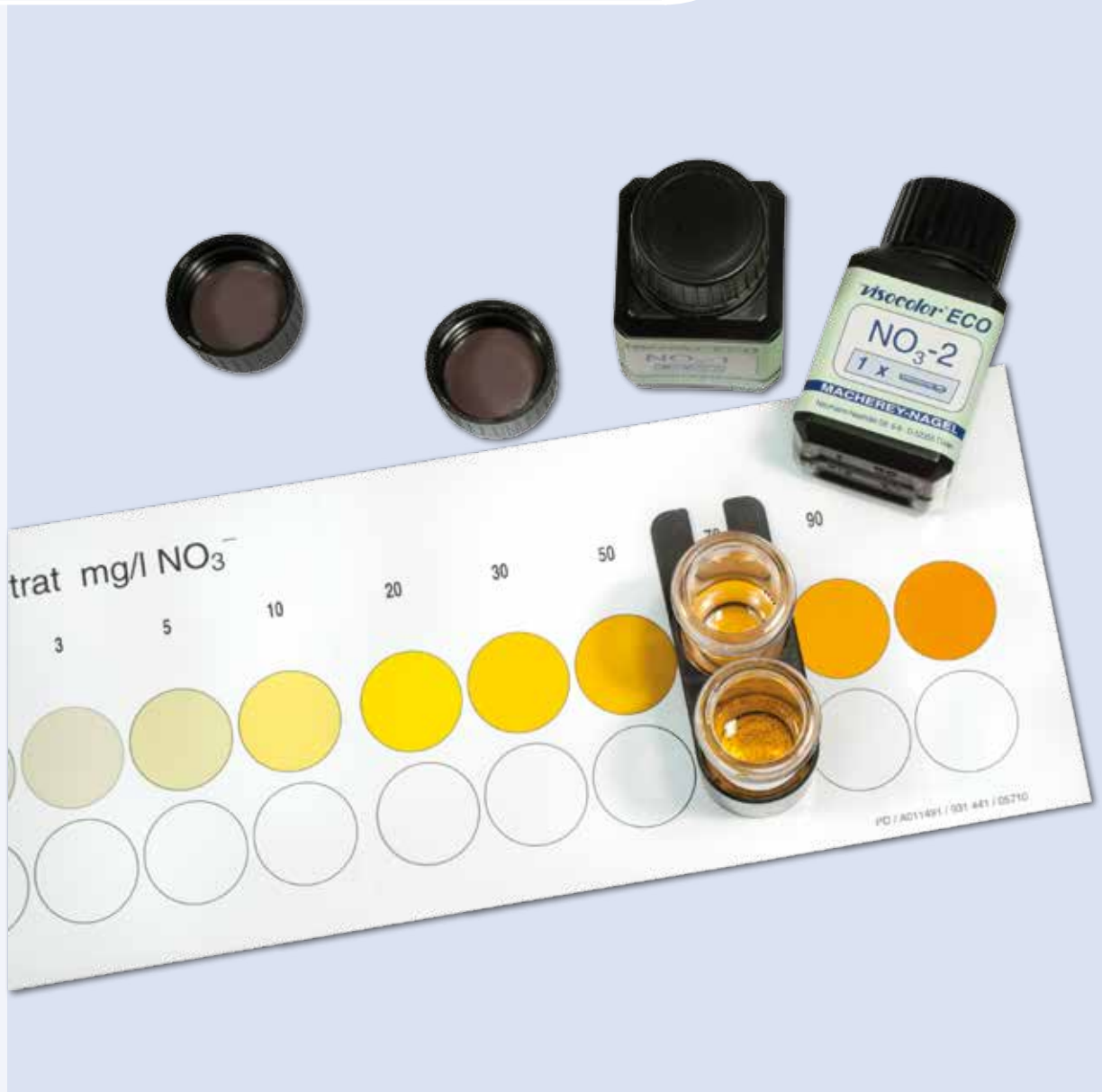


# Water Analysis

VISOCOLOR® • VISOCOLOR®



## Water analysis made easy

### VISOCOLOR® tests for water analysis

- Various measuring methods and detection principles for many parameters
- Visual and photometric determination
- Reagent cases with individual combinations of different test kits

