



STANDARD CONFIGURATION VAPODEST 500 / VAPODEST 500 CAROUSEL

| Standard configuration | VAP500 | VAP500 Carousel |
|---|--------|-----------------|
| Multi Touch Sensitive Screen 7" | ● | ● |
| Automatic addition H ₃ BO ₃ | ● | ● |
| Automatic addition H ₂ O | ● | ● |
| Automatic addition NaOH / reagent | ● | ● |
| Programmable reaction time | ● | ● |
| Programmable distillation time | ● | ● |
| Variable steam power 0 - 100 % | ● | ● |
| Automatic suction of sample waste | ● | ● |
| Automatic suction of the receiver | ● | ● |
| Selection of language | ● | ● |
| Vergabe von Benutzerrechten | ● | ● |
| Optical and acoustical error messages | ● | ● |
| Stand-by-Function | ● | ● |
| Automatic calculation of results | ● | ● |
| Method data base | ● | ● |
| Programmable methods | ● | ● |
| Connection for external keyboard | ● | ● |
| Connection for external PC-mouse | ● | ● |
| Automatic check of chemical reservoir | ● | ● |
| Kjeldatherm digestion tubes can be used ¹⁾ | ● | ● |
| Kjeldahl flasks can be used ¹⁾ | ● | - |
| Automatic titration | ● | ● |
| Micro dosing pump for titration | ● | ● |
| Gerhardt Dashboard (Data management program for PC) | ● | ● |
| Automatic sample feeding (carousel) for 20 tubes | - | ● |
| Set of storage tanks incl. level control sensors | - | ● |
| Compressor | - | ● |
| USB-interface on the front side | 1 x | 1 x |
| USB-interface on the back | 4 x | 4 x |
| Ethernet-interface on the back | 1 x | 1 x |
| RS-232 interface on the back | 1 x | 1 x |

● = Standard configuration

1) = see digestion tubes and Kjeldahl-flasks on page 4

2) = for technical reasons, the 115 V version is only delivered without compressor.

SCOPE OF DELIVERY

| Type | VAP 500 | VAP500 Carousel |
|--|---------|-----------------|
| Distillation system | 1 x | 1 x |
| Gerhardt Dashboard Data management program for VAPODEST 500 ¹⁾ | 1 x | 1 x |
| KJELDATHERM digestion tube | 1 x | 20 x |
| pH-electrode | 1 x | 1 x |
| Buffer solution pH7 | 1 x | 1 x |
| Buffer solution pH4 | 1 x | 1 x |
| KCL-solution | 1 x | 1 x |
| Tubing set complete | 1 x | 1 x |
| Mains cable | 1 x | 1 x |

1) **Computer:** Personal computer and printer are not included the delivery.

1) **Operating system:** Windows 10 64 bit, 1 x free USB-interface, 1 x free LAN-Port RJ45

TECHNICAL DATA

| Type | VAP 500 | VAP500 Carousel |
|-----------------------------------|----------------------|----------------------|
| Cooling water consumption [l/min] | 2 / 5 / 7 adjustable | 2 / 5 / 7 adjustable |
| Cooling water pressure [bar] | 1 - 6 | 1 - 6 |
| Distillation time [min] | 2 - 4 | 2 - 4 |
| Recovery rate [%] | > 99,5 | > 99,5 |
| Reproducibility [%] | +/- 1 | +/- 1 |
| Detection limit N [mg] | 0,1 | 0,1 |
| Nominal voltage [VAC] | 230 (115) | 230 (115) |
| Frequency [Hz] | 50/60 | 50/60 |
| Current [A] | 9,5 (19,1) | 10 (20) |
| Nominal wattage [W] | 2200 | 2300 |
| Weight [kg] | ca. 44 kg | ca. 205 |
| Dimensions W / D / H [mm] | 527 x 390 x 697 | 960 / 600 / 1670 |

