



Rapid Tests

Visual test kits

VISOCOLOR®

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VISOCOLOR[®] alpha

Colorimetric and titrimetric test kits

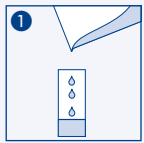
VISOCOLOR[®] alpha is the most simple version of colorimetric and titrimetric test kits. These tests are suitable for visual evaluation only and are very convenient in performance, because of the used multicomponent reagents. Therefore, the test kits are limited in precision and accuracy but represent an inexpensive method for screening tests of non-turbid and uncolored water samples. The reagent bottles are packed in practical blister packs. The color comparison chart for colorimetric evaluations, as well as the test instructions, are provided on the cardboard back, which is also used for opening and closing of the package.



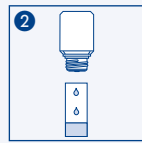
How it's done



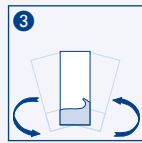
Colorimetric



Fill in sample



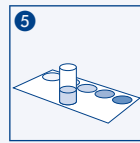
Add reagent



Mix

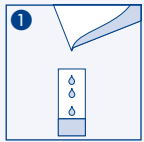


Wait

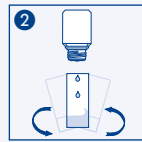


Analyze

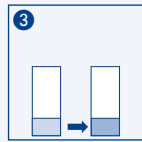
Titrimetric



Fill in sample



Add reagent and mix



Color change

Visual test kits

Ordering information

Test	REF	Measuring range	Number of tests	Shelf life	Method
■ Ammonium	935012	0 · 0.2 · 0.5 · 1 · 2 · 3 mg/L NH ₄ ⁺	50	1.5 years	Indophenol
■ Carbonate hardness	935016	1 drop equals 1.25 °e	100	1.5 years	Mixed indicator
■ Chlorine, free	935019	0.25 · 0.5 · 1.0 · 1.5 · 2.0 mg/L Cl ₂	150	1.5 years	DPD
■ Nitrate	935065	2 · 8 · 15 · 30 · 50 mg/L NO ₃ ⁻	100	1.5 years	Azo dye
■ Nitrite	935066	0.05 · 0.10 · 0.25 · 0.5 · 1.0 mg/L NO ₂ ⁻	200	1.5 years	Sulfanilic acid / 1-naphthylamine
■ pH 5–9	935075	pH 5.0 · 5.5 · 6.0 · 6.5 · 7.0 · 7.5 · 8.0 · 8.5 · 9.0	200	3 years	Mixed indicator
■ Phosphate	935079	2 · 5 · 10 · 15 · 20 mg/L PO ₄ ³⁻	70	2 years	Phosphomolybdenum blue
■ Residual hardness	935080	0.00 · 0.05 · 0.10 · 0.19 · 0.38 °e	200	1 year	Mixed indicator
■ Total hardness	935042	1 drop equals 1.25 °e	100	1.5 years	Complexometric titration

¹⁾ Please see the instruction leaflet.

GHS: Globally harmonized system: This product contains harmful substances which must be specially labeled as hazardous. For detailed information please see the SDS.



	Colorimetric	Titrimetric	Sea water ¹⁾	GHS	Test
	■		■	■	Ammonium
		■	■		Carbonate hardness
	■		■	■	Chlorine, free
	■		■	■	Nitrate
	■		■	■	Nitrite
	■		■	■	pH 5-9
	■		■	■	Phosphate
	■			■	Residual hardness
		■	■	■	Total hardness

Colorimetric and titrimetric test kits

VISOCOLOR® ECO presents a product group of colorimetric and titrimetric test kits, which allow even the determination of low limiting values with sufficient accuracy. The high sensitivity and accuracy is accomplished by single reagents which can be dosed precisely and by the possibility to compensate turbidity and color of water samples.

The results are evaluated visually with high-quality color comparison cards, which are adjusted to the original colors of standard solutions. In addition, there is the possibility to evaluate most VISOCOLOR® ECO tests also photometrically with the compact photometers PF-3 (see page 134) and PF-12^{Plus} (see page 132) and spectrophotometer NANOCOLOR® Advance (see page 128). This enables a quantitative evaluation of the test kit.

Budget-priced refill packs are available for photometric evaluation as well as for replacement of consumed chemicals.

All VISOCOLOR® ECO test kits are delivered in a practical cardboard box with plastic inlay and easy to understand instruction manual. In addition, pictogram instructions are available for every test kit on the MACHEREY-NAGEL website.

Good to know

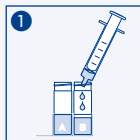
The easiest way to check your photometric chlorine measurement: VISOCOLOR® Color standards Chlorine (REF 914820)



How it's done



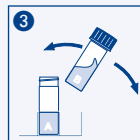
Colorimetric



Fill in sample



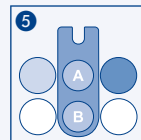
Add reagent



Mix

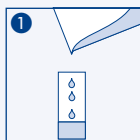


Wait

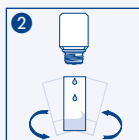


Analyze

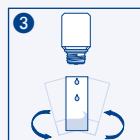
Titrimetric



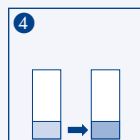
Fill in sample



Add indicator



Add titration solution and mix



Color change

Ordering information

Test	REF	REF refill	Measuring range (visual)	Measuring range (photometric) ⁴⁾	Number of tests
■ Alkalinity TA	–	931204	–	0.4–17.5 °e / 5–250 mg/L CaCO ₃	100
■ Aluminum	931006	931206	0 · 0.10 · 0.15 · 0.20 · 0.25 · 0.30 · 0.40 · 0.50 mg/L Al ³⁺	–	50
■ Ammonium 3	931008	931208	0 · 0.2 · 0.3 · 0.5 · 0.7 · 1 · 2 · 3 mg/L NH ₄ ⁺	0.1–2.5 mg/L NH ₄ ⁺	50
■ Ammonium 15	931010	931210	0 · 0.5 · 1 · 2 · 3 · 5 · 7 · 10 · 15 mg/L NH ₄ ⁺	0.5–8.0 mg/L NH ₄ ⁺	50
■ Bromine	–	931211	–	0.10–13.00 mg/L Br ₂	200
■ Calcium	931012	–	1 drop equals 5 mg/L Ca ²⁺	–	100
■ Carbonate hardness	931014	–	1 drop equals 1.25 °e	–	100
■ Chloride	931018	931218	1 · 2 · 4 · 7 · 12 · 20 · 40 · 60 mg/L Cl ⁻	1–50 mg/L Cl ⁻	90
■ Chlorine + pH see Swimming pool					

¹⁾ Please see the instruction leaflet.

²⁾ For evaluation with the PF-12 / PF-12^{Plus}, a special filter (450 nm) is required.

³⁾ Additionally required with first order: Oxygen sample bottle, REF 915498.

⁴⁾ Measuring range for photometric evaluation with the PF-12^{Plus}. Range on other photometers can be different.

GHS: Globally harmonized system: This product contains harmful substances which must be specially labeled as hazardous. For detailed information please see the SDS.
refill: Refill pack, sufficient for photometric determination.

Easy

- Chemical analysis without further accessories
- No extensive training necessary
- Color-coded reagents with clear dosing instructions

Safe

- Pictogram test instructions
- Reaction basis according to international standards
- Compensation of turbidity and color

Unique

- High quality test kits
- Business-prized refill packs
- Ecologically friendly disposal of used reagents



Shelf life	Method											
		Advance	PF-12 ^{plus}	PF-3 Drinking Water	PF-3 Fish	PF-3 Pool	PF-3 Soil	Colorimetric	Titrimetric	Sea water ¹⁾	GH/S	Test
1 year	Bromophenol blue	■	■	■		■		■		■		Alkalinity TA
2 years	Chromazurol S							■		■		Aluminum
1.5 years	Indophenol	■	■		■			■		■	■	Ammonium 3
1.5 years	Indophenol	■	■					■		■	■	Ammonium 15
2 years	DPD	■	■	■		■		■		■		Bromine
1.5 years	Complexometric titration								■	■	■	Calcium
2 years	Mixed indicator								■	■	■	Carbonate hardness
1 year	Mercury(II)-thiocyanate / Iron(III)-nitrate	■	■					■			■	Chloride
												Chlorine + pH see Swimming pool

Test	REF	REF refill	Measuring range (visual)	Measuring range (photometric) ⁴⁾	Number of tests
■ Chlorine 1, free + total	931035	931235	< 0.1 · 0.1 · 0.2 · 0.3 · 0.4 · 0.6 · 0.9 · 1.2 · 2.0 mg/L Cl ₂	0.05–2.00 mg/L Cl ₂	150
■ free Chlorine 2	931016	931216	< 0.1 · 0.1 · 0.2 · 0.3 · 0.4 · 0.6 · 0.9 · 1.2 · 2.0 mg/L Cl ₂	0.05–2.00 mg/L Cl ₂	150
■ Chlorine 2, free + total	931015	931215	< 0.1 · 0.1 · 0.2 · 0.3 · 0.4 · 0.6 · 0.9 · 1.2 · 2.0 mg/L Cl ₂	0.05–2.00 mg/L Cl ₂	150
■ free Chlorine 6	–	931219	–	0.05–6.00 mg/L Cl ₂	400
■ Chlorine 6, free + total	–	931217	–	0.05–6.00 mg/L Cl ₂	200
■ Chlorine dioxide	931021	931221	< 0.2 · 0.2 · 0.4 · 0.6 · 0.8 · 1.1 · 1.7 · 2.3 · 3.8 mg/L ClO ₂	0.20–3.80 mg/L ClO ₂	150
■ Chromium(VI)	931020	931220	0.02 · 0.05 · 0.10 · 0.15 · 0.20 · 0.30 · 0.40 · 0.50 mg/L Cr(VI)	0.02–0.50 mg/L Cr(VI)	140
■ Copper	931037	931237	0 · 0.1 · 0.2 · 0.3 · 0.5 · 0.7 · 1.0 · 1.5 mg/L Cu ²⁺	0.1–5.0 mg/L Cu ²⁺	100
■ Cyanide	931022	931222	0 · 0.01 · 0.02 · 0.03 · 0.05 · 0.07 · 0.10 · 0.15 · 0.20 mg/L CN ⁻	0.01–0.20 mg/L CN ⁻	100
■ Cyanuric acid	931023	931223	10 · 15 · 20 · 30 · 40 · 60 · 80 · 100 mg/L Cya	10–100 mg/L Cya	100
■ DEHA	931024	931224	0 · 0.01 · 0.03 · 0.05 · 0.10 · 0.15 · 0.20 · 0.25 · 0.30 mg/L DEHA	–	125
■ Detergents, anionic	931050	931250	0.1 · 0.25 · 0.5 · 1.0 · 2.0 · 5.0 mg/L MBAS	–	50
■ Detergents, cationic	931051	931251	0 · 1 · 3 · 5 · 10 · 15 · 20 mg/L CTAB	–	50
■ Fluoride	–	931227	–	0.1–2.0 mg/L F ⁻	150
■ Hydrazine	931030	931230	0 · 0.05 · 0.10 · 0.15 · 0.20 · 0.25 · 0.30 · 0.40 mg/L N ₂ H ₄	0.05–0.40 mg/L N ₂ H ₄	130
■ Iron 1	931025	931225	0 · 0.04 · 0.07 · 0.10 · 0.15 · 0.20 · 0.30 · 0.50 · 1.0 mg/L Fe	0.04–2.00 mg/L Fe	200
■ Iron 2	931026	931226	0 · 0.04 · 0.07 · 0.10 · 0.15 · 0.20 · 0.30 · 0.50 · 1.0 mg/L Fe	0.04–2.00 mg/L Fe	100
■ Manganese	931038	931238	0 · 0.1 · 0.2 · 0.3 · 0.5 · 0.7 · 0.9 · 1.2 · 1.5 mg/L Mn	0.1–5.0 mg/L Mn	70
■ Nickel	931040	931240	0 · 0.1 · 0.2 · 0.3 · 0.5 · 0.7 · 0.9 · 1.2 · 1.5 mg/L Ni ²⁺	0.04–5.00 mg/L Ni ²⁺	150
■ Nitrate	931041	931241	0 · 1 · 3 · 5 · 10 · 20 · 30 · 50 · 70 · 90 · 120 mg/L NO ₃ ⁻	4–60 mg/L NO ₃ ⁻	110
■ Nitrite	931044	931244	0 · 0.02 · 0.03 · 0.05 · 0.07 · 0.1 · 0.2 · 0.3 · 0.5 · mg/L NO ₂ ⁻	0.02–0.50 mg/L NO ₂ ⁻	120
■ Oxygen ³⁾	931088	931288	0 · 1 · 2 · 3 · 4 · 6 · 8 · 10 mg/L O ₂	1–8 mg/L O ₂	50
■ pH 4.0–9.0	931066	931266	pH: 4.0 · 5.0 · 6.0 · 6.5 · 7.0 · 7.5 · 8.0 · 8.5 · 9.0	–	450
■ pH 6.0–8.2	–	931270	–	pH 6.1–8.4	150
■ Phosphate	931084	931284	0 · 0.2 · 0.3 · 0.5 · 0.7 · 1 · 2 · 3 · 5 mg/L PO ₄ -P	0.2–5.0 mg/L PO ₄ -P	80
■ Potassium	931032	931232	2 · 3 · 4 · 6 · 8 · 10 · 15 mg/L K ⁺	2–25 mg/L K ⁺	60
■ Silica	931033	931233	0 · 0.2 · 0.4 · 0.6 · 1.0 · 1.5 · 2.0 · 2.5 · 3.0 mg/L SiO ₂	0.2–3.0 mg/L SiO ₂	80
■ Silica HR 200	–	931234	–	10–200 mg/L SiO ₂ ²⁾	100
■ Sulfate	931092	931292	25 · 30 · 35 · 40 · 50 · 60 · 70 · 80 · 100 · 120 · 150 · 200 mg/L SO ₄ ²⁻	20–200 mg/L SO ₄ ²⁻	100
■ Sulfide	931094	931294	0.1 · 0.2 · 0.3 · 0.4 · 0.5 · 0.6 · 0.7 · 0.8 mg/L S ²⁻	0.05–0.80 mg/L S ²⁻	90
■ Sulfite	931095	–	1 drop equals 1 mg/L SO ₃ ²⁻	–	60
■ Swimming pool	931090	931290	Chlorine: < 0.1 · 0.1 · 0.2 · 0.3 · 0.4 · 0.6 · 0.9 · 1.2 · 2.0 mg/L Cl ₂ pH: 6.9 · 7.2 · 7.4 · 7.6 · 7.8 · 8.2	–	150
■ Total hardness	931029	–	1 drop equals 1.25 °e	–	110
■ Zinc	931098	931298	0 · 0.5 · 1 · 2 · 3 mg/L Zn ²⁺	0.1–3.0 mg/L Zn ²⁺	120

¹⁾ Please see the instruction leaflet.

²⁾ For evaluation with the PF-12/PF-12^{Plus}, a special filter (450 nm) is required.

³⁾ Additionally required with first order: Oxygen sample bottle, REF 915498.

⁴⁾ Measuring range for photometric evaluation with the PF-12^{Plus}. Range on other photometers can be different.

GHS: Globally harmonized system: This product contains harmful substances which must be specially labeled as hazardous. For detailed information please see the SDS.
refill: Refill pack, sufficient for photometric determination.

Shelf life	Method	Advance	PF-12 ^{plus}	PF-3 Drinking Water	PF-3 Fish	PF-3 Pool	PF-3 Soil	Colorimetric	Titrimetric	Sea water ¹⁾	GHS	Test
2 years	DPD	■	■	■		■		■		■		Chlorine 1, free + total
1.5 years	DPD	■	■	■		■		■			■	free Chlorine 2
1.5 years	DPD	■	■	■		■		■			■	Chlorine 2, free + total
2 years	DPD	■	■	■		■		■		■		free Chlorine 6
2 years	DPD	■	■	■	■	■		■		■		Chlorine 6, free + total
1.5 years	DPD	■	■	■		■		■			■	Chlorine dioxide
1.5 years	Carbazide	■	■		■			■		■	■	Chromium(VI)
2 years	Cuprizone	■	■		■			■		■		Copper
1 year	Barbituric acid / pyridine	■	■		■			■		■	■	Cyanide
1.5 years	Triazine (turbidity)	■	■	■		■		■		■		Cyanuric acid
1 year	Redox reaction	■	■					■		■		DEHA
2 years	Methylene blue							■		■	■	Detergents, anionic
2 years	Bromphenol blue							■		■	■	Detergents, cationic
1.5 years	SPADNS	■	■	■		■		■		■	■	Fluoride
1 year	4-Dimethylaminobenzaldehyde	■	■					■		■	■	Hydrazine
2 years	Triazine	■	■	■	■	■		■		■	■	Iron 1
2 years	Triazine	■	■	■		■	■	■		■		Iron 2
1.5 years	Formaloxime	■	■		■			■		■	■	Manganese
1.5 years	Dimethylglyoxime	■	■					■		■	■	Nickel
1.5 years	Azo dye	■	■		■		■	■		■		Nitrate
1.5 years	Sulfanilic acid / 1-naphthylamine	■	■		■			■		■		Nitrite
1 year	Winkler	■	■		■			■		■	■	Oxygen ³⁾
3 years	Mixed indicator							■		■	■	pH 4.0–9.0
1.5 years	Mixed indicator	■	■	■	■	■		■		■		pH 6.0–8.2
3 years	Phosphormolybdenum blue	■	■		■		■	■		■	■	Phosphate
3 years	Potassium tetraphenyl borate (turbidity)	■	■		■		■	■		■	■	Potassium
3 years	Silicomolybdenum blue	■	■		■			■		■	■	Silica
3 years	Silicomolybdenum blue	■	■	■		■		■		■	■	Silica HR 200
3 years	Barium sulfate (turbidity)	■	■					■		■	■	Sulfate
3 years	DPD	■	■					■		■	■	Sulfide
1 year	Iodometric titration								■	■	■	Sulfite
1.5 years	DPD Mixed indicator							■		■	■	Swimming pool
1.5 years	Complexometric titration							■	■	■	■	Total hardness
1 year	Zincon	■	■					■		■	■	Zinc

Colorimetric and titrimetric test kits

VISOCOLOR® HE test kits are highly sensitive colorimetric and titrimetric tests to determine even the lowest limiting values.

The exact dosing of the single reagents as well as the compensation of turbidity and color are the basis for a highly precise analysis. Maximum sensitivity and accuracy are achieved by the use of longer measuring tubes and larger sample volumes. The sensitivity of VISOCOLOR® HE is 10 to 100 times higher compared to other VISOCOLOR® tests.

The visual evaluation of the colorimetric test kits is done with high-quality color comparison disks, which are adjusted to the original color of standard solutions.

Refill packs are available as replacement for consumed reagents. Every VISOCOLOR® HE test kit is delivered in a robust box with plastic inlay and an easy to understand instruction leaflet.

Good to know

VISOCOLOR® HE test kits reach the highest sensitivity and accuracy in visual analytics.



Ordering information

Test	REF	REF refill	Measuring range	Number of tests	Shelf life
■ Acidity AC 7 (base capacity)	915006	915206	0.2–7.2 mmol/L H ⁺ (1 syringe filling)	200	2 years
■ Alkalinity AL 7 (acid capacity)	915007	915207	0.2–7.2 mmol/L OH ⁻ (1 syringe filling)	200	2 years
■ Ammonium	920006	920106	0.0 · 0.02 · 0.04 · 0.07 · 0.10 · 0.15 · 0.20 · 0.30 · 0.40 · 0.50 mg/L NH ₄ ⁺	110	1 year
■ Calcium CA 20	915010	915210	0.6–25.0 °e / 0.1–3.6 mmol/L Ca ²⁺ (1 syringe filling)	200	2 years
■ Carbonate hardness C 20	915003	915203	0.6–25.0 °e / 0.2–7.2 mmol/L H ⁺ (1 syringe filling)	200	2 years
■ Chloride CL 500	915004	915204	5–500 mg/L Cl ⁻ (1 syringe filling)	300	2 years
■ Chlorine, free + total	920015	920115	0.0 · 0.02 · 0.04 · 0.06 · 0.10 · 0.15 · 0.20 · 0.30 · 0.40 · 0.60 mg/L Cl ₂	160	2 years
■ Copper	920050	920150	0.0 · 0.04 · 0.07 · 0.10 · 0.15 · 0.20 · 0.25 · 0.30 · 0.40 · 0.50 mg/L Cu ²⁺	150	2 years
■ Cyanide	920028	920128	0.0 · 0.002 · 0.004 · 0.007 · 0.010 · 0.015 · 0.020 · 0.025 · 0.030 · 0.040 mg/L CN ⁻	50	1 year
■ Iron	920040	920140	0.0 · 0.01 · 0.02 · 0.03 · 0.04 · 0.05 · 0.07 · 0.10 · 0.15 · 0.20 mg/L Fe	300	2 years
■ Manganese	920055	920155	0.0 · 0.03 · 0.06 · 0.10 · 0.15 · 0.20 · 0.25 · 0.30 · 0.40 · 0.50 mg/L Mn	100	1.5 years
■ Nitrite	920063	920163	0.0 · 0.005 · 0.010 · 0.015 · 0.02 · 0.03 · 0.04 · 0.06 · 0.08 · 0.10 mg/L NO ₂ ⁻	150	2 years
■ Oxygen SA 10	915009	915209	0.2–10.0 mg/L O ₂ (1 syringe filling)	100	1.5 years
■ pH 4.0–10.0	920074	920174	pH 4.0 · 5.0 · 5.5 · 6.0 · 6.5 · 7.0 · 7.5 · 8.0 · 8.5 · 9.0 · 10.0	500	2 years
■ Phosphate	920082	920182	0.0 · 0.05 · 0.10 · 0.15 · 0.20 · 0.3 · 0.4 · 0.6 · 0.8 · 1.0 mg/L PO ₄ -P	300	2 years
■ Phosphate (DEV)	920080	920180	0.0 · 0.01 · 0.02 · 0.03 · 0.05 · 0.07 · 0.10 · 0.15 · 0.20 · 0.25 mg/L PO ₄ -P	100	2 years
■ Silica	920087	920187	0.0 · 0.01 · 0.02 · 0.03 · 0.05 · 0.07 · 0.10 · 0.15 · 0.20 · 0.30 mg/L Si	120	2 years
■ Sulfite SU 100	915008	915208	2–100 mg/L SO ₃ ²⁻ (1 syringe filling)	100	3 years
■ Total hardness H 2	915002	915202	0.06–2.50 °e / 0.01–0.36 mmol/L Ca ²⁺ (1 syringe filling)	200	1.5 years
■ Total hardness H 20 F	915005	915205	0.6–25.0 °e / 0.1–3.6 mmol/L Ca ²⁺ (1 syringe filling)	200	1.5 years

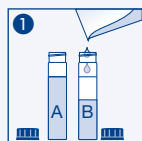
¹⁾ Please see the instruction leaflet.

GHS: Globally harmonized system: This product contains harmful substances which must be specially labeled as hazardous. For detailed information please see the SDS.
refill.: Refill pack

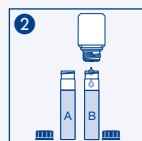
How it's done



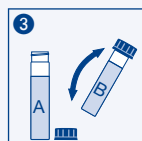
Colorimetric



Fill in sample



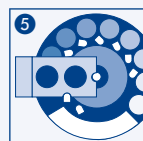
Add reagent



Mix

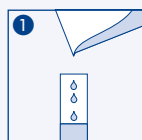


Wait

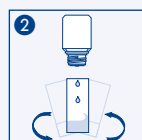


Analyze

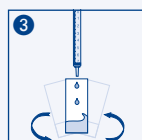
Titrimetric



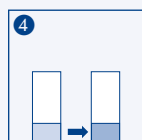
Fill in sample



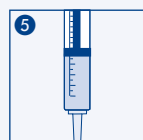
Add indicator and mix



Add titration solution and mix



Color change



Analyze

Method

Colorimetric
Titrimetric
Sea water (1)
GHS
Test

Phenolphthalein		■	■	■	Acidity AC 7 (base capacity)
Methyl red		■	■	■	Alkalinity AL 7 (acid capacity)
Indophenol	■			■	Ammonium
Complexometric titration		■	■	■	Calcium CA 20
Mixed indicator		■	■	■	Carbonate hardness C 20
Mercurimetric titration		■	■	■	Chloride CL 500
DPD	■		■		Chlorine, free + total
Cuprizon	■		■		Copper
Barbituric acid / pyridine	■		■	■	Cyanide
Triazine	■				Iron
Formaloxime	■			■	Manganese
Sulfanilic acid / 1-naphthylamine	■		■		Nitrite
Winkler		■	■	■	Oxygen SA 10
Mixed indicator	■		■	■	pH 4.0-10.0
Phosphorous molybdenum blue	■		■	■	Phosphate
Phosphorous molybdenum blue	■		■	■	Phosphate (DEV)
Silicomolybdenum blue	■		■	■	Silica
Iodometric titration		■	■	■	Sulfite SU 100
Complexometric titration		■		■	Total hardness H 2
Complexometric titration		■	■	■	Total hardness H 20 F



VISOCOLOR® Powder Pillows

Photometric reagent Powder Pillows

VISOCOLOR® Powder Pillows are photometric tests that combine easiest dosing of reagents with photometric precision. Each VISOCOLOR® powder pillow contains the exact amount of reagents needed for a determination. The individually packaged portions not only stand out due to their very long shelf life, but also avoid the use of hazardous substances wherever possible. Easy to understand test instructions with pictograms in 6 languages are available on MACHEREY-NAGEL homepage. VISOCOLOR® Powder Pillows can be evaluated on compact photometers PF-12^{Plus} (see page 132), PF-3 (see page 134) and spectrophotometers NANOCOLOR® Advance (see page 128) NANOCOLOR® VIS II and NANOCOLOR® UV/VIS II (see page 124).

Good to know

Most VISOCOLOR® Powder Pillows for chlorine and silica can be directly used in competitor's photometers. They are ready to use with pre-programmed methods and equipment, no further calibration is needed.



How it's done

Application VISOCOLOR® Powder Pillows



Visual test kits

Ordering information

Test	REF	Number of tests	Measuring range	Shelf life	Method
■ Ammonium	936229	100	0.02-0.80 mg/L NH ₄ -N	3 years	Bethelot reaction
■ free Chlorine	936220 936220.1	100 1000	0.03-6.00 mg/L Cl ₂	5 years	DPD
■ total Chlorine, Ozone	936221 936221.1	100 1000	0.03-6.00 mg/L Cl ₂ / 0.03-4.00 mg/L O ₃	5 years	DPD
■ Iron	936227	100	0.03 – 3.00 mg/L Fe	3 years	1,10-Phenanthroline
■ Nitrate	936226	100	1.0-50 mg/L NO ₃ -N	3 years	Azo dye
■ Nitrite	936230	100	0.01-0.30 mg/L NO ₂ -N	3 years	Diazotation
■ pH	936222	100	pH: 6.2-8.2	5 years	Mixed indicator
■ Phosphate	936228	100	0,02-4,50 mg/L PO ₄ -	3 years	Phosphormolybdenum blue
■ Silica LR ¹⁾	936224	100	0.02-2.10 mg/L SiO ₂	3 years	Silicomolybdenum blue
■ Silica HR ²⁾	936225	100	2-210 mg/L SiO ₂	3 years	Molybdosilic acid
■ Sulfate	936223	100	15-200 mg/L SO ₄ ²⁻	5 years	Barium sulfate (turbidity)

¹⁾ Measuring range for photometric evaluation on NANOCOLOR® VIS II. Range on other photometers can be different.

