

Supelco®

1.14404.0001

MQuant® Iron Test

Fe

1. Method

Determination with color-card comparator

All iron ions are reduced to iron(II) ions by a thioglycolate buffer. These react with 1,10-phenanthroline to form a red complex. The iron concentration is measured **semiquantitatively** by visual comparison of the color of the measurement solution with the color fields of a color card.

2. Measuring range and number of determinations

Measuring range / color-scale graduation	Number of determinations
0.25 - 0.5 - 1.0 - 2.0 - 3.0 - 5.0 - 7.5 - 10 - 15 mg/l Fe	300

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
Food after appropriate pretreatment

4. Influence of foreign substances

This was checked individually in solutions containing 1 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⁺	500	Cu ²⁺	0.5	Pb ²⁺	50	EDTA	0 %
Ca ²⁺	500	F ⁻	500	PO ₄ ³⁻	500	Surfactants ¹⁾	1000
Cd ²⁺	5	Hg ²⁺	5	S ²⁻	500	Na-acetate	5 %
CN ⁻	10	Mg ²⁺	500	SCN ⁻	500	NaCl	20 %
Co ²⁺	5	Mn ²⁺	500	SiO ₃ ²⁻	500	NaNO ₃	20 %
CO ₃ ²⁻	500	NH ₄ ⁺	500	SO ₃ ²⁻	500	Na ₂ SO ₄	20 %
Cr ³⁺	50	Ni ²⁺	10	Zn ²⁺	5		
Cr ₂ O ₇ ²⁻	10	NO 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)
1 graduated 5-ml plastic syringe
2 test tubes with screw caps (in comparator block)
1 color card

Other reagents:

Nitric acid 65 % for analysis EMSURE®, Cat. No. 100456
MQuant® Universal indicator strips pH 0 -14, Cat. No. 109535
Sodium hydroxide solution 1 mol/l Titripur®, Cat. No. 109137
Nitric acid Titrisol® for 1 mol/l, Cat. No. 109966
Iron standard solution Certipur®, 1000 mg/l Fe, Cat. No. 119781

6. Preparation

- Analyze immediately after sampling. Otherwise preserve with nitric acid 65 % (1 ml nitric acid per 1 l of sample solution).
- The pH must be within the range 2 - 8.**
Adjust, if necessary, with sodium hydroxide solution or nitric acid.
- Filter turbid samples.

7. Procedure

Open the box and set up with both test tubes **on the left**.

Slide the comparator block all the way to the left, so that the end holding the test tubes protrudes laterally over the bottom part of the box.

Unfold the color card and insert it, colored end first, into the slit at the lower **right-hand** edge of the box.

	Measurement sample tube <u>nearer</u> to the tester (A)	Blank tube <u>farther</u> from the tester (B)	
Pretreated sample (10 - 40 °C)	10 ml	10 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).

Slide the color card through to the left until the closest possible color match is achieved between the two open test tubes when viewed from above.

Read off the result in mg/l Fe from the color card at the lower right-hand edge of the comparator block within the bottom part of the box.

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 15 mg/l Fe is obtained.
- Concerning the result of the analysis, the dilution must be taken into account:

$$\text{Result of analysis} = \text{measurement value} \times \text{dilution factor}$$

8. Method control

To check test reagent, measurement device, and handling: Dilute the iron standard solution with distilled water to 2.0 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.