ORDER INFORMATION

| Order No. | Type | Description |
|-----------|-----------------|--|
| 12-0500 | VAP500 | Distillation system, Version Standard 230 V , |
| 12-0501 | VAP500 | Distillation system, Version Standard 115 V , |
| 12-0510 | VAP500 Carousel | Distillation system, Version 230 V , complete with carousel for 20 x 250/300 ml tubes |
| 12-0513 | VAP500 Carousel | Distillation system, Version 230 V , complete with carousel for 20 x 400 ml tubes |
| 12-0511 | VAP500 Carousel | Distillation system, Version 115 V²⁾ , complete with carousel for 20 x 250/300 ml tubes |

* For technical reasons, the 115 V version is delivered without compressor. The unit must be connected to the in-house compressed air supply or to an external compressor.

UPGRADE KITS

The C. Gerhardt upgrade kits offer maximum flexibility. For example, the VAP500 can be retrofitted with an autosampler (carousel) at any time. Various carousel inserts for analysis with different glass sizes are also available for the VAP500 carousel system.

ORDER INFORMATION UPGRADE KITS for VAP500

The VAPODEST 500 distillation systems can be upgraded with an automatic sample changer and operated as VAP500 carousel.

| Order No. | Type | Description |
|-----------|------|--|
| 12-0512 | | Lower part automatic sample changer VAP500 carousel, 230 V, for 20 x 250 ml tubes 12-0301 Suitable for a later update from VAP 500 to VAP 500 carousel |
| 12-0516 | | Upgrade kit VAP500 to VAP500 carousel, 250 ml <i>Required accessories for lower part 12-0512</i> |
| 12-0517 | | Lower part automatic sample changer VAP500 carousel, 230 V for 20 x 400 ml tubes 12-0308 or 12-0310 Suitable for a later update from VAP 500 to VAP 500 carousel |
| 12-0507 | | Upgrade kit VAP500 to VAP500 carousel, 400 ml <i>Required accessories for lower part 12-0517</i> |

ORDER INFORMATION CAROUSEL INSERT for VAP500 Carousel

For the use of different glass tubes C. Gerhardt offers conversion kits with suitable carousel inserts and sample tube guide cages.



| Order No. | Type | Description |
|-----------|--------|--|
| 12-0518 | KIT400 | Conversion kit carousel for 20 x 400 ml tubes, for tubes KDD 400 ml and BS 400 ml, complete with: - Sample tube guide cage 400 - carousel 20-place 400 ml, PP-white Ø 480 mm - 20 x digestion tubes 400 ml, No. 12-0308 |
| 12-0519 | KIT250 | Conversion kit carousel for 20 x 250 ml tubes, complete with: - Sample tube guide cage 250 - carousel 20-place 250 ml, PP-white Ø 480 mm - 20 x digestion tubes 250/300 ml, No. 12-0301 |