²⁾ For evaluation with the PF-12^{Plus}, a special filter (450 nm) is required.

GHS: Globally harmonized system: This product contains harmful substances which must be specially labeled as hazardous. For detailed information please see the SDS.

Easy

- Dosing without spoon or pipette
- Pictogram instructions for each test
- No zero measurement required

Safe

- Photometric precision for best results
- Reaction basis according to international standards
- Extremely long shelf life

Unique

- Optimal price / performance-ratio
- Works on competitor's photometers
- Ecologically friendly disposal of used reagents



	Spectrophotometers	PF-12 ^{Plus}	PF-3 Drinking Water	PF-3 Fish	PF-3 Pool	PF-3 Soil	Competitor compatible	Sea Water	GH5	Test
■	■		■	■	■		■		■	Ammonium
■	■	■	■	■	■		■	■		free Chlorine
■	■	■	■	■	■		■	■		total Chlorine, Ozone
■	■	■	■	■	■		■	■	■	Iron
■	■	■	■	■	■		■	■	■	Nitrate
■	■	■	■	■	■		■	■	■	Nitrite
■	■	■		■			■	■		pH
■	■		■			■	■	■	■	Phosphate
■	■	■	■	■	■		■	■	■	Silica LR
■	■	■	■	■	■		■	■	■	Silica HR
■	■	■	■	■	■			■	■	Sulfate

VISOCOLOR® accessories

The complete analysis from one source

VISOCOLOR® test kits from MACHEREY-NAGEL are ideally suited for the fast and easy water analysis. Besides the test kits, MACHEREY-NAGEL offers a broad range of accessories for VISOCOLOR® tests.

Good to know

VISOCOLOR® Color standards Chlorine (REF 914820) simulate the reaction color of DPD-based VISOCOLOR® chlorine tests for simple photometer check.



Ordering information

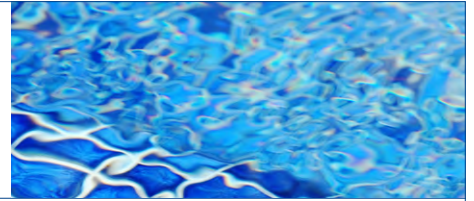
Description	REF	Content	GHS
Inspection solutions			
■ VISOCOLOR® Color standards Chlorine for checking consistent instrument response of NANOCOLOR® UV/VIS II, VIS II, NANOCOLOR® Advance, PF-12 ^{Plus} and PF-3	914820	4 solutions	
Accessories			
■ Measuring glasses for VISOCOLOR® ECO with screw caps	931151	10 pieces	
■ Slide comparator for VISOCOLOR® ECO	931152	2 pieces	
■ Color comparison chart for VISOCOLOR® ECO (REF end No. see test kit)	931 4..	1 piece	
■ Titration test tube with 5-mL-marking	915499	1 piece	
■ Sample bottle 30 mL for oxygen determination	915498	1 piece	
■ Sample beaker 25 mL	914498	1 piece	
■ Sample tube with 10-/20-mL-marking	914496	1 piece	
■ Measuring tube 25–200 mg/L Sulfate	914495	1 piece	
■ Measuring tube 2–15 mg/L Potassium	914444	1 piece	
■ Test tubes 16 mm OD	91680	20 pieces	
■ Test tubes 24 mm OD	936101	6 pieces	
■ Plastic spoon (measuring spoon) black, 85 mm	914663	10 pieces	
■ Plastic spoon (measuring spoon) orange, 85 mm	914664	10 pieces	
■ Plastic spoon (measuring spoon) black, 70 mm	914492	10 pieces	
■ VISOCOLOR® ECO test instructions for photometer PF-12 ^{Plus}	931503	1 piece	
■ VISOCOLOR® ECO test instructions for photometer PF-12	931501	1 piece	
■ VISOCOLOR® ECO test instructions for photometer PF-3	934001	1 piece	
■ VISOCOLOR® ECO test instructions for visual determination	931502	1 piece	
■ Additive reagent Z-1 to eliminate copper ions prior determination of total hardness	931929	30 mL	■
■ Measuring tube for VISOCOLOR® HE with screw cap	920401	10 pieces	
■ Comparator block for VISOCOLOR® HE	920402	1 piece	
■ Color comparison disk for VISOCOLOR® HE (REF end No. see test kit)	9203..	1 piece	
■ Spare syringes for VISOCOLOR® HE (REF end No. see test kit)	9154..	2 pieces	
■ Thermometer -10 °C to +60 °C	914497	1 piece	

GHS: Globally harmonized system: This product contains harmful substances which must be specially labeled as hazardous. For detailed information please see the SDS.



VISOCOLOR®

Color standards Chlorine



Simplest photometer control

- For VISOCOLOR® chlorine analysis
- Simulates DPD reaction color
- Three concentrations in a rugged case
- For VISOCOLOR® ECO tests and VISOCOLOR® Powder Pillows



Photometric tests

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NANOCOLOR® tube tests

Precise rapid tests for photometric water analysis

NANOCOLOR® tube tests for photometric analysis convince by their easy handling and therefore are the first choice for routine, laboratory and process analysis. A maximum in accuracy and precision is granted for the measurement results due to exactly pre-dosed reagents in 16 mm cuvettes and additional reagents. The tests are preprogrammed in MACHEREY-NAGEL photometers and selected automatically via a barcode on the cuvette. This perfect interaction of instruments and tests lets the user experience a high measurement safety, saving time and working cost-efficiently.

Ideally packed

All NANOCOLOR® tube tests are delivered in stable boxes with color coded labels, giving all relevant information about the test at one glance. The boxes provide a perfect protection from sunlight and convenient withdrawal of test tubes and reagents. LOT-specific information are available by scanning of the 2D barcode on the back of the box. The colored pictograms in the lid, which are of special value for our customers, provide intuitive instructions on the test procedure also for inexperienced users.

The perfect test for every user

The user's choice of the correct test is the first step towards a successful analysis. MACHEREY-NAGEL offers various test kits with different measurement ranges for all typical parameters relevant in water and waste water analysis. It is recommended to choose a test kit, where the expected and measured measurement value is within the 20–80 % range of the measuring range of the used test. Here, the safety of the measurement result is at its optimum. The operator gets reliable results and safety for the reporting of his results to supervisors and towards authorities.

Good to know

Certificate



Certificates of analysis for NANOCOLOR® tube tests can be downloaded fast and convenient via www.mn-net.com/certificate.



Good to know

Via the 2D barcode on the back of the packages, LOT-specific information can be read easily.



Easy

- Colored pictograms as step-by-step instruction
- Big cuvettes for easy pipetting
- Barcoded cuvettes for automatic test selection

Safe

- Convenient withdrawal of tubes from the box
- No contact with chemicals
- Reactions based on internationally accepted standard methods

Reliable

- Precisely pre-dosed reagents
- Adequate test for every application
- Constant high quality from batch to batch

Good to know



For further information on photometers for the evaluation of NANOCOLOR® tube tests see page 12.



ISO conform COD tests

MACHEREY-NAGEL offers a complete analytical system with seven tube tests for an ISO conform COD analysis. The ISO 15705 describes the use of tube tests that are suitable for photometric evaluation and is a standardized and internationally accepted method for sewage and waste water analysis. This norm explicitly suggests to use commercial test kits.

Time-saving and reliable analysis of total nitrogen

The sum-parameter total nitrogen is of high relevance in water and waste water analysis. It gives valuable information about the grade of contaminations with e.g. ammonia, nitrite or nitrate. NANOCOLOR® total nitrogen tests impress with safe and reproducible results as well as fast and easy handling. Precisely pre-dosed reagents allow the performance of the test in only a few steps. A separate cuvette for every sample decomposition saves time and minimizes errors from cross-contaminations.

NANOCOLOR® tube tests

Ordering information

Test	REF	Measuring range NANOCOLOR® VIS II	Number of tests	Shelf life	Method	
■ Aluminum 07 ²⁾	985098	0.02–0.70 mg/L Al ³⁺	19	1 year	Eriochrome® Cyanine R	
■ Ammonium 3	985003	0.04–2.30 mg/L NH ₄ -N 0.05–3.00 mg/L NH ₄ ⁺	20	1 year	Indophenol	
■ Ammonium 10	985004	0.2–8.0 mg/L NH ₄ -N 0.2–10.0 mg/L NH ₄ ⁺	20	1 year	Indophenol	
■ Ammonium 50	985005	1–40 mg/L NH ₄ -N 1–50 mg/L NH ₄ ⁺	20	1 year	Indophenol	
■ Ammonium 100	985008	4–80 mg/L NH ₄ -N 5–100 mg/L NH ₄ ⁺	20	1 year	Indophenol	
■ Ammonium 200	985006	30–160 mg/L NH ₄ -N 40–200 mg/L NH ₄ ⁺	20	1 year	Indophenol	
■ Ammonium 2000	985002	300–1600 mg/L NH ₄ -N 400–2000 mg/L NH ₄ ⁺	20	1 year	Indophenol	
■ AOX 3	985007	0.1–3.0 mg/L AOX 0.01–0.30 mg/L AOX	20	1 year	Mercury(II)-thiocyanate / Iron(III)-nitrate	
■ BOD ₅ (in Winkler bottles)	985822	2–3000 mg/L O ₂	25–50	2 years	Winkler	
■ BOD ₅ -TT	985825	0.5–3000 mg/L O ₂	22	2 years	Winkler	
■ Cadmium 2	985014	0.05–2.00 mg/L Cd ²⁺	10–19	1 year	Cadion	
■ Carbonate hardness 15	985015	1.25–18.75 °e 0.4–5.4 mmol/L H ⁺	20	1 year	Bromphenol blue	
■ Chloride 50	985021	0.5–50.0 mg/L Cl ⁻	20	1 year	Mercury(II)-thiocyanate / Iron(III)-nitrate	
■ Chloride 200	985019	5–200 mg/L Cl ⁻ 0.10–1.00 g/L Cl ⁻	20	1 year	Mercury(II)-thiocyanate / Iron(III)-nitrate	
■ Chlorine / Ozone 2	985017	0.05–2.50 mg/L Cl ₂ 0.05–2.00 mg/L O ₃	20	1 year	DPD	
■ Chlorine dioxide 5	985018	0.15–5.00 mg/L ClO ₂	20	1 year	DPD	
■ Chromate 5	985024	0.05–2.00 mg/L Cr(VI) 0.005–0.500 mg/L Cr(VI) ¹⁾ 0.1–4.0 mg/L CrO ₄ ²⁻ 0.01–1.00 mg/L CrO ₄ ²⁻¹⁾	20	2 years	Carbazide	
■ total Chromium 2	985059	0.05–2.00 mg/L Cr 0.005–0.500 mg/L Cr ¹⁾	20	2 years	Carbazide	
■ COD 40	ISO 15705	985027	2–40 mg/L O ₂	20	1 year (2–8 °C)	Potassium dichromate
■ COD 60	ISO 15705	985022	5–60 mg/L O ₂	20	1 year (2–8 °C)	Potassium dichromate
■ COD 60 in salt water		985020	6–60 mg/L O ₂	20	1 year (2–8 °C)	Potassium dichromate
■ COD 160	ISO 15705	985026	15–160 mg/L O ₂	20	1 year	Potassium dichromate
■ COD 160 Hg-free		963026	15–160 mg/L O ₂	20	1 year (2–8 °C)	Potassium dichromate
■ COD 300		985033	50–300 mg/L O ₂	20	1 year	Potassium dichromate
■ COD 600	ISO 15705	985030	50–600 mg/L O ₂	20	1 year	Potassium dichromate
■ COD 1500	ISO 15705	985029	100–1500 mg/L O ₂	20	1 year	Potassium dichromate
■ COD 1500 Hg-free		963029	100–1500 mg/L O ₂	20	1 year	Potassium dichromate
■ COD 4000		985011	400–4000 mg/L O ₂	20	1 year	Potassium dichromate
■ COD 10000		985023	1.00–10.00 g/L O ₂	20	1 year	Potassium dichromate
■ COD 15000		985028	1.0–15.0 g/L O ₂	20	1 year	Potassium dichromate
■ COD 60000		985012	5.0–60.0 g/L O ₂	20	1 year	Potassium dichromate
■ COD LR 150	ISO 15705	985036	3–150 mg/L O ₂	20	1 year	Potassium dichromate

Photometric tests

On other photometers than the NANOCOLOR® VIS II measurement ranges and wavelengths can be different.

¹⁾ A more sensitive measuring range is possible by using semi-micro cuvettes 50 mm (REF 91950).

²⁾ Decomposition only possible in microwave.

³⁾ Special filter can be necessary for filter photometers (Formaldehyde 10: 412 nm, Tin 3: 520 nm).

⁴⁾ Without barcode.

⁵⁾ Please see the instruction leaflet.

⁶⁾ This test can be performed without a NANOCOLOR® reagent set. Determination only with NANOCOLOR® spectrophotometers and the PF-12^{Plus}.

⁷⁾ Additionally required with first order: NANOCOLOR® TIC-Ex (REF 916993).

GHS: Globally harmonized system: This product contains harmful substances which must be specially labeled as hazardous. For detailed information please see the SDS.

NANOCOLOR® tube tests

	Spectrophotometer	PF-12 ^{plus}	PF-3 COD	PF-3 Drinking Water	PF-3 Fish	PF-3 Pool	PF-3 Soil	NanoOx N	NanoOx Metal	Crack set	Sea water ⁵⁾	GH5	Test
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		Aluminum 07 ²⁾
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Ammonium 3
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Ammonium 10
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Ammonium 50
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Ammonium 100
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Ammonium 200
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Ammonium 2000
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AOX 3
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BOD ₅ (in Winkler bottles)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	BOD ₅ -TT
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		Cadmium 2
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										<input checked="" type="checkbox"/>		Carbonat hardness 15
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Chloride 50
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Chloride 200
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>		Chlorine / Ozone 2
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										<input checked="" type="checkbox"/>		Chlorine dioxide 5
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		Chromate 5
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											<input checked="" type="checkbox"/>	total Chromium 2
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										<input checked="" type="checkbox"/>	COD 40
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										<input checked="" type="checkbox"/>	COD 60
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>									<input checked="" type="checkbox"/>		COD 60 in salt water
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										<input checked="" type="checkbox"/>	COD 160
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											<input checked="" type="checkbox"/>	COD 160 Hg-free
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											<input checked="" type="checkbox"/>	COD 300
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										<input checked="" type="checkbox"/>	COD 600
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										<input checked="" type="checkbox"/>	COD 1500
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										<input checked="" type="checkbox"/>	COD 1500 Hg-free
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										<input checked="" type="checkbox"/>	COD 4000
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										<input checked="" type="checkbox"/>	COD 10000
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										<input checked="" type="checkbox"/>	COD 15000
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										<input checked="" type="checkbox"/>	COD 60000
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										<input checked="" type="checkbox"/>	COD LR 150

NANOCOLOR® tube tests

Test	REF	Measuring range NANOCOLOR® VIS II	Number of tests	Shelf life	Method
■ COD HR 1500 ISO 15705	985038	20–1500 mg/L O ₂	20	1 year	Potassium dichromate
■ org. Complexing agents 10	985052	0.5–15.0 mg/L I _{BIC} 0.5–20.0 mg/L EDTA	10–19	1 year	Bismut xylenol orange
■ Copper 5	985053	0.10–7.00 mg/L Cu ²⁺	20	2 years	Cuprizone
■ Easily liberated Cyanide 04	985025	0.01–0.40 mg/l CN ⁻	19	1 year	Barbituric acid derivative
■ Cyanide 08	985031	0.02–0.80 mg/L CN ⁻ 0.005–0.100 mg/L CN ⁻¹)	20	1 year	Barbituric acid / Pyridine
■ DEHA 1 (Diethylhydroxylamine)	985035	0.05–1.00 mg/L DEHA	20	1 year	Redox reaction
■ Ethanol 1000	985838	0.10–1.00 g/L EtOH 0.013–0.130 Vol. % EtOH	23	2 years (< 0 °C)	Alcoholoxidase / Peroxidase
■ Fluoride 2	985040	0.1–2.0 mg/L F ⁻	20	1.5 years	Lanthanum-Alizarine complexone
■ Formaldehyde 8	985041	0.1–8.0 mg/L HCHO	20	2 years	Chromotropic acid
■ Formaldehyde 10 ³⁾	985046	0.20–10.00 mg/L HCHO 0.02–1.00 mg/L HCHO ¹⁾	20	2 years	Acetylacetone
■ Hardness Ca / Mg	985044	1.25–25.00 °e 0.2–3.6 mmol/L	20	1.5 years	Phthalein purple
■ Hardness 20	985043	1.25–25.00 °e 0.2–3.6 mmol/L	20	1.5 years	Phthalein purple
■ HC 300 (Hydrocarbons)	985057	0.5–5.6 mg/L HC 30–300 mg/kg HC	20	1 year	Potassium dichromate
■ Iron 3	985037	0.10–3.00 mg/L Fe 0.02–1.00 mg/L Fe ¹⁾	20	1 year	Diphenylpyridyltriazine
■ Lead 5	985009	0.10–5.00 mg/L Pb ²⁺	20	1 year	4-(2-Pyridyl)-(2-azo)-resorcine (PAR)
■ Manganese 10	985058	0.1–10.0 mg/L Mn 0.02–2.00 mg/L Mn ¹⁾	20	1.5 years	Formaldehyde
■ Methanol 15	985859	0.2–15.0 mg/L MeOH	23	2 year (< 0 °C)	Alcoholoxidase / Peroxidase
■ Molybdenum 40	985056	1.0–40.0 mg/L Mo(VI) 1.6–65.0 mg/L MoO ₄ ²⁻	20	2 years	Thioglycolic acid
■ Nickel 4	985071	0.10–7.00 mg/L Ni ²⁺ 0.02–1.00 mg/L Ni ^{2+ 1)}	20	2 years	Dimethylglyoxime
■ Nitrate 8	985065	0.30–8.00 mg/L NO ₃ -N 1.3–35.0 mg/L NO ₃ ⁻	20	2 years	2,6-Dimethylphenol
■ Nitrate 50	985064	0.3–22.0 mg/L NO ₃ -N 2–100 mg/L NO ₃ ⁻	20	2 years	2,6-Dimethylphenol
■ Nitrate 250	985066	4–60 mg/L NO ₃ -N 20–250 mg/L NO ₃ ⁻	20	2 years	2,6-Dimethylphenol
■ Nitrite 2	985068	0.003–0.460 mg/L NO ₂ -N 0.02–1.50 mg/L NO ₂ ⁻	20	1 year	Sulfanilic acid / 1-Naphthylamine
■ Nitrite 4	985069	0.1–4.0 mg/L NO ₂ -N 0.3–13.0 mg/L NO ₂ ⁻	20	1.5 years	Sulfanilic acid / 1-Naphthylamine
■ total Kjeldahl nitrogen TKN 16	985067	1.00–16.0 mg/L TKN	20	1.5 years	2,6-Dimethylphenol
■ total Nitrogen TN _b 22	985083	0.5–22.0 mg/L N	20	1 year	2,6-Dimethylphenol
■ total Nitrogen TN _b 60	985092	3–60 mg/L N	20	1 year	2,6-Dimethylphenol
■ total Nitrogen TN _b 220	985088	5–220 mg/L N	20	1 year	2,6-Dimethylphenol
■ Organic acids 3000	985050	30–3000 mg/L CH ₃ COOH 0.5–50.0 mmol/L CH ₃ COOH	20	1.5 years	Ethylenglycole / Iron(III)-Ions
■ Oxygen 12	985082	0.5–12.0 mg/L O ₂	22	2 years	Winkler

Photometric tests

On other photometers than the NANOCOLOR® VIS II measurement ranges and wavelengths can be different.

¹⁾ A more sensitive measuring range is possible by using semi-micro cuvettes 50 mm (REF 91950).

²⁾ Decomposition only possible in microwave.

³⁾ Special filter can be necessary for filter photometers (Formaldehyde 10: 412 nm, Tin 3: 520 nm).

⁴⁾ Without barcode.

⁵⁾ Please see the instruction leaflet.

⁶⁾ This test can be performed without a NANOCOLOR® reagent set. Determination only with NANOCOLOR® spectrophotometers and the PF-12^{20s}.

⁷⁾ Additionally required with first order: NANOCOLOR® TIC-Ex (REF 916993).

GHS: Globally harmonized system: This product contains harmful substances which must be specially labeled as hazardous. For detailed information please see the SDS.

NANOCOLOR® tube tests

	Spectrophotometer	PF-12 ^{plus}	PF-3 COD	PF-3 Drinking Water	PF-3 Fish	PF-3 Pool	PF-3 Soil	NanoOx N	NanoOx Metal	Crack set	Sea water ⁵⁾	GHS	Test
	■	■	■									■	COD HR 1500
	■	■									■		org. Complexing agents 10
	■	■							■	■			Copper 5
	■	■									■	■	Easily liberated Cyanide 04
	■	■									■	■	Cyanide 08
	■	■									■	■	DEHA 1 (Diethylhydroxylamine)
	■	■											Ethanol 1000
	■	■									■	■	Fluoride 2
	■	■										■	Formaldehyde 8
	■	■									■		Formaldehyde 10 ⁹⁾
	■	■									■		Hardness Ca / Mg
	■	■									■		Hardness 20
	■	■									■	■	HC 300 (Hydrocarbons)
	■	■							■	■	■	■	Iron 3
	■	■								■			Lead 5
	■	■									■	■	Manganese 10
	■	■											Methanol 15
	■	■										■	Molybdenum 40
	■	■							■	■	■	■	Nickel 4
	■	■										■	Nitrate 8
	■	■					■						Nitrate 50
	■	■											Nitrate 250
	■	■									■	■	Nitrite 2
	■	■									■		Nitrite 4
	■	■						■				■	total Kjeldahl nitrogen TKN 16
	■	■						■				■	total Nitrogen TN _b 22
	■	■						■				■	total Nitrogen TN _b 60
	■	■						■				■	total Nitrogen TN _b 220
	■	■									■	■	Organic acids 3000
	■	■									■	■	Oxygen 12

NANOCOLOR® tube tests

Test	REF	Measuring range NANOCOLOR® VIS II		Number of tests	Shelf life	Method
■ Peroxide 2	985871	0.03–2.00 mg/L H ₂ O ₂		10–19	1 year (2–8 °C)	Peroxidase
■ pH 6.5–8.2 ⁴⁾	91872	pH 6.5–8.2		100	1.5 years	Phenol red
■ Phenolic Index 5	985074	0.2–5.0 mg/L Phenol		20	1.5 years	4-Aminoantipyrine
■ ortho- and total Phosphate 1	985076	0.05–1.50 mg/L P 0.010–0.800 mg/L P ¹⁾	0.2–5.0 mg/L PO ₄ ³⁻ 0.03–2.50 mg/L PO ₄ ³⁻¹⁾	20	1 year	Phosphomolybdenum blue
■ ortho- and total Phosphate 5	985081	0.20–5.00 mg/L P	0.5–15.0 mg/L PO ₄ ³⁻	20	1 year	Phosphomolybdenum blue
■ ortho- and total Phosphate 15	985080	0.30–15.00 mg/L P	1.0–45.0 mg/L PO ₄ ³⁻	20	1 year	Phosphomolybdenum blue
■ ortho- and total Phosphate 45	985055	5.0–50.0 mg/L P	15–150 mg/L PO ₄ ³⁻	20	1 year	Phosphomolybdenum blue
■ ortho- and total Phosphate 50	985079	10.0–50.0 mg/L P	30–150 mg/L PO ₄ ³⁻	19	3 years	Vanadate molybdate
■ ortho- and total Phosphate LR 1	985095	0.05–0.50 mg/L P	0.2–1.5 mg/L PO ₄ ³⁻	20	1 year	Phosphomolybdenum blue
■ POC 200	985070	20–200 mg/L POC	2–40 mg/L KWI	20	1.5 years	Turbidity
■ Potassium 50	985045	2–50 mg/L K ⁺		20	2 years	Potassium tetraphenylborate (Turbidity)
■ Residual hardness 1	985084	0.03–1.25 °e	0.004–0.180 mmol/L	20	1 year	Phthalein purple
■ Silver 3	985049	0.20–3.00 mg/L Ag ⁺	0.08–0.50 mg/L Ag ^{+ 1)}	20	1.5 years	Indicator
■ Starch 100	985085	5–100 mg/L starch		19	1 year	Iodine-starch reaction
■ Sulfate 1000	985087	200–1000 mg/L SO ₄ ²⁻		20	3 years	Barium sulfate (Turbidity)
■ Sulfate LR 200	985062	20–200 mg/L SO ₄ ²⁻		20	3 years	Barium sulfate (Turbidity)
■ Sulfate MR 400	985060	40–200 mg/L SO ₄ ²⁻		20	3 years	Barium sulfate (Turbidity)
■ Sulfate HR 1000	985063	200–1000 mg/L SO ₄ ²⁻		20	2 years	Barium sulfate (Turbidity)
■ Sulfide 3	985073	0.05–3.00 mg/L S ²⁻		20	3 years	Methylene blue
■ Sulfite 10	985089	0.2–10.0 mg/L SO ₃ ²⁻	0.05–2.40 mg/L SO ₃ ²⁻¹⁾	20	1 year	Thiobenzoic acid derivative
■ Sulfite 100	985090	5–100 mg/L SO ₃ ²⁻		19	1 year	Potassium iodate / -iodide
■ Anionic surfactants 4	985032	0.20–4.00 mg/L MBAS	0.20–3.500 mg/L SDS	20	2 years	Methylene blue
■ Cationic surfactants 4	985034	0.20–4.00 mg/L CTAB		20	2 years	Disulfine blue
■ Nonionic surfactants 15	985047	0.3–15.0 mg/L Triton® X-100		20	2 years	TBPE
■ Thiocyanate 50	985091	0.5–50.0 mg/L SCN ⁻		20	2 years	Iron(III)-thiocyanate
■ Tin 3 ³⁾	985097	0.10–3.00 mg/L Sn		18	1 year	9-Phenyl-3-fluoron
■ TOC 30 ⁷⁾	985075	2.0–30.0 mg/L C		20	1 year (2–8 °C)	Indicator
■ TOC 300 ⁷⁾	985078	20–300 mg/L C		20	1 year (2–8 °C)	Indicator
■ TTC / Sludge activity	985890	5–150 µg TPF	0.050–2.300 A	20	2 years (2–8 °C)	2,3,5-Triphenyltetrazoliumchloride (TTC)
■ Turbidity ⁶⁾	Test 9-06	0.1–1000 NTU		–	–	Turbidity
■ Zinc 4	985096	0.10–4.00 mg/L Zn ²⁺		20	1 year	Zincon
■ Zinc 6	985042	0.20–6.00 mg/L Zn ²⁺		20	1 year	4-(2-pyridylazo)resorcinol (PAR)
■ Zirconium 100	985001	5–100 mg/L Zr		20	3 years	Indicator

Photometric tests

On other photometers than the NANOCOLOR® VIS II measurement ranges and wavelengths can be different.

¹⁾ A more sensitive measuring range is possible by using semi-micro cuvettes 50 mm (REF 91950).

²⁾ Decomposition only possible in microwave.

