Special Instruction

Version 3

Simplification of *NANOCOLOR*® standard tests

General information

The measuring sample is not prepared in a 25-mL-volumetric flask, but in a beaker or in an Erlenmeyer flask. There is no need to fill up to the final volume of 25 mL.

Overview	
Parameters	Chlorine, Iron, Hydrazine, Silica, Copper, Manganese, Nickel, Nitrite, *ortho*-Phosphate
Required tests	*NANOCOLOR*® Chlorine (REF 91816) *NANOCOLOR*® Iron (REF 91836) *NANOCOLOR*® Iron LR (REF 918128) *NANOCOLOR*® Hydrazine (REF 91844) *NANOCOLOR*® Silica (REF 91848) *NANOCOLOR*® Copper (REF 91853) *NANOCOLOR*® Manganese (REF 91860) *NANOCOLOR*® Manganese LR (REF 918126) *NANOCOLOR*® Nickel (REF 91862) *NANOCOLOR*® Nitrite (REF 91867) *NANOCOLOR*® *ortho*-Phosphate (REF 91877 or REF 91878)
Accessories	Piston pipette with tips, beaker or Erlenmeyer flask 50 mL, 50-mm-rectangular cuvette of glas
Measurment and calculation	Call up absorbance measurement program and measure. Consider the factors in the below given table for calculation of measuring results. The result can be calculated with this formula: **$F4 \times A^4 + F3 \times A^3 + F2 \times A^2 + F1 \times A + F0 = \ldots$ mg/L** F = Factor; A = Absorbance

MACHEREY-NAGEL GmbH & Co. KG
Valencienner Str. 11
52355 Düren · Germany
www.mn-net.com

DE Tel.: +49 24 21 969-0 info@mn-net.com
CH Tel.: +41 62 388 55 00 sales-ch@mn-net.com
FR Tel.: +33 388 68 22 68 sales-fr@mn-net.com
US Tel.: +1 888 321 62 24 sales-us@mn-net.com

Remarks

- Procedure for blank value and sample is described in the table below
- Pour blank value and sample in 50-mm-rectangular cuvette separately
- Clean cuvette from outside
- Consider reaction time
- Consider device-depending measuring wavelength λ
- The given factors are for measurements in 50-mm-rectangular cuvettes
- Consider device-depending factors while calculating the results
- Consider the respective photometer manual for programming as a special method

Procedure

Parameter REF, measuring range	Wavelength	Reaction time	Sample Procedure	Blank value Procedure	Factor 400 D, 500 D	Factor *VIS*, $^{UV}/_{VIS}$	Factor *VIS* II, $^{UV}/_{VIS}$ II
Chlorine, free REF 91816 0.02 – 2.00 mg/L Cl_2	λ = 540 nm	30 s	• 20 mL sample solution • 1 mL R1, mix • 1 spoon R2, mix	20 mL sample solution	F1: 0.92	F1: 0.92	F1: 0.92
Chlorine, total REF 91816 0.02 – 2.00 mg/L Cl_2	λ = 540 nm	3 min	• 20 mL sample solution • 1 mL R1, mix • 1 spoon R2, mix • 5 drops R3, mix	• 20 mL sample solution	F1: 0.93	F1: 0.93	F1: 0.93
Iron REF 91836 0.01 – 2.00 mg/L Fe	λ = 470 nm	5 min	• 20 mL sample solution • 1 mL R1, mix • 1 spoon R2, mix • 1 mL R3, mix • 1 mL R4, mix	• 20 mL dest. water • 1 mL R1, mix • 1 spoon R2, mix • 1 mL R3, mix • 1 mL R4, mix	F1: 1.30	F1: 1.30	F1: 1.30
Iron LR REF 918128 0.005 – 0.500 mg/L Fe	λ = 540 nm / 563 nm	3 min	• 20 mL sample solution • 3 mL R1, mix • 1 spoon R2, mix	• 20 mL dest. water • 3 mL R1, mix • 1 spoon R2, mix	F1: 0.546 (λ = 540 nm)	F1: 0.455 (λ = 563 nm)	F1: 0.455 (λ = 563 nm)

