behr
Labor-Technik

Kjeldahl method for

determining nitrogen

EN



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Contents







Kjeldahl method for determining nitrogen

The behr program for determination of nitrogen using the Kjeldahl method ____ 4

behr Kjeldahl block digestion systems ____ 6

Standard Kjeldahl block digestion systems, behr K 8, K 12 und K 20 ____ 6

Micro Kjeldahl block digestion systems, behr K 16, K 24 und K 40 ____ 6

Macro Kjeldahl block digestion systems, behr K 8 B ____ 7

behr Kjeldahl block digestion systems with fully automatic lift ____ 8

Accessories for Kjeldahl block digestion systems ____ 9

Infrared rapid digestion units ____ 10

Infrared digestion compared to block digestion ____ 11

Digestion units ____ 12

Digestion system with temperature control ____ 16

Accessories for behr InKjel ____ 17

behrotest® fully equipped work stations ____ 18

behrosog 3 scrubber ____ 20

behr steam distillers S 1 to S 5 ____ 22

Maintenance set ____ 23

Steam distillers S1 and S2 ____ 24

Steam distillers S3 and S4 ____ 25

Steam distiller S5 ____ 26

Equipping the models ____ 27

Canister sets ____ 27

Adapter for using different digestion vessels ____ 28

Manual titration station STI ____ 28

Dispenser ____ 29

Data collection and evaluation with KjelSoft ____ 30

The behr program for the

Kjeldahl method for determining nitrogen











The behr program for the determination of nitrogen using the Kjeldahl method provides the user individually configurable complete solutions for the laboratory.

Digestion units

Kjeldahl block digestion systems

Block digestion systems with high-quality corrosion-resistant block housing made of stainless steel. Manual or with automatic lift.

- High-efficiency heating and extraction hood with exhaust collector
- behr single-knob control for particularly easy and fast programming
- Menu navigation in national language
- 25 freely configurable programs for block temperature and digestion time
- Applications can be saved

Standard systems

- Digestion vessels with 250 ml volume (8, 12 or 20 sample slots)

Micro-Kjeldahl systems

- Digestion vessels with 100 ml volume (16, 24 or 40 sample slots)

Infrared digestion systems

The digestion units of the behrotest® InKjel series are equipped with efficient quartz glass infrared heating. Apart from the traditional series with energy control, there is a fully equipped series of appliances for temperature-controlled digestion.

The quality and positioning of the behr infrared heaters guarantees the user identical heating phases and digestion temperatures on all sample slots. This also applies to double-rowed arrangement in insert racks for 12 samples.

Direct sample heating by the infrared heaters prevents the agonisingly long heating and cooling times of conventional heating block systems.

The behrotest® InKjel is therefore the ideal rapid digestion system for the determination of nitrogen using the Kjeldahl method and other high-temperature digestion tests.

Scrubber

The two-stage behrosog scrubber – pre-separator plus safety stage – prevents any acid fumes whatsoever from reaching the environment.

Titration stations

The behrotest® STI manual titration station or an automatic titrator ensure reliable, safe and fast titration for completion of the nitrogen determination.

Areas of application

Dairies

Cocoa/drinking chocolate

Meat/sausages

Biogas plants

Preserves/
canned foods

Malt houses

Spirits

Delicatessen

Coffee

Nuts

Wastewater

Feedstuffs

Block digestion systems

behr Kjeldahl block digestion systems



K 12

Standard Kjeldahl block digestion systems, behr K 8, K 12 and K 20

Block digestion systems with high-quality corrosion-resistant block housing made of stainless steel. With 8, 12 or 20 sample slots for standard Kjeldahl digestion vessels with a volume of 250 ml. High-efficiency heating and extraction hood with exhaust collector.

- behr single-knob control for particularly easy and fast programming.
- Menu navigation in national language.
- 25 freely configurable programs for block temperature and digestion time.
- Applications can be saved.
- USB interface.
- The removable inspection door on the insertion rack enables the progress of the digestion to be observed.

Complete systems with digestion vessels, rack and extraction hood.

