September 2012

1.10004.0001

MQuant™ Iron Test

Fe

1. Method

Iron(II) ions react with 2,2'-bipyridine to form a red complex. The iron(II) concentration is measured **semiquantitatively** by visual comparison of the reaction zone of the test strip with the fields of a color scale.

2. Measuring range and number of determinations

Measuring range / color-scale graduation	Number of determinations
3 - 10 - 25 - 50 - 100 - 250 - **500** mg/l Fe^{2+}	100

3. Applications

This test measures only iron(II) ions. Samples must be reduced by ascorbic acid before iron(III) ions and total iron (sum of iron(II) and iron(III)) can be measured (see section 7).

Sample material:
Groundwater and surface water
Drinking water
Industrial water
Wastewater and percolating water
Pickling baths (after dilution)
Etching baths (gravure printing)
Food and preserves (e. g. wine, fruit and vegetable juices, liquids for canned preserves, milk, syrup)

4. Influence of foreign substances

This was checked in solutions with 25 and 0 mg/l Fe^{2+}. The determination is not yet interfered with up to the concentrations of foreign substances given in the table.

Concentrations of foreign substances in mg/l					
Ag^{+}	1000	**$[Fe(CN)_6]^{4-}$**	**5**	NO_2^{-}	1000
Al^{3+}	1000	**$[Fe(CN)_6]^{3-}$**	**5**	NO_3^{-}	1000
Ba^{2+}	1000	Hg^{+}	1000	Pb^{2+}	1000
Ca^{2+}	1000	Hg^{2+}	1000	PO_4^{3-}	1000
Cd^{2+}	1000	K^{+}	1000	Sn^{2+}	1000
Cl^{-}	1000	Mg^{2+}	1000	SO_3^{2-}	1000
CN^{-}	1000	MnO_4^{-}	1000	SO_4^{2-}	1000
Co^{2+}	250	Na^{+}	1000	VO_3^{-}	250
CrO_4^{2-}	1000	NH_4^{+}	1000	Zn^{2+}	1000
Cu^{2+}	500	Ni^{2+}	1000		

5. Reagents and auxiliaries

The test strips are stable up to the date stated on the pack when stored closed at +15 to +25 °C.

Package contents:
Tube containing 100 test strips

Other reagents:
MColorpHast™ Universal indicator strips pH 0 - 14, Cat. No. 109535
Hydrochloric acid 1 mol/l TitriPUR®, Cat. No. 109057
Ascorbic acid
Ammonium iron(II) sulfate hexahydrate GR for analysis, Cat. No. 103792

6. Preparation

- Samples containing more than 500 mg/l Fe^{2+} must be diluted with distilled water.
- **The pH must be within the range 1 - 7.** Adjust, if necessary, with hydrochloric acid.

7. Procedure

Immerse the reaction zone of the test strip in the pre-treated sample (**15 - 25 °C**) **for 1 sec**.

Shake off excess liquid from the strip and **after 10 sec** determine with which color field on the label the color of the reaction zone coincides most exactly.

Read off the corresponding result in mg/l Fe^{2+}.

Determination of total iron:

To 10 ml of sample add 1 spatula-tip of ascorbic acid and shake. After 10 - 15 seconds perform the determination as described in section 7.

Calculation of the iron(III) content:

mg/l Fe^{3+} = mg/l total iron - mg/l Fe^{2+}

Notes on the measurement:

- The color of the reaction zone may continue to change after the specified reaction time has elapsed. This must not be considered in the measurement.
- If the color of the reaction zone is equal to or more intense than the darkest color on the scale, repeat the measurement using **fresh**, diluted samples until a value of less than 500 mg/l Fe^{2+} is obtained.

  Concerning the result of the analysis, the dilution (see also section 6) must be taken into account:

Result of analysis = measurement value x dilution factor

8. Method control

To check test strips and handling:
Dissolve 0.7 g of ammonium iron(II) sulfate hexahydrate in distilled water, make up to 100 ml with distilled water, and mix. Fe^{2+} content: 1000 mg/l. Dilute this standard solution with distilled water to 100 mg/l Fe^{2+} and analyze as described in section 7. Additional notes see under **www.qa-test-kits.com**.

9. Note

Reclose the tube containing the test strips immediately after use.

Merck KGaA, 64271 Darmstadt, Germany,
Tel. +49(0)6151 72-2440
www.analytical-test-kits.com

EMD Millipore Corporation, 290 Concord Road, Billerica, MA 01821, USA, Tel. +1-978-715-1335