**MACHEREY-NAGEL**

[www.mn-net.com](http://www.mn-net.com)



## VISOCOLOR® test kits

VISOCOLOR® tests are compact and flexible test kits, which allow a chemical analysis without additional accessories and without the need for any prior experience. They are suitable for analysis in labs, in school or directly on-site. MACHEREY-NAGEL offers three product lines with different accuracies, precisions and sensitivities for universal use depending on the analytical requirement. For each product line there are colorimetric and titrimetric measuring methods to determine all important water and waste water parameters. The VISOCOLOR® test kits can be sold individually or in stable reagent cases as portable laboratories.

### Convenient handling

- Simple chemical-analytical methods
- Instructions in different languages and with pictograms for safe and simple test performance
- Color-coded reagent bottles for clear identification of reagents
- Fast-dissolving reagents save time and facilitate the daily work

### Reliable analysis

- Reaction principles based on internationally acknowledged regulations (DIN, EN, ISO)
- Maximum safety for the user and easy disposal
- Low susceptibility to interferences
- Additional increase of accuracy by photometric determination of VISOCOLOR® ECO tests with the photometers PF-12 and PF-3

### Unique quality

- VISOCOLOR® color charts are set on the original colors of freshly produced standard solutions
- Finest measurement graduations by true color printing
- Precision and reproducibility by high printing quality

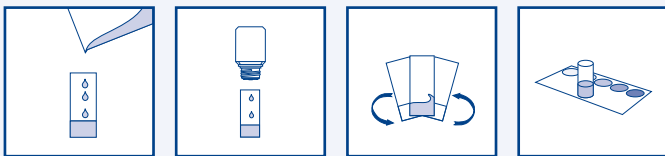


## VISOCOLOR® alpha

### Easy and compact

- Cost-efficient
- Handy packages
- Multicomponent reagents for reducing of required amount of reagent

#### Colorimetry with color chart



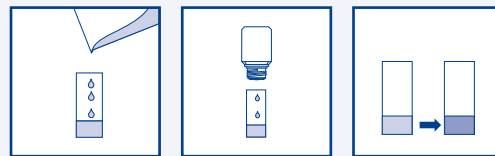
Fill the sample

Add reagent

Mix

Analyze

#### Titration with drop counting

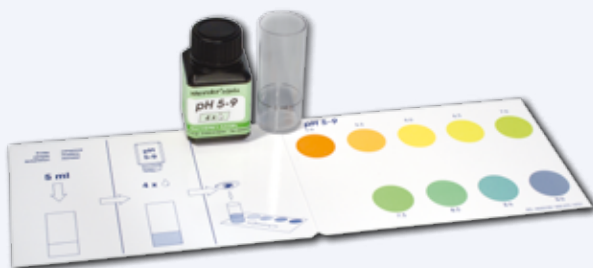


Fill the sample

Add reagent

Color change

Count the drops: 1  $\Delta$  = 1 measuring unit

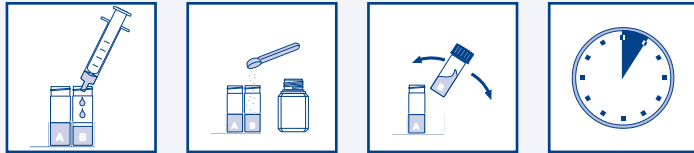


## VISOCOLOR® ECO

### Accurate and precise

- Sharp color change due to separate indicator and titration solution
- Compensation of turbidity and colors
- Cost-efficient refill packs available