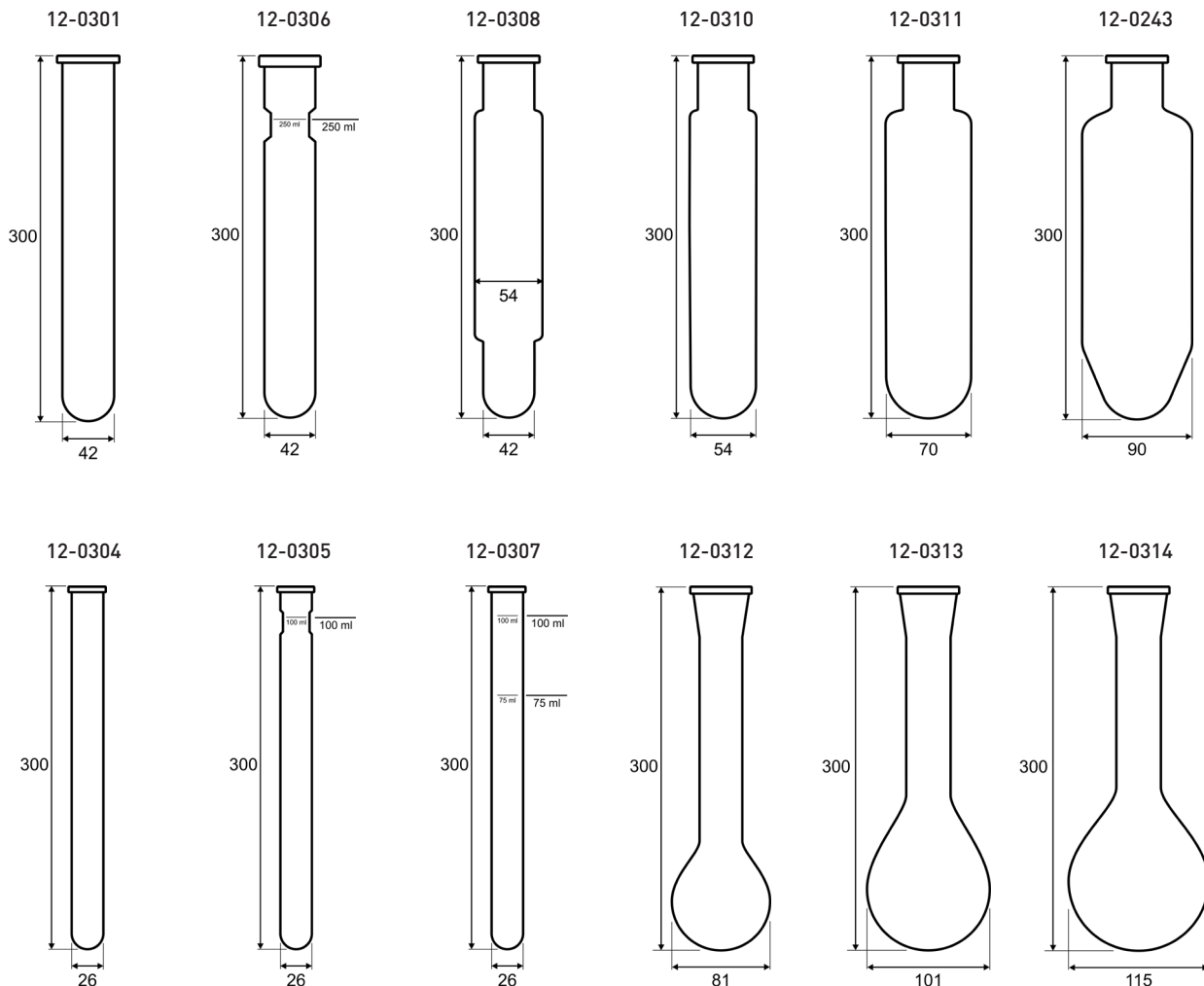
CONSUMABLES AND ACCESSORIES

Make sure to use only original C. Gerhardt spare parts in order to obtain the best possible results. These parts have been tested thoroughly for the operation with VAPODEST in the C. Gerhardt application lab.

KJELDAHL-DIGESTION TUBES AND KJELDAHL-FLASKS

Depending on sample type and sample quantity VAPODEST 500 can use a lot of Kjeldahl-digestion tubes as well as Kjeldahl-flasks. All tubes are made of high standard Duran material.

| Order No. | Type | Description | VAP500 | VAP500 C |
|-----------|---------|--|--------|----------|
| 12-0301 | KTG | KJELDATHERM-digestion tube, macro 250/300 ml - 10 pcs | ● | ● |
| 12-0306 | KTG/E | KJELDATHERM-digestion tube, macro 250/300 ml, with constriction + calibrated at 250 ml | ● | - |
| 12-0308 | BS-400 | KJELDATHERM-digestion tube, 400 ml, diminished | ● | ● |
| 12-0310 | KDD400 | Jumbo-digestion tube 400 ml - 4 pcs | ● | ● |
| 12-0311 | KDD800 | Jumbo-digestion tube 800 ml - 4 pcs | ● | - |
| 12-0243 | KDD1200 | Jumbo-digestion tube 1.200 ml | ● | - |
| 12-0304 | KMT | KJELDATHERM-digestion glas, micro 100 ml - 10 pcs | ● | - |
| 12-0305 | KMT/E | KJELDATHERM-digestion glas, micro 100 ml with constriction + calibrated at 100 ml | ● | - |
| 12-0307 | KMT | KJELDATHERM-Glas, mikro 100 ml, calibrated at 100 ml + 75 ml | ● | - |
| 12-0312 | KD250 | Kjeldahl-flask 250 ml, with enlarged neck | ● | - |
| 12-0313 | KD500 | Kjeldahl-flask 500 ml, with enlarged neck, 4 pcs | ● | - |
| 12-0314 | KD750 | Kjeldahl-flask 750 ml, with enlarged neck, 4 pcs | ● | - |