³⁾ Special filter can be necessary for filter photometers (Formaldehyde 10: 412 nm, Tin 3: 520 nm).

⁴⁾ Without barcode.

⁵⁾ Please see the instruction leaflet.

⁶⁾ This test can be performed without a NANOCOLOR® reagent set. Determination only with NANOCOLOR® spectrophotometers and the PF-12^{Plus}.

⁷⁾ Additionally required with first order: NANOCOLOR® TIC-Ex (REF 916993).

GHS: Globally harmonized system: This product contains harmful substances which must be specially labeled as hazardous. For detailed information please see the SDS.

NANOCOLOR[®] tube tests

	Spectrophotometer	PF-12 ^{plus}	PF-3 COD	PF-3 Drinking Water	PF-3 Fish	PF-3 Pool	PF-3 Soil	NanoX N	NanoX Metal	Crack set	Sea water ⁵⁾	GHS	Test
	■	■									■		Peroxide 2
	■	■		■		■					■		pH 6.5–8.2 ⁴⁾
	■	■									■	■	Phenolic index 5
	■	■							■		■	■	ortho- and total Phosphate 1
	■	■							■		■	■	ortho- and total Phosphate 5
	■	■					■		■		■	■	ortho- and total Phosphate 15
	■	■							■		■	■	ortho- and total Phosphate 45
	■	■							■		■	■	ortho- and total Phosphate 50
	■	■							■		■	■	ortho- and total Phosphate LR 1
	■	■									■		POC 200
	■	■					■				■	■	Potassium 50
	■	■											Residual hardness 1
	■	■							■				Silver 3
	■	■									■	■	Starch 100
	■	■										■	Sulfate 1000
	■	■										■	Sulfate LR 200
	■	■											Sulfate MR 400
	■	■											Sulfate HR 1000
	■	■									■	■	Sulfide 3
	■	■									■	■	Sulfite 10
	■	■									■	■	Sulfite 100
	■	■									■	■	Anionic surfactants 4
	■	■									■	■	Cationic surfactants 4
	■	■										■	Nonionic surfactants 15
	■	■									■	■	Thiocyanate 50
	■	■									■	■	Tin 3 ³⁾
	■	■										■	TOC 30
	■	■										■	TOC 300
	■	■										■	TTC / Sludge activity
	■	■									■		Turbidity ⁶⁾
	■	■							■	■	■	■	Zinc 4
	■	■							■	■	■	■	Zinc 6
	■	■							■	■	■		Zirconium 100

NANOCOLOR[®] robot tests

Fully automated water analysis

The companies MACHEREY-NAGEL and Skalar Analytical BV have collaborated on a robotic analyzer for fully automated water analysis in the laboratory.

The test kit analyzer SP2000^{series} automates all the necessary handling steps of the photometric NANOCOLOR[®] tube tests such as sample (de)-capping, pipetting, addition of reagents, mixing, heating, cooling and measurement.

The flexibility and versatility of the test kit platform is reflected in the possibility to process 48 to 192 test tubes at once by using different test tube racks. The instrument can be configured for the analysis of one test kit application or for multiple test kit applications per analysis run, such as combinations of COD, total phosphate, total nitrogen and others. The evaluation of the tests is performed on the spectrophotometer NANOCOLOR[®] VIS II which is integrated on the platform. With the software the user can define if the application should be processed sequential or parallel.

Good to know

If you are interested in automated water analysis, please do not hesitate to contact us.



Ordering information

Test	REF	Measuring range NANOCOLOR [®] VIS II ¹⁾		Number of tests	Shelf life	Method
Ammonium 3	985603	0.04–2.30 mg/L NH ₄ -N	0.05–3.00 mg/L NH ₄ ⁺	20	1 year	Indophenol
Ammonium 50	985605	1–40 mg/L NH ₄ -N	1–50 mg/L NH ₄ ⁺	20	1 year	Indophenol
Chloride 50	985621	0.5–50.0 mg/L Cl ⁻		20	1 year	Mercury(II)-thiocyanate / Iron(III)-nitrate
Chloride 200	985619	5–200 mg/L Cl ⁻		20	1 year	Mercury(II)-thiocyanate / Iron(III)-nitrate
COD 60	985622	5–60 mg/L O ₂		20	1 year (2–8 °C)	Potassium dichromate
COD 160	985626	10–160 mg/L O ₂		20	1 year	Potassium dichromate
COD 600	985630	50–600 mg/L O ₂		20	1 year	Potassium dichromate
COD 1500	985629	100–1500 mg/L O ₂		20	1 year	Potassium dichromate
COD LR 150	985636	3–150 mg/L O ₂		19	1 year	Potassium dichromate
COD HR 1500	985638	20–1500 mg/L O ₂		19	1 year	Potassium dichromate
COD 15000	985628	1.0–15.0 g/L O ₂		20	1 year	Potassium dichromate
Nitrate 8	985665	0.30–8.00 mg/L NO ₃ -N	1.3–35.0 mg/L NO ₃ ⁻	20	2 years	2,6-Dimethylphenol
Nitrate 50	985664	0.3–22.0 mg/L NO ₃ -N	2–100 mg/L NO ₃ ⁻	20	2 years	2,6-Dimethylphenol
Nitrite 2	985668	0.003–0.460 mg/L NO ₂ -N	0.02–1.50 mg/L NO ₂ ⁻	20	1 year	Sulfanilic acid / 1-Naphthylamine
Nitrite 4	985669	0.1–4.0 mg/L NO ₂ -N	0.3–13.0 mg/L NO ₂ ⁻	20	1.5 years	Sulfanilic acid / 1-Naphthylamine
total Nitrogen TN _b 22	985683	0.5–22.0 mg/L N		20	1 year	2,6-Dimethylphenol
total Nitrogen TN _b 220	985688	5–220 mg/L N		20	1 year	2,6-Dimethylphenol
Organic acids 3000	985650	30–3000 mg/L CH ₃ COOH	0.5–50.0 mmol/L CH ₃ COOH	20	1.5 years	Ethylenglycole / Iron(III)-Ions
Phenolic Index 5	985674	0.2–5.0 mg/L Phenol		20	1.5 years	4-Aminoantipyrine
total Phosphate 1	985676	0.05–1.50 mg/L P	0.2–5.0 mg/L PO ₄ ³⁻	20	1 year	Phosphomolybdenum blue
total Phosphate 5	985681	0.20–5.00 mg/L P	0.5–15.0 mg/L PO ₄ ³⁻	20	1 year	Phosphomolybdenum blue
total Phosphate 15	985680	0.30–15.00 mg/L P	1.0–45.0 mg/L PO ₄ ³⁻	20	1 year	Phosphomolybdenum blue
ortho Phosphate 1	985607	0.05–1.50 mg/L P	0.2–5.0 mg/L PO ₄ ³⁻	20	1 year	Phosphomolybdenum blue
ortho Phosphate 15	985657	0.30–15.00 mg/L P	1.0–45.0 mg/L PO ₄ ³⁻	20	1 year	Phosphomolybdenum blue
Sulfide 3	985673	0.05–3.00 mg/L S ²⁻		20	3 years	Methylene blue

¹⁾ Evaluation only possible on the spectrophotometers NANOCOLOR[®] VIS II and NANOCOLOR[®] VIS.

²⁾ Please see the instruction leaflet.

GHS: Globally harmonized system: This product contains harmful substances which must be specially labeled as hazardous. For detailed information please see the SDS.

NANOCOLOR® standard tests

High sensitivity for photometric water analysis

NANOCOLOR® standard tests are convenient reagent kits for photometric analysis. With ready-to-use reagents up to 500 determinations are possible with only one test kit, resulting in low costs per determination for the user. Even very low limits can be evaluated precisely, due to high sample volumes and the measurement in 50 mm cuvettes. An enhancement of selectivity is possible for various parameters by extraction, where potentially interfering substances remain in the aqueous phase. The colored complex with the substance of interest is extracted with an organic solvent from the aqueous phase and is then analyzed within the organic phase.

Good to know

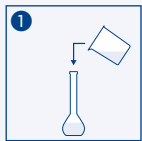
NANOCOLOR® standard tests offer maximum sensitivity and accuracy in photometric analysis.

Good to know

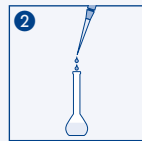
For further information on NANOCOLOR® photometers for the evaluation of NANOCOLOR® standard tests see page 12.

How it's done

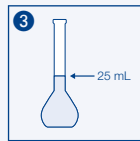
Procedure of standard tests



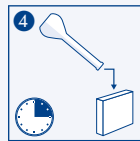
1 Fill 20 mL sample into 25 mL flask



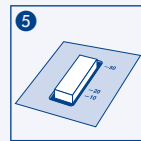
2 Add reagents



3 Fill up to 25 mL with dist. water and mix



4 After reaction time fill into cuvette



5 Measure





NANOCOLOR® standard tests

Ordering information

Test	REF	Measuring range NANOCOLOR® VIS II		Number of tests ¹⁾	Shelf life	Method
■ Aluminum ²⁾	91802	0.01–1.00 mg/L Al ³⁺		250	2 years	Eriochrome® Cyanine R
■ Ammonium	91805	0.01–2.0 mg/L NH ₄ -N	0.01–2.5 mg/L NH ₄ ⁺	100	1 year	Indophenol
■ Cadmium ³⁾	918131	0.002–0.50 mg/L Cd ²⁺		25	1.5 years	Dithizone
■ Chloride	91820	0.2–125 mg/L Cl ⁻		250	1 year	Mercury(II)-thiocyanate / iron(III)-nitrate
■ Chlorine	91816	0.02–10.0 mg/L Cl ₂		250	3 years	DPD
■ Chlorine dioxide	918163	0.04–4.00 mg/L ClO ₂		50	1.5 years	DPD
■ Chromate	91825	0.01–3.0 mg/L Cr(VI)	0.01–6.0 mg/L CrO ₄ ²⁻	250	2 years	Carbazide
■ Cobalt	91851	0.002–0.70 mg/L Co ²⁺		250	2 years	5-CI-PADAB
■ Color (Hazen/DIN) ⁴⁾	Test 1-39	5–500 mg/L Pt (Hazen)	0.2–20.0 ¹ /m	–	–	Hazen
■ Copper	91853	0.01–10.0 mg/L Cu ²⁺		250	2 years	Cuprizone
■ Cyanide	91830	0.001–0.50 mg/L CN ⁻		250	1 year	Barbituric acid / pyridine
■ Detergents, anionic	91832	0.02–5.0 mg/L MBAS		40	3 years	Methylene blue
■ Detergents, cationic	91834	0.05–5.0 mg/L CTAB		40	3 years	Bromphenol blue
■ Fluoride	918142	0.05–2.00 mg/L F ⁻		500	2 years	SPADNS
■ Hydrazine	91844	0.002–1.50 mg/L N ₂ H ₄		250	1 year	4-(Dimethylamino)-benzaldehyde
■ Iron LR	918128	0.005–5.00 mg/L Fe		250	3 years	Triazine
■ Iron	91836	0.01–15.0 mg/L Fe		250	3 years	1,10-Phenanthroline
■ Lead ³⁾	918101	0.005–1.00 mg/L Pb ²⁺		50	1.5 years	Dithizone
■ Manganese LR	918126	0.005–3.00 mg/L Mn		250	1 year	TMB
■ Manganese	91860	0.01–10.0 mg/L Mn		250	3 years	Formaloxime
■ Nickel	91862	0.01–10.0 mg/L Ni ²⁺		250	2 years	Dimethylglyoxime
■ Nitrate	91865	0.1–30.0 mg/L NO ₃ -N	0.5–140 mg/L NO ₃ ⁻	100	2 years	2,6-Dimethylphenol
■ Nitrate Z	91863	0.02–1.0 mg/L NO ₃ -N	0.1–5.0 mg/L NO ₃ ⁻	500	1.5 years	Sulfanilic acid / 1-Naphthylamine
■ Nitrite	91867	0.002–0.30 mg/L NO ₂ -N	0.005–1.00 mg/L NO ₂ ⁻	250	1.5 years	Sulfanilic acid / 1-Naphthylamine
■ Ozone	91885	0.01–1.50 mg/L O ₃		200	1 year (2–8 °C)	Indigotrisulfonate
■ Phenol	91875	0.01–7.0 mg/L Phenol		500	3 years	4-Nitroaniline
■ ortho-Phosphate	91877	0.04–6.5 mg/L PO ₄ -P	0.1–20.0 mg/L PO ₄ ³⁻	500	3 years	Phospho molybdenum blue
■ ortho-Phosphate	91878	0.2–17 mg/L PO ₄ -P	0.5–50 mg/L PO ₄ ³⁻	500	3 years	Vanadate molybdate
■ SAC ^{4) 7)}	Test 3-01	0.1–150.0 ¹ /m		–	–	–
■ Silica	91848	0.01–10.0 mg/L Si 0.002–0.1 mg/L Si ⁵⁾	0.02–10.0 mg/L SiO ₂ 0.005–0.200 mg/L SiO ₂ ⁵⁾	250	3 years	Silicomolybdenum blue
■ Sulfide	91888	0.01–3.0 mg/L S ²⁻		250	3 years	Methylene blue
■ Turbidity (Formazine/DIN) ⁴⁾	Test 1-92	1–100 TE/F (= FAU)	0.5–40.0 ¹ /m	–	–	Turbidity
■ Zinc	91895	0.02–3.0 mg/L Zn ²⁺		250	3 years	Zincon

Photometric tests

¹⁾ Maximal number of tests. The number of tests depends on the used sample volume.

²⁾ Decomposition in micro wave is possible.

³⁾ Organic phase tetrachloro ethylene p.a. or tetrachloro methane is needed additionally.

⁴⁾ No NANOCOLOR® test is necessary for this determination.

⁵⁾ Highly sensitive measurement.

⁶⁾ Please see the instruction leaflet.

⁷⁾ This test can only be performed with NANOCOLOR® UV/VIS II.

GHS: Globally harmonized system: This product contains harmful substances which must be specially labeled as hazardous. For detailed information please see the SDS.

NANOCOLOR® standard tests

	Spectrophotometer	Reduced sample volume	Simplified procedure	NanOx N	NanOx Metal	Sludge analysis	Crack set	Sea water ⁹⁾	GHS	Test
	■	■			■			■		Aluminum ²⁾
	■								■	Ammonium
	■					■	■		■	Cadmium ³⁾
	■	■							■	Chloride
	■	■	■					■		Chlorine
	■							■	■	Chlorine dioxide
	■	■			■	■		■	■	Chromate
	■	■			■		■	■	■	Cobalt
	■							■		Color (Hazen/DIN) ⁴⁾
	■	■	■		■	■	■	■		Copper
	■	■						■	■	Cyanide
	■								■	Detergents, anionic
	■								■	Detergents, cationic
	■	■						■	■	Fluoride
	■	■	■					■	■	Hydrazine
	■	■	■		■		■			Iron LR
	■	■	■		■		■	■	■	Iron
	■					■	■		■	Lead ³⁾
	■									Manganese LR
	■	■	■						■	Manganese
	■	■	■		■	■	■	■	■	Nickel
	■			■					■	Nitrate
	■	■							■	Nitrate Z
	■	■	■					■	■	Nitrite
	■							■	■	Ozone
	■	■						■	■	Phenol
	■	■	■					■	■	ortho-Phosphate
	■	■	■					■	■	ortho-Phosphate
	■									SAC ^{4) 7)}
	■	■	■					■	■	Silica
	■	■						■	■	Sulfide
	■							■		Turbidity (Formazine/DIN) ⁴⁾
	■	■			■	■	■	■	■	Zinc

NANOCOLOR[®] ECO

Flexible reagent kits for photometric analysis

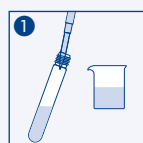
NANOCOLOR[®] ECO reagent kits are convenient and flexible test sets for photometric analysis. They impress with their simple test procedure at low determination costs. A set includes all reagents needed for 100 determinations. The tests are performed and measured in 16 mm (REF 91680) or 24 mm (REF 936101) round test tubes without the need of additional beakers or volumetric flasks. The sensitivity can be increased by transferring the solution into a 50 mm semi micro cell (REF 91950). The reagent kits from the NANOCOLOR[®] ECO line are based on reaction chemistry of recognized standard methods and norms. All together, NANOCOLOR[®] ECO reagent kits combine convenient test procedures with secure and reliable measuring results.

Good to know

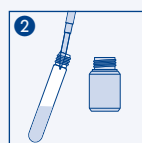
NANOCOLOR[®] ECO reagent kits include liquid or solid reagents which can be easily dosed with a pipette or tweezers.

How it's done

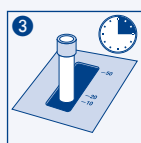
Procedure of NANOCOLOR[®] ECO tests



1 Add sample to cuvette



2 Add reagents and mix



3 Measure after reaction time

Ordering information

Test	REF	Measuring range	Shelf life	Number of tests	Method
■ Ammonium LR	976003	0.040–1.80 mg/L NH ₄ -N (16 mm) 0.020–1.15 mg/L NH ₄ -N (24 mm) 0.010–0.500 mg/L NH ₄ -N (50 mm)	1.5 years	100	Indophenol – according to APHA 4500-NH ₃ F, ISO 7150-1, DIN 38406-E5 and EPA 350.1

¹⁾ See instruction leaflet

GHS: Globally harmonized system: This product contains harmful substances which must be specially labeled as hazardous. For detailed information please see the SDS.



Easy

- Pictograms as step-by-step instruction
- Tests are performed directly in 16 mm or 24 mm test tubes
- No complex sample preparation in volumetric flask or beaker

Reliable

- Reaction chemistry based on internationally accepted standard methods
- Constant quality from batch to batch
- Method validation data available for each reagent kit

Flexible

- Measurement in 16 mm or 24 mm round tubes
- Increased sensitivity by transfer into 50 mm semi micro cell
- Convenient test procedure with high sensitivity

Spectrophotometers
 PF-12^{Plus}
 Sea Water ¹⁾
 GHS
 Test

Ammonium LR



NANOCONTROL

Analytical quality control for a complete analytical system

With *NANOCONTROL* the user can check the complete *NANOCOLOR*[®] analytical system and his own work comprehensively and prove the correctness of his results. The performance of consequent analytical quality assurance allows for an objective proof of the accuracy of the photometric analysis resulting in acceptance by local authorities. *MACHEREY-NAGEL* offers a complete system to test and document the performance of the system for internal quality control. Together with our customers we developed a user-friendly system, future-proof, and tailor-made for the needs of the operator. Continuous development and innovation make us the market leader in all questions regarding quality control in photometric water analysis.

Single and multistandards

In *NANOCONTROL* standards the respective reference substances are dissolved with a defined concentration. This concentration of the standard solution is selected to be in the middle of the measuring range of the suitable test kit with a narrow confidence interval. The standard solution is applied in the test instead of a normal water sample. The test kit is then handled as described in the instructions. When the result of the test is within the confidence interval, the operator can be sure that all components of his analytical system are working correctly and that no handling error was made. In case of deviations from the given value, equipment and test kit have to be monitored and checked. In addition to solutions with only one standard substance also multistandards are available, containing a mixture of different standard substances. They are designed for special fields of application, e.g. waste water or drinking water analysis.

Hereby various characteristic parameters can be controlled with only one standard solution and the results can then be conveniently documented.

Good to know



All requirements on quality assurance (IQC) can be fulfilled with the *NANOCONTROL* System from *MACHEREY-NAGEL*.

Find an overview on page 16.



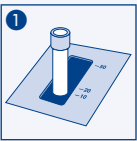
Spiking solutions

The concentration of a parameter in samples is increased by a defined value by spiking it with a standard addition using *NANOCONTROL* 100+ solutions. Possible interferences in the sample matrix can be detected under consideration of the recovery rates. This kind of plausibility test is especially recommended if an unknown sample has to be analyzed for the first time, or if it is known that the sample contains interfering substances as e.g. large amounts of salt or proteins. In addition to a dilution, this method can give insight to possible sources of error, if there is a continuous deviation from the expected measurement result. *NANOCONTROL* 100+ solutions are available for multi-standards as well as single standards.

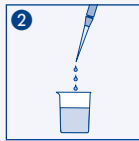
How it's done



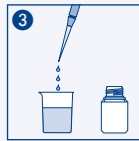
Procedure for *NANOCONTROL* 100+ addition



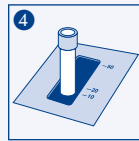
1 Determination of concentration of sample before spiking



2 Fill 10 mL of sample into beaker (or cuvette)



3 Add 100 µL 100+ addition solution and mix



4 Determination of new concentration

The difference in concentration should equal the theoretical value of the 100+ addition solution.



Ordering information

Standards

Standard	REF	Test number	Test	Number of tests	Concentration of standard ¹⁾	Confidence interval
Single standards						
■ AOX 3	92507	0-07	AOX 3	20	1.0 mg/L AOX	0.8–1.2 mg/L AOX
■ BOD ₅	92582	8-22 / 8-25	BOD ₅ / BOD ₅ -TT	10	210 mg/L O ₂	170–250 mg/L O ₂
■ Chlorine	92517	0-17 1-16	Chlorine / Ozone 2 Chlorine	30	0.80 mg/L Cl ₂ 1.00 mg/L Cl ₂	0.70–0.90 mg/L Cl ₂ 0.90–1.10 mg/L Cl ₂
■ Chromate	92524	0-24 0-59 1-25	Chromate 5 total Chromium 2 Chromate	15	2.0 mg/L CrO ₄ ²⁻ 0.90 mg/L Cr 0.40 mg/L CrO ₄ ²⁻	1.8–2.2 mg/L CrO ₄ ²⁻ 0.80–1.00 mg/L Cr 0.36–0.44 mg/L CrO ₄ ²⁻
■ COD 60	92522	0-27 / 0-22	COD 40 / COD 60	15	30 mg/L O ₂	26–34 mg/L O ₂
■ COD 160	92526	0-26 / 0-33 / 0-36	COD 160 / COD 300 / COD LR 150	15	100 mg/L O ₂	90–110 mg/L O ₂
■ COD 1500	92529	0-30 / 0-29 / 0-38	COD 600 / COD 1500 / COD HR 1500	15–30	400 mg/L O ₂	360–440 mg/L O ₂
■ COD 15000	92528	0-23 0-28	COD 10000 COD 15000	30–150	4.00 g/L O ₂ 4.0 g/L O ₂	3.60–4.40 g/L O ₂ 3.6–4.4 g/L O ₂
■ Nitrite	92568	0-68 0-69 1-67	Nitrite 2 Nitrite 4 Nitrite	15–150	0.30 mg/L NO ₂ -N 2.10 mg/L NO ₂ -N 0.060 mg/L NO ₂ -N	0.25–0.35 mg/L NO ₂ -N 1.9–2.3 mg/L NO ₂ -N 0.054–0.066 mg/L NO ₂ -N
■ ortho-Phosphate	92576	0-76 1-77	ortho- and total Phosphate 1 ortho-Phosphate	15	1.00 mg/L PO ₄ -P 0.2 mg/L PO ₄ -P	0.90–1.10 mg/L PO ₄ -P 0.18–0.22 mg/L PO ₄ -P
■ Sulfate	92562	0-62	Sulfate LR 200	15	120 mg/L SO ₄ ²⁻	110–130 mg/L SO ₄ ²⁻
■ Sulfite	92590	0-90	Sulfite 100	15	50 mg/L SO ₃ ²⁻	45–55 mg/L SO ₃ ²⁻
■ TOC 30	92575	0-75	TOC 30	15	10 mg/L C	8.5–11.5 mg/L C
■ TOC 300	92578	0-78	TOC 300	15	100 mg/L C	85–115 mg/L C
Multistandards						
■ Sewage outflow 1	925011	0-04 0-26 0-33 0-11 0-36 0-65 0-64 1-65 0-81 0-92	Ammonium 10 COD 160 COD 300 COD 4000 COD LR 150 Nitrate 8 Nitrate 50 Nitrate ortho- and total Phosphate 5 total Nitrogen TN _b 60	12–120	3.0 mg/L NH ₄ -N 114 mg/L O ₂ 114 mg/L O ₂ 2600 mg/L O ₂ 114 mg/L O ₂ 6.00 mg/L NO ₃ -N 6.0 mg/L NO ₃ -N 6.0 mg/L NO ₃ -N 2.50 mg/L P 20 mg/L N	2.7–3.3 mg/L NH ₄ -N 103–125 mg/L O ₂ 103–125 mg/L O ₂ 2340–2860 mg/L O ₂ 103–125 mg/L O ₂ 5.20–6.80 mg/L NO ₃ -N 5.2–6.8 mg/L NO ₃ -N 5.2–6.8 mg/L NO ₃ -N 2.25–2.75 mg/L P 18–22 mg/L N
■ Sewage outflow 2	925010	0-03 0-27 0-22 0-65 0-64 1-65 0-76 0-81 0-95 0-83 0-67	Ammonium 3 COD 40 COD 60 Nitrate 8 Nitrate 50 Nitrate total Phosphate 1 total Phosphate 5 total Phosphate LR total Nitrogen TN _b 22 TKN 16	12–120	1.50 mg/L NH ₄ -N 30 mg/L O ₂ 30 mg/L O ₂ 3.00 mg/L NO ₃ -N 3.0 mg/L NO ₃ -N 3.0 mg/L NO ₃ -N 1.00 mg/L P 1.00 mg/L P 0.25 mg/L P 12.0 mg/L N 9.00 mg/L TKN	1.30–1.70 mg/L NH ₄ -N 26–34 mg/L O ₂ 26–34 mg/L O ₂ 2.60–3.40 mg/L NO ₃ -N 2.6–3.4 mg/L NO ₃ -N 2.6–3.4 mg/L NO ₃ -N 0.90–1.10 mg/L P 0.90–1.10 mg/L P 0.22–0.28 mg/L P 10.0–14.0 mg/L N 6.6–11.4 TKN
■ Sewage inflow	925012	0-05 0-30 0-29 0-28 0-12 0-38 0-64 0-66 0-80 0-88	Ammonium 50 COD 600 COD 1500 COD 15000 COD 60000 COD HR 1500 Nitrate 50 Nitrate 250 total Phosphate 15 total Nitrogen TN _b 220	30–300	25.0 mg/L NH ₄ -N 400 mg/L O ₂ 400 mg/L O ₂ 10.0 g/L O ₂ 10.0 g/L O ₂ 400 mg/L O ₂ 15.0 mg/L NO ₃ -N 15 mg/L NO ₃ -N 8.00 mg/L P 75 mg/L N	22.0–28.0 mg/L NH ₄ -N 360–440 mg/L O ₂ 360–440 mg/L O ₂ 9.0–11.0 g/L O ₂ 9.0–11.0 g/L O ₂ 360–440 mg/L O ₂ 13.5–16.5 mg/L NO ₃ -N 13–17 mg/L NO ₃ -N 7.20–8.80 mg/L P 67–83 mg/L N

Photometric tests

¹⁾ Please see the instruction leaflet / evaluation sheet.

²⁾ Shelf life 6 weeks after first opening / see instruction leaflet.

GHS: Globally harmonized system: This product contains harmful substances which must be specially labeled as hazardous. For detailed information please see the SDS.