#### Colorimetry with color chart

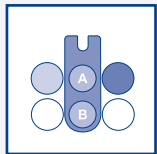


Fill the sample

Add reagent

Mix

Wait

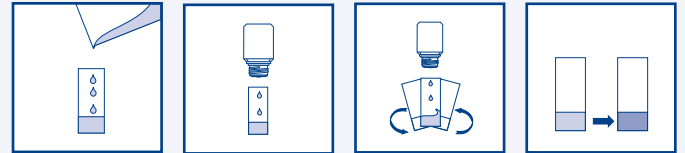


Analyze

*Evaluation with photometer PF-12 & PF-3*



#### Titration with drop counting



Fill the sample

Add indicator

Add titration solution and mix

Color change

Count the drops: 1  $\text{D}$  = 1 measuring unit

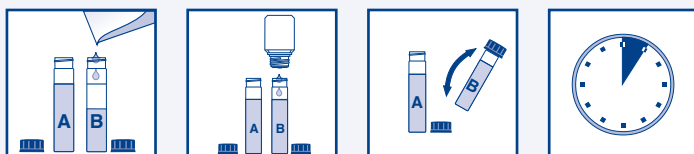


## VISOCOLOR® HE

### Highest sensitivity and accuracy

- Highest sensitivity (10 to 100 times)
- Narrow gradation and narrowly graduated syringe
- Compensation of turbidity and colors
- Cost-efficient refill packs available

#### Colorimetry with color comparison disc

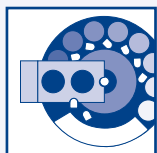


Fill sample

Add reagent

Mix

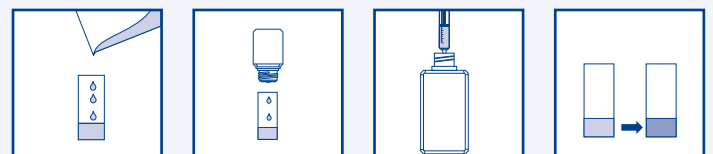
Wait



Analyze



#### Titration with graduated syringe

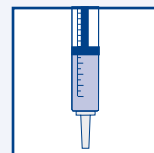


Fill the sample

Add indicator

Titration solution

Color change



Analyze



## VISOCOLOR® reagent cases

### Infinite options

- Rugged cases with premium foam inlays
- With and without photometer PF-12
- Pre-packed or empty cases for individual solutions



**Slip lid tubes**  
for qualitative test papers  
and indicator papers  
without color scale

**Aluminium tubes and  
snap-on lids**  
for semi-quantitative and  
qualitative test papers, test  
strips and pH-Fix PT tubes

**Accessories**  
manuals, color scales  
and accessories

**Reagent bottles**  
for VISOCOLOR® alpha,  
ECO, HE and QUANTOFIX®

**Slid lid tubes**  
for pH-Fix

**Trick lid tubes**  
for pH indicator papers and  
qualitative test papers

### VISOCOLOR® reagent case without photometer



#### VISOCOLOR® reagent case for soil analysis

REF 931 601

- Incl. all reagents, instruments and additional tools to produce soil extracts and determine soil structure, potassium, pH, phosphate, ammonium, nitrite and nitrate

#### VISOCOLOR® ECO reagent case

REF 931 301

- For determination of ammonium, carbonate hardness, total hardness, nitrate, nitrite, pH and phosphate

#### VISOCOLOR® ECO reagent case (empty)

REF 931 303

- For individual equipment with 8 different VISOCOLOR® ECO tests

#### VISOCOLOR® reagent case

REF 931 304

- For determination of alkalinity, ammonium, total hardness, nitrite, pH, phosphate, oxygen, temperature

#### VISOCOLOR® reagent case (empty)

REF 931 305

- For individual equipment with VISOCOLOR® ECO tests, VISOCOLOR® HE tests, VISOCOLOR® alpha tests, pH indicator papers, pH fix test strips, qualitative and semi-qualitative test papers and test strips

### VISOCOLOR® reagent case with photometer PF-12



#### VISOCOLOR® reagent case "Environmental analysis"

REF 914 303

- For determination of ammonium, carbonate hardness, iron, total hardness, nitrate, nitrite, pH, phosphate incl. photometer PF-12

#### VISOCOLOR® reagent case with photometer PF-12

REF 914 301

- For individual equipment with VISOCOLOR® ECO tests, VISOCOLOR® HE tests, VISOCOLOR® alpha tests, pH indicator papers, pH fix test strips, qualitative and semi-qualitative test papers and test strips



## Maximum flexibility - Compact photometer PF-12

Adapted to our customers' requirements the PF-12 impresses with modern design and precise analytics. More than 100 preprogrammed methods, automatic wavelength adjustment and the intuitive user guidance allow fast and easy operation.