Tank level control



Tank level control 1005098

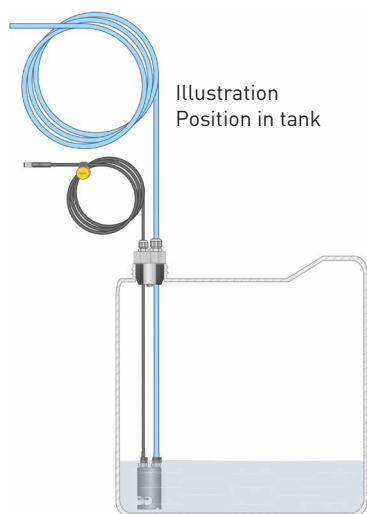


Illustration
Position in tank

| Order No. | Type | Description |
|-----------|--------|--|
| 1005098 | ID8 | Tank level control for Reagent-storage tank , incl. cable labels for clear identification, suitable for tanks with the following dimensions: - Height = min. 130 mm... max. 2000 mm - Filler neck = min. Ø 40 mm... max. Ø 50 mm |
| 1005721 | PA8 | Tank level control for sample waste storage tank , incl. cable labels for clear identification, suitable for tanks with the following dimensions: - Height = all tanks - Filler neck = min. Ø 47 mm... max. Ø 50 mm |
| 12-0505 | NIV500 | Tank level control set for 3 reagent-tanks and 1 sample waste tank and 1 titration tank, consisting of: - 3 x Tank level control for reagent-tank no. 1005098 - 1 x Tank level control for sample waste tank, no. 1005721 - 1 x Tank 5 L for titration acid, incl. tank level control |

Storage tanks



| Order No. | Type | Description |
|-----------|-------|-------------------------|
| 1005849 | KAN10 | Tank made of HDPE, 10 L |
| 1005850 | KAN20 | Tank made of HDPE, 20 L |

Hinweis

Durch die begrenzte Bauweise der Kanisterschublade im VAPODEST 500 Carousel betragen die maximalen Dimensionen bei Verwendung handelsüblicher Kanister (B = 246 mm, T 290 mm, H = 385 mm).

Labelling - Stickers



| Order No. | Type | Description |
|-----------|------|---|
| 1005823 | | Stickers for tank level sensors (cable banner), can be attached to the tubes. 12 Stickers: Reagent 1, Reagent 2, H ₂ O, NaOH, HCl, H ₃ BO ₃ , NDF, ADF, H ₂ SO ₄ , KOH, Sample Waste, Neutral |
| 1005824 | | Stickers for tanks, can be affixed to any place on the tank. 12 Stickers: Reagent 1, Reagent 2, H ₂ O, NaOH, HCl, H ₃ BO ₃ , NDF, ADF, H ₂ SO ₄ , KOH, Sample Waste, Neutral |

Gerhardt Dashboard



| Order No. | Type | Description |
|-----------|------|--|
| 12-0506 | | Gerhardt Dashboard, program to support sample input and sample management via a network / PC in combination with VAPODEST 500. The program offers convenient functions for data management and supports requirements of EN ISO 17025 and GLP. Delivery incl. USB-Stick. |