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Parameter REF, measuring range	Wavelength	Reaction time	Sample Procedure	Blank value Procedure	Factor 400 D, 500 D	Factor *VIS*, $^{UV}/_{VIS}$	Factor *VIS* II, $^{UV}/_{VIS}$ II
Hydrazine REF 91844 0.002 – 0.250 mg/L N_2H_4	λ = 436 nm	10 min	• 20 mL sample solution • 2 mL R1, mix • 2 mL R2, mix	• 20 mL dest. water • 2 mL R1, mix • 2 mL R2, mix	F1: 0.17	F1: 0.17	F1: 0.17
Silica REF 91848 0.01 – 1.40 mg/L Si 0.02 – 3.00 mg/L SiO_2	λ = 690 nm	15 min	• 20 mL sample solution • 1 mL R1, mix, wait 3 min • 1 mL R2, mix, wait 1 min • 1 mL R3, mix	• 20 mL silica-free water • 1 mL R1, mix, wait 3 min • 1 mL R2, mix, wait 1 min • 1 mL R3, mix	F1: 0.74 for mg/L Si F1: 1.57 for mg/L SiO_2	F1: 0.74 for mg/L Si F1: 1.57 for mg/L SiO_2	F1: 0.74 for mg/L Si F1: 1.57 for mg/L SiO_2
Silica **high sensitive** REF 91848 0.002 – 0.100 mg/L Si 0.005 – 0.200 mg/L SiO_2	λ = 800 nm	15 min	• 20 mL sample solution • 1 mL R1, mix, wait 3 min • 1 mL R2, mix, wait 1 min • 1 mL R3, mix	• 20 mL silica-free water • 1 mL R1, mix, wait 3 min • 1 mL R2, mix, wait 1 min • 1 mL R3, mix	F1: 0.294 for mg/L Si F1: 0.629 for mg/L SiO_2	F1: 0.303 for mg/L Si F1: 0.648 for mg/L SiO_2	F1: 0.303 for mg/L Si F1: 0.648 for mg/L SiO_2
Copper REF 91853 0.01 – 2.00 mg/L Cu^{2+}	λ = 585 nm	15 min	• 20 mL sample solution • 2 mL R1, mix • The pH-value must be 8.5-9.5, otherwise adjust with R1. • 2 mL R2, mix	• 20 mL sample solution	F1: 0.95	F1: 0.95	F1: 0.95
Manganese REF 91860 0.01 – 2.00 mg/L Mn	λ = 470 nm	5 min	• 20 mL sample solution • 1 mL R1, mix • 1 mL R2, mix, wait 1 min • 1 mL R3, mix	• 20 mL sample solution	F1: 1.24	F1: 1.24	F1: 1.24

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Parameter REF, measuring range	Wavelength	Reaction time	Sample Procedure	Blank value Procedure	Factor 400 D, 500 D	Factor *VIS*, $^{UV}/_{VIS}$	Factor *VIS* II, $^{UV}/_{VIS}$ II
Manganese LR REF 918126 0.005 – 0.700 mg/L Mn	λ = 436 nm / 450 nm	6 min	• 20 mL sample solution • 0.5 mL R1, mix • 1 mL R2, mix, wait 5 min • 2 mL R3, mix, wait 1 min	• 20 mL sample solution	F1: 0.406 F2: 0.046 (λ = 436 nm)	F1: 0.333 F2: 0.030 (λ = 450 nm)	F1: 0.333 F2: 0.030 (λ = 450 nm)
Nickel REF 91862 0.01 – 2.00 mg/L Ni^{2+}	λ = 436 nm	5 min	• 20 mL sample solution • 1 mL R1 • 1 mL R2, mix • 1 mL R3, mix • 1 mL R4, mix	• 20 mL sample solution	F1: 1.04	F1: 1.04	F1: 1.04
Nitrite REF 91867 0.002 – 0.100 mg/L NO_2-N 0.005 – 0.250 mg/L NO_2^-	λ = 520 nm	10 min	• 20 mL sample solution • 2 mL R1, mix • 2 mL R2, mix	• 20 mL dest. water • 2 mL R1, mix • 2 mL R2, mix	F1: 0.08 for mg/L NO_2-N F1: 0.263 for mg/L NO_2^-	F1: 0.08 for mg/L NO_2-N F1: 0.263 for mg/L NO_2^-	F1: 0.08 for mg/L NO_2-N F1: 0.263 for mg/L NO_2^-
***ortho*-Phosphate** REF 91877 0.04 – 1.70 mg/L PO_4-P 0.1 – 5.0 mg/L PO_4^{3-}	λ = 690 nm	10 min	• 20 mL sample solution • 1 mL R1, mix • 1 mL R2, mix	• 20 mL dest. water • 1 mL R1, mix • 1 mL R2, mix	F1: 1.88 for mg/L PO_4-P F1: 5.76 for mg/L PO_4^{3-}	F1: 1.88 for mg/L PO_4-P F1: 5.76 for mg/L PO_4^{3-}	F1: 1.88 for mg/L PO_4-P F1: 5.76 for mg/L PO_4^{3-}
***ortho*-Phosphate** REF 91878 0.2 – 6.6 mg/L PO_4-P 0.5 – 20.0 mg/L PO_4^{3-}	λ = 436 nm	10 min	• 20 mL sample solution • 1 mL R1, mix • 1 mL R2, mix	• 20 mL dest. water • 1 mL R1, mix • 1 mL R2, mix	F1: 6.07 for mg/L PO_4-P F1: 18.6 for mg/L PO_4^{3-}	F1: 6.16 for mg/L PO_4-P F1: 18.9 for mg/L PO_4^{3-}	F1: 5.98 for mg/L PO_4-P F1: 18.3 for mg/L PO_4^{3-}

Contact

If you have further questions, please do not hesitate to contact us:

Technical support and customer service	Tel.:	+49 24 21 969-333
	E-Mail:	support@mn-net.com
For orders (international)	E-Mail:	sales@mn-net.com

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