Standard Kjeldahl block digestion system

Type	Product description	Art. No.
K 8	with 8 sample slots, for digestion vessels with a volume of 250 ml	B00632822
K 12	with 12 sample slots, for digestion vessels with a volume of 250 ml	B00605456
K 20	with 20 sample slots, for digestion vessels with a volume of 250 ml	B00632831



K 20

Micro Kjeldahl block digestion systems, behr K 16, K 24 and K 40

Block digestion systems with high-quality corrosion-resistant block housing made of stainless steel. With 16, 24 or 40 sample slots for micro Kjeldahl digestion vessels with a volume of 100 ml. High-efficiency heating and extraction hood with exhaust collector.

- behr single-knob control for particularly easy and fast programming.
- Menu navigation in national language.
- 25 freely configurable programs for block temperature and digestion time.
- Applications can be saved.
- USB interface.
- The removable inspection door on the insertion rack enables the progress of the digestion to be observed.

Complete systems with digestion vessels, rack and extraction hood.

Micro Kjeldahl block digestion system

Type	Product description	Art. No.
K 16	with 16 sample slots, for digestion vessels with a volume of 100 ml	B00632829
K 24	with 24 sample slots, for digestion vessels with a volume of 100 ml	B00632828
K 40	with 40 sample slots, for digestion vessels with a volume of 100 ml	B00632821

Macro-Kjeldahl block digestion systems, behr K 8 B

Block digestion systems with high-quality corrosion-resistant block housing made of stainless steel. With 8 sample slots, for macro Kjedldahl digestion vessels with a volume of 400 ml. High-efficiency heating and extraction hood with exhaust collector.

- behr single-knob control for particularly easy and fast programming.
- Menu navigation in national language.
- 25 freely configurable programs for block temperature and digestion time.
- Applications can be saved.
- USB interface.
- The removable inspection door on the insertion rack enables the progress of the digestion to be observed.

Complete systems with digestion vessels, rack and extraction hood.



K 8 B

Macro Kjeldahl block digestion system

Type	Product description	Art. No.
K 8 B	with 8 sample slots, for digestion vessels with a volume of 400 ml	B00632830



Technical data of the behr Kjeldahl block digestion systems

	K 8	K 12	K 16/K 24	K 20/K 40
Voltage	230 VAC			
Frequency	50/60 Hz			
Power consumption	1000 W	1500 W	1500 W	2200 W
Current consumption	5 A	8 A	8 A	10 A
Weight (incl. vessels)	approx. 28 kg	approx. 30 kg	approx. 30 kg	approx. 34 kg
Dimensions in cm (W x D x H)	approx. 42 x 51 x 76.5		approx. 48 x 51 x 76.5	
Temperature range	430°			



K 40 L

behr Kjeldahl block digestion systems with fully automatic lift

behr's L series Kjeldahl block digestion systems are equipped with a fully automatic lift. This enables the user to avoid handling the heavy samples unit and the hot chemicals. The software not only controls the sample lift but also the behrosog 3 and therefore enables largely automatic digestion.

At the end of the digestion the lift moves the complete unit upwards, including the rack and extraction hood. Following a freely programmable cooling/extraction time, it raises the extraction hood and moves it into the end position.

- Temperature profiles and the starting time of the digestion are freely programmable.
- behr single-knob control for particularly easy and fast programming.
- USB interface.
- The removable inspection door on the insertion rack enables the progress of the digestion to be observed.

Available with 230 V~/50-60 Hz.

behr Kjeldahl block digestion systems with fully automatic lift

Type	Product description	Art. No.
K 12 L	Automatic Kjeldahl block digestion system with lift. 12 sample slots, for digestion vessels with a volume of 250 ml	B00632827
K 20 L	Automatic Kjeldahl block digestion system with lift. 20 sample slots, for digestion vessels with a volume of 250 ml	B00632826
K 24 L	Automatic micro Kjeldahl block digestions system with lift. 24 sample slots, for digestion vessels with a volume of 100 ml	B00632825
K 40 L	Automatic micro Kjeldahl block digestions system with lift. 40 sample slots, for digestion vessels with a volume of 100 ml	B00632824