Connection stopper, Viton



| Order No. | Type | Description |
|-----------|------|--|
| 12-0477 | | Viton-connection stopper, normal size for PP distribution head 1006342 |

Connection stopper, Micro



| Order No. | Type | Description |
|-----------|------|---|
| 12-0352 | | Connection stopper VK, Isoversinic micro, special edition for the use of micro digestion tubes 100 ml For type VAP200 - VAP500 |

Upgrade kit Büchi



| Order No. | Type | Description |
|-----------|------|---|
| 12-0568 | | Adapter Set for Büchi tubes, suitable for all distribution heads type VAP200 - VAP500, complete with: 1 x Viton-connection stopper, no. 12-0567 suitable for distribution heads with connection pipe \varnothing 31 mm 1 x Viton-connection stopper, no. 12-0566 suitable for distribution heads with connection pipe \varnothing 33 mm 1 x Viton-connection stopper, no. 12-0351 1 x Adapter PP-nature |

Distribution head PP



| Order No. | Type | Description |
|-----------|------|---|
| 1006342 | | Distribution head PP for VAP500 / VAP500 Carousel |

Catalyst tablets


| Order No. | Type | Description |
|-----------|----------|--|
| 12-0326 | Se | KJELCAT-tablets, tin of 1,000 pcs 3.5 g K_2SO_4 + 0.0035 g Se |
| 12-0328 | Cu | KJELCAT-tablets, tin of 1,000 pcs 5.0 g K_2SO_4 + 0.5 g $CuSO_4 \times 5H_2O$ |
| 12-0329 | CuTi | KJELCAT-tablets, tin of 1,000 pcs 5.0 g K_2SO_4 + 0.15 g $CuSO_4 \times 5H_2O$ + 0.15 g TiO_2 |
| 12-0336 | Cu light | KJELCAT-tablets, tin of 1,000 pcs 5.0 g K_2SO_4 + 0.1 g $CuSO_4 \times 5H_2O$ |
| 12-0336 | CK | Kjelcat tablets, 3.5g K_2SO_4 + 0.4g $CuSO_4 \times 5H_2O$, 1,000 pcs |

Antifoam tablets


| Order No. | Type | Description |
|-----------|------|--|
| 12-0332 | AS | Antifoam extra tablets, tin with 1,000 pcs 0.97 Na_2SO_4 + 0.03 g silicone antifoam |

KCL and Buffer solution


| Order No. | Type | Description |
|-----------|------|--------------------------|
| 1000178 | | Electrolyte solution KCL |
| 1000176 | | Buffer solution pH 4 |
| 1000177 | | Buffer solution pH 7 |

pH-combined electrode


| Order No. | Type | Description |
|-----------|--------|---|
| 12-0555 | ET-KCL | pH-combined electrode KCL, require regularly filling with KCL |

Impedance converter for pH-combined electrode


| Order No. | Type | Description |
|-----------|------|---|
| 1002740 | | The impedance converter improves the pH measurement. It prevents malfunctions caused by dirt, moisture or electrical fields of powered lines. |

Accessories for receiver



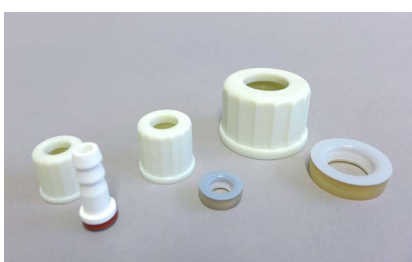
| Order No. | Type | Description |
|-----------|------|---|
| 1001269 | REC | Receiver vessel for collecting distillate |

Destillationskühler



| Order No. | Type | Description |
|-----------|------|---|
| 12-0552 | | Distillation condenser glass with short outlet pipe, for PP-distribution head 1006342 with connecting piece for ventilation valve |
| 1000036 | | Ventilation valve for distillation condenser |

