Supelco®

1.14759.0001

MQuant®

Iron Test

Fe

1. Method

Determination with color-disk comparator
All iron ions are reduced to iron(II) ions. In a thioglycolate-buffered medium these react with a triazine derivative to form a red-violet complex. The iron concentration is measured **semiquantitatively** by visual comparison of the color of the measurement solution with the color fields of a color disk.

2. Measuring range and number of determinations

Measuring range / color-scale graduation	Number of determinations
0.1 - 0.2 - 0.3 - 0.5 - 0.8 - 1.2 - 2 - 3 - **5 mg/l Fe**	500

3. Applications

This test measures bivalent and trivalent iron in its dissolved form as well as fresh colloidal iron(III) hydroxide.

Sample material:
Groundwater and surface water, seawater
Drinking water and mineral water
Waters from aquaculture
Boiler and boiler feed water, cooling water
Industrial water
Wastewater and percolating water

4. Influence of foreign substances

This was checked individually in solutions containing 1.2 and 0 mg/l Fe. The determination is not yet interfered with up to the concentrations of foreign substances given in the table. Cumulative effects were not checked; such effects can, however, not be excluded.

Concentrations of foreign substances in mg/l or %							
Al^{3+}	1000	**Cu^{2+}**	**5**	NO_2^-	100	EDTA	10 %
Ca^{2+}	1000	**Hg^{2+}**	**10**	**Pb^{2+}**	**10**	Surfactants[1]	1 %
Cd^{2+}	1000	Mg^{2+}	1000	PO_4^{3-}	1000	Na-acetate	5 %
CN^-	100	Mn^{2+}	1000	SiO_3^{2-}	1000	NaCl	20 %
Co^{2+}	**5**	**MoO_4^{2-}**	**1**	Zn^{2+}	1000	$NaNO_3$	20 %
Cr^{3+}	100	NH_4^+	1000			Na_2SO_4	20 %
$Cr_2O_7^{2-}$	50	**Ni^{2+}**	**10**				

[1] tested with nonionic, cationic, and anionic surfactants

5. Reagents and auxiliaries

Please note the warnings on the packaging materials!

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

Package contents:
2 bottles of reagent Fe-1 (in aluminium container due to odor)
1 graduated 6-ml plastic syringe
2 test tubes with screw caps
1 color-disk comparator

Other reagents and accessories:
Nitric acid 65 % for analysis EMSURE®, Cat. No. 100456
MQuant® Iron Test, Cat. No. 110004,
measuring range 3 - 500 mg/l Fe^{2+}
MQuant® Universal indicator strips pH 0 -14, Cat. No. 109535
Sodium hydroxide solution 1 mol/l Titripur®, Cat. No. 109137
Hydrochloric acid 1 mol/l Titripur®, Cat. No. 109057
Iron standard solution Certipur®,1000 mg/l Fe, Cat. No. 119781

MQuant® Flat-bottomed tubes with screw caps for MQuant® tests with color-disk comparator (12 pcs), Cat. No. 117988

Refill pack:
Cat. No. 118458
Iron Test
Refill pack for 114759, 114438 y 114403
(Reagent **without technical accessories** for the number of determinations stated in section 2)

6. Preparation

- Analyze immediately after sampling. Otherwise preserve with nitric acid 65 % (1 ml nitric acid per 1 l of sample solution).
- Check the iron content with the MQuant® Iron Test.
  Samples containing more than 5 mg/l Fe must be diluted with distilled water.
- **The pH must be within the range 1 - 10.**
  Adjust, if necessary, with sodium hydroxide solution or hydrochloric acid.
- Filter strongly turbid samples.

7. Procedure

	Measurement sample right-hand tube (**A**) behind the color disk	**Blank** left-hand tube (**B**) behind the color disk	
Pretreated sample (**10 - 40 °C**)	6 ml	6 ml	Inject into the test tube with the syringe.
Reagent Fe-1	3 drops[1]	-	Add, close the tube, and mix.
Leave to stand for 3 min (reaction time).			
Hold the comparator to the light, keeping it upright, and rotate the disk until the closest possible color match is achieved between the two large windows. Read off the result in mg/l Fe shown in the small window.			

[1] **Hold the bottle vertically while adding the reagent!**

Notes on the measurement:

- The color of the measurement solution remains stable for at least 60 min after the end of the reaction time stated above.
- Turbidity in the measurement solution makes the color comparison more difficult.
- If the color of the measurement solution 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 5 mg/l Fe 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 reagent, measurement device, and handling:
Dilute the iron standard solution with distilled water to 2 mg/l Fe and analyze as described in section 7.
Additional notes see under **www.qa-test-kits.com**.

9. Notes

- Reclose the reagent bottle immediately after use.
- Rinse the test tubes and the syringe **with distilled water only**.
- **The contents of the test tubes as well as the test reagent must not be run off with the wastewater!**
  Information on disposal can be obtained at www.disposal-test-kits.com.

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

EMD Millipore Corporation, 400 Summit Drive
Burlington MA 01803, USA, Tel. +1-978-715-4321