Addition	Shelf life ²⁾	GHS	Standard
Single standards			
1.0 mg/L AOX	1 year		AOX 3
–	1 year (2–8 °C)		BOD ₅
–	1 year	■	Chlorine
0.5 mg/L CrO ₄ ²⁻ 0.22 mg/L Cr 0.5 mg/L CrO ₄ ²⁻	1 year	■	Chromate
–	1 year (2–8 °C)		COD 60
–	1 year (2–8 °C)		COD 160
–	1 year (2–8 °C)		COD 1500
–	1 year (2–8 °C)		COD 15000
0.02 mg/L NO ₂ -N – 0.02 mg/L NO ₂ -N	1 year		Nitrite
0.10 mg/L PO ₄ -P 0.10 mg/L PO ₄ -P	1 year		ortho-Phosphate
–	1 year		Sulfate 200
–	1 year		Sulfite
–	1 year (2–8 °C)		TOC 30
–	1 year (2–8 °C)		TOC 300
Multistandards			
1.0 mg/L NH ₄ -N 25 mg/L O ₂ 25 mg/L O ₂ – – 1.50 mg/L NO ₃ -N 1.5 mg/L NO ₃ -N 1.5 mg/L NO ₃ -N 0.25 mg/L P 10 mg/L N	6 months		Sewage outflow 1
0.30 mg/L NH ₄ -N 10 mg/L O ₂ 10 mg/L O ₂ 3.00 mg/L NO ₃ -N 3.0 mg/L NO ₃ -N 3.0 mg/L NO ₃ -N 0.30 mg/L P 0.30 mg/L P 0.10 mg/L P 3.3 mg/L N 0.30 mg/L TKN	6 months (2–8 °C)		Sewage outflow 2
10 mg/L NH ₄ -N 100 mg/L O ₂ 100 mg/L O ₂ – – 100 mg/L O ₂ 6.0 mg/L NO ₃ -N 6 mg/L NO ₃ -N 1.00 mg/L P 20 mg/L N	1 year		Sewage inflow



Standard	REF	Test number	Test	Number of tests	Concentration of standard ¹⁾	Confidence interval
■ Metals 1	925015	0-14	Cadmium 2	15-60	1.00 mg/L Cd ²⁺	0.80-1.20 mg/L Cd ²⁺
		1-13	Cadmium		0.10 mg/L Cd ²⁺	0.08-0.12 mg/L Cd ²⁺
		0-21	Chloride 50		20 mg/L Cl ⁻	17-23 mg/L Cl ⁻
		0-19	Chloride 200		80 mg/L Cl ⁻	70-90 mg/L Cl ⁻
		0-24	Chromate 5 + NanOx Metal		1.0 mg/L Cr	0.8-1.2 mg/L Cr
		0-59	total Chromium 2		1.0 mg/L Cr	0.8-1.2 mg/L Cr
		1-25	Chromate + NanOx Metal		1.0 mg/L Cr	0.8-1.2 mg/L Cr
		0-37	Iron 3		1.00 mg/L Fe ³⁺	0.80-1.20 mg/L Fe ³⁺
		1-36	Iron		0.10 mg/L Fe ³⁺	0.08-0.12 mg/L Fe ³⁺
		1-28	Iron LR		0.10 mg/L Fe ³⁺	0.08-0.12 mg/L Fe ³⁺
		0-40	Fluoride 2		1.0 mg/L F ⁻	0.8-1.2 mg/L F ⁻
		1-42	Fluoride		1.00 mg/L F ⁻	0.80-1.20 mg/L F ⁻
		0-62	Sulfate LR 200		80 mg/L SO ₄ ²⁻	70-90 mg/L SO ₄ ²⁻
		0-60	Sulfate MR 400		80 mg/L SO ₄ ²⁻	70-90 mg/L SO ₄ ²⁻
		0-96	Zinc 4		1.00 mg/L Zn ²⁺	0.80-1.20 mg/L Zn ²⁺
		1-95	Zinc		0.10 mg/L Zn ²⁺	0.08-0.12 mg/L Zn ²⁺
		0-42	Zinc 6		1.00 mg/L Zn ²⁺	0.80-1.20 mg/L Zn ²⁺
		■ Metals 2	925016		0-09	Lead 5
1-10	Lead			0.25 mg/L Pb ²⁺	0.22-0.28 mg/L Pb ²⁺	
0-45	Potassium 50			20 mg/L K ⁺	18-22 mg/L K ⁺	
0-53 / 0-54	Copper 5 / Copper 7			2.00 mg/L Cu ²⁺	1.80-2.20 mg/L Cu ²⁺	
1-53	Copper			0.60 mg/L Cu ²⁺	0.50-0.70 mg/L Cu ²⁺	
0-61 / 0-71	Nickel 7 / Nickel 4			2.00 mg/L Ni ²⁺	1.80-2.20 mg/L Ni ²⁺	
1-62	Nickel			0.60 mg/L Ni ²⁺	0.50-0.70 mg/L Ni ²⁺	
■ Seepage	925013	0-08	Ammonium 100	15-300	40 mg/L NH ₄ -N	36-44 mg/L NH ₄ -N
		0-06	Ammonium 200		80 mg/L NH ₄ -N	72-88 mg/L NH ₄ -N
		0-23	COD 10000		4.00 g/L O ₂	3.60-4.40 g/L O ₂
		0-28	COD 15000		4.0 g/L O ₂	3.6-4.4 g/L O ₂
		0-66	Nitrate 250		30 mg/L NO ₃ -N	27-33 mg/L NO ₃ -N
		0-55	total Phosphate 45		25.0 mg/L P	22.0-28.0 mg/L P
		0-79	ortho-Phosphate 50		25.0 mg/L PO ₄ -P	22.0-28.0 mg/L PO ₄ -P
■ Drinking water	925018	0-98	Aluminum 07	15-30	0.50 mg/L Al ³⁺	0.44-0.56 mg/L Al ³⁺
		1-02	Aluminium		0.50 mg/L Al ³⁺	0.44-0.56 mg/L Al ³⁺
		1-05	Ammonium		0.20 mg/L NH ₄ -N	0.17-0.23 mg/L NH ₄ -N
		0-21	Chloride 50		20 mg/L Cl ⁻	17-23 mg/L Cl ⁻
		1-20	Chloride		20 mg/L Cl ⁻	17-23 mg/L Cl ⁻
		0-37	Iron 3		1.50 mg/L Fe ³⁺	1.30-1.70 mg/L Fe ³⁺
		1-36	Iron		1.50 mg/L Fe ³⁺	1.30-1.70 mg/L Fe ³⁺
		0-58	Manganese 10		1.5 mg/L Mn ²⁺	1.3-1.7 mg/L Mn ²⁺
		1-60	Manganese		1.50 mg/L Mn ²⁺	1.30-1.70 mg/L Mn ²⁺
		0-86	Sulfate 200		120 mg/L SO ₄ ²⁻	102-138 mg/L SO ₄ ²⁻
		0-62	Sulfate LR 200		120 mg/L SO ₄ ²⁻	102-138 mg/L SO ₄ ²⁻

¹⁾ Please see the instruction leaflet / evaluation sheet.

²⁾ Shelf life 6 weeks after first opening / see instruction leaflet.

GHS: Globally harmonized system: This product contains harmful substances which must be specially labeled as hazardous. For detailed information please see the SDS.

Addition	Shelf life ²⁾	GHS	Standard
– – 10 mg/L Cl ⁻ 50 mg/L Cl ⁻ 0.2 mg/L Cr 0.2 mg/L Cr 0.2 mg/L Cr 0.30 mg/L Fe ³⁺ 0.30 mg/L Fe ³⁺ 0.30 mg/L Fe ³⁺ 0.5 mg/L F ⁻ 0.50 mg/L F ⁻ 50 mg/L SO ₄ ²⁻ 50 mg/L SO ₄ ²⁻ 0.40 mg/L Zn ²⁺ 0.40 mg/L Zn ²⁺ 0.40 mg/L Zn ²⁺	1 year		Metals 1
0.50 mg/L Pb ²⁺ – 10 mg/L K ⁺ 0.70 mg/L Cu ²⁺ 0.70 mg/L Cu ²⁺ 0.70 mg/L Ni ²⁺ 0.70 mg/L Ni ²⁺	1 year		Metals 2
30 mg/L NH ₄ -N 30 mg/L NH ₄ -N – – 10 mg/L NO ₃ -N 5.0 mg/L P 5.0 mg/L PO ₄ -P	1 year		Seepage
0.20 mg/L Al ³⁺ 0.20 mg/L Al ³⁺ 0.20 mg/L NH ₄ -N 5.0 mg/L Cl ⁻ 5.0 mg/L Cl ⁻ 0.20 mg/L Fe ³⁺ 0.20 mg/L Fe ³⁺ 1.0 mg/L Mn ²⁺ 0.20 mg/L Mn ²⁺ 50 mg/L SO ₄ ²⁻ 50 mg/L SO ₄ ²⁻	1 year		Drinking water



NANOCOLOR® reagents for sample decomposition

Sample preparation for photometric analysis

Usually only dissolved compounds of a parameter are detected in water analysis. In strongly contaminated waters and industrial waste water these parameters are often bound in complexes or other structures and are therefore not directly accessible for the respective test. If it is necessary to determine the total amount of these substances, a decomposition step has to be done prior to analysis, where on most cases large amounts of organic material have to be decomposed. Within the NANOCOLOR® system there are various rapid and easy methods available for conventional sample decomposition with solid reagents and kits with liquid reagents for complex matrices. In some of the NANOCOLOR® tube tests the reagents for sample preparation are already included and pre-dosed in additional test tubes next to the cuvettes. This is the perfect combination for the determination of total parameters such as total nitrogen or total chromium. Other reagents for sample preparation are available separately and are suitable for more than one parameter. After digestion the samples are then processed as described in the instructions for the respective NANOCOLOR® test kit.

NANOCOLOR® NanOx N – Oxidative digestion of samples containing nitrogen

NANOCOLOR® NanOx N consists of an easy-to-dose solid oxidation reagent (peroxodisulfate) and a compensation reagent to eliminate interfering substances. After digestion, all inorganic and organic nitrogen compounds in the sample have been converted to nitrate and can be detected. The digestion of larger sample volumes allows a multiple determination from just one preparation.

NANOCOLOR® NanOx Metal – Oxidation of samples containing heavy metals

Undissolved metal ions and metal oxides are dissolved with the aid of acids and heat, metal ions are de-complexated and adsorptive or interfering substances are eliminated. Optimal recovery rates can be found in the analysis of heavy metals. NANOCOLOR® NanOx Metal consists of an easy-to-dose solid oxidation reagent (peroxodisulfate) and a neutralizing reagent to adjust the pH value for the following determination of different metals. In addition to the digestion in the heating block, it is possible to digest samples in less time using a microwave.

Good to know

For further accessories for digestions with NANOCOLOR® NanOx Metal in a heating block or a microwave see page 112.



NANOCOLOR[®] reagents for sample decomposition

NANOCOLOR[®] crack set

For a more powerful and complete digestion of resistant samples we recommend to use the NANOCOLOR[®] crack set. The included liquid reagents allow an oxidative sample preparation under acidic conditions (peroxodisulfate/sulfuric acid) and normal pressure at 100 °C in the heating block.

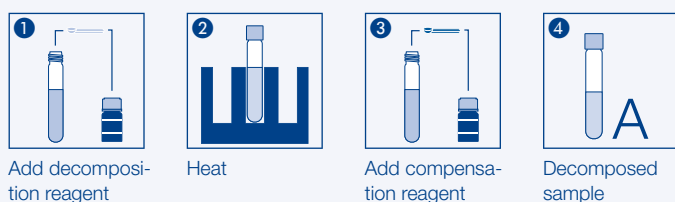
NANOCOLOR[®] sludge

In Germany, the sewage sludge regulation regularizes the use of sludge as fertilizer in agriculture and in market gardens. Therein a limit for seven heavy metals is established. The determination of these parameters is possible with high accuracy using NANOCOLOR[®] sludge (aqua regia) for digestion. A thorough training is recommended to learn the special working techniques before using the kit. Detailed instructions regarding sludge analysis can be provided free of charge.

How it's done



Decomposition in heating block with *NanOx N*



Ordering information

Description	REF	Number of decompositions	Shelf life	GHS
Determination of total Nitrogen				
■ NANOCOLOR [®] <i>NanOx N</i> solid reagents for the oxidative digestion prior to total nitrogen determination (heating block or microwave)	918979	50–100	1 year	■
Determination of total metals and phosphorous				
■ NANOCOLOR [®] <i>NanOx Metal</i> solid reagents for the oxidative decomposition of samples containing heavy metals and total phosphate (heating block or microwave)	918978	75–150	1 year	■
Crack set for aqueous systems				
■ Crack set incl. sulfuric acid /potassium peroxodisulfate for the oxidative digestion in the heating block	91808	100	3 years	■
■ Decomposition apparatus for sample decomposition incl. decomposition tube, reducing adaptor and condensor	91629	–	–	
Sludge analysis				
■ Reagent set NANOCOLOR [®] sludge: aqua regia digestion of sludge- and soil samples in the heating block	91850	10	3 years	■
■ Starter set combination of necessary accessories for sludge analysis (without reagents, photometer, heating block) incl. instructions	91610	–	–	

GHS: Globally harmonized system: This product contains harmful substances which must be specially labeled as hazardous. For detailed information please see the SDS.

NANOCOLOR[®] accessories

Everything from one hand

An indicator for the quality of an analytical system is its completeness. Therefore, accessories for sample drawing, preparation, and conservation as well as for decomposition, extraction and filtration are part of the NANOCOLOR[®] system.

Getting all these components from one hand allows a smooth work flow leading to optimal results.

Ordering information

Description	REF	Content	Number of tests	Shelf life	GHS
General accessories					
■ Volumetric flask 10 mL for reduced analytical preparations	91642	2 pieces			
■ Volumetric flask 25 mL with NS 10/19 and PE stopper for analytical preparations	91661	2 pieces			
■ Volumetric flask 100 mL with NS 12/21 and PE stopper	91683	2 pieces			
■ Erlenmeyer flask 50 mL	916212	1 piece			
■ Erlenmeyer flask 100 mL	91638	1 piece			
■ Measuring cylinder 50 mL	91684	1 piece			
■ Bulb for filling 20 mL pipettes	91665	1 piece			
■ Glass rod 30 cm	91639	1 piece			
■ Tweezers for picking of NANOFIX capsules	916114	1 piece			
■ Plastic wash bottle 500 mL with spraying attachment	91689	1 piece			
■ Magnetic stirring unit	970115	1 piece			
■ Mini-magnet for stirring (30 x 6 mm)	916211	1 piece			
■ Timer with digital display and acoustic signal (up to 99:59 min)	91696	1 piece			
■ Porcelain mortar 90 mm Ø with pestle	91688	1 piece			
■ Holder for 15 round glass tubes and 2 tubes for sample digestion	91623	1 piece			
■ Safety kit, consists of safety glasses, gloves and rubber apron	91690	1 piece			
■ Adhesive tape, glass fiber reinforced, for closing the shipping boxes for hazardous goods	91620	1 roll, 50 m			
■ Glass funnel 60 mm Ø	91681	1 piece			
■ Glass funnel 80 mm Ø	91682	1 piece			
■ Filter circles MN 1670, 11 cm Ø	470011	100 pieces			
■ Filter circles MN 640 d, 15 cm Ø	205015	100 pieces			
Membrane filtration					
■ Membrane filtration kit: 2 syringes 20 mL, 25 CHROMAFIL [®] membrane filters 0.45 µm	91650	1 set			
■ CHROMAFIL [®] membrane filters 0.45 µm	91652	50 pieces			
■ Membrane filtration kit: 2 syringes 20 mL, 25 CHROMAFIL [®] membrane filters 1.2 µm	916511	1 set			
■ CHROMAFIL [®] membrane filters 1.2 µm	916513	50 pieces			
■ Membrane filtration kit: 2 syringes 20 mL, 25 CHROMAFIL [®] membrane filters GF / PET 0.45 µm	91601	1 set			
■ CHROMAFIL [®] membrane filters GF / PET 0.45 µm	91602	50 pieces			
Pipetting					
■ Piston pipette 200 µL	91672	1 piece			
■ Plastic tips transparent for piston pipettes 5–200 µL	916915	100 pieces			
■ Piston pipette 500 µL	91653	1 piece			
■ Plastic tips transparent for piston pipettes 100–1000 µL	91676	100 pieces			
■ Piston pipette 1.0 mL	91671	1 piece			
■ Plastic tips transparent for piston pipettes 100–1000 µL	91676	100 pieces			

GHS: Globally harmonized system: This product contains harmful substances which must be specially labeled as hazardous. For detailed information please see the SDS.

Description	REF	Content	Number of tests	Shelf life	GHS
■ Piston pipette 2.0 mL	916917	1 piece			
■ Plastic tips transparent for piston pipettes 1.0–5.0 mL	916916	100 pieces			
■ Digital piston pipette 5–50 µL, adjustable, with tip ejector	91658	1 piece			
■ Digital piston pipette 50–200 µL, adjustable, with tip ejector	916914	1 piece			
■ Plastic tips transparent for piston pipettes 5–50 µL and 50–200 µL	916915	100 pieces			
■ Digital piston pipette 100–1000 µL, adjustable, with tip ejector	91677	1 piece			
■ Plastic tips transparent for piston pipettes 100–1000 µL	91676	100 pieces			
■ Digital piston pipette 1.0–5.0 mL, adjustable, with tip ejector	916909	1 piece			
■ Plastic tips transparent for piston pipettes 1.0–5.0 mL	916916	100 pieces			
■ Pipette stand for 6 piston pipettes	91679	1 piece			
Extraction					
■ 100 mL separation funnel with NS glass tap and PE stopper for extraction methods	91664	2 pieces			
■ Stand with clamps and bosses for 4 separation funnels, height 70 cm	91695	1 piece			
AOX					
■ Supplement kit for AOX for the sensitive AOX range (0.01–0.30 mg/L AOX) and for higher COD values (required above 50 mg/L COD)	918072	2 x 4 g	20	1 year	■
■ Chloride detection kit AOX for samples with high chloride contents	918073	10 mL		1 year	■
■ Starter set for AOX, consists of tweezers, funnel, cartridge adaptor, beaker, glass rods, 1 L bottle and syringes	916111	1 set			
■ Pump set for AOX, consists of centrifugal pump, connecting tubes, graduated 1 L reservoir with tap and stand with clamps and bosses	916115	1 set			
■ NANOCOLOR® cartridge adapter for AOX pump-set	916113	1 piece			
BOD₅					
■ BOD ₅ nutrient mixture (without <i>N</i> -allylthiourea [NATU])	918994	20 cuvettes	20–80	2 years	
■ BOD ₅ nutrient mixture PLUS (with <i>N</i> -allylthiourea [NATU])	918995	20 cuvettes	20–80	2 years	
■ BOD ₅ accessories set, consists of electric air pump, 10 L PE container, 2 aerating bricks, 1 L laboratory bottle, 4 Winkler bottles	916918	1 set			
■ BOD ₅ -TT accessories set, consists of electric air pump, 2 aerating bricks, 1 L PE container, 2 reaction vessels (40 mL)	916925	1 set			
■ Reaction vessels for BOD ₅ -TT	916926	10 pieces			
■ Oxygen bottles according to Winkler (250–300 mL)	916919	4 pieces			
■ Aerating bricks for BOD ₅ determination	916920	4 pieces			
COD					
■ Chloride complexing agent for chloride concentration of 1000–7000 mg/L Cl ⁻	918911	100 mL	100	1.5 years	■
■ Cartridges for chloride elimination of up to 2000 mg/L chloride per cartridge	963911	10 pieces	10	1 year (2–8 °C)	■
■ COD- and TOC-free water	918993	50 mL		1 year	
■ Safety bottle for shaking COD tubes	91637	1 piece			
Hydrocarbons					
■ Extraction of HC from water	918571	1 box	20	1.5 years	■
■ Extraction of HC from soil	918572	1 box	20	1.5 years	■
■ Separation funnel 500 mL with PTFE tap and glass stopper	91608	2 pieces			
■ CHROMABOND® column 45 mL with 4 g aluminum oxide ALOX N for purification of water and soil extracts by solid phase extraction	730250	20 pieces	20	3 years	
■ Syringe adaptor for CHROMABOND® columns 45 mL	91603	2 pieces			
■ Plastic syringes 50 mL	91609	10 pieces			

GHS: Globally harmonized system: This product contains harmful substances which must be specially labeled as hazardous. For detailed information please see the SDS.

NANOCOLOR® accessories

Description	REF	Content	Number of tests	Shelf life	GHS
■ Stop valve for pipette tips for low-viscosity liquids	91621	100 pieces			
■ Threaded union for coupling the sample tube with the COD tube	91604	2 pieces			
■ Soxhlet apparatus 30 mL, with 100 mL round flask with flat bottom and condenser (3 parts); additionally a heater is required	91605	1 set			
■ Extraction thimbles MN 64523 mm Ø x 100 mm	645008	25 pieces			
■ Measuring flask 50 mL with PE stopper	91606	2 pieces			
TOC					
■ NANOCOLOR® TIC-Ex for removal of TIC, incl. cuvette holder, power supply 100–240 V, 50/60 Hz, 9 V + 3 adapters, manual	916993	1 piece			
■ Manual for NANOCOLOR® TIC-Ex	916994	1 piece			
■ Cuvette holder for NANOCOLOR® TIC-Ex	916995	1 piece			
■ Power supply for QUANTOFIX® Relax and NANOCOLOR® TIC-Ex	930995	1 piece			
■ Pipette tips for NANOCOLOR® TIC-Ex	916997	20 pieces			
■ Pipette tips for NANOCOLOR® TIC-Ex	916998	200 pieces			
■ Cover for NANOCOLOR® VIS for TOC determination	916996	1 piece			
■ Holder for 15 round glass tubes and 2 tubes	91623	1 piece			
Special chemicals for elimination of interferences					
■ Distilled water	918932	1 L		1 year	
■ Silica-free water	918912	1 L		1 year	
■ Isobutyl methyl ketone (MIBK) for phenol test 0-74	918929	100 mL			■
Reagents for sample preparation					
■ Carrez solutions 1 + 2, for nitrite in cooling lubricants, sewage water from landfills etc.	918937	2 x 30 mL	30	2 years	
■ Removal of interfering calcium for determinations of copper, nickel and zinc by lime precipitation clarification	918939	100 g	20	2.5 years	
■ Amidosulfuric acid for nitrite elimination	918973	25 g		2 years	■
■ Ammonium compensation reagent for tube test NANOCOLOR® Potassium 50	918045	30 mL	100	2 years	■

GHS: Globally harmonized system: This product contains harmful substances which must be specially labeled as hazardous. For detailed information please see the SDS.

High quality filter papers

MN filter papers since 1911



German quality

- More than 7000 different filtration products
- Reliable results
- Flexible and custom-made products
- Special filter papers for sewage plants according to DIN EN 872



Microbiological tests

BioFix®
Nitrification inhibition tests 118
Luminous bacteria toxicity tests 120





Nitrification inhibition tests

Easy control of nitrification

The nitrification inhibition tests BioFix® *A-Tox* / *N-Tox* provide an easy method to control the biology on sewage plants. These BioFix® nitrification inhibition tests can be used to measure the inhibition of the nitrification in all types of water. Interferences by single substances as well as substance mixtures are detected.

Nitrification is an important step during waste water purification in order to keep the concentration of ammonium ions in the effluents of the sewage plant as low as possible. Additionally, nitrification is the prerequisite for denitrification for complete nitrogen elimination. This process is required for waste water treatment in many countries.

BioFix® nitrification inhibition tests allow the investigation of the first and second step of nitrification separately as well as undifferentiated. With BioFix® *A-Tox* one tests, whether the first step of the nitrification, the oxidation of ammonium, is inhibited by sample components. BioFix® *N-Tox* is used to analyze the second step of the nitrification, the oxidation of nitrite.

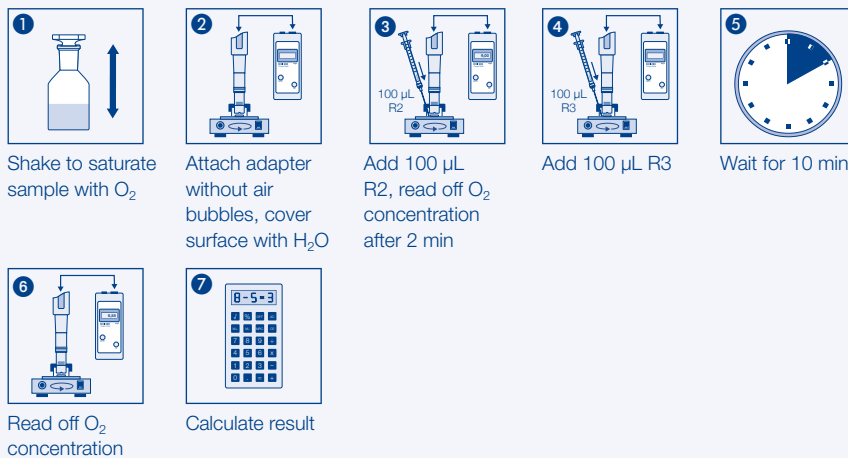
Whether the nitrification is inhibited by sample components in general can be determined with the undifferentiated screening test BioFix® *A/N-Tox*.



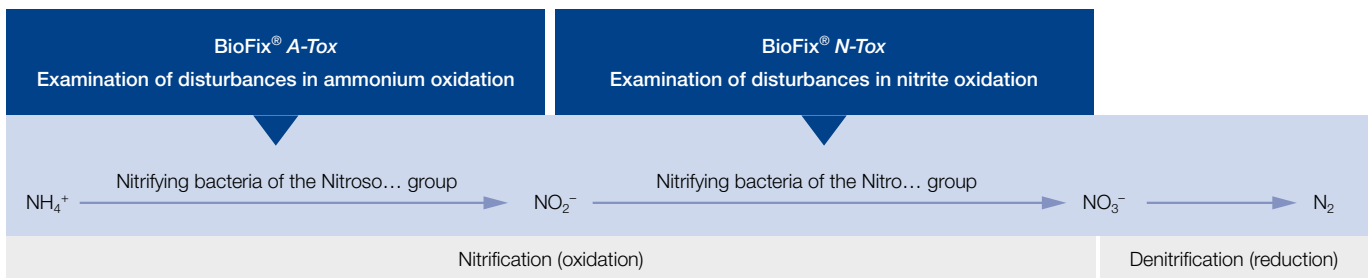
How it's done



Procedure of nitrification inhibition tests



Microbiological tests



Rapid

- Test only takes 10 min
- Pre-dosed nitrificants
- Ready-to-use reagents

Easy

- Considerably less effort necessary compared to DIN-procedure
- Evaluation without inconvenient equipment
- Dispose of used reagents without constraints

Safe

- High sensitivity
- Very good reproducibility due to defined bacteria strains
- Differentiated analysis of both nitrification steps possible

Ordering information

Test	REF	Number of tests	Shelf life
■ BioFix® A-Tox for evaluation of the biological conversion of ammonium to nitrite (1 st step of nitrification)	970001	10–19	1 year (2–8 °C)
■ BioFix® N-Tox for evaluation of the biological conversion of nitrite to nitrate (2 nd step of nitrification)	970002	10–19	1 year (2–8 °C)
■ BioFix® nitrification inhibition test, reagent A-Tox R2, enriched nitrificants for oxidation of ammonia	970903	10 x 2 mL	1 year (2–8 °C)
■ BioFix® nitrification inhibition test, reagent N-Tox R2, enriched nitrificants for oxidation of nitrite	970902	10 x 2 mL	1 year (2–8 °C)

Accessories

Description	REF	Content
■ Starter kit for BioFix® nitrification inhibition tests: 1 electrode adaptor which holds the oxygen electrode, 3 x 2 seals for the electrode adaptor, 2 mini-magnets, 1 micro syringe 100 µL, 1 filtration syringe 20 mL	970101	1 set
■ CHROMAFIL® membrane filters, 0.45 µm	91652	50 pieces
■ Electrode adaptor	970111	1 piece
■ Special adaptor 12 mm for oxygen electrodes with membrane heads type WP3-ST	970116	1 piece
■ Seals for electrode adaptor	970112	5 x 2 pieces
■ Reaction vessels	970113	50 pieces
■ Magnetic stirring unit without heater	970115	1 piece
■ Mini-magnets	970114	5 pieces
■ Stand, complete with 4 clamps and bosses	91695	1 piece

Luminous bacteria toxicity tests

Tests for bio toxicity in accordance to ISO 11348

BioFix® luminous bacteria tests use bio luminescence to determine bio toxicity. In contrast to chemical single parameter analysis, luminous bacteria tests allow an evaluation of the over-all-toxicity of a sample. The test principle is based on the static measurement of the bio luminescence of luminous bacteria (strain *Vibrio fischeri* NRRL B-11177), where a defined sample volume is mixed with a suspension of bacteria. Subsequently, the inhibition of the luminescence in the sample is determined in comparison to an uninhibited control solution.

