

**IRON, TOTAL**  
**Range: 0.0-0.20 mg/L and 0.0-1.20 mg/L**  
**TPTZ Iron Reagent Method**  
**Model IR-21**  
**Cat. No. 22993-00**



## **Introduction**

To ensure accurate results please read carefully before proceeding.

Iron in the sample, including precipitated or suspended iron such as rust, is converted to the ferrous state. A deep blue-purple color develops in the presence of ferrous iron. Hach combines the reducing agent and indicator for total iron analysis in a single powder formulation.

Deposits of iron on glassware may interfere with the results of this test. To avoid such interference presoak or rinse glassware with a 1:1 Hydrochloric Acid Solution, followed by rinsing with demineralized water. The first determination of total iron using new glassware may give slightly high results. This is due to iron deposits being leached from the glass.

Copper, cobalt, chromium and mercury may interfere with the results of this test, giving slightly high results.

***WARNING: The chemicals in this kit may be hazardous to the health and safety of the user if inappropriately handled. Please read all warnings before performing the test and use appropriate safety equipment.***

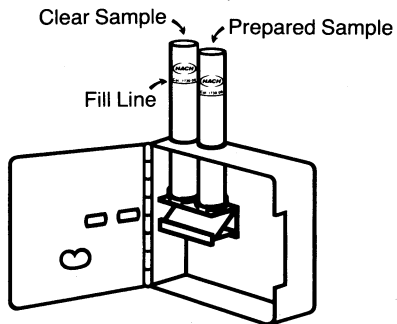
**HACH COMPANY, P.O. BOX 389, LOVELAND, COLORADO 80359**  
**TELEPHONE: WITHIN U.S. 800-227-4224, OUTSIDE U.S. 970-669-3050, TELEX: 160840**

This test requires the generation of a reagent blank. To prepare a reagent blank, fill the clean graduated vial to the 25-mL mark with demineralized water and add the contents of one TPTZ Iron Reagent Powder Pillow. Swirl immediately to mix. The untreated water sample may have a color or turbidity greater than the generated reagent blank. If so, use the untreated water sample in place of the generated reagent blank.

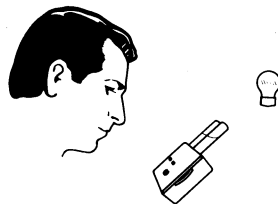
### **Iron Test Instructions: Low Range (0-0.20 mg/L)**

1. Fill the clean graduated vial to the 25-mL mark with the water to be tested.
2. Use the clippers to open one TPTZ Iron Reagent Powder Pillow. Add the contents of the pillow to the sample and swirl immediately to mix.
3. A blue color will develop if iron is present. Allow three minutes for full color development.
4. Fill one sample tube to the line underlining "Cat. 1730-00" with the prepared sample. This will be approximately 15 mL. If not using 1730 tubes, fill to the line found at approximately 3 inches up from the bottom of the tube.
5. Place the lengthwise viewing adapter in the comparator as shown in Figure 1.
6. Place the tube of prepared water sample into the comparator opening labeled Prepared Sample Position in Figure 1.
7. Fill the other sample tube with untreated water or a reagent blank to the line underlining "Cat. 1730-00". Insert this tube into the comparator opening labeled Clear Sample Position in Figure 1.

8. Hold the comparator with the tube tops pointing to a window or light source as in Figure 1a. View through the openings in the front of the comparator. When viewing, use care to not spill samples from unstoppered tubes.
9. Rotate the disc to obtain a color match. Read the mg/L total iron (Fe) through the scale window on the "end view" scale.



**FIGURE 1**



**FIGURE 1a**

### **High Range (0.0-1.20 mg/L)**

1. Fill the clean graduated vial to the 25-mL mark with the water to be tested.
2. Use the clippers to open one TPTZ Iron Reagent Powder Pillow. Add the contents of the pillow to the sample and swirl immediately to mix.
3. A blue color will develop if iron is present in the sample. Allow three minutes for full color development.
4. Fill a viewing tube to the 5-mL mark with the prepared water sample. Place the sample tube into the opening of the comparator labeled Prepared Sample Position in Figure 2.
5. Fill the other viewing tube with untreated water or a reagent blank and place it in the left top comparator opening labeled Untreated Sample Position in Figure 2.
6. Hold the comparator up to a light source such as a window, the sky, or a lamp and view through the opening in the front. Rotate the disc to obtain a color match.
7. Read the mg/L total iron (Fe) through the scale window on the "side view" scale.