GL-Screw caps + seals



| Order No. | Type | Description |
|-----------|------|---|
| 1004320 | | Screw cap GL14, nat. white |
| 1004321 | | Screw cap GL18, nat. white |
| 1004322 | | Screw cap GL 32, nat. white |
| 1000358 | | Silicone seal GL 14 with connection, straight |
| 1000356 | | Silicone-seal GL 18 |
| 1000357 | | Silicone-seal GL 32 |

Recirculating cooler FL



| Order No. | Type | Description |
|-----------|--------|--|
| 10-0045 | FL1201 | Recirculating cooler 230 V / 50 Hz, 1200 W, for economical and environmentally friendly cooling water supply of VAPODEST |
| 10-0047 | FL1201 | Identical to 10-0045, but in version 115 V / 60 Hz |

Drip tray



| Order No. | Type | Description |
|-----------|------|---|
| 1006749 | TW | Drip tray VAP500, front side |
| 1006691 | TWC | Drip tray VAP500 Carousel, front side with whole for glass feeder |

Plastic bottles



| Order No. | Type | Description |
|-----------|------|--|
| 1006521 | | Bottle for buffer solution, 50 ml with screw cap |

Tubings / Cable



| Order No. | Type | Description |
|-----------|------|--|
| 1000394 | | Water inlet tube 10/17, 2 m long, 90bar, 3/8 x 1/2" + 3/8 x 3/4" |
| 1000047* | | PVC-tubing, 8 x 12 mm |
| 1000499* | | Verpren-tubing, 8 x 12 mm |
| 1000567 | | PVC-pipe 400 mm long, 10,2 x 1,4 mm |
| 10-0057 | | Mains cable, 3 m |

*length needed when order

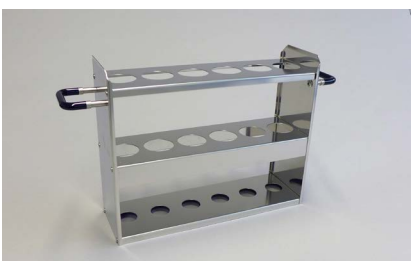
Guide cage Carousel



| Order No. | Type | Description |
|-----------|------|--|
| 1006925 | | Sample tube guide cage compl. for 250 ml tubes |
| 1006692 | | Sample tube guide cage compl. for 400 ml tubes |

Insert racks for digestion tubes

Insert racks made of stainless steel, best for collecting the single digestion tubes, e.g. for direct distillation.



| Order No. | Type | Description |
|-----------|----------|---------------------------------------|
| 12-0269 | EG625 | Insert rack 6-place for tubes 250 ml |
| 12-0273 | EG125 | Insert rack 12-place for tubes 250 ml |
| 12-0271 | EG440 | Insert rack 4-place for tubes 400 ml |
| 12-0272 | EG480 | Insert rack 4-place for tubes 800 ml |
| 12-0277 | EG12-100 | Insert rack 12-place for tubes 100 ml |

Please see the product data sheet KJELDATHERM for more insert racks and variants.

SUPPORT AND SERVICE

In addition to its high quality instruments, C. Gerhardt offers comprehensive services to maintain the functionality and efficiency of your equipment.

INSTALLATION / EQUIPMENT QUALIFICATION

| Order no | Type | Description |
|----------|---------|--|
| 99-0202 | ABI-VAP | Installation and Instruction VAPODEST 500 - Installation and connection of the unit - functional check - operating instructions |
| 99-0211 | GQF-VAP | Equipment Qualification (IQ/OQ) VAPODEST 500 - Installation of the unit and instruction - Installation Q ualification IQ and O perational Q ualification OQ , Guidance for P erformance Q ualification PQ - Training of laboratory personnel with certificate - Individual training certificates, if requested |

SERVICING AND MAINTENANCE CONCEPTS

For detailed information on servicing and maintenance concepts, please contact your local authorised C. Gerhardt representative.

WORKSHOPS / SEMINARS / APPLICATIONS TRAINING

For detailed information on trainings and workshops, please contact your local authorised C. Gerhardt representative.