The tests are easy to use and the procedure is normed (ISO 11348). This guarantees safe and reliable results with low effort. BioFix® luminous bacteria tests are available in various, application specific packing sizes. The applications for these tests reach from the analysis of ground, surface, seepage and all types of waste water to the analysis at waste disposal sites. Furthermore they allow the determination of the bio toxicity of solid material e.g. soil samples, sediments and solid waste.

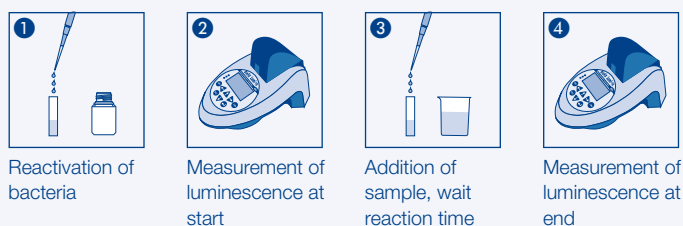
BioFix® luminous bacteria tests are available with liquid-dried (according to ISO 11348-2) and freeze-dried bacteria (according to ISO 11348-3). Used reagents and bacteria can be disposed of easily by washing them down the drain.

The evaluation of the toxicity analysis is performed with the BioFix® Lumi-10 (see page 156), a universal luminometer, which is suitable for portable use.

How it's done



Performance of luminous bacteria toxicity tests



Ordering information

Test	REF	Number of tubes	Number of tests	Shelf life	Liquid-dried	Freeze-dried
■ Lumi luminous bacteria, with reconstitution solution	945002	20	up to 2000	2 years		■
■ Lumi luminous bacteria, with reconstitution solution	945003	10	up to 1000	2 years		■
■ Lumi luminous bacteria, with medium	945006	20	up to 400	2 years		■
■ Lumi luminous bacteria, with medium	945007	10	up to 200	2 years		■
■ Lumi multi-shot, with reactivation and control solution	945022	10	up to 100	2 years		■
■ Lumi single-shot, with reactivation and control solution	945021	20	up to 40	2 years		■
■ Lumi luminous bacteria, with reactivation and NaCl solution	945023	10	up to 200	2 years	■	
■ Lumi luminous bacteria, with reactivation and NaCl solution	945024	20	up to 400	2 years	■	
■ Lumi luminous bacteria, with reactivation and NaCl solution	945025	10	up to 100	2 years	■	

All freeze/liquid-dried BioFix® luminous bacteria are also suited for luminometers of other manufacturers (e.g. LUMISTox, LUMISmini of HACH). All luminous bacteria tests by MACHEREY-NAGEL need to be stored at -20 ± 2 °C.

Luminous bacteria toxicity tests

Accessories

Description	REF	Content
■ BioFix® Lumi diluent	945601	1 L
■ BioFix® Lumi osmotic adjusting solution	945602	50 mL
■ BioFix® Lumi reconstitution solution for freeze-dried luminous bacteria	945603	1 L
■ BioFix® Lumi diluent for solid phase test	945604	1 L
■ BioFix® Lumi medium for freeze-dried luminous bacteria in accordance with DIN EN ISO 11348-3	945608	1 L
■ Absorbance color correction cuvettes with 100 aspirators	940006	4 pieces
■ Glass cuvettes, 50 x 12 mm, plain bottom, 12 mm Ø	916912	690 pieces
■ Rack for glass cuvettes 12 mm Ø, 5 x 10 positions	945013	1 piece



Photometers

NANOCOLOR® VIS II and UV/VIS II	124
NANOCOLOR® Advance	128
PF-12 ^{Plus}	132
PF-3	134
NANOCOLOR® TIC-Ex	138
NANOCOLOR® FP-200	139
NANOCONTROL	140
Accessories for photometers	141

Heating blocks

NANOCOLOR® VARIO 4, VARIO C2 and VARIO C2 M	144
NANOCOLOR® VARIO Mini	147
NANOCOLOR® VARIO HC	148
NANOCOLOR® T-Set and USB T-Set	150
Accessories for heating blocks	152

Reflectometer

QUANTOFIX® Relax	154
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Luminometer

BioFix® Lumi-10	156
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NANOCOLOR[®] VIS II and UV/VIS II

Spectrophotometers for high-precision analysis

The NANOCOLOR[®] VIS II and NANOCOLOR[®] UV/VIS II are high-precision measurement instruments applicable in all areas of water and wastewater analysis. MACHERY-NAGEL revolutionizes the daily laboratory work with these two new spectrophotometers, combining premium high-tech instruments with outstanding usability. With their intuitive, icon-based menu guidance, these innovative photometers can be used like a smartphone or tablet. The clearly arranged, high-resolution touch screen display makes your daily measurement routine a real pleasure.

Powerful technology

The new NANOCOLOR[®] spectrophotometers impress with high-class technology and optics. The spectral bandwidth of the NANOCOLOR[®] UV/VIS II of < 2 nm allows high-precision measurements. The optical set-up and the clever technique of both devices enable measurements without protective cover; a big advantage for smooth lab processes. With a 2D barcode scanner and cuvette recognition, all steps from measuring over displaying to storing of the result are part of a fully automated sequence.

The allrounders for all requirements

As comprehensive spectrophotometers, the NANOCOLOR[®] VIS II and UV/VIS II, meet all requirements of your daily laboratory work. They come with well-known barcode technology for a rapid measurement of NANOCOLOR[®] tube tests. In addition, they offer extensive color measurement possibilities and real-time scan recording. Next the nephelometric turbidity measurement and the turbidity measurement in transmitted light, the preprogrammed MEBAK methods allow a comprehensive brewery analysis. The simple menu navigation and the icon-based pictogram instructions for the performance of cuvette tests, reduce the complexity of the daily laboratory work. The clear result screen enables an easy assignment of additional sample information and measurement results. The systematic menu guidance for the calibration of special methods allows even inexperienced users to program methods for user specific applications.

Good to know



Turbidity – a source of error: Turbidity is often underestimated since it is not always visually recognizable. During each measurement, the MACHERY-NAGEL spectrophotometers automatically measure the turbidity and actively warn the user in case of an interfering turbidity.



Good to know



An overview of all NANOCOLOR[®] test kits available on the NANOCOLOR[®] UV/VIS II and VIS II is given from page 88.

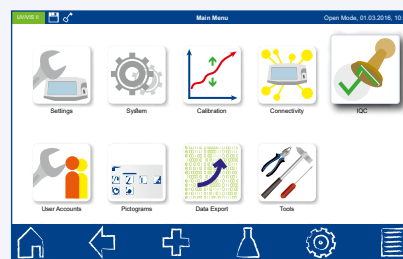
How it's done



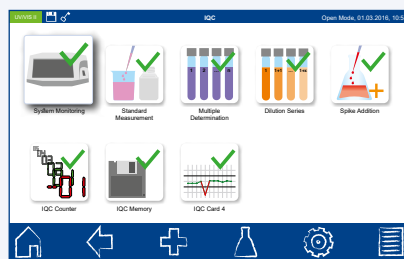
In four steps to inspection equipment monitoring



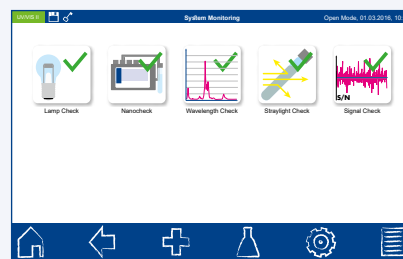
1. Call up main menu



2. Choose IQC-menu



3. Call up inspection equipment monitoring



4. Choose respective test

Good to know



The test equipment offers the monitoring of the entire analysis system and also extensive options for verifying the device functionality. The user can perform the test himself and save costs, an external device test is no longer needed.

NANOCOLOR[®] VIS II and UV/VIS II

Smart

- Outstanding usability due to touch screen
- 10.1" HD display for a clear overview
- Unique user experience due to icon based menu guidance

Precise

- High quality optics with reference detector technology
- Safe results due to automatic turbidity control function (NTU-check)
- Safeguarding of results via integrated IQC menu

Impressively versatile

- Future-proof interfaces
- Color measurements, turbidity measurements and scans
- Applicable in all fields of water and waste water analysis



Smart photometry



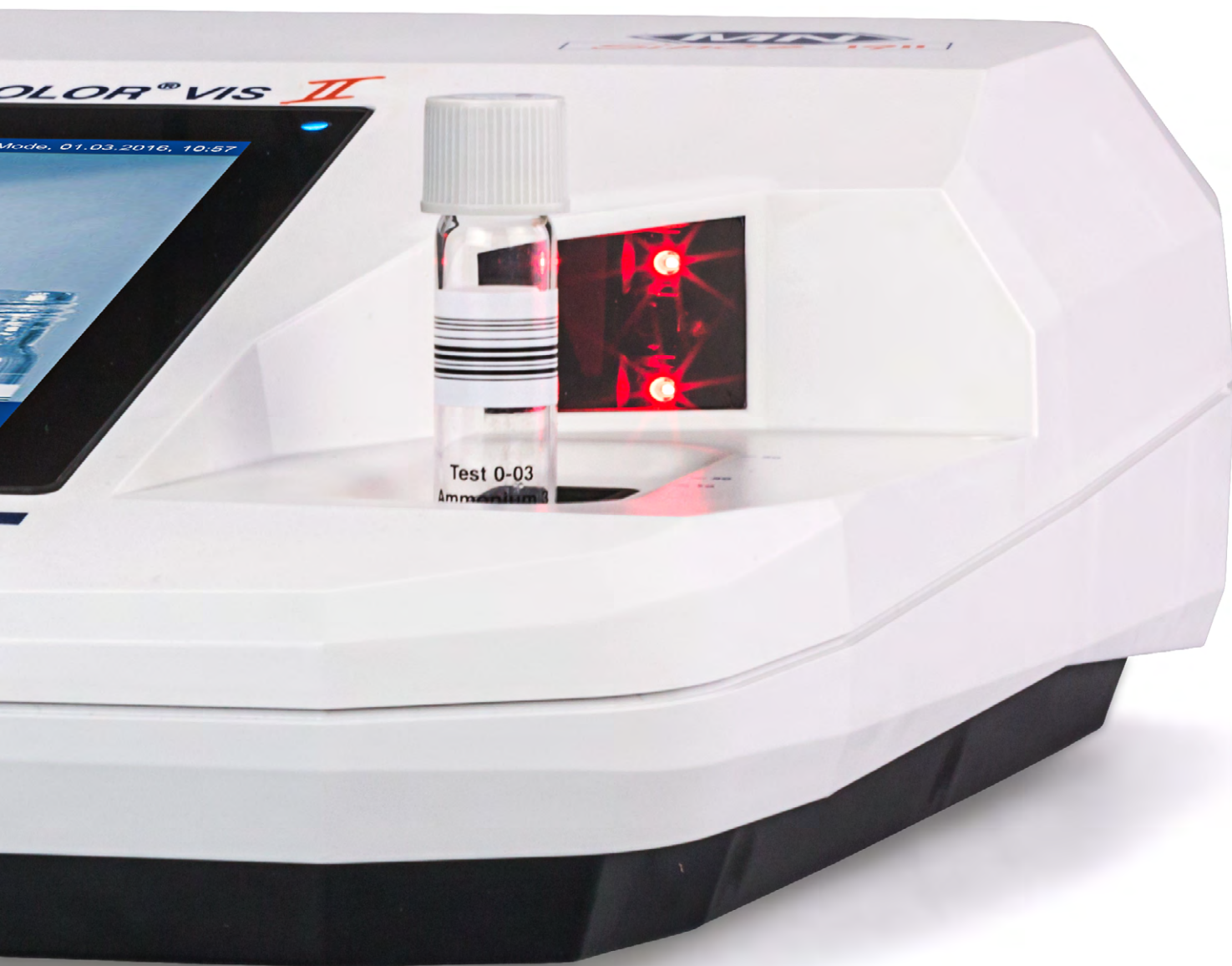
NANOCOLOR[®] VIS II and ^{UV}/VIS II

The next audit will be a breeze

Quality is of high importance for MACHEREY-NAGEL. Therefore, our new spectrophotometers are equipped with extensive quality control features. Besides the integrated, f.o.c. inspection equipment monitoring tools, the devices offer a variety of quality control functions for e.g. standard measurements, multiple determinations and dilution series. IQC cards are generated directly in the device and can be printed or exported for documentation purposes. Therefore, NANOCOLOR[®] VIS II and ^{UV}/VIS II offer easy to use control options, allowing an efficient and accurate internal quality control perfectly integrated in your daily work.

Striking interface options for smart connectivity

The connection of measuring devices to laboratory information systems (LIMS) plays a more and more important role in many industries. Therefore, the NANOCOLOR[®] VIS II and NANOCOLOR[®] ^{UV}/VIS II are equipped with all important interfaces (LAN, RS232, USB) for the connection to laboratory information systems. In addition, the integrated LIMS configurator allows a customized adaptation for many kinds of data for transfer. An easily accessible USB port increases the comfort of data exchange with mass storage media or the usage of a barcode reader, scanner or printer.



Ordering information

Description	REF
<ul style="list-style-type: none"> Spectrophotometer NANOCOLOR[®] VIS II incl. manual (quick start guide), touch pen, protective covering, power cable with country adapters, USB cable, USB stick, calibration cuvette, cleaning cloth and certificate in a cardboard box. 	919650.1
<ul style="list-style-type: none"> Spectrophotometer NANOCOLOR[®] ^{UV}/VIS II incl. manual (quick start guide), touch pen, protective covering, power cable, USB cable, USB stick, calibration cuvette, cleaning cloth and certificate in a cardboard box. 	919600.1

Technical data

	NANOCOLOR [®] VIS II	NANOCOLOR [®] ^{UV} /VIS II
Type	Spectrophotometer with reference detector technology (RDT)	
Light source	Halogen lamp	Halogen lamp (visible range) Deuterium lamp (UV range)
Optics	Monochromator Insensitive to external light for fast measurements without cuvette slot cover; Cuvette slot must be covered for color measurements and measurements in the UV-range	
Wavelength range	320 nm–1100 nm	190 nm–1100 nm
Wavelength accuracy	± 1 nm	
Wavelength resolution	0.1 nm	
Wavelength reproducibility	< 0.5 nm	
Wavelength calibration	Automatic	
Wavelength selection	Automatic, barcode, manual	
Scan speed	1 complete scan in less than 1 min	
Spectral bandwidth	< 4 nm	< 2 nm
Photometric range	± 3.0 A in wavelength range 340 nm–900 nm	± 3.0 A in wavelength range 200 nm–900 nm
Photometric accuracy	0.005 A at 0.0 A–0.5 A; 1 % at 0.5 A–2.0 A	
Photometric linearity	< 0.5 % at ≤ 2 A; ≤ 1 % at > 2 A	
Stray light	< 0.1 %	< 0.05 %
Measuring modes	More than 200 preprogrammed tests and special methods, 100 optionally programmable methods, absorbance, transmittance, factor, kinetics, 2-point calibration, scan, nephelometric turbidity measurement	
Compatible test kits	NANOCOLOR [®] tube tests (see page 88) and NANOCOLOR [®] standard tests (see page 98), NANOCOLOR [®] ECO tests (see page 102), VISOCOLOR [®] Powder Pillow tests (see page 82) VIS II: NANOCOLOR [®] robot tests (see page 96)	
Turbidity measurement	Nephelometric turbidity measurement at 860 nm, 0.1 NTU–1000 NTU Accuracy: < 1 NTU: +/- 0,1 NTU, 4 NTU: 3–5 NTU, 100 NTU: 90–110 NTU, 400 NTU: 360–440 NTU	
Internal quality control	With NANOCONTROL NANOCHECK 2.0 and integrated Holmium oxide filter	
Cuvette slot	Test tubes 16 mm OD Rectangular cuvettes 2 mm, 10 mm, 20 mm, 40 mm, 50 mm	
Data memory	16 GB Micro SDHC card, 5000 measured data sets, 100 scans or color measurements, GLP-conform	
Display	10.1" LED backlit HD display, anti-reflective cover glass with projected capacitive touch screen (PCAP)	
Operation	Test selection via barcode technology, icon-based menu guidance, touch screen	
Languages	DE/EN/FR/ES/PT/PL/HU/NL/CZ/RO/IT	
Interfaces	LAN, 2 x USB (Host), 1 x USB (Function) and RS232	
Update	Free of charge via USB stick	
Operating range	10 °C–40 °C, up to 80 % relative humidity (non-condensing)	
Power supply	Input: 110 V–240 V, Output: 12 V 3A	110 V–240 V, ~50/60 Hz
Dimensions	360 mm x 400 mm x 110 mm	400 mm x 440 mm x 170 mm
Weight	4.0 kg	6.5 kg
Warranty	2 years	
CE	CE certified	

NANOCOLOR® Advance

Smart into the future

The spectrophotometer *NANOCOLOR® Advance* combines the most important features of our portable compact photometer *PF-12^{Plus}* and our high-precision spectrophotometer *NANOCOLOR® VIS II*. It provides precise and reliable measurement results in the daily laboratory routine and can also be used mobile due to its rechargeable battery. With its wavelength spectrum of 340–800 nm it allows the measurement of all photometrically evaluable test kits from MACHEREY-NAGEL. The *NANOCOLOR® Advance* can therefore be used universally in the entire spectrum of water and wastewater analysis.

Leave nothing to chance

The *NANOCOLOR® Advance* offers the user an automatic detection of interfering turbidity (NTU-Check). With an additional 860 nm LED, the device determines the nephelometric turbidity during each measurement of a tube test and warns the user of incorrect results. This option helps to avoid measuring errors and sets the basis for reliable measuring results.

Experience flexibility

The *NANOCOLOR® Advance* is the first photometer from MACHEREY-NAGEL with a 24 mm cuvette slot and thus extends the options for all areas of water analysis. Besides the *NANOCOLOR®* tube tests and standard tests, the test kits from our *VISOCOLOR® ECO* and *VISOCOLOR® Powder Pillows* range can also be evaluated. The comprehensive and easy-to-understand menu for creating customer-specific methods makes the device an all-rounder in laboratory analysis and measurements on the road.

Good to know

The *NANOCOLOR® Advance* has passed the vibration test according to Military Standard 810H only 514.8 CAT 4 and fulfills the requirements of protection class IP 67. This underlines the robustness of the device and confirms its suitability for mobile analysis.

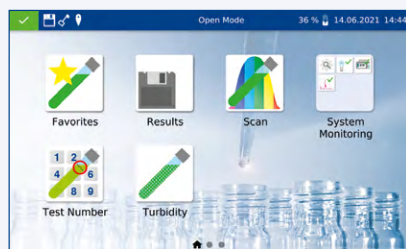
Good to know

Universal cuvette slot
10, 20, 50 mm standard tests as well as 16 and 24 mm tube tests can be used with only two adapters.
Stable and with a large opening, the new 24 mm tube tests are ideally suited for the evaluation of our *VISOCOLOR® Powder Pillows* (see page 82)



How it's done

For non-barcoded tubes your result is just four clicks away.



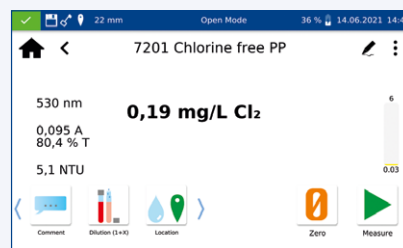
1. Call up Favorites



2. Choose method and press OK



3. Insert cuvette and press measure



4. Read result

Smart

- 2D barcode recognition for automatic method selection
- Touch screen and icon-based menu navigation for outstanding usability
- NTU check for detection of interfering turbidities

Mobile

- Water proof according to IP 67
- Robust design and built-in battery ensure a limitless flexibility
- Applicable in all fields of water and waste water analysis

Versatile

- High quality optics for perfect results in every environment
- Comprehensive options for a full internal quality control
- Compatible with all photometrically evaluable test kits from MACHERY-NAGEL



Smart photometry



NANOCOLOR® Advance

Versatile in use

The NANOCOLOR® Advance allows a simple and reliable routine analysis by fully automatic cell recognition via the integrated 2D barcode scanner. The fast selection of the test method and the correct wavelength allows almost contactless operation.

The data export is done directly via the integrated interfaces. Be prepared for future requirements. You do not need any additional accessories for the data export. Connect USB stick - export data - open on computer.

Ordering information

Description	REF
■ Spectrophotometer NANOCOLOR® Advance incl. manual (quick start guide), protective cover, power supply unit with country specific adapters, USB stick, calibration cuvette, certificate and cleaning cloth in cardboard box	919750



Technical data

NANOCOLOR [®] Advance	
Type	Spectrophotometer with Reference Detector Technology (RDT)
Light source	Halogen lamp
Optical system	Single beam photometer with grating monochromator
Wavelength range	340 nm–800 nm
Wavelength accuracy	± 2 nm
Wavelength resolution	1 nm
Wavelength reproducibility	± 0.1 nm
Wavelength calibration	Automatically
Wavelength selection	Automatically, Barcode, manually
Scan speed	1 complete Scan < 3 min
Spectral bandwidth:	< 4 nm
Photometric range	+/- 3.0 A in the range 340–800 nm
Photometric accuracy	0.003 A at 0.0–0.5 A; 1 % at 0.5–2.0 A
Photometric linearity	< 0.5 % at 0.5–2.0 A; ≤ 1 % at > 2 A with neutral glass filters at 546 nm
Scattered light:	< 0.5 %
Measurement modes	Over 200 preprogrammed tests and special methods; 100 fully programmable methods; absorbance; transmission; factor; kinetics; 2-point calibration; scan; nephelometric turbidity measurement
Compatible test kits	NANOCOLOR [®] tube tests (see page 88) NANOCOLOR [®] standard tests (see page 98) NANOCOLOR [®] ECO tests (see page 102) VISOCOLOR [®] Powder Pillow tests (see page 82) VISOCOLOR [®] ECO tests (see page 76)
Turbidity measurement	Nephelometric turbidity measurement (based on ISO 7027, 16 mm and 24 mm) 1–1000 NTU Accuracy: 1 NTU: 0–2 NTU 4 NTU: 3–5 NTU 100 NTU: 95–105 NTU 400 NTU: 380–420 NTU
Cuvette slot	Tube test 16 mm and 24 mm OD Standard test 10 mm, 20 mm, 40 mm and 50 mm
Data memory	1000 Measured values, 1000 IQC data, 100 scans; GLP-conform
Display	Backlit colored 5" display with touch screen
Operation	Barcode technology; icon-based display menu navigation; capacitive touch screen
Languages	DE / EN / FR / ES / NL / IT / HU / PL / CZ / PT-Br / TK / BG / RO / DK
External light	Insensitive; open cuvette slot
Interfaces	LAN (CAT 6; only use shielded cables with a maximum length of 20 m) 2 x USB (Host), 1 x USB (Function)
Internal quality control	With NANOCONTROL NANOCHECK 2.0 and integrated Holmium oxide filter
Protection class	IP 67
Update	Free of charge via USB stick
Operating range	10 °C–40 °C, up to 80 % relative humidity (non-condensing)
Power supply	100 V–240 V~, 50 / 60 Hz / 6 V, 3.2 Ah via built-in battery including mains power supply
Dimensions	325 x 280 x 130 mm (L x W x H)
Weight	3.8 kg
Warranty	2 years
CE	CE certified

Compact photometer for mobile water analysis

The photometer PF-12^{Plus} is a device tailored for the mobile water analysis. The icon-based menu guidance and clear taskbar make the PF-12^{Plus} an easy to use photometer for all fields of water and wastewater analysis without the need for extensive training. The device comes in a rugged case equipped with useful accessories and is therefore particularly popular with users for the direct analysis at the point of sampling.

Easy implementation

Measurement results are obtained very quickly with the PF-12^{Plus}, thanks to its simple operation. Equipped with more than 100 preprogrammed methods, it is the ideal companion for analysis on the road. The PF-12^{Plus} comes with easy to understand pictogram instructions in a practical manual for the evaluation of VISOCOLOR[®] ECO test kits.

Free programming

In addition to the preprogrammed methods, the PF-12^{Plus} offers the possibility to create up to 50 special methods for customized applications. Equations up to 4th degree and logarithmic functions can be programmed systematically.

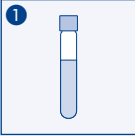
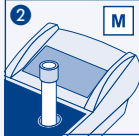
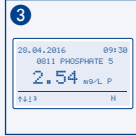
Turbidity measurements


With its especially positioned 860 nm LED the PF-12^{Plus} enables nephelometric turbidity measurements (NTU) in the range of 1–1000 NTU. Therefore, disturbing turbidities will be detected reliably in parallel to a measurement of tube tests - a huge PLUS on measurement safety. Furthermore, the PF-12^{Plus} offers the possibility to accurately determine the turbidity in transmitted light from 4–350 FAU.

How it's done




Photometric determination with the PF-12^{Plus}


1 	2 	3 
Prepare sample	Measure	Read result

Good to know 


Manifold case solutions are available for the PF-12^{Plus}, which can be individually equipped with test kits. An overview of the available cases is given on page 164.

Good to know 

An overview of the VISOCOLOR[®] ECO tests, VISOCOLOR[®] Powder Pillows, NANOCOLOR[®] ECO and NANOCOLOR[®] tubes compatible with the PF-12^{Plus} is given on page 76, page 82, page 102 and page 88.