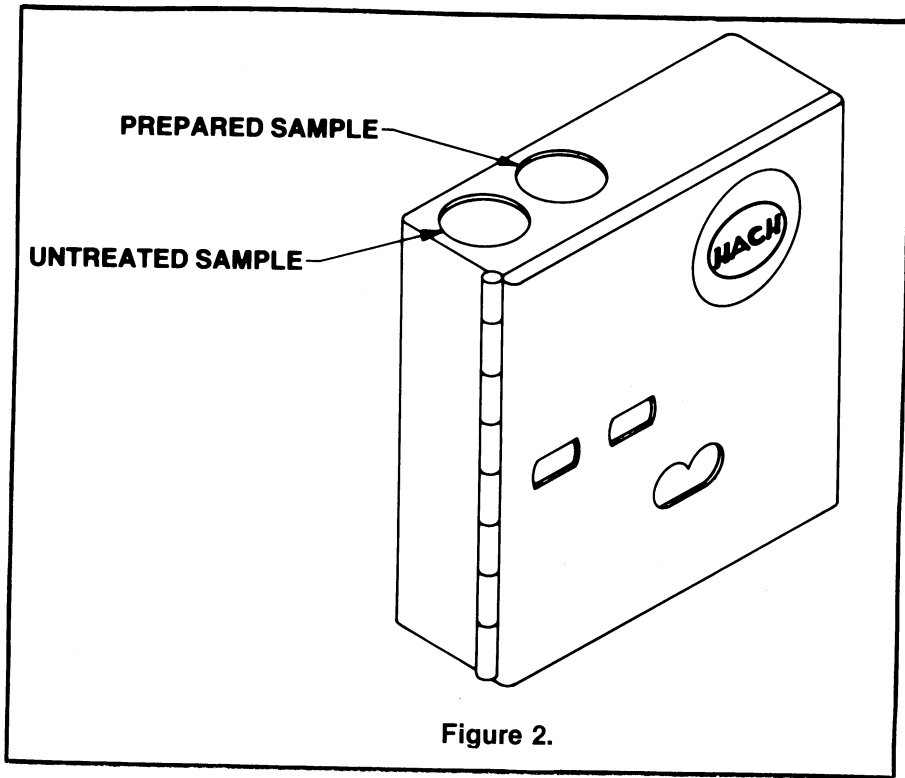


Figure 2.

## REPLACEMENTS

<b>Cat. No.</b>	<b>Description</b>	<b>Unit</b>
22756-68	TPTZ Iron Reagent Pillows .....	.25/box
968-00	Clippers .....	each
1732-00	Color Comparator .....	each
22990-00	Color Disc (TPTZ, Iron) .....	each
1730-00	Color Viewing Tube .....	each
24122-01	Lengthwise Viewing Adapter .....	each
14480-00	Stopper, Hollow No. 0 .....	each
2193-00	Vial, graduated .....	pkg/6
14175-14	Iron Standard Solution, 100 mg/L Fe (not included in kit) .....	.118 mL (4 oz)
14254-10	Iron Standard, 50 mg Fe/L, Voluette® Ampule (not included in kit) .....	.16/pkg

Reagent accuracy should be checked periodically. To do this, prepare a 1.0-mg/L iron standard solution by pipetting 1.00 mL of Iron Standard Solution, 100 mg/L as Fe, Cat. No. 14175-14, into a 100-mL volumetric flask; then dilute that solution to the mark with iron-free demineralized water. Alternatively, using the TenSette™ Pipet, add 0.5 mL of a Voluette Ampule for Iron, 50 mg/L as Fe, into a 25-mL volumetric flask and dilute to volume with demineralized water. Follow the instructions for the High Range Test, using this solution instead of a water sample. The standard solution should be prepared fresh before each use.

Iron Standard Solutions are not included as part of this kit but may be ordered from Hach Company. *See Replacements.*

Voluette and TenSette are Hach Company trademarks.

©Hach Company, 1986. All rights are reserved.

1/90

MADE IN U.S.A.