### Experience flexibility

- More than 100 preprogrammed VISOCOLOR® ECO and NANOCOLOR® tube tests
- Programmable for 20 user-defined methods
- Photometric basic functions: absorbance, transmission, factor and standard

### Save time

- Operation without complex and time-consuming training
- Backlit graphic display with self-explanatory user guidance
- Progressively designed optics is insensitive to external light and makes measuring straightforward

### Assure results

- GLP-conform storage of results
- Fast and easy access to stored results and data sets
- Comfortable data export with included NANOCOLOR® software DVD

#### Photometer PF-12

Incl. Software, manual, batteries, empty test tubes, funnel, beaker, syringe, USB cable, calibration cuvette and certificate in rugged case



REF 919 200

## Small, strong, smart – Compact photometer PF-3

The smallest and youngest member of the MACHEREY-NAGEL photometer family, the new compact photometer PF-3, is ideally suited for mobile use directly at the point of interest. As the PF-3 is equipped with 3 different wavelengths, it will be available in multiple versions for different applications. Also for the PF-3 MACHEREY-NAGEL offers numerous reagent cases.

### Small and tough

- Especially handy and light by compact dimensions
- Water proof according to IP 68
- Shock-resistant optics

### Easy and convenient

- Fully developed menu structure using just 4 buttons
- Test selection within seconds
- Optional storage for just one 0-measurement

### Smart and clever Add new tests and parameters anytime

- Power supply and data transfer via USB port
- Storage of 50 measurements

#### Compact photometer PF-3 (Version A) (Cl<sub>2</sub>, pH, Cya, TA, ClO<sub>2</sub>, F<sup>-</sup>, Fe)

Incl. manual, batteries, certificate and accessories in rugged case

REF 934 102

#### Compact photometer PF-3 (Version E) (NH<sub>4</sub>-N, K<sup>+</sup>, NO<sub>3</sub>-N, PO<sub>4</sub>-P)

Incl. manual, batteries, certificate and accessories rugged case

REF 934 202



More information and a complete list of all versions are available on [www.mn-net.com/PF-3](http://www.mn-net.com/PF-3) or on request from MACHEREY-NAGEL.

