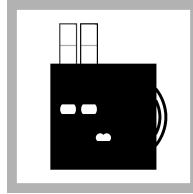
6. Add one Sodium Periodate Powder Pillow for Manganese. Swirl to mix.



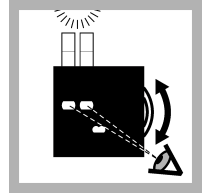
7. Wait 2 minutes. A pink color develops if manganese is in the sample. Read the result within 8 minutes.



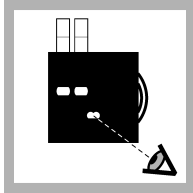
8. Fill a second tube to the top line with the prepared sample.



9. Put the second tube into the color comparator box.



10. Hold the color comparator box below a light source. Turn the color disc to find the color match.



11. Read the result in mg/L in the scale window.

