

REF 91836

en

# Test 1-36 01.18

## NANOCOLOR® Iron

**Method:**

Photometric determination with 1,10-phenanthroline

Cuvette:	50 mm	10 mm
Range (mg/L Fe):	0.01–2.00	0.1–15.0
Wavelength (HW = 5–12 nm):	492 nm	
Wavelength (HW = 5–12 nm):	470 nm	
Reaction time:	5 min (300 s)	
Reaction temperature:	20–25 °C	

**Contents of reagent set:**

100 mL Iron R1  
20 g Iron R2  
100 mL Iron R3  
100 mL Iron R4  
1 measuring spoon 85 mm

**Hazard warning:**

Reagent R2 contains hydroxylammonium chloride 80–100 %, reagent R3 contains acetic acid 25–50 %, reagent R4 contains ethanol 35–55 %.

H314, H317, H351 Causes severe skin burns and eye damage. May cause an allergic skin reaction. Suspected of causing cancer.

P201, P260sh, P280sh, P303+361+353, P305+351+338, P310 Obtain special instructions before use. Do not breathe dust / vapors. Wear protective gloves / eye protection. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER / doctor. For further information ask for a safety data sheet.

**Preliminary tests:**

If the order of magnitude of the concentration in a sample is not known, a preliminary test with QUANTOFIX® Total iron 100 (2–100 mg/L Fe, REF 91344) rapidly gives this information. From the order of magnitude the required dilution can be calculated and prepared directly.

**Interferences:**

For test of the absence of interfering complexing agents we recommend a preliminary test with NANOCOLOR® organic Complexing Agents 10 (REF 985052).

The following quantities of ions will not interfere: ≤ 5 mg/L Co; ≤ 25 mg/L Cu, Ni, Zn; ≤ 100 mg/L PO<sub>4</sub><sup>3-</sup>.

The method can be applied also for the analysis of sea water.

**Notes:**

The odor and color of reagent Iron R4 can vary depending on the LOT of the test kit. This does not affect the obtained results.

Only dissolved iron and easily soluble iron compounds can be determined with the procedure described above. We recommend the following method to distinguish between total iron and dissolved iron:

- A) determination of the dissolved iron after filtration through a 0.45 µm membrane filter (REF 91650)  
B) determination of total iron, please refer to NANOCOLOR® NanOx Metal (REF 918978) or Crack Set (REF 91808); for exact measurements in the low range, the determination should be performed against a decomposed blank solution (use distilled water instead of the sample).

Please contact MACHEREY-NAGEL for special working instructions concerning a simplified procedure in a beaker (without filling up) and evaluation in 50 mm cuvette.

**Procedure:**

Requisite accessories: volumetric flasks 25 mL, piston pipette with tips

Pour into two separate volumetric flasks 25 mL:

Test sample	Blank value <sup>[1]</sup>
20 mL test sample (the pH value of the sample must be between pH 1 and 7)	20 mL test sample (the pH value of the sample must be between pH 1 and 7)
1 mL R1, mix	-
1 level spoon R2, mix	-
1 mL R3, mix	-
1 mL R4, mix	-

<sup>[1]</sup> For the sensitive determination of iron using 50 mm cuvettes a reagent blank value (distilled water plus reagents) is required.

Fill up sample and blank value to 25 mL mark with distilled water and mix again. After 5 min pour into cuvettes and measure.

**Determination of the iron(II) ions:**

Procedure as described above but without addition of reagent Iron R2.

**Measurement:**

For MACHEREY-NAGEL photometers see manual, test 1-36.

**Photometers of other manufacturers:**

Verify factor for each type of instrument by measuring standard solutions.

**Analytical quality control:**

NANOCONTROL Multistandard Metals 1 (REF 925015) or Multistandard Drinking Water (REF 925018)

**Decreasing volume of analytical preparation:**

In order to increase the number of determinations, you can work with volumetric flasks of 10 mL: 8 mL test sample + 0.4 mL R1 + ½ level spoon R2 + 0.4 mL R3 + 0.4 mL R4, semi-micro cuvette (REF 91950).

**Disposal:**

The contents of cuvettes and flasks can be washed into drain with plenty of water.