### Ordering information

| Test                                      | Range (visual)   | Type  | No. of tests | REF      |             |
|---|--|-------|--------------|----------|-------------|
|   |  |       |              | Test kit | Refill pack |
| Acidity AC 7* (base capacity)             | 0.2–7.2 mmol/L H <sup>+</sup> <sup>1)</sup>                          | HE    | 200          | 915 006  | 915 206     |
| Alkalinity AL 7* (total)                  | 0.2–7.2 mmol/L OH <sup>-</sup> <sup>1)</sup>                         | HE    | 200          | 915 007  | 915 207     |
| Alkalinity TA <sup>3)</sup>               | <b>NEW!</b> 0.10–5.00 mmol/L H <sup>+</sup>                          | ECO   | 100          | –        | 931 204     |
| Alkalinity (p/m-value)                    | see Carbonate hardness C 20  |       |              |          |             |
| Aluminum                                  | 0.10–0.50 mg/L Al <sup>3+</sup>                                      | ECO   | 50           | 931 006  | 931 206     |
| Ammonium 15*                              | 0.5–15 mg/L NH <sub>4</sub> <sup>+</sup>                             | ECO   | 50           | 931 010  | 931 210     |
| Ammonium*                                 | 0.2–3 mg/L NH <sub>4</sub> <sup>+</sup>                              | alpha | 50           | 935 012  | –           |
| Ammonium 3*                               | 0.2–3 mg/L NH <sub>4</sub> <sup>+</sup>                              | ECO   | 50           | 931 008  | 931 208     |
| Ammonium*                                 | 0.02–0.50 mg/L NH <sub>4</sub> <sup>+</sup>                          | HE    | 110          | 920 006  | 920 106     |
| Bromine <sup>2) 3)</sup>                  | <b>NEW!</b> 0.10–13.00 mg/L Br <sub>2</sub>                          | ECO   | 200          | –        | 931 211     |
| Calcium CA 20*                            | 0.6–25.0 °e / 0.1–3.6 mmol/L Ca <sup>2+</sup> <sup>1)</sup>          | HE    | 200          | 915 010  | 915 210     |
| Calcium*                                  | 1 drop $\triangleq$ 5 mg/L Ca <sup>2+</sup>                          | ECO   | 100          | 931 012  | –           |
| Carbonate hardness*                       | 1 drop $\triangleq$ 1.25 °e $\triangleq$ 17.8 mg/L CaCO <sub>3</sub> | alpha | 100          | 935 016  | –           |
| Carbonate hardness*                       | 1 drop $\triangleq$ 1.25 °e $\triangleq$ 17.8 mg/L CaCO <sub>3</sub> | ECO   | 100          | 931 014  | –           |
| Carbonate hardness C 20* (p/m-value)      | 0.6–25.0 °e / 0.2–7.2 mmol/L H <sup>+</sup> <sup>1)</sup>            | HE    | 200          | 915 003  | 915 203     |
| Chloride*                                 | 1–60 mg/L Cl <sup>-</sup>  | ECO   | 90           | 931 018  | 931 218     |
| Chloride CL 500*                          | 5–500 mg/L Cl <sup>-</sup> <sup>1)</sup>                             | HE    | 300          | 915 004  | 915 204     |
| Chlorine, free                            | 0.25–2.0 mg/L Cl <sub>2</sub>  | alpha | 150          | 935 019  | –           |
| Chlorine 2*, free + total                 | 0.1–2.0 mg/L Cl <sub>2</sub>   | ECO   | 150          | 931 015  | 931 215     |
| free Chlorine 2*                          | 0.1–2.0 mg/L Cl <sub>2</sub>   | ECO   | 150          | 931 016  | 931 216     |
| Chlorine 6, free + total <sup>2) 3)</sup> | 0.05–6.00 mg/L Cl <sub>2</sub>                                       | ECO   | 200          | –        | 931 217     |
| free Chlorine 6 <sup>2) 3)</sup>          | 0.05–6.00 mg/L Cl <sub>2</sub>                                       | ECO   | 400          | –        | 931 219     |
| Chlorine*                                 | 0.02–0.60 mg/L Cl <sub>2</sub>                                       | HE    | 160          | 920 015  | 920 115     |
| Chlorine + pH                             | see Swimming pool  |       |              |          |             |
| Chlorine dioxide*                         | 0.2–3.8 mg/L ClO <sub>2</sub>  | ECO   | 150          | 931 021  | 931 221     |
| Chromium(VI)*                             | 0.02–0.50 mg/L Cr(VI)  | ECO   | 140          | 931 020  | 931 220     |
| Copper                                    | 0.1–1.5 mg/L Cu <sup>2+</sup>  | ECO   | 100          | 931 037  | 931 237     |
| Copper                                    | 0.04–0.50 mg/L Cu <sup>2+</sup>                                      | HE    | 150          | 920 050  | 920 150     |
| Cyanide*                                  | 0.01–0.20 mg/L CN <sup>-</sup>                                       | ECO   | 100          | 931 022  | 931 222     |
| Cyanide*                                  | 0.002–0.04 mg/L CN <sup>-</sup>                                      | HE    | 50           | 920 028  | 920 128     |
| Cyanuric acid                             | 10–100 mg/L Cya  | ECO   | 100          | 931 023  | 931 223     |
| DEHA* (diethylhydroxylamine)              | 0.01–0.30 mg/L DEHA  | ECO   | 125          | 931 024  | 931 224     |
| Fluoride <sup>2) 3)</sup>                 | 0.1–2.0 mg/L F <sup>-</sup>  | ECO   | 150          | –        | 931 227     |
| total Hardness*                           | 1 drop $\triangleq$ 1.25 °e $\triangleq$ 17.8 mg/L CaCO <sub>3</sub> | alpha | 100          | 935 042  | –           |
| total Hardness*                           | 1 drop $\triangleq$ 1.25 °e $\triangleq$ 17.8 mg/L CaCO <sub>3</sub> | ECO   | 110          | 931 029  | –           |
| total Hardness H 20 F*                    | 0.6–25.0 °e / 0.1–3.6 mmol/L Ca <sup>2+</sup> <sup>1)</sup>          | HE    | 200          | 915 005  | 915 205     |
| total Hardness H 2*                       | 0.06–2.50 °e / 0.01–0.36 mmol/L Ca <sup>2+</sup> <sup>1)</sup>       | HE    | 200          | 915 002  | 915 202     |
| residual Hardness *                       | 0.05–0.37 °e   | alpha | 200          | 935 080  | –           |
| Hydrazine*                                | 0.05–0.40 mg/L N <sub>2</sub> H <sub>4</sub>                         | ECO   | 130          | 931 030  | 931 230     |
| Iron 1*                                   | 0.04–1.0 mg/L Fe   | ECO   | 200          | 931 025  | 931 225     |
| Iron 2                                    | 0.04–1.0 mg/L Fe   | ECO   | 100          | 931 026  | 931 226     |
| Iron                                      | 0.01–0.20 mg/L Fe  | HE    | 300          | 920 040  | 920 140     |