Fully automatic

boil



cool



finished



Accessories for Kjeldahl block digestion systems

Digestion vessels for K blocks

Type	Product description	Art. No.
SR 3i	Round bottom digestion vessel, 250 ml	B00217959
SR 4	Round bottom digestion vessel, 100 ml for micro Kjeldahl	B00217960
SR 5	Round bottom digestion vessel, 400 ml for K 8 B	B00373170



SR 3i



SR 4



SR 5

Good to know:

behrotest® standard digestion vessels have standard dimensions. That means they fit into digestion and distillation units of most brands. Of course, it also means that standard digestion vessels of most brands can be used with behrotest® digestion and distillation units.

Accessories for the behr Kjeldahl digestion

Type	Product description	Art. No.
KT 1	Catalyst tablets (5.0 g K_2SO_4; 0.5 g $CuSO_4$), tin with 1000 tablets (CX)	B00217934
KT 1-500	Catalyst tablets (5.0 g K_2SO_4; 0.5 g $CuSO_4$), tin with 500 tablets (CX)	B00727970
KT 2	Catalyst tablets (5.0 g K_2SO_4; 0.15 g $CuSO_4$; 0.15 g TiO_2), tin with 1000 tablets (CT)	B00217935
KT 2-500	Catalyst tablets (5.0 g K_2SO_4; 0.15 g $CuSO_4$; 0.15 g TiO_2), tin with 500 tablets (CT)	B00727971
KT 3	Catalyst tablets (3.5 g K_2SO_4; 0.4 g $CuSO_4$), tin with 1000 tablets (CK)	B00217937
KT 3-500	Catalyst tablets (3.5 g K_2SO_4; 0.4 g $CuSO_4$), tin with 500 tablets (CK)	B00727972
KT 4	Catalyst tablets (3.5 g K_2SO_4; 0,0035 g Se), tin with 1000 tablets (ST)	B00490920
KT 4-500	Catalyst tablets (3.5 g K_2SO_4; 0,0035 g Se), tin with 500 tablets (ST)	B00727973
AFS	Anti-foam tablets, tin with 100 tablets for steam distillation	B00217936
SIST 100	Boiling stones for the Kjeldahl digestion, contents 100 g	B00217914
WP	Weighing paper, block of 250 sheets, 95 x 110 mm	B00441136
WB 1	behrotest® Weighing boats for Kjeldahl, 58 x 10 x 10 mm	B00217938
DOS 25	behrotest® dispenser for metering sulfuric acid, 2.5-25 ml adjustable without bottle	B00661157



KT 2



SIST 100

Infrared rapid detection units

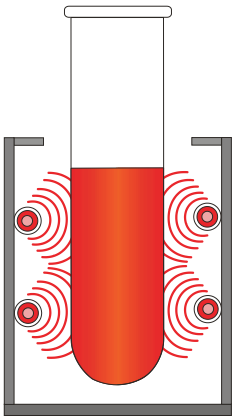
behrotest® InKjel



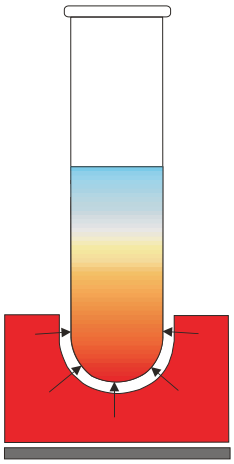


Infrared digestion compared to block digestion

Particularly uniform heating of the samples using side heaters, therefore no zones with different temperatures. Hardly any boiling delays..