APPLICATION SERVICE

The following listed applications are examples from our comprehensive application data base. Please contact your local C. Gerhardt representative or write to application@gerhardt.de to ask for one of the listed application data sheets or to ask for an application which is not yet listed.

ANALYSIS OF FEED- AND FOODSTUFFS



| Selection | Description |
|--------------------------|---|
| <input type="checkbox"/> | Non Protein content in Meat |
| <input type="checkbox"/> | Nitrogen in bread and rolls |
| <input type="checkbox"/> | Total Nitrogen in Raw Material for Breweries |
| <input type="checkbox"/> | Soluble Nitrogen Content Wort |
| <input type="checkbox"/> | Raw Protein Determination in Eggs |
| <input type="checkbox"/> | Total Protein in Margarine |
| <input type="checkbox"/> | Tomato puree and Ketchup |
| <input type="checkbox"/> | Nitrogen in Milk and Dairy Products |
| <input type="checkbox"/> | Nitrogen in Cream |
| <input type="checkbox"/> | Protein in Milk Powder |
| <input type="checkbox"/> | Non-Protein in Milk and Dairy Products |
| <input type="checkbox"/> | Raw Protein in Meat and Meat Products |
| <input type="checkbox"/> | Raw Protein in Grain and Grain Products |
| <input type="checkbox"/> | Raw Protein in Beer and Wort acc. to Lochner |
| <input type="checkbox"/> | Total Nitrogen in Sugar at very low N-content |
| <input type="checkbox"/> | Nitrogen in Starch |
| <input type="checkbox"/> | Nitrogen in Fish and Fish Products |
| <input type="checkbox"/> | Nitrogen in Chocolate |
| <input type="checkbox"/> | Total Protein in Fresh Yeast |
| <input type="checkbox"/> | Raw Protein in Feed |

ENVIRONMENTAL ANALYTICS / OTHER



| Selection | Description |
|--------------------------|--|
| <input type="checkbox"/> | Coagulated Nitrogen |
| <input type="checkbox"/> | Nitrogen Determination in Fertilizers with Nitrate |
| <input type="checkbox"/> | Fertilizers without Nitrate Content |
| <input type="checkbox"/> | Ammonium Determination in Fertilizers |
| <input type="checkbox"/> | Water soluble Ammonium nitrogen in Fertilizers |
| <input type="checkbox"/> | Determination of Nitrat and Ammonium Nitrogen fert |
| <input type="checkbox"/> | Total Nitrogen in Xanthan |
| <input type="checkbox"/> | Total Nitrogen in Water |
| <input type="checkbox"/> | Total Nitrogen in Soil |
| <input type="checkbox"/> | Total Nitrogen in Grass and Plant Material |
| <input type="checkbox"/> | Total Nitrogen in Coal |
| <input type="checkbox"/> | Ammonium in Solid Samples |
| <input type="checkbox"/> | Ammonium in Aqueous Samples |
| <input type="checkbox"/> | Nitrate in Aqueous Samples and Eluates |

TABLE OF CONFIGURATION

Please arrange the required system

DISTILLATION SYSTEM / TYPE

| Quantity | Order No. | Type | Description |
|----------|-----------|------|-------------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

CONSUMABLES / ACCESSORIES

| Quantity | Order No. | Type | Description |
|----------|-----------|------|-------------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

SUPPORT AND SERVICE

| Quantity | Order No. | Type | Description |
|----------|-----------|------|-------------|
| | | | |
| | | | |
| | | | |

Send offer to:

| | |
|--------------|--|
| Customer No. | |
| Company | |
| Name | |
| Address | |
| Tel. | |
| E-Mail | |
| Web | |



C. Gerhardt GmbH & Co. KG
 Cäsariusstraße 97 · 53639 Königswinter, Germany
 Tel.: +49 (0) 2223 2999-0 · www.gerhardt.de

Presented by:



PL 16 (Palokorvenkatu 2)
 04261 Kerava
 Puh. 010 417 4500
 hyxo@hyxo.fi • www.hyxo.fi