The measurement range of photometric determination with photometer PF-3 and PF-12 can be different.

<sup>1)</sup> For titration test kits the range can be increased using additional titration solution.

<sup>2)</sup> only for the photometric determination with PF-12

<sup>3)</sup> only for the photometric determination with PF-3

<sup>4)</sup> based on the chemical procedures of the German Standard Methods (DEV)

\* This product contains harmful substances which must be specially labeled as hazardous. For detailed information please see MSDS.

**Program VISOCOLOR®**
**Ordering information**

| Test                           | Range (visual)   | Type  | No. of tests | REF      |             |
|--------------------------------|--|-------|--------------|----------|-------------|
|                                |  |       |              | Test kit | Refill pack |
| Manganese*                     | 0.1–1.5 mg/L Mn  | ECO   | 70           | 931 038  | 931 238     |
| Manganese*                     | 0.03–0.50 mg/L Mn  | HE    | 100          | 920 055  | 920 155     |
| Nickel*                        | 0.1–1.5 mg/L Ni <sup>2+</sup>                            | ECO   | 150          | 931 040  | 931 240     |
| Nitrate*                       | 2–50 mg/L NO <sub>3</sub> <sup>-</sup>                   | alpha | 100          | 935 065  | –           |
| Nitrate*                       | 1–120 mg/L NO <sub>3</sub> <sup>-</sup>                  | ECO   | 110          | 931 041  | 931 241     |
| Nitrite*                       | 0.05–1.0 mg/L NO <sub>2</sub> <sup>-</sup>               | alpha | 200          | 935 066  | –           |
| Nitrite*                       | 0.02–0.5 mg/L NO <sub>2</sub> <sup>-</sup>               | ECO   | 120          | 931 044  | 931 244     |
| Nitrite*                       | 0.005–0.10 mg/L NO <sub>2</sub> <sup>-</sup>             | HE    | 150          | 920 063  | 920 163     |
| pH 5–9*                        | pH 5.0–9.0   | alpha | 200          | 935 075  | –           |
| pH 4.0–9.0*                    | pH 4.0–9.0   | ECO   | 400          | 931 066  | 931 266     |
| pH 4.0–10.0*                   | pH 4.0–10.0  | HE    | 500          | 920 074  | 920 174     |
| pH 6.0–8.2 <sup>2) 3)</sup>    | pH 6.0–8.2   | ECO   | 150          | –        | 931 270     |
| Phosphate*                     | 2–20 mg/L PO <sub>4</sub> <sup>3-</sup>                  | alpha | 70           | 935 079  | –           |
| Phosphate*                     | 0.2–5 mg/L PO <sub>4</sub> -P                            | ECO   | 80           | 931 084  | 931 284     |
| Phosphate*                     | 0.05–1.0 mg/L P  | HE    | 300          | 920 082  | 920 182     |
| Phosphate* (DEV) <sup>4)</sup> | 0.01–0.25 mg/L P   | HE    | 100          | 920 080  | 920 180     |
| Potassium*                     | 2–15 mg/L K <sup>+</sup>                                 | ECO   | 60           | 931 032  | 931 232     |
| Residual hardness              | see Hardness (residual)                                  |       |              |          |             |
| Oxygen*                        | 1–10 mg/L O <sub>2</sub>                                 | ECO   | 50           | 931 088  | 931 288     |
| Oxygen SA 10*                  | 0.2–10 mg/L O <sub>2</sub> <sup>1)</sup>                 | HE    | 100          | 915 009  | 915 209     |
| Silica* / silicon              | 0.2–3.0 mg/L SiO <sub>2</sub>                            | ECO   | 80           | 931 033  | 931 233     |
| Silica* / silicon              | 0.01–0.30 mg/L Si  | HE    | 120          | 920 087  | 920 187     |
| Sulfate*                       | 25–200 mg/L SO <sub>4</sub> <sup>2-</sup>                | ECO   | 100          | 931 092  | 931 292     |
| Sulfide*                       | 0.1–0.8 mg/L S <sup>2-</sup>                             | ECO   | 90           | 931 094  | 931 294     |
| Sulfite*                       | 1 drop $\triangleq$ 1 mg/L SO <sub>3</sub> <sup>2-</sup> | ECO   | 60           | 931 095  | –           |
| Sulfite SU 100*                | 2–100 mg/L SO <sub>3</sub> <sup>2-</sup> <sup>1)</sup>   | HE    | 100          | 915 008  | 915 208     |
| Swimming pool* (Chlorine + pH) | 0.1–2.0 mg/L Cl <sub>2</sub><br>pH 6.9–8.2               | ECO   | 150<br>150   | 931 090  | 931 290     |
| Zinc*                          | 0.5–3 mg/L Zn <sup>2+</sup>                              | ECO   | 120          | 931 098  | 931 298     |