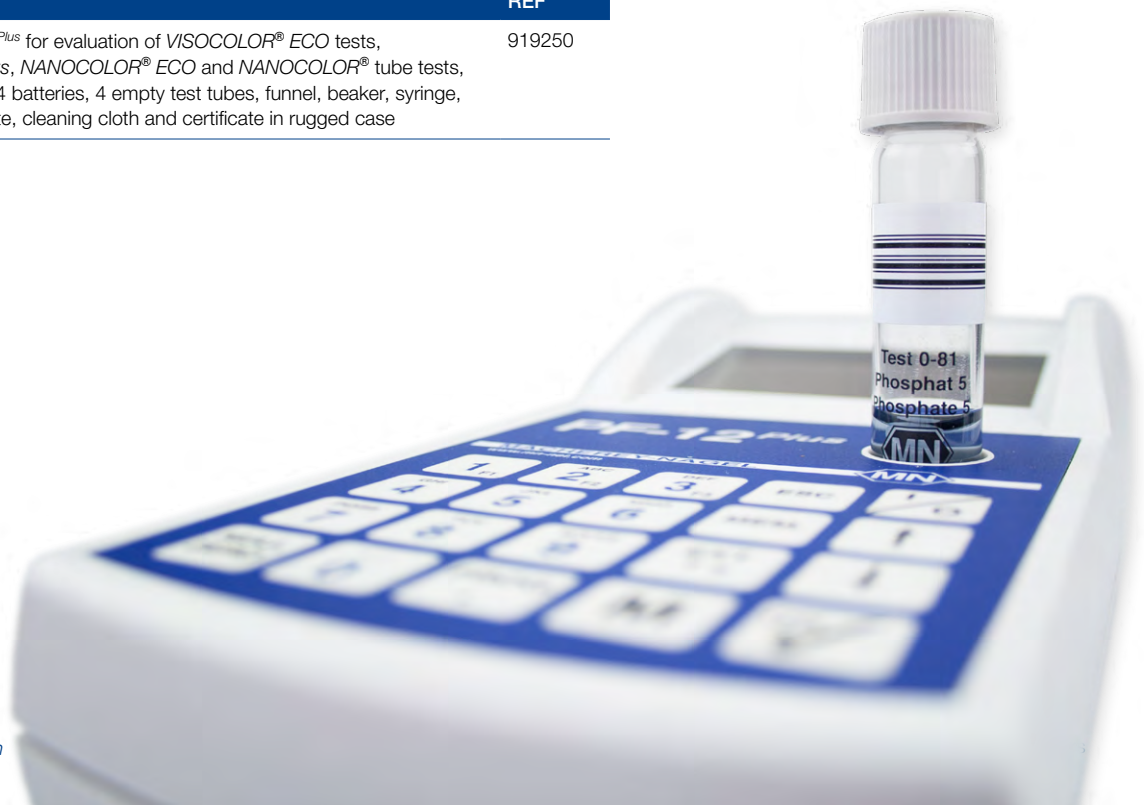
Good to know 

Turbidity – a source of error:
Turbidity is often underestimated since it is not always visually recognizable. During each measurement, the PF-12^{Plus} automatically measures the turbidity in the tube and warns the user in case of an interfering turbidity.



Ordering information

Description	REF
<ul style="list-style-type: none"> Compact photometer PF-12^{Plus} for evaluation of VISOCOLOR[®] ECO tests, VISOCOLOR[®] Powder Pillows, NANOCOLOR[®] ECO and NANOCOLOR[®] tube tests, incl. software DVD, manual, 4 batteries, 4 empty test tubes, funnel, beaker, syringe, USB cable, calibration cuvette, cleaning cloth and certificate in rugged case 	919250



Safe

- Easy handling for precise results
- GLP-conform storage of all measurement results
- Comfortable data export and data backup options

Mobile

- Flexible power supply via batteries or accu-pack
- Backlit graphic display also for critical lighting conditions
- Robust and waterproof according to IP 68

Versatile

- Compatible with *NANOCOLOR*[®] and *VISOCOLOR*[®] test kits
- NTU-measurement and NTU-check for detection of interfering turbidities
- Applicable in all fields of water and waste water analysis



Technical data

PF-12 ^{Plus}	
Type	Filter photometer with microprocessor control, self-test and auto-calibration
Optics	Automatic filter wheel with 7 interference filters; Insensitive to external light for fast measurements without cuvette slot cover
Wavelengths	345 nm / 436 nm / 470 nm / 540 nm / 585 nm / 620 nm / 690 nm plus 1 compartment for an additional filter; 860 nm LED for NTU measurement
Wavelength accuracy	± 2 nm, bandwidth at half transmission 10 nm–12 nm
Light source	Xenon lamp
Detector	Silicon-photodiode
Blank value	Automatic
Measuring modes	Over 100 preprogrammed tests and special methods, absorbance, transmission, factor, standard, nephelometric turbidity measurement, 50 freely programmable methods
Turbidity measurement	Nephelometric turbidity measurement (based on ISO 7027, 16 mm) 1–1000 NTU Accuracy: 1 NTU: 0–1 NTU, 4 NTU: 3–5 NTU, 100 NTU: 90–110 NTU, 400 NTU: 360–440 NT
Compatible test kits	<i>VISOCOLOR</i> [®] <i>ECO</i> tests (see page 76), <i>VISOCOLOR</i> [®] <i>Powder Pillow</i> tests (see page 82), <i>NANOCOLOR</i> [®] <i>ECO</i> tests (see page 102), <i>NANOCOLOR</i> [®] tube tests (see page 88)
Photometric range	± 3 A
Photometric accuracy	± 1 %
Stability	< 0.002 A/h
Cuvette slot	Tubes 16 mm OD
Data memory	1000 results, GLP conform
Display	Backlit graphic display, 128 x 64 pixels. All important data at a glance: Result with unit, date, time, sample number, sample location, dilution, measuring range control bar
Auto-off function	Inactive or automatic shutdown after 5 min, 10 min, 15 min, 20 min, 60 min
Quality control	With <i>NANOCONTROL</i> <i>NANOCHECK</i> 2.0
Operation	Self-explanatory menu guidance, foil keypad, test selection via parameter lists
Interface	USB 2.0
Languages	DE / EN / FR / ES / IT / NL / HU / PL / PT / CZ / ID / SL / TR / MY
Update	Free of charge via Internet / PC
Operating range	10 °C–40 °C, up to 80 % relative humidity (non-condensing)
Power supply	4 AA batteries, rechargeable batteries, USB interface; optional internal accu-pack
Housing	Shock-resistant according to MIL-STD 810C (test specification 514.2); Waterproof and dustproof according IP 68
Dimensions	215 mm x 100 mm x 65 mm
Weight	0.7 kg
Warranty	2 years
CE	CE certified

Compact photometer for mobile water analysis

The compact photometer PF-3 is the smallest member of the MACHEREY-NAGEL photometer family. The device completes our product portfolio and perfectly fits our tradition of reliability, user friendliness and innovation. The instrument comes in multiple versions, equipped with three LEDs and interference filters, designed to meet the analysis requirements of specific applications. Together with the approved *VISOCOLOR® ECO* test kits, *VISOCOLOR® Powder Pillows* and high quality *NANOCOLOR®* tube tests from MACHEREY-NAGEL, the PF-3 is perfectly suited for mobile analysis directly at the place of sampling. Optionally, the device comes in a practical case with pre-equipped test kits, in a cardboard box or in an empty case for the individual combination with our *VISOCOLOR® ECO* test kits.

Small, strong, smart

The handy and compact design makes this lightweight the ideal companion for mobile analysis. Its simple operation allows measurements within seconds. Besides the measurement accuracy, simplicity and user friendliness are key features of all MACHEREY-NAGEL devices. The interaction of context-sensitive icons and only four buttons guarantees a smart, clear and language-independent operation.

Fast and reliable results

The centerpiece of the PF-3 is its high-quality optic with the specially selected LEDs and corresponding interference filters. The unique "open slot" technology allows measurements without cuvette slot cover, thus emphasizing the high technical standard of the instrument. This yields into a simple and quick operation for the user, together with highly reliable results. MACHEREY-NAGEL provides free PC software, for an even more comfortable operation. The software makes data management convenient, simple and efficient. Additionally it guarantees a forgery-proof data management.

Be prepared

The variable power supply is of particular convenience for the user and enables reliable measurements in all situations. Besides batteries and an accu-pack, the device can also be powered directly via an USB cable or a power adaptor.

Good to know

Manifold case solutions are available for the PF-3, which can be individually equipped with test kits. An overview of the available cases is given on page 164.



Good to know

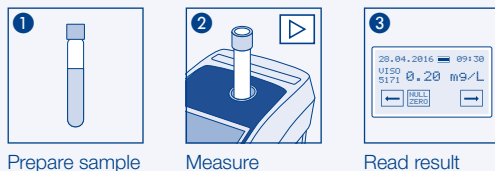
An overview of *VISOCOLOR® ECO* tests, *VISOCOLOR® Powder Pillows* and *NANOCOLOR®* tube tests compatible with the PF-3 is given on page 76, page 82 and page 88.



How it's done



Photometric determination with the PF-3



Simple

- Intuitive operation with only four keys
- Flat menu structure
- Bright display for safe readings

Robust

- Glass fiber reinforced housing for extreme durability
- Water- and dustproof according to IP 68
- Shock-resistant optics

Flexible

- Various case solutions including reagents
- Additional parameters available f.o.c.
- Compatible with VISOCOLOR® ECO tests, VISOCOLOR® Powder Pillows and NANOCOLOR® tests



PF-3

Ordering information

Description	REF
■ Compact photometer PF-3 Pool (Cl ₂ , pH, Cya, TA), in a cardboard box for evaluation of VISOCOLOR® ECO tests, VISOCOLOR® Powder Pillows and NANOCOLOR® tube tests incl. manual, batteries and certificate	919340
■ Compact photometer PF-3 Soil (NH ₄ , K, NO ₃ , PO ₄), in a cardboard box for evaluation of VISOCOLOR® ECO tests, VISOCOLOR® Powder Pillows and NANOCOLOR® tube tests incl. manual, batteries and certificate	919341
■ Compact photometer PF-3 COD (COD), in a cardboard box for evaluation of NANOCOLOR® tube tests incl. manual, batteries and certificate	919342
■ Compact photometer PF-3 Drinking Water (Cl ₂ , pH, F, Fe, ClO ₂), in a cardboard box for evaluation of VISOCOLOR® ECO tests, VISOCOLOR® Powder Pillows and NANOCOLOR® tube tests incl. manual, batteries and certificate	919343
■ Compact photometer PF-3 Fish (NH ₄ , Cl ₂ , pH, Fe, SiO ₂ , PO ₄ , NO ₃ , NO ₂ , O ₂ , Cu), in a cardboard box for evaluation of VISOCOLOR® ECO tests, VISOCOLOR® Powder Pillows and NANOCOLOR® tube tests incl. manual, batteries and certificate	919345

Additional versions and tests will follow successively. All current options can be found at www.mn-net.com/PF-3.



Technical data

PF-3	
Type	LED photometer with microprocessor control, self-test and auto-calibration
Optics	LED + interference filters Insensitive to external light for fast measurements without cuvette slot cover
Wavelengths	3 wavelengths; depending on version Pool / Drinking Water: 450 nm / 530 nm / 590 nm Soil: 365 nm / 450 nm / 660 nm COD: 365 nm / 450 nm / 595 nm Fish: 450 nm / 530 nm / 660 nm
Wavelength accuracy	± 2 nm, bandwidth at half transmission 10 nm–12 nm
Light source	LED
Detector	Silicon-photodiode
Compatible test kits	<i>VISOCOLOR</i> [®] <i>ECO</i> tests (see page 76) <i>VISOCOLOR</i> [®] <i>Powder Pillows</i> (see page 82) <i>NANOCOLOR</i> [®] tube tests (see page 88)
Cuvette slot	Tubes 16 mm OD
Memory	50 results
Display	Backlit graphic display, 128 x 64 pixels, all important data at a glance: result with unit, date, time
Auto-off function	Inactive or automatic shutdown after 5 min, 10 min, 15 min, 20 min
Quality control	With <i>NANOCONTROL</i> <i>NANOCHECK</i> 2.0
Operation	Self-explanatory menu guidance, foil keypad, test selection via parameter lists
Interface	Mini-USB
Update	Free of charge via Internet / PC
Operating range	10 °C–40 °C, up to 80 % relative humidity (non-condensing)
Power supply	3 AA batteries, rechargeable batteries, USB interface; optional internal accu-pack
Housing	Shock-resistant; waterproof and dustproof, according to IP 68
Dimensions	170 mm x 95 mm x 68 mm
Weight	0.5 kg
Warranty	2 years
CE	CE certified

NANOCOLOR® TIC-Ex

Removal of inorganic carbon in TOC analysis

The NANOCOLOR® TIC-Ex is required during the sample preparation of MACHEREY-NAGEL TOC tube tests. For evaluation of the total organic carbon (TOC) prior to determination, the inorganic carbon needs to be removed from the sample. The removal is accomplished by purging of air with the help of the NANOCOLOR® TIC-Ex through the prepared sample solution.

The acidified sample solutions are put into the cuvette holder and placed in the premarked positions of the NANOCOLOR® TIC-Ex. The preinstalled pipette tips are dipped into the sample solutions by pressing down the lowering mechanism of the NANOCOLOR® TIC-Ex. After switching on the device, air is automatically purged through the sample solutions in the cuvettes for five minutes. Hereby the inorganic carbon is removed as carbon dioxide quantitatively. After the elapsed time the process stops automatically. The pipette tips are removed from the solutions and can be disposed using the removing mechanism on top. Afterwards the sample solutions are treated following the next steps of the respective TOC test kit.

Good to know



The NANOCOLOR® TIC-Ex can be used even for very hard waters with up to 48° d and therefore is superior to other methods for TIC removal. To check the carbonate hardness of your samples, we recommend QUANTOFIX® carbonate hardness (REF 91323).

Ordering information

Description	REF
■ NANOCOLOR® TIC-Ex Device for removal of TIC, incl. cuvette holder, manual, mains adapter and certificate in a cardboard box	916993

Technical data

TIC-Ex	
Type	Device for removal of TIC
Operation	Via two buttons
Operating range	5–40 °C, 20–80 % relative humidity (non-condensing)
Power supply	9 V DC / 2.0 A
Dimensions	350 x 300 x 235 mm
Weight	4.95 kg
Warranty	2 years
CE	CE certified



NANOCOLOR® Sipper module

Dealing with large sample numbers in photometric analysis often requires a lot of time and resources due to the preparation of the samples in different cuvettes and the frequent changes of the cell in the photometer. The sipper module *NANOCOLOR®* FP-200 is an optional accessory for the spectrophotometers *NANOCOLOR®* VIS II and *UV/VIS II*, which can significantly reduce the analysis effort for high sample quantities. A constant amount of liquid is pumped through a flow cell (2 mm, 10 mm or 50 mm) in the photometer and the absorbance is measured automatically. As the same optical conditions apply to both the zero measurement and the measurement of the sample, the measuring accuracy can be improved by working with the *NANOCOLOR®* FP-200.

Good to know



Using the sipper module, the danger of direct contact with chemicals is drastically reduced. A recasting of samples into the cuvettes is no longer necessary.

Ordering information

Description	REF
■ Sipper module <i>NANOCOLOR®</i> FP-200 for <i>NANOCOLOR®</i> UV/VIS II and <i>NANOCOLOR®</i> VIS II incl. manual, USB cable, tygon-tubing set with adapters, intake needle and certificate	919180

Technical data

FP-200	
Type	Peristaltic pump
Operation	Fully automatic using the spectrophotometers <i>NANOCOLOR®</i> VIS II and <i>UV/VIS II</i>
Housing	Protection rating IP 30
Interfaces	USB B
Additional information	Wavelength range - 340 nm–900 nm (plastic), 190 nm–900 nm (quartz glass)
Pumping capacity	1 mL/s
Power supply	Via USB cable, 5 V, 500 mA
Operating range	10–40 °C max. 80 % relative humidity (non-condensing)
Dimensions	125 x 177 x 69 mm
Weight	365 g
Warranty	2 years
CE certified	Yes



NANOCONTROL

Analytical quality control for the entire analysis system

The NANOCONTROL equipment for quality control of the photometers is designed to support our IQC concept. It always allows the user to check the correct functionality of the devices and therefore represents a cornerstone for ensuring correct measurement results.

Checking the photometric accuracy

NANOCONTROL NANOCHECK 2.0 is used as secondary standard for the determination of photometric accuracy and linearity. It is a crucial tool for the inspection of spectrophotometers and filter photometers, besides the use of standards and spiking solutions. Two different colored solutions are included in three concentrations each. They are factory-checked against a reference spectrophotometer. The absorbances of these NIST-traceable control solutions are reported in a comprehensive certificate. The automated linearity check in our spectrophotometers NANOCOLOR® VIS II, NANOCOLOR® UV/VIS II and NANOCOLOR® Advance provides an additional, unique level of safety. A 2D-Barcode on each box is used to comfortably program our spectrophotometers with the LOT-specific data. Besides the check of the photometric accuracy NANOCOLOR® VIS II and NANOCOLOR® UV/VIS II also support an automatic photometric linearity check when using NANOCONTROL NANOCHECK 2.0.

All features of NANOCONTROL NANOCHECK combined make photometer inspection easy as never before.

Checking the turbidity calibration

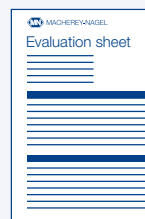
NANOCONTROL NANOTURB is a turbidity standard for nephelometric turbidity measurements for our photometers. The solutions are used as a primary standard for calibrating and checking the nephelometric turbidity unit in accordance with ISO 7027. The test solutions are ready for immediate use and must only be placed into the photometer. Dilution steps or contact with chemicals are avoided effectively.

Ordering information

Description	REF	Shelf life	GHS
<ul style="list-style-type: none"> NANOCONTROL NANOCHECK 2.0 Test solutions for the determination of photometric accuracy and linearity for NANOCOLOR® photometers, secondary standard for inspection equipment monitoring in accordance with ISO 9001	925703	2 years	■
NANOCONTROL NANOTURB			
<ul style="list-style-type: none"> NANOCONTROL NANOTURB turbidity standard with 4 tubes (1, 4, 100, 400 NTU) for the nephelometric turbidity calibration for NANOCOLOR® spectrophotometers and PF-12^{Plus}, secondary standard for inspection equipment monitoring in accordance with ISO 9001 	925702	8 months	
VISOCOLOR® Inspection solutions			
<ul style="list-style-type: none"> VISOCOLOR Color standards Chlorine for checking consistent instrument response of NANOCOLOR® UV/VIS II, VIS II, Advance, PF-12^{Plus} and PF-3 	914820		

GHS: Globally harmonized system: This product contains harmful substances, which must be labeled as hazardous. For detailed information, please see the SDS.

Good to know



With the NANOCONTROL NANOCHECK 2.0 evaluation sheet the requirements for quality assurance can be fulfilled and it serves as validation against authorities and supervisors.



The complete analytics from a single source

MACHEREY-NAGEL photometers fulfill all requirements for daily laboratory analysis. In addition, many accessories are available to be equipped optimally for special applications. The sipper module *NANOCOLOR*[®] FP-200 for instance enables timesavings and increased accuracy for standard tests with high sample throughput. The user receives all accessories from a single source ensuring compatibility with the different photometers at all times.

Ordering information

Description	REF	Content
Transport cases for photometers		
■ Transport case for spectrophotometer <i>NANOCOLOR</i> [®] UV/VIS II	919624	1 piece
■ Transport case for spectrophotometer <i>NANOCOLOR</i> [®] VIS II	919652	1 piece
■ Transport case for spectrophotometer <i>NANOCOLOR</i> [®] Advance	919757	1 piece
Special filters for photometers <i>NANOCOLOR</i>[®] 500 D / 400 D / 350 D / PF-12^{Plus} / PF-12		
■ Interference filter 412 ± 2 nm (incl. installation) for tube test <i>NANOCOLOR</i> [®] Formaldehyde 10	919841.2	1 piece
■ Special filter incl. ex-factory installation (wavelengths on request)	919850.2	1 piece
Handheld scanner		
■ Handheld scanner for <i>NANOCOLOR</i> [®] spectrophotometers	919134	1 piece
Sipper		
■ Sipper module <i>NANOCOLOR</i> [®] FP-200 for <i>NANOCOLOR</i> [®] UV/VIS II and <i>NANOCOLOR</i> [®] VIS II incl. manual, USB cable, tygon-tubing set with adapters, intake needle and certificate	919180	1 piece
■ Tubing set for sipper module <i>NANOCOLOR</i> [®] FP-200 consisting of tygon-tube set with adapters and pump tubing with pre-installed fittings	919181	1 piece
■ Support stand for <i>NANOCOLOR</i> [®] FP-200	919143	1 piece
Manuals		
■ Manual (quick start guide) for <i>NANOCOLOR</i> [®] VIS II and UV/VIS II	919601	1 piece
■ Manual (quick start guide) for <i>NANOCOLOR</i> [®] Advance	919754	1 piece
■ Manual for photometer PF-12 ^{Plus}	919252	1 piece
■ Manual for photometer PF-3	919392	1 piece
■ <i>VISOCOLOR</i> [®] ECO test instructions for photometer PF-3	934001	1 piece
■ <i>VISOCOLOR</i> [®] ECO test instructions for photometer PF-12 ^{Plus}	931503	1 piece
■ Manual for Sipper module <i>NANOCOLOR</i> [®] FP-200	919182	1 piece
Lamps		
■ Halogen lamp for <i>NANOCOLOR</i> [®] VIS II and UV/VIS II	919604	1 piece
■ Halogen lamp for <i>NANOCOLOR</i> [®] Advance	919759	1 piece
■ Deuterium lamp for <i>NANOCOLOR</i> [®] UV/VIS II	919603	1 piece
■ Tungsten lamp for <i>NANOCOLOR</i> [®] 500 D / 400 D / 350 D / 300 D / 250 D / PT-3	919787	1 piece
Cuvettes		
■ Calibration cuvette 16 mm for <i>NANOCOLOR</i> [®] photometers	916908	1 piece
■ Calibration cuvette 24 mm for <i>NANOCOLOR</i> [®] Advance	916930	1 piece
■ Flow cuvette, quartz glass, 2 mm optical path, for <i>NANOCOLOR</i> [®] UV/VIS and UV/VIS II	919127	1 piece
■ Flow cuvette, quartz glass, 10 mm optical path, for <i>NANOCOLOR</i> [®] UV/VIS II	919626	1 piece
■ Flow cuvette, optical glass, 10 mm optical path, for <i>NANOCOLOR</i> [®] VIS, VIS II and UV/VIS II	919158	1 piece
■ Flow cuvette, quartz glass, 50 mm optical path, for <i>NANOCOLOR</i> [®] VIS, VIS II and UV/VIS II	919149	1 piece

¹ Required additionally: Cable set, REF 919133 ;

² Required additionally: Mains adaptor, REF 91906

³ Required additionally for PF-3: Mini USB-cable, REF 919390

Accessories for photometers

Description	REF	Content
■ Quartz glass cuvette, 2 mm optical path, for NANOCOLOR® UV/VIS and UV/VIS II	919122	1 piece
■ Quartz glass cuvette, 10 mm optical path, for NANOCOLOR® UV/VIS and UV/VIS II	919120	1 piece
■ Quartz glass cuvette, 50 mm optical path, for NANOCOLOR® UV/VIS and UV/VIS II	919121	1 piece
■ Glass cuvettes, 5 mm optical path	91932	2 pieces
■ Glass cuvettes, 10 mm optical path	91933	2 pieces
■ Glass cuvettes, 20 mm optical path	91934	2 pieces
■ Glass cuvette, 50 mm optical path	91935	1 piece
■ Semi-micro cuvette, 50 mm optical path	91950	1 piece
■ Lids for glass cuvettes, 10 mm	91941	2 pieces
■ Lids for glass cuvettes, 50 mm	91940	2 pieces
■ Disposable plastic cuvettes, 10 mm optical path	91937	100 pieces
■ Fixing for 10 mm cuvette for NANOCOLOR® Advance, VIS II, UV/VIS and UV/VIS II	919136	1 piece
■ Test tubes, 16 mm OD	91680	20 pieces
■ Test tubes, 24 mm OD	936101	6 pieces
■ Cuvette adapter A and B for 10, 16, 20, 50 mm and 24 mm cuvettes for NANOCOLOR® Advance	919752	1 piece
Cover		
■ Cover for cuvette slot for NANOCOLOR® UV/VIS II	919606	1 piece
■ Cover for cuvette slot for NANOCOLOR® VIS II	919654	1 piece
■ Cover for cuvette slot for NANOCOLOR® Advance	919753	1 piece
Protective coverings		
■ Protective covering for NANOCOLOR® UV/VIS II	919605	1 piece
■ Protective covering for NANOCOLOR® VIS II	919651	1 piece
■ Protective covering for NANOCOLOR® Advance	919751	1 piece
■ Protective covering for NANOCOLOR® 500 D / 400 D / 350 D	91918	1 piece
Printer		
■ NANOCOLOR® thermal printer for photometer NANOCOLOR® VIS II and UV/VIS II (incl. mains adaptor and manual)	919655	1 piece
■ NANOCOLOR® thermal printer for NANOCOLOR® UV/VIS ^{1) 2)} / VIS ^{1) 2)} / 500 D / 400 D / 350 D / 300 D / 250 D and photometer PF-11 ²⁾ (incl. printer cable, without mains adaptor)	91916	1 piece
■ Printer paper rolls for NANOCOLOR® thermal printer for NANOCOLOR® VIS II / UV/VIS II, 79 mm width, core 12 mm, OD 80 mm	919656	3 pieces
Software		
■ NANOCOLOR® software for Linus / 500 D / 400 D / 350 D / 300 D / 250 D / PF-12 ^{Plus} / PF-12 / BioFix® Lumi-10	91902	1 piece
Accessories for data transfer		
■ USB cable AA for NANOCOLOR® 500 D	919686	1 piece
■ USB cable AB for NANOCOLOR® VIS / VIS II / UV/VIS / UV/VIS II / VARIO 4 / VARIO C2 / PF-12 ^{Plus} / PF-12 / FP-200	919687	1 piece
■ LAN cable (1.5 m) for NANOCOLOR® Advance, VIS II and UV/VIS II	919682	1 piece
■ Mini USB cable for photometer PF-3 and VARIO Mini	919390	1 piece
■ Zero modem cable, serial, 2x9 pin SUB-D socket, for NANOCOLOR® 500 D / 400 D / 350 D / 300 D / 250 D / PT-3 / PF-10 / PF-11 and BioFix® Lumi-10	919773	1 piece
■ Adaptor, 9 pin SUB-D-plug to 25 pin SUB-D socket	919681	1 piece
■ NANOCOLOR® USB stick for NANOCOLOR® Advance, VIS II / UV/VIS II / VARIO Mini	919123	1 piece
■ NANOCOLOR® USB stick for NANOCOLOR® VIS / UV/VIS / VARIO 4 / VARIO C2 / VARIO C2 M / VARIO HC	919119	1 piece
Power supply		
■ Mains adaptor for NANOCOLOR® Advance, VIS, VIS II and VARIO Mini	919156	1 piece

¹⁾ Required additionally: Cable set, REF 919133 ;

²⁾ Required additionally: Mains adaptor, REF 91906

³⁾ Required additionally for PF-3: Mini USB-cable, REF 919390

Accessories for photometers

Description	REF	Content
■ USB mains adaptor for photometer PF-12 ^{Plus} / PF-12 / PF-3 ³⁾	919220	1 piece
■ Mains adaptor for NANOCOLOR® 500 D / 400 D / 350 D / 300 D / 250 D / PT-3 / PF-11 / FP-100; prim. 100 V–240 V ~; sec. 9 V ^{DC} / 1500 mA	91906	1 piece
■ Rechargeable battery pack for photometer PF-12 ^{Plus} / PF-12	919201	1 piece
■ Rechargeable battery pack for photometer PF-3	919391	1 piece
■ Battery charger for photometer PF-3 / PF-12 ^{Plus} / PF-12 / PF-11 / PF-10, incl. 4 rechargeable batteries	919221	1 piece

¹⁾ Required additionally: Cable set, REF 919133 ;
²⁾ Required additionally: Mains adaptor, REF 91906
³⁾ Required additionally for PF-3: Mini USB-cable, REF 919390

NANOCOLOR® VARIO 4, VARIO C2 and VARIO C2 M

Heating blocks for reliable digestions

The NANOCOLOR® heating blocks enable a fast and safe performance of all kinds of sample digestions required in water and waste water analysis. Standard parameters for routine digestions such as COD, TOC, total nitrogen, total phosphorus and metals are pre-programmed in the heating blocks and help the user to avoid mistakes.