The measurement range of photometric determination with photometer PF-3 and PF-12 can be different.

<sup>1)</sup> For titration test kits the range can be increased using additional titration solution.

<sup>2)</sup> only for the photometric determination with PF-12

<sup>3)</sup> only for the photometric determination with PF-3

<sup>4)</sup> based on the chemical procedures of the German Standard Methods (DEV)

\* This product contains harmful substances which must be specially labeled as hazardous. For detailed information please see MSDS.





## Applications

### Universally applicable



Soil analysis



Aquaculture



Breweries



Chemical industry



Electroplating industry



Food & beverage industries



Leather industry



Metal processing industry



Milk industry



Pool & spa care



Textile industry



Cement & concrete production

### Customized case solutions

Catering to our individual customer needs is one of the great importance to MACHEREY-NAGEL. Even though our case solutions provide a high level of flexibility, we recognize that some customers may have specific requirements outside our existing case solutions. Therefore, we offer entirely individual solutions with a foam inlay designed exactly to your specifications and testing needs. Starting with a minimum of 50 cases, we can provide you with a case that perfectly fits your personal requirements. We also offer readily packed cases starting at a minimum quantity of 50 cases as well. Thus, within our highly flexible case range, we can provide virtually any customer with the perfect testing and transportation solution.

## Contact



Technical support and customer service  
for Filtration, Rapid Tests, Water Analysis: +49

24 21 / 969 161  
+49 24 21 / 969 138  
+49 24 21 / 969 190  
+49 24 21 / 969 174  
+49 24 21 / 969 340  
+49 24 21 / 969 187  
csc@mn-net.com

Your local distributor:

**Impex Produkter AS**  
Verkseier Furulunds vei 15  
0668 OSLO  
Tel. 22 32 77 20  
Fax 22 32 77 25  
info@impex.no  
www.impex.no

www.mn-net.com

# MACHEREY-NAGEL



MACHEREY-NAGEL GmbH & Co. KG  
Germany  
and international:  
Tel.: +49 24 21 969-0  
Fax: +49 24 21 969-199  
E-mail: info@mn-net.com

Switzerland:  
MACHEREY-NAGEL AG  
Tel.: +41 62 388 55 00  
Fax: +41 62 388 55 05  
E-mail: sales-ch@mn-net.com

France:  
MACHEREY-NAGEL EURL  
Tel.: +33 3 88 68 22 68  
Fax: +33 388 51 76 88  
E-mail: sales-fr@mn-net.com

USA:  
MACHEREY-NAGEL Inc.  
Tel.: +1 484 821 0984  
Fax: +1 484 821 1272  
E-mail: sales-us@mn-net.com