The small one and the big one

The heating block NANOCOLOR® VARIO C2 enables the simultaneous digestion of up to 12 samples. For a higher sample throughput the NANOCOLOR® VARIO 4 is perfectly suited, as it allows up to 24 simultaneous digestions in two separately controllable heating units. Therefore, MACHEREY-NAGEL offers the appropriate heating block to each user for routine analysis in the laboratory. The NANOCOLOR® heating blocks are equipped with lockable protective lids and a touch protection for increased work safety. The NANOCOLOR® VARIO C2 M heating block with two 22 mm and eight 16 mm holes is available for the digestion of large sample volumes as part of metal analysis.

Extremely versatile and maximally secure

In addition to the preprogrammed temperatures and heating times, a large number of user-specific digestion methods can be stored. The USB and RS232 interfaces allow an easy connection to a PC and enable the convenient linkage to the NANOCONTROL inspection equipment monitoring tools. The graphical representation of the heating curves enhances transparency about the temperature stability. The electronic over-temperature sensor protects the heating block from overheating.

Temperature testing and calibration

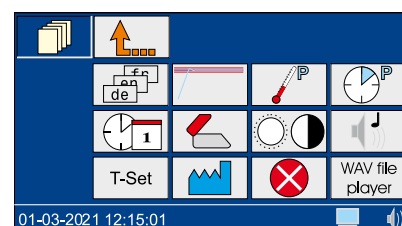
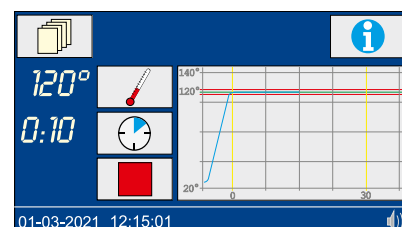
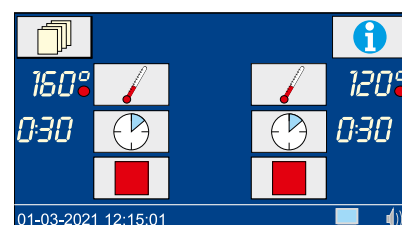
A temperature test can be performed using the NANOCOLOR® T-Sets to safeguard results against authorities and supervisors. The free PC software of the heating blocks facilitates checking of temperatures and the creation of the respective reports. After measurement data transfer via the interfaces using the PC software, the testing certificate is created directly, which ensures a GLP-compliant documentation of all equipment testing.

Suitable for all NANOCOLOR® digestion methods

Application	Temperature	Time
COD according to DIN ISO 15705	148 °C	120 min
High-speed COD	160 °C	30 min
TOC	100 °C	60 min
Total nitrogen	120 °C	30 min
Total kjeldahl nitrogen	120 °C	30 min
Total phosphorus	120 °C	30 min
Organic acids	100 °C	10 min
Total metals	120 °C	30 min
AOX	120 °C	30 min
Hydrocarbons	148 °C	120 min
Programmable, user-defined programs	40 °C–160 °C	0 h:01 min–9 h:59 min

Good to know

The NANOCOLOR® USB T-Set is a simple and unique tool for inspection equipment monitoring of MACHEREY-NAGEL heating blocks by the user himself. For further information about the NANOCOLOR® USB T-Set see page 150.



NANOCOLOR® VARIO 4, VARIO C2 and VARIO C2 M

Easy

- User-friendly touch screen
- Intuitive usage via icons
- Operation without the need for intensive training

Fast

- All important parameters within 30 minutes
- Extremely short heating-up times
- Call up of heating programs in a matter of seconds

Secure

- High temperature stability
- Graphically visualized heating curves
- Internal quality control via NANOCOLOR® T-Set

Ordering information

Description	REF
■ Heating block NANOCOLOR® VARIO 4 with two blocks with separate control, 2 x 12 bores for test tubes of 16 mm OD, incl. power cable, two separate protective coverings, manual, data cable, software DVD and certificate	919300
■ Heating block NANOCOLOR® VARIO C2 12 bores for test tubes of 16 mm OD, incl. power cable, protective covering, manual, data cable, software DVD and certificate	919350
■ Heating block NANOCOLOR® VARIO C2 M – version for metal analysis, with large bores – 8 bores for test tubes of 16 mm OD, 2 bores for reaction vessels of 22 mm OD, incl. power cable, protective covering, manual, data cable, software DVD and certificate	919350.1



NANOCOLOR® VARIO 4, VARIO C2 and VARIO C2 M

Technical data

NANOCOLOR® VARIO 4, VARIO C2 and VARIO C2 M	
Type	Heating blocks for chemical-analytical digestions
Number of bores	2 x 12 of 16 mm OD (VARIO 4) 12 of 16 mm OD (VARIO C2) 8 of 16 mm OD + 2 of 22 mm OD (VARIO C2 M)
Display	Colored, backlit LCD touch screen
Operation	Icon-based menu guidance via touch screen
Temperatures	6 preprogrammed temperatures 70 °C / 100 °C / 120 °C / 148 °C / 150 °C / 160 °C 6 free memory locations for individual temperature settings
Temperature range	40 °C–160 °C (1 °C increments)
Temperature stability	± 1 °C (according to DIN, EN, ISO and EPA methods)
Warm-up time	From 20 °C to 160 °C within 10 minutes
Heating times	5 preprogrammed heating times 10 min / 30 min / 60 min / 120 min / cont. 7 free memory locations for individual heating times
Time range	0 h:01 min–9 h:59 min (1 °C increments)
Safety	Replaceable safety covers as contact protection Lockable protective lids Overheating protection
Interfaces	Bidirectional serial RS232, USB A (function) and USB B (Host)
Internal quality control (IQC)	With NANOCOLOR® T-Set (REF 919917) and NANOCOLOR® USB T-Set (REF 919921) Optional fully automatic calibration and generation of a test certificate for instrument control and monitoring
Languages	DE / EN / FR / ES / HU / PL / CZ / TR / DK
Update	Free via Internet / PC and USB stick
Operating range	10 °C–40 °C; max. 80 % relative humidity (non-condensing)
Power supply	110 V–230 V~, 50 / 60 Hz
Power consumption	300 / 550 W (VARIO 4) 150 / 300 W (VARIO C2 and VARIO C2 M)
Dimensions	290 mm x 287 mm x 146 mm (VARIO 4) 169 mm x 282 mm x 146 mm (VARIO C2 and VARIO C2 M)
Weight	approx. 3.2 kg (VARIO 4) approx. 2.0 kg (VARIO C2 and VARIO C2 M)
Warranty	2 years
CE	CE certified



Compact heating block for mobile analysis

Sample digestion is an essential step in the determination of a couple of important parameters in photometric water analysis, but is usually only carried out in a laboratory. The new NANOCOLOR® VARIO Mini now gives the ability to perform sample digestions on-site or on the road. This guarantees a mobile and safe performance of all sample digestions required in the water and waste water analysis. The compact size and the flexible power supply, e.g. through the power port of a car, ease the use and offer a maximum flexibility for the everyday analysis.

Simply clever

The NANOCOLOR® VARIO Mini has six positions for test tubes with an outer diameter of 16 mm and therefore offers the opportunity to examine small numbers of samples directly on the spot. Furthermore, the device impresses with a temperature stability of ± 1 °C. All digestions of the MACHEREY-NAGEL test kits can easily be conducted using the pre-programmed temperatures and heating times. With the NANOCOLOR® USB T-Set MACHEREY-NAGEL offers a reliable inspection equipment monitoring tool to ensure the temperature stability and the accuracy of the temperature calibration of the NANOCOLOR® VARIO Mini. It allows the easy temperature checking and calibration of the heating block and thereby results in an always accurate and reliable digestion of the sample.

Ordering information

Description	REF
■ Heating block NANOCOLOR® VARIO Mini, 6 bores for test tubes of 16 mm OD, incl. power cable, protective covering, manual and certificate	919380

Technical data

NANOCOLOR® VARIO Mini	
Type	Heating block for chemical and analytical digestion
Number of bores	6 of 16 mm OD
Display	Graphic display 128 x 64 pixel
Operation	Icon-based menu guidance with four buttons
Temperatures	70 °C, 100 °C, 120 °C, 148 °C, 150 °C, 160 °C
Temperature stability	± 1 °C (according DIN, EN, ISO and EPA methods)
Warm-up time	From 20 °C to 160 °C within 25 minutes (at 20 °C ambient temperature)
Heating times	30 min, 60 min, 120 min
Safety	Safety cover with lockable protective lid and overheating protection
Interfaces	Mini-USB-OTG (On-The-Go)
Internal quality control (IQC)	With NANOCOLOR® USB T-Set (REF 919921) Optional fully automatic calibration and test certificate generation
Update	Free via Internet / PC and USB stick
Operating range	10 °C–40 °C; max. 80 % relative humidity (non-condensing)
Power supply	12 V, 5 A
Power consumption	60 W
Dimensions	105 mm x 125 mm x 170 mm
Weight	670 g
Warranty	2 years
CE	CE certified

Good to know



No power supply available? The NANOCOLOR® VARIO Mini can be operated with an external battery or the power port of a car as the only heating block device of its class. For the comfortable transport MACHEREY-NAGEL provides compact and complete mini laboratories as case solutions for direct analysis at the place of sampling.



NANOCOLOR® VARIO HC

Heating block for fast digestions

The factor time plays a crucial role in many laboratories when conducting sample digestions. The NANOCOLOR® VARIO HC enables the user to digest all important parameters in just 30 minutes. The usually very slow cooling down of the cuvettes after digestion is greatly accelerated in the NANOCOLOR® VARIO HC by the active cooling unit. Hereby the test tubes are ready for the measurement or further analysis steps shortly after the digestion has ended.

Simply fast

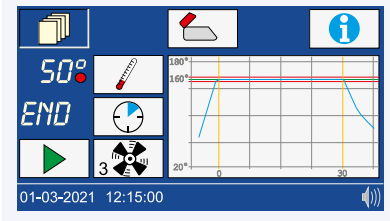
Thanks to the intelligent linkage of heating-up, digestion and cooling-down the NANOCOLOR® VARIO HC allows the performance of a COD test in less than 45 minutes. The readily prepared cuvettes are directly inserted into the cold heating block, which means an additional time saving for the user as the waiting of the heating process is omitted.

Approved and versatile

In addition to the cooling function, the NANOCOLOR® VARIO HC comes with all features provided by our proven heating blocks NANOCOLOR® VARIO 4 and VARIO C2. Naturally, this includes the possibility of checking and calibrating the temperature with the NANOCOLOR® T-Sets, thus fulfilling the requirements of analytical quality control. The safety of the user is as important as accurate results. The protection lid of the NANOCOLOR® VARIO HC locks electronically during digestion. The operation of the heating block and the input of digestion programs are carried out via a user-friendly touch screen.

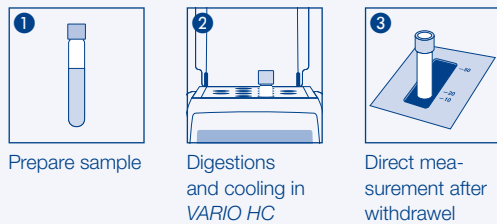
Good to know

Both, the temperature of the cooling process as well as the ventilation speed can be individually adjusted by the user.



How it's done

Heating and cooling



Ordering information

Description	REF
■ Heating block NANOCOLOR® VARIO HC – with cooling function – 12 bores for test tubes of 16 mm OD and fan, incl. power cable, protective covering, manual, data cable, software DVD and certificate	919330

Technical data

NANOCOLOR® VARIO HC	
Type	Heating block for chemical-analytical digestion
Number of bores	12 of 16 mm OD
Display	Colored, backlit LCD touch screen
Operation	Icon-based menu guidance via touch screen
Temperatures	6 preprogrammed temperatures 70 °C / 100 °C / 120 °C / 148 °C / 150 °C / 160 °C 6 free memory locations for individual temperature settings
Temperature range	40 °C–160 °C (1 °C increments)
Temperature stability	± 1 °C (according to DIN-, EN-, ISO- and EPA-methods)
Warm-up time	from 20 °C to 160 °C within 10 minutes
Heating times	5 preprogrammed heating times 10 min / 30 min / 60 min / 120 min / cont. 7 free memory locations for individual heating times
Time range	0 h:01 min–9 h:59 min (increments 0 h:01 min)
Safety	Replaceable safety covers for contact protection Lockable protective lids Overheating protection
Interfaces	Bidirectional serial RS232, USB A (function) and USB B (Host)
Internal quality control (IQC)	With NANOCOLOR® T-Set (REF 919917) and NANOCOLOR® USB T-Set (REF 919921) Optional fully automatic calibration and test certificate generation
Languages	DE / EN / FR / ES / HU / PL / CZ / TR / DK
Update	Free via Internet and USB-stick
Operating range	10 °C–40 °C; max. 80 % relative humidity (non-condensing)
Power supply	110 V–230 V~, 50 / 60 Hz
Power consumption	150 / 550 W
Dimension	290 mm x 287 mm x 146 mm
Weight	approx. 3.2 kg
Warranty	2 years
CE	CE certified

NANOCOLOR® T-Set and USB T-Set

Analytical quality control for the entire analysis system

The unique inspection equipment NANOCOLOR® T-Set is an electronic temperature sensor, which is suitable for the temperature control and automatic calibration of all NANOCOLOR® heating blocks. The user can check the heating blocks independently with the NANOCOLOR® T-Set for internal quality control purposes. For this reason the NANOCOLOR® T-Set is an important building block for a comprehensive analytical quality assurance.

Independent self-control

By a target-actual comparison, the temperatures in the heating blocks can be tested quickly and easily. All programmed temperatures are measured, registered and stored in the heating block by the NANOCOLOR® T-Set. This tool also enables an automatic calibration of the heating blocks. Our customers appreciate the NANOCOLOR® T-Set, as it allows a cost-effective and independent monitoring of their own heating block.

Data transfer and documentation

After completion of the temperature control or calibration, the collected data can be transferred to a computer easily via the RS232 or USB port. The free of charge NANOCOLOR® T-Set PC software enables a GLP-compliant documentation and the creation of direct test certificates.

Now with temperature display

The new NANOCOLOR® USB T-Set is an advancement of the established NANOCOLOR® T-Set, extended by a LED display to control the measured temperature. Therefore, temperature measurements can now be carried out independent of the heating block.

Good to know

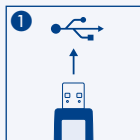
The NANOCOLOR® T-Sets can be used also for external temperature measurements, e.g. for the determination of the sample temperature.

Good to know

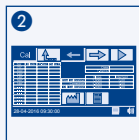
The temperature display of the NANOCOLOR® USB T-Set can be flipped by tapping on the edge of the device. Therefore, an optimal reading is always guaranteed.

How it's done

Automatic temperature control and calibration with the NANOCOLOR® USB T-Set



Connect T-Set



Choose and start program



Create test protocol



NANOCOLOR® T-Set and USB T-Set

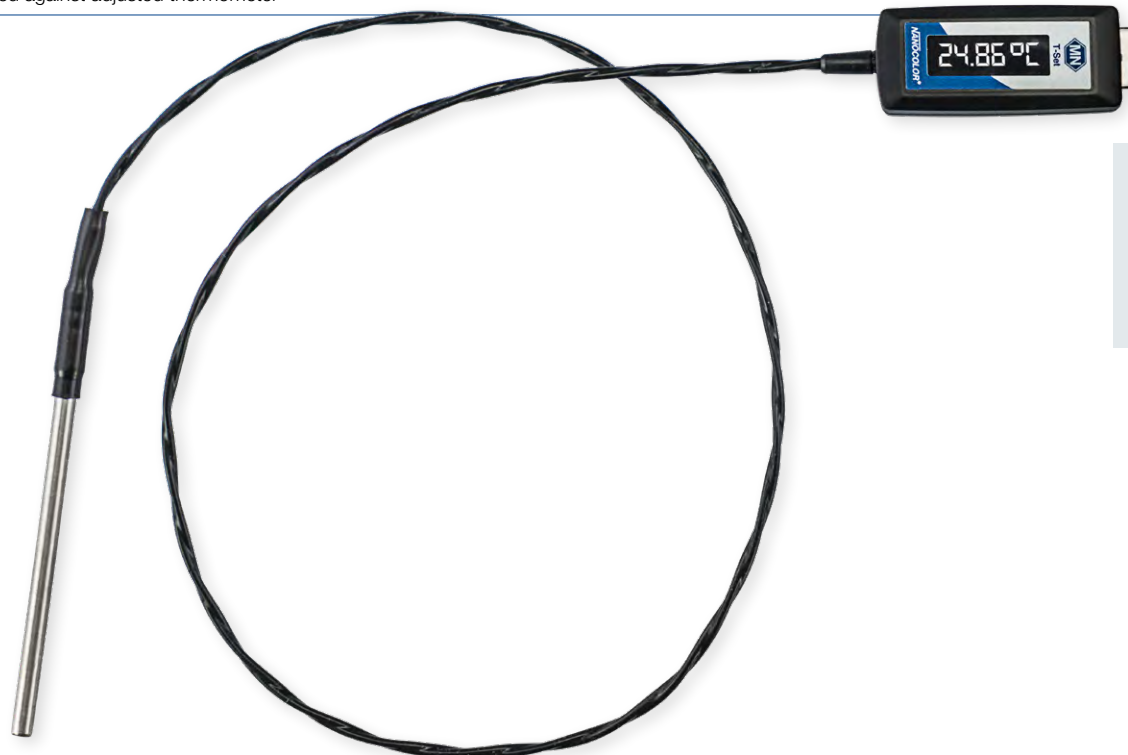
Ordering information

Description	REF
■ NANOCOLOR® T-Set for electronic temperature control and calibration of the heating blocks NANOCOLOR® VARIO 4 / VARIO C2 / VARIO C2 M / VARIO HC / VARIO 3 / VARIO compact	919917
■ NANOCOLOR® USB T-Set for electronic temperature control and calibration of the heating blocks NANOCOLOR® VARIO 4 / VARIO C2 / VARIO C2 M / VARIO HC / VARIO Mini ¹⁾	919921

¹⁾ Additional adapter for USB-T-Set (REF 919937) is required.

Technical data

	T-Set	USB T-Set
Type	Electronic thermal sensor for temperature control, calibration and generation of a test certificate for inspection equipment monitoring	
Detector	PT 1000 (95 mm length x 4 mm Ø)	
Display	–	LED display
Operation	Via touch screen of the heating blocks and the T-Set software	
Temperature range	0 °C–200 °C	
Precision	± 1 °C	
Accuracy	± 0.2 °C	
Long term stability	± 0.1 °C	
Interface	RS232	USB A
Operating range	10 °C–40 °C max. 80 % relative humidity (non-condensing)	
Power supply	Via RS232	Via USB A
Power consumption	Max. 20 mW	
Dimensions	75 cm (length)	73 cm (length)
Weight	Approx. 60 g	
Warranty	2 years	
CE	CE certified	
Certificate	Calibrated against adjusted thermometer	



Accessories for heating blocks

The complete analytics from a single source

MACHEREY-NAGEL heating blocks represent an important corner stone of the NANOCOLOR® analytical system. By the perfect combination of test kits, heating blocks and photometers, the user is well equipped for daily laboratory analysis. In addition to the digestion for the classical parameters such as COD and phosphate, some customers require special solutions, e.g. for the digestion of metals using *NanOx Metal*. The accessories required for this purpose are available as a complete package from MACHEREY-NAGEL. For an overview of available digestion reagents see page 110. All this ensures the compatibility of the equipment and a reliable analysis.

Good to know

The NANOCOLOR® VARIO Mini can be operated independent of the grid with a car adapter cable (REF 919938) from our heating block accessories.



Accessories

Description	REF	Content
Accessories for temperature control of heating blocks		
■ T-Set adaptor 16 mm	919924	1 piece
■ T-Set adaptor 13 mm	919925	1 piece
■ USB-serial-Adaptor for heating blocks NANOCOLOR® VARIO 4 / VARIO C2 / VARIO C2 M / VARIO HC / VARIO 3 / VARIO compact and NANOCOLOR® T-Set	919926	1 piece
■ USB-T-Set adaptor for NANOCOLOR® VARIO Mini	919937	1 piece
Accessories for digestions in heating blocks		
■ Protective covering for NANOCOLOR® VARIO 4 / VARIO C2 / VARIO C2 M / VARIO HC, transparent	919310	1 piece
■ Protective covering with bores for TOC-tests for NANOCOLOR® VARIO 4 / VARIO C2 / VARIO C2 M / VARIO HC, transparent	919309	1 piece
■ Protective covering for NANOCOLOR® VARIO Mini, transparent	919381	1 piece
■ Safety cover for NANOCOLOR® VARIO 4 / VARIO C2 / VARIO HC / VARIO 3 / VARIO compact	916598	1 piece
■ Reducing adaptors 16 → 13 mm for NANOCOLOR® heating blocks	916910	8 pieces
■ Reducing adaptors 22 → 16 mm for NANOCOLOR® heating blocks	919916	2 pieces
■ Decomposition apparatus including tube for sample decomposition, reducing adaptor and condensor	91629	1 piece
■ Tubes for sample decomposition 22 mm OD, NS 19/26 with glass stopper	91666	2 pieces
■ Condenser 200 mm, type KS with 3 m PE tubing, NS 19/26 bottom, NS 29/32 top	91667	1 piece
■ Absorption attachment for condenser NS 29/32	91668	1 piece
■ Reaction tubes 16 mm OD	91680	20 pieces
■ Reaction tubes 22 mm OD	91622	2 pieces
Power supply ¹⁾		
■ Car adapter cable for NANOCOLOR® VARIO Mini	919938	1 piece
■ Mains adaptor for NANOCOLOR® VIS, NANOCOLOR® VIS II and VARIO Mini	919156	1 piece
Accessories for data transfer		
■ USB cable AB for NANOCOLOR® UV/VIS / UV/VIS II / VIS / VIS II / VARIO 4 / VARIO C2 / VARIO C2 M and PF-12 / PF-12 ^{plus}	919687	1 piece
■ Mini USB cable for compact photometer PF-3 and NANOCOLOR® VARIO Mini	919390	1 piece
Manuals		
■ Manual for NANOCOLOR® VARIO C2 and NANOCOLOR® VARIO 4	919311	1 piece
■ Manual for NANOCOLOR® VARIO HC	919312	1 piece
■ Manual for NANOCOLOR® VARIO Mini	919383	1 piece

¹⁾ For information about an external battery for NANOCOLOR® VARIO Mini, please contact MACHEREY-NAGEL.

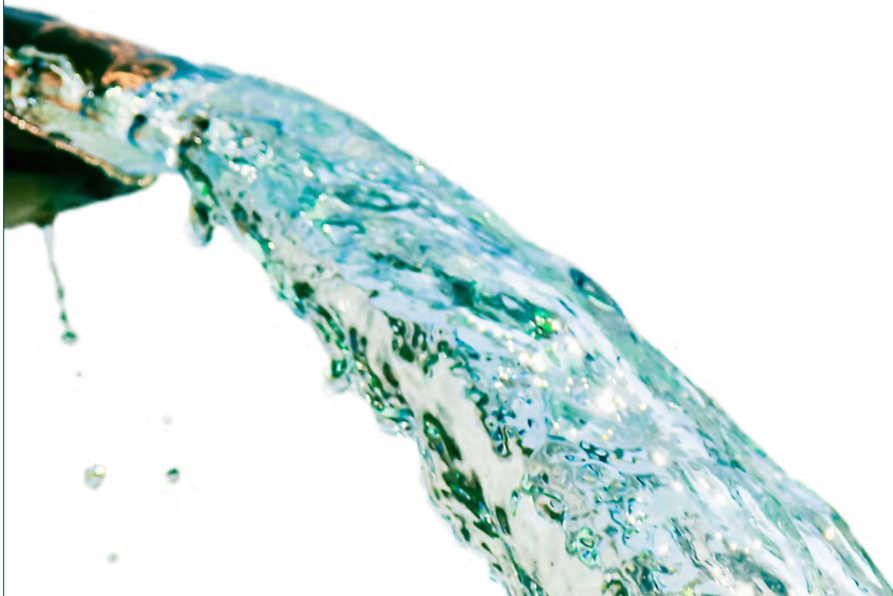
NANOCOLOR[®] COD test kits

Safe, safer, the safest



Reliable COD analysis

- No risk of leaking gases
- Minimum quantity of hazardous chemicals
- Hg-free version available
- 13 measurement ranges available for all requirements and demands



QUANTOFIX® Relax

Reflectometer for evaluation of test strips

The QUANTOFIX® Relax is the ideal device for the objective evaluation of our QUANTOFIX® test strips. It combines the simplicity of test strips with the safety of instrumental analysis and thus the best out of these two worlds. The QUANTOFIX® Relax does not require any special strips, but evaluates the normal pH-Fix and QUANTOFIX® test strips. Therefore entrance into instrumental analysis is very simple; the same strip can be used for visual and instrumental evaluation.

Excellent usability

All functions of the device can be selected with the touch screen display. Therefore, the operation is simple and intuitive, without the need for extensive training. The auto-start function initiates the measurement as soon as the test strip is placed on the strip holder. Therefore, it is not necessary to touch the device for performing a measurement. Contaminations are reliably avoided. Frequently used parameters can be stored as favorites. Simple tapping can quickly access these favorites during operation.

Quantitative results

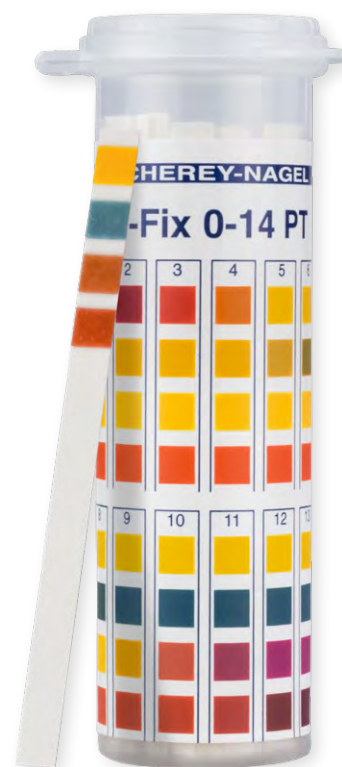
The optics of the QUANTOFIX® Relax has been proven for years in medical technology and supplies secure and standardized values. Thereby an accuracy of $\leq 10\%$ is achieved for many parameters; a hardly achieved level in the analysis of test strips, yet. The evaluation with the QUANTOFIX® Relax is not interfered by external factors and is therefore absolutely objective and precise. The estimation of measured values between the gradations of the scale is omitted.

Documentation and data transfer

The QUANTOFIX® Relax allows the assured documentation of analytics with test strips. Results are printed immediately after the measurement. The printout can be e.g. appended to a production protocol or kept for later quality controls. The transmission to an information system can be realized easily. In addition, the data are stored in the device and can be simply read out or printed again later on.

Good to know

For an overview of all the parameters and pH-Fix test strips available on the QUANTOFIX® Relax, please refer to page 52 and 60.



How it's done



Objective evaluation with the QUANTOFIX® Relax



Ordering information

Description	REF
■ Reflectometer QUANTOFIX® Relax for evaluation of QUANTOFIX® test strips incl. power supply, adapter, manual, 1 roll of printer paper and certificate	91346

Accessories

Description	REF	Content
■ Transport case for reflectometer QUANTOFIX® Relax for individual combination with 1 QUANTOFIX® Relax, 3 rolls of printer paper, 6 QUANTOFIX® tubes, 6 batteries, power supply, manual and accessories	930889	1 piece
■ Printer paper for QUANTOFIX® Relax	93065	5 pieces
■ Barcode scanner for QUANTOFIX® Relax	93074	1 piece
■ Power supply for QUANTOFIX® Relax	930995	1 piece

Objective

- High-quality optics
- Independent from external light and subjective color perception
- Standardized reaction times

Easy

- Intuitive use via touch screen
- Contactless measurement due to auto-start function
- Favorites list for the most important parameters

Safe

- Reproducible results independent of the user
- Printout of results for optimized documentation
- Accuracy for many parameters $\leq 10\%$

Technical data

QUANTOFIX® Relax

Type	Reflectometer with microprocessor control, self-test and auto-calibration
Calibration	Automatic, self calibrating
Capacity	50 strips per hour
Data storage	200 results
Display	LCD display with touch screen
Operation	alphanumeric input via touch screen
Interface	RS232, USB B (Host), PS/2 for connection of a keyboard or barcode scanner
Languages	DE / EN / FR / ES / IT / PT / PL / TR / HU
Update	Free via Internet / PC
Operating range	10 °C–40 °C, max. 80 % relative humidity (non-condensing)
Power supply	100 V–240 V~, optional with 6 AA batteries
Dimensions	200 mm x 160 mm x 75 mm
Weight	710 g (without batteries and power supply)
Warranty	2 years
CE	CE certified



BioFix® Lumi-10

Compact luminometer for mobile use

The BioFix® Lumi-10 is a compact luminometer for the measurement of bio and chemical luminescence reactions with constant light emission. Due to its size it is ideally suited for the use in the laboratory or on the road and can be operated with a power supply as well as rechargeable batteries.

Incredibly versatile

Thanks to its highly sensitive detector (Ultra-Fast Single Photon Counter) the BioFix® Lumi-10 can be used for a variety of applications. This includes amongst others bio toxicity tests, ATP- and biomass determinations, reporter-gene assays, luminescence immunoassays as well as NAD(P)H measurements.

Individually programmable

The BioFix® Lumi-10 has six individually adjustable measurement protocols and a data memory for up to 2000 results. It provides the opportunity for single, multiple and extensive screening measurements. The results are optionally displayed in % inhibition, % stimulation or RLU (relative light units). The user can set the particular measurement parameters such as incubation time or measurement time individually. By a previous definition of detection limits, the results can be automatically classified by the device. There are already pre-programmed test methods available for the determination of luminescent bacteria toxicity tests and ATP tests.

Good to know



Thanks to six individually adjustable measurement protocols, the BioFix® Lumi-10 is extremely versatile and suitable for many applications.

Ordering information

Description	REF
■ BioFix® Lumi-10 incl. manual, rack, cuvettes and spare adaptor	940008

Accessories

Description	REF	Content
■ Absorbance color correction cuvettes with 100 aspirators	940006	4 pieces
■ Glass cuvettes 12 mm OD	916912	690 pieces
■ Rack for glass cuvettes 12 mm OD, 5 x 10 positions	945013	1 piece
■ Manual BioFix® Lumi-10, German	940014	1 piece
■ Manual BioFix® Lumi-10, English	940014.en	1 piece
■ Mains adaptor	940009	1 piece

Technical data

BioFix® Lumi-10	
Type	Luminometer
Optics	Ultra-Fast Single Photon Counter
Wavelengths range	380 nm–630 nm
Software	Microprocessor software
Measuring modes	3 preprogrammed tests, 6 free programmable methods, % inhibition, % stimulation, RLU
Cuvette holder	Cuvettes 12 mm OD
Data storage	2000 results
Display	Backlit graphic display (128 x 64 pixel)
Operation	Foil covered push buttons
Languages	DE/EN
Interface	USB interface for data transfer to the PC or printer
Operating range	15 °C–30 °C
Power supply	Mains adaptor: 230 V/50 Hz, 115 V/60 Hz, batteries
Rechargeable batteries	3 Rechargeable batteries: NiCd R14/C/Baby/UM2 batteries; 1600 mAh
Dimensions	170 mm x 150 mm x 280 mm
Weight	2 kg (incl. batteries)
Warranty	2 years
CE	CE certified



Reagent cases

Reagent cases for special applications	160
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Reagent cases for special applications

Compact laboratories for mobile analysis

MACHEREY-NAGEL reagent cases are flexible tools for all areas of water and soil analysis. Catering to our customer needs, we offer a large number of prepacked reagent cases with and without photometer which can be used for a wide area of applications.

The rugged cases with premium foam inlays allow a fast and direct analysis at the point of interest. All needed test instructions as well as analytical accessories are already included for especially easy and convenient handling. Particular chemical knowledge or experience is not required to run any of the tests or to use the cases effectively. The color-coded bottles prevent a mixing-up of the reagents.

Consumed reagents can be replaced simple and cost-effective with refill packs.

Reagent cases for water analysis

The reagent cases together with the VISOCOLOR® tests give water attendants, fish farmers and other persons that are interested in water analysis the possibility to determine important analytical values for evaluation of water quality within a short time.

The prepacked reagent cases can be used for a wide area of applications like swimming pools, drinking water analysis, schools, monitoring of fishing waters and of course for general water analysis.

Good to know



The VISOCOLOR® School reagent case is especially designed for schools. All reagents are approved to be used in schools in Germany (GUV-SR 2004 directive).



Ordering information

Reagent case	REF	Dimensions	Application	GHS	PF-3	PF-12 ^{Plus}	Test
■ VISOCOLOR® ECO Reagent case	931301	340 x 275 x 83 mm	General	■			VISOCOLOR® ECO Ammonium 3 VISOCOLOR® ECO Carbonate hardness VISOCOLOR® ECO Total hardness VISOCOLOR® ECO Nitrate VISOCOLOR® ECO Nitrite VISOCOLOR® ECO pH 4.0–9.0 VISOCOLOR® ECO Phosphate
■ VISOCOLOR® Reagent case	931304	450 x 360 x 140 mm	General	■			VISOCOLOR® ECO Ammonium 3 VISOCOLOR® ECO Nitrite VISOCOLOR® ECO pH 4.0–9.0 VISOCOLOR® ECO Phosphate VISOCOLOR® HE Alkalinity AL 7 VISOCOLOR® HE Total hardness H 20 F VISOCOLOR® HE Oxygen SA 10
■ VISOCOLOR® Reagent case for environmental analysis	914353	450 x 360 x 140 mm	General	■		■	VISOCOLOR® ECO Ammonium 15 VISOCOLOR® ECO Iron 2 VISOCOLOR® ECO Nitrate VISOCOLOR® ECO Nitrite VISOCOLOR® ECO pH 4.0–9.0 VISOCOLOR® ECO Phosphate VISOCOLOR® HE Carbonate hardness C 20 VISOCOLOR® HE Total hardness H 20 F
■ VISOCOLOR® Reagent case with PF-3 Pool (Cl ₂ liquid)	934118	340 x 275 x 83 mm	Swimming pool	■	■		VISOCOLOR® ECO Alkalinity TA VISOCOLOR® ECO Chlorine 2, free + total VISOCOLOR® ECO Cyanuric acid VISOCOLOR® ECO pH 6.0–8.2
■ VISOCOLOR® Reagent case with PF-3 Pool (Cl ₂ solid)	934119	340 x 275 x 83 mm	Swimming pool	■	■		VISOCOLOR® ECO Alkalinity TA VISOCOLOR® ECO Chlorine 6, free + total VISOCOLOR® ECO Cyanuric acid VISOCOLOR® ECO pH 6.0–8.2

GHS: Global harmonized system: This product contains harmful substances which must be specially labeled as hazardous. For detailed information please see the SDS.

Reagent cases for special applications

Reagent cases for soil analysis

Thorough analysis is the basis to support and maintain healthy, productive and biologically active soil. To effectively and efficiently plan all measures that affect the soil (fertilization, liming, etc.) it is crucial to determine the important soil parameters first.

The VISOCOLOR® reagent cases for soil analysis are the perfect companions for economical, fast and convenient soil analysis, both in the field or in the laboratory. The user can choose between a reagent case version with or without compact photometer PF-3 Soil, which was especially developed for soil analysis.

Both case versions contain additional analytical tools, such as scale, sieve, etc. as well as predosed solutions for the production of necessary soil extracts.

Good to know



The reagent cases VISOCOLOR® School, VISOCOLOR® Fish and the VISOCOLOR® reagent case for soil analysis contain detailed manuals. Besides further background information about the most important parameters also information about reaction equations and of the reaction basis are included.



Measuring range (visual)	Measuring range (photometric)	Number of tests	Reagent cases
0 · 0.2 · 0.3 · 0.5 · 0.7 · 1 · 2 · 3 mg/L NH ₄ ⁺	–	50	VISOCOLOR® ECO
1 drop equals 1.25 °e	–	100	Reagent case
1 drop equals 1.25 °e	–	110	
0 · 1 · 3 · 5 · 10 · 20 · 30 · 50 · 70 · 90 · 120 mg/L NO ₃ ⁻	–	110	
0 · 0.02 · 0.03 · 0.05 · 0.07 · 0.1 · 0.2 · 0.3 · 0.5 mg/L NO ₂ ⁻	–	120	
pH: 4.0 · 5.0 · 6.0 · 6.5 · 7.0 · 7.5 · 8.0 · 8.5 · 9.0	–	450	
0 · 0.2 · 0.3 · 0.5 · 0.7 · 1 · 2 · 3 · 5 mg/L PO ₄ -P	–	80	
0 · 0.2 · 0.3 · 0.5 · 0.7 · 1 · 2 · 3 mg/L NH ₄ ⁺	–	50	VISOCOLOR®
0 · 0.02 · 0.03 · 0.05 · 0.07 · 0.1 · 0.2 · 0.3 · 0.5 mg/L NO ₂ ⁻	–	120	Reagent case
pH: 4.0 · 5.0 · 6.0 · 6.5 · 7.0 · 7.5 · 8.0 · 8.5 · 9.0	–	450	
0 · 0.2 · 0.3 · 0.5 · 0.7 · 1 · 2 · 3 · 5 mg/L PO ₄ -P	–	80	
0.2–7.2 mmol/L OH ⁻ (1 syringe filling)	–	200	
0.6–25.0 °e / 0–3.6 mmol/L Ca ²⁺ (1 syringe filling)	–	200	
0–10.0 mg/L O ₂ (1 syringe filling)	–	100	
–	0.5–8.0 mg/L NH ₄ ⁺	50	VISOCOLOR®
–	0.04–2.00 mg/L Fe	100	Reagent case for environmental analysis
–	4–60 mg/L NO ₃ ⁻	110	
–	0.02–0.50 mg/L NO ₂ ⁻	120	
pH: 4.0 · 5.0 · 6.0 · 6.5 · 7.0 · 7.5 · 8.0 · 8.5 · 9.0	–	450	
–	0.2–5.0 mg/L PO ₄ -P	80	
0.6–25.0 °e / 0–7.2 mmol/L H ⁺ (1 syringe filling)	–	200	
0.6–25.0 °e / 0–3.6 mmol/L Ca ²⁺ (1 syringe filling)	–	200	
–	0.4–17.5 °e / 5–250 mg/L CaCO ₃	100	VISOCOLOR®
–	0.10–2.00 mg/L Cl ₂	150	Reagent case with PF-3
–	10–100 mg/L Cya	100	Pool (Cl ₂ liquid)
–	pH 6.1–8.4	150	
–	0.4–17.5 °e / 5–250 mg/L CaCO ₃	100	VISOCOLOR®
–	0.05–6.00 mg/L Cl ₂	200	Reagent case with PF-3
–	10–100 mg/L Cya	100	Pool (Cl ₂ solid)
–	pH 6.1–8.4	150	

Reagent cases for special applications

Reagent case	REF	Dimensions	Application	GHS	PF-3	PF-12 ^{Plus}	Test
■ VISOCOLOR® Reagent case with PF-3 Drinking Water (Cl ₂ liquid)	934124	340 x 275 x 83 mm	Drinking water	■	■		VISOCOLOR® ECO Chlorine 2, free + total VISOCOLOR® ECO Chlorine dioxide VISOCOLOR® ECO Iron 2 VISOCOLOR® ECO Fluoride VISOCOLOR® ECO pH 6.0–8.2
■ VISOCOLOR® Reagent case with PF-3 Drinking Water (Cl ₂ solid)	934125	340 x 275 x 83 mm	Drinking water	■	■		VISOCOLOR® ECO Chlorine 6, free + total VISOCOLOR® ECO Chlorine dioxide VISOCOLOR® ECO Iron 2 VISOCOLOR® ECO Fluoride VISOCOLOR® ECO pH 6.0–8.2
■ Reagent case VISOCOLOR® School	933100	275 x 230 x 83 mm	Schools	■			VISOCOLOR® School Ammonium VISOCOLOR® School Total hardness VISOCOLOR® School Nitrate VISOCOLOR® School Nitrite VISOCOLOR® School pH 4.0–9.0 VISOCOLOR® School Phosphate
■ Reagent case VISOCOLOR® Fish	933101	275 x 230 x 83 mm	Fishing waters	■			VISOCOLOR® Fish Ammonium VISOCOLOR® Fish Total hardness VISOCOLOR® Fish Nitrate VISOCOLOR® Fish Nitrite VISOCOLOR® Fish pH 4.0–9.0 VISOCOLOR® Fish Phosphate
■ Reagent case VISOCOLOR® Fish with PF-3 Fish	934127	395 x 295 x 106 mm	Fishing waters	■	■		QUANTOFIX® Chloride QUANTOFIX® Multi-stick for aquarium owners VISOCOLOR® ECO Ammonium 3 VISOCOLOR® ECO Chlorine 6, free + total VISOCOLOR® ECO Iron 2 VISOCOLOR® ECO Silica VISOCOLOR® ECO Copper VISOCOLOR® ECO Nitrate VISOCOLOR® ECO Nitrite VISOCOLOR® ECO pH 6.0–8.2 VISOCOLOR® ECO Phosphate VISOCOLOR® ECO Oxygen VISOCOLOR® HE Alkalinity AL 7 VISOCOLOR® HE Phosphate
■ VISOCOLOR® Reagent case for soil analysis, with accessories	931601	500 x 420 x 175 mm	Soil	■			pH-Fix 2.0–9.0 QUANTOFIX® Ammonium QUANTOFIX® Nitrate/Nitrite VISOCOLOR® ECO Potassium VISOCOLOR® HE pH 4.0–10.0 VISOCOLOR® HE Phosphate
■ VISOCOLOR® Reagent case for soil analysis with PF-3 Soil, with accessories	934220	500 x 420 x 175 mm	Soil	■	■		pH-Fix 2.0–9.0 QUANTOFIX® Nitrate/Nitrite VISOCOLOR® ECO Ammonium 3 VISOCOLOR® ECO Potassium VISOCOLOR® ECO Nitrate VISOCOLOR® ECO Phosphate
■ VISOCOLOR® Reagent case for soil analysis with PF-3 Soil	934210	340 x 275 x 83 mm	Soil	■	■		VISOCOLOR® ECO Ammonium 3 VISOCOLOR® ECO Potassium VISOCOLOR® ECO Nitrate VISOCOLOR® ECO Phosphate

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Reagent cases for special applications

Measuring range (visual)	Measuring range (photometric)	Number of tests	Reagent cases
–	0.10–2.00 mg/L Cl ₂	150	VISOCOLOR®
–	0.20–3.80 mg/L ClO ₂	150	Reagent case with PF-3
–	0.04–2.00 mg/L Fe	100	Drinking Water (Cl ₂ liquid)
–	0.1–2.0 mg/L F ⁻	150	
–	pH 6.1–8.4	150	
–	0.05–6.00 mg/L Cl ₂	200	VISOCOLOR®
–	0.20–3.80 mg/L ClO ₂	150	Reagent case with PF-3
–	0.04–2.00 mg/L Fe	100	Drinking Water (Cl ₂ solid)
–	0.1–2.0 mg/L F ⁻	150	
–	pH 6.1–8.4	150	
0 · 0.2 · 0.5 · 1 · 3 mg/L NH ₄ ⁺ 1 drop equals 1.25 °e	–	50	Reagent case
0 · 1 · 5 · 10 · 20 · 50 · 90 mg/L NO ₃ ⁻	–	50	VISOCOLOR® School
0 · 0.02 · 0.05 · 0.1 · 0.2 · 0.5 mg/L NO ₂ ⁻	–	50	
pH: 4.0 · 5.0 · 6.0 · 7.0 · 8.0 · 9.0	–	50	
0 · 0.5 · 1.5 · 3 · 6 · 15 mg/L PO ₄ ³⁻	–	50	
0 · 0.2 · 0.5 · 1 · 3 mg/L NH ₄ ⁺ 1 drop equals 1.25 °e	–	50	Reagent case
0 · 1 · 5 · 10 · 20 · 50 · 90 mg/L NO ₃ ⁻	–	50	VISOCOLOR® Fish
0 · 0.02 · 0.05 · 0.1 · 0.2 · 0.5 mg/L NO ₂ ⁻	–	50	
pH: 4.0 · 5.0 · 6.0 · 7.0 · 8.0 · 9.0	–	50	
0 · 0.5 · 1.5 · 3 · 6 · 15 mg/L PO ₄ ³⁻	–	50	
0 · 500 · 1000 · 1500 · 2000 · ≥ 3000 mg/L Cl ⁻	–	100	Reagent case
Total hardness: 0 · 6.3 · 12.5 · 18.8 · 25.0 · 31.3 °e	–	100	VISOCOLOR® Fish with
Carbonate hardness: 0 · 3.8 · 7.5 · 12.5 · 18.8 · 25.0 °e	–	100	PF-3 Fish
pH: 6.4 · 6.8 · 7.2 · 7.6 · 8.0 · 8.4	–	100	
–	0.1–2.5 mg/L NH ₄ ⁺	50	
–	0.05–6.00 mg/L Cl ₂	200	
–	0.04–2.00 mg/L Fe	100	
–	0.2–3.0 mg/L SiO ₂	80	
–	0.1–5.0 mg/L Cu ²⁺	100	
–	4–60 mg/L NO ₃ ⁻	110	
–	0.02–0.50 mg/L NO ₂ ⁻	120	
–	pH 6.1–8.4	100	
–	0.2–5.0 mg/L PO ₄ -P	80	
–	1–8 mg/L O ₂	50	
0.2–7.2 mmol/L OH ⁻ (1 syringe filling)	–	200	
0.0 · 0.05 · 0.10 · 0.15 · 0.20 · 0.3 · 0.4 · 0.6 · 0.8 · 1.0 mg/L PO ₄ -P	–	300	
pH: 2.0 · 2.5 · 3.0 · 3.5 · 4.0 · 4.5 · 5.0 · 5.5 · 6.0 · 6.5 · 7.0 · 7.5 · 8.0 · 8.5 · 9.0	–	100	VISOCOLOR®
0 · 10 · 25 · 50 · 100 · 200 · 400 mg/L NH ₄ ⁺	–	100	Reagent case for soil
Nitrate: 0 · 10 · 25 · 50 · 100 · 250 · 500 mg/L NO ₃ ⁻	–	100	analysis, with accessories
Nitrite: 0 · 1 · 5 · 10 · 20 · 40 · 80 mg/L NO ₂ ⁻	–	100	
2 · 3 · 4 · 6 · 8 · 10 · 15 mg/L K ⁺	–	60	
pH: 4.0 · 5.0 · 5.5 · 6.0 · 6.5 · 7.0 · 7.5 · 8.0 · 8.5 · 9.0 · 10.0	–	500	
0.0 · 0.05 · 0.10 · 0.15 · 0.20 · 0.3 · 0.4 · 0.6 · 0.8 · 1.0 mg/L PO ₄ -P	–	100	
pH: 2.0 · 2.5 · 3.0 · 3.5 · 4.0 · 4.5 · 5.0 · 5.5 · 6.0 · 6.5 · 7.0 · 7.5 · 8.0 · 8.5 · 9.0	–	100	VISOCOLOR®
Nitrate: 0 · 10 · 25 · 50 · 100 · 250 · 500 mg/L NO ₃ ⁻	–	100	Reagent case for soil
Nitrite: 0 · 1 · 5 · 10 · 20 · 40 · 80 mg/L NO ₂ ⁻	–	100	analysis with PF-3 Soil,
–	0.1–2.5 mg/L NH ₄ ⁺	50	with accessories
–	2–25 mg/L K ⁺	60	
–	4–60 mg/L NO ₃ ⁻	110	
–	0.2–5.0 mg/L PO ₄ -P	80	
–	0.1–2.5 mg/L NH ₄ ⁺	50	VISOCOLOR®
–	2–25 mg/L K ⁺	60	Reagent case for soil
–	4–60 mg/L NO ₃ ⁻	110	analysis with PF-3 Soil
–	0.2–5.0 mg/L PO ₄ -P	80	

Reagent cases for individual solutions

Compact laboratories for mobile analysis

With our reagent case program we also fulfill individual customer requests. The user can choose between reagent case versions with tests for visual evaluation and possible combinations with the compact photometers PF-3 and PF-12^{Plus}.

The reagent cases for individual solutions offer a flexible combination of all VISOCOLOR® tests, pH-indicator papers, pH-Fix indicator strips, qualitative test papers and semi-quantitative QUANTOFIX® test strips as well as useful accessories.

The NANOCOLOR® reagent cases can also be equipped with NANOCOLOR® tube tests and the heating blocks NANOCOLOR® VARIO C2, NANOCOLOR® VARIO C2 M and NANOCOLOR® VARIO Mini.

Therefore, the reagent cases for individual solutions are versatilely applicable in a variety of areas in water and waste water analysis.

Good to know



Starting at a minimum quantity of 50 cases, we offer entirely individual solutions in different sizes with a foam inlay designed exactly to the customers specifications and needs.

Good to know



For questions about individual solution of the reagent cases, we are pleased to be of service.



Ordering information

Reagent case	REF	Dimensions	NANOCOLOR® VARIO C2	NANOCOLOR® VARIO C2 M	NANOCOLOR® VARIO Mini	NANOCOLOR® tube tests	VISOCOLOR® alpha
■ Test paper analysis case	913990	280 x 220 x 80 mm					
■ VISOCOLOR® ECO Reagent case	931303	340 x 275 x 83 mm					
■ VISOCOLOR® Reagent case	931305	450 x 360 x 140 mm					■
■ VISOCOLOR® Reagent case with PF-3 Pool	934102	340 x 275 x 83 mm					
■ VISOCOLOR® Reagent case with PF-3 Drinking Water	934402	340 x 275 x 83 mm					
■ VISOCOLOR® Reagent case with PF-3 Soil	934202	340 x 275 x 83 mm					
■ VISOCOLOR® Reagent case with PF-3 Fish	934602	340 x 275 x 83 mm					
■ VISOCOLOR® Reagent case with PF-12 ^{Plus}	914351	450 x 360 x 140 mm					■
■ NANOCOLOR® Reagent case with PF-3 COD	919212	534 x 427 x 207 mm	■	■	■	■	
■ NANOCOLOR® Reagent case with PF-12 ^{Plus}	919214	534 x 427 x 207 mm	■	■	■	■	

Reagent cases for individual solutions



VISOCOLOR® ECO	VISOCOLOR® HE	pH-Fix	PEHANNON®	Indicator papers	Duotest and Tritest	QUANTOFIX®	AQUADUR®	Qualitative test papers	Thermometer	Oxygen bottle	Pipettes	Reagent case
												Test paper analysis case
■									■	■		VISOCOLOR® ECO Reagent case
■	■	■	■	■	■	■	■	■	■	■		VISOCOLOR® Reagent case
■												VISOCOLOR® Reagent case with PF-3 Pool
■												VISOCOLOR® Reagent case with PF-3 Drinking Water
■												VISOCOLOR® Reagent case with PF-3 Soil
■												VISOCOLOR® Reagent case with PF-3 Fish
■	■	■	■	■	■	■	■	■	■	■		VISOCOLOR® Reagent case with PF-12 ^{Plus}
											■	NANOCOLOR® Reagent case with PF-3 COD
											■	NANOCOLOR® Reagent case with PF-12 ^{Plus}

Accessories for reagent cases

The complete analysis from one source

The MACHEREY-NAGEL reagent cases are perfectly suited for mobile analysis. With our wide range of accessories they can be refilled quickly and easily.

Good to know

For general accessories for the VISOCOLOR® reagent cases see page 84



Ordering information

Description	REF	Content	GHS
Accessories for Reagent case VISOCOLOR® School			
■ VISOCOLOR® School refill pack	933200	1 piece	
■ VISOCOLOR® School color scale	933300	1 piece	
■ VISOCOLOR® School manual	933150	1 piece	
Accessories for Reagent case VISOCOLOR® Fish			
■ VISOCOLOR® Fish refill pack	933201	1 piece	
■ VISOCOLOR® Fish color scale	933301	1 piece	
■ VISOCOLOR® Fish manual for reagent case VISOCOLOR® Fish	933151	1 piece	
■ VISOCOLOR® Fish manual for reagent case VISOCOLOR® Fish with PF-3 Fish	933161	1 piece	
Accessories for VISOCOLOR® Reagent cases for soil analysis			
■ 100 mL CaCl ₂ stock solution	914612	3 pieces	■
■ 100 mL CAL stock solution	914614	4 pieces	
■ Reagent set VISOCOLOR® HE Phosphorus in soil	920183	1 piece	■
■ Color chart VISOCOLOR® HE Phosphorus in soil	920383	1 piece	
■ 30 mL pyrophosphate solution	914611	3 pieces	
■ Folded filters MN 616 1/4, 18.5 cm Ø	532018	100 pieces	
■ Soil sieve (2 mm mesh size)	914650	1 piece	
■ Plastic bottle 500 mL with spraying attachment	91689	1 piece	
■ Balance 250 g	914651	1 piece	
■ Sample beaker 250 mL	914652	5 pieces	
■ Wide neck bottles 500 mL for soil samples	914653	5 pieces	
■ Shaking bottle 300 mL	914654	5 pieces	
■ Measuring cylinder 100 mL with base	914655	2 pieces	
■ Plastic scoop	914656	1 piece	
■ Funnel 80 mm Ø, plastic	914657	3 pieces	
■ Sedimentation tubes with screw caps	914659	2 pieces	
■ Syringe 10 mL with tube	914660	1 piece	
■ Manual for VISOCOLOR® Reagent cases for soils analysis	914602	1 piece	
■ Thermometer -10 °C to +60 °C	914497	1 piece	

GHS: Global harmonized system: This product contains harmful substances which must be specially labeled as hazardous. For detailed information please see the SDS.

NANOCOLOR® Reagent case

Mobile analysis for sewage plants



Mobile photometric analysis

- Compact photometer PF-12^{Plus} for flexible analysis
- Heating block NANOCOLOR® VARIO C2 for fast sample digestions
- Highest transport safety due to robust case
- Tube tests for precise results



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