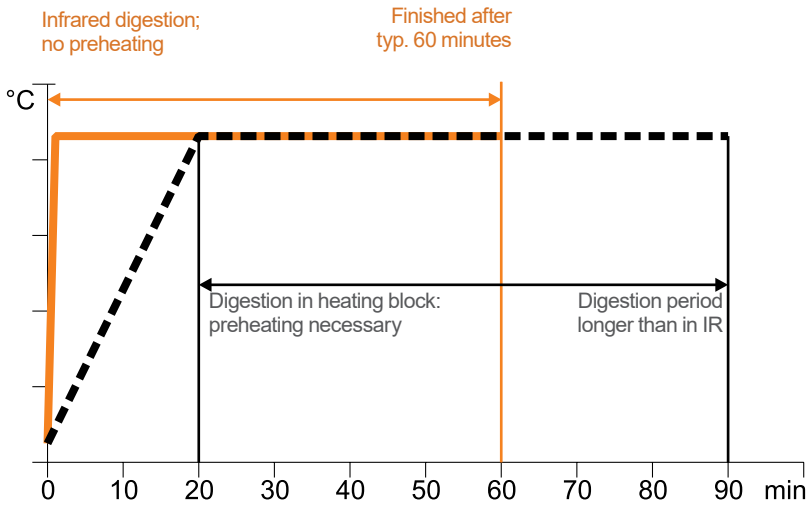


Samples are heated from underneath, therefore higher requirements for users to prevent boiling delays.



Quartz heaters:

- uniform effect along the entire length
- insulated from the housing, no energy loss through heat transfer
- full heat output within 1 minute, no preheating required



Digestion units

The digestion units of the behrotest® InKjel series are equipped with efficient infrared heating. The quality and positioning of the behr infrared heaters guarantees the user identical heating phases and digestion temperatures on all sample slots. This also applies to double-rowed arrangement in insert racks for 12 samples. The digestion tubes hang in the rack and do not touch the bottom of the digester. As a result, the digestion vessels are at less risk of breakage than in an aluminium heating block.

- Direct sample heating by the infrared heaters prevents the agonisingly long heating times of conventional heating block systems.
- You can reach a radiation temperature of 830 °C within one minute and heat up the samples in 10 minutes to their boiling temperature of 410°C.
- High-quality quartz heaters instead of the usual steel tubular heating elements ensure particularly uniform heating of all sample slots.
- behr single-knob control for particularly easy and fast programming.
- Menu navigation in national language.

The behrotest® InKjel is therefore the ideal digestion system for the determination of nitrogen using the Kjeldahl method and other high-temperature digestion tests. With the Kjeldahl digestion method, the temperature is set by the boiling temperature of the sulphuric acid.



InKjel 625 M

InKjel 625 M rapid digestion system with manual energy control for 6 sample slots, 250 ml

Rapid digestion system with manual energy control and direct heating of the samples using high-quality quartz infrared heaters (1500 W).

- 6 glass digestion tubes of 250 ml
- Constant heating of all samples to 410 °C in approx. 10 minutes
- Uniform heating of all sample slots
- Energy savings compared to aluminium block

Complete system with tiered rack, fume removal unit, insert rack and glass digestion tubes.

Type	Product description	Art. No.
InKjel 625 M	Manually controllable infrared digestion system for 6 glass tubes of 250 ml	B00218101



InKjel 625 P

InKjel 625 P rapid digestion system with 25 freely configurable programs for energy and digestion time for 6 sample slots, 250 ml

Rapid digestion system with 25 freely configurable programs for energy and digestion time and direct heating of the samples using high-quality quartz infrared heaters (1500 W).

- 6 glass digestion tubes of 250 ml
- Constant heating of all samples to 410 °C in approx. 10 minutes
- Uniform heating of all sample slots
- Energy savings compared to aluminium block

Complete system with tiered rack, fume removal unit, insert rack and glass digestion tubes.

Type	Product description	Art. No.
InKjel 625 P	Programmable infrared digestion system for 6 glass tubes of 250 ml	B00218105

InKjel 1210 M rapid digestion system with manual energy control for 12 sample slots, 100 ml

Rapid digestion system with manual energy control and direct heating of the samples using high-quality quartz infrared heaters (1500 W).

- 12 glass digestion tubes of 100 ml
- Constant heating of all samples to 410 °C in approx. 10 minutes
- Uniform heating of all sample slots
- Energy savings compared to aluminium block

Complete system with tiered rack, fume removal unit, insert rack and glass digestion tubes.

Type	Product description	Art. No.
InKjel 1210 M	Manually controllable infrared digestion system for 12 glass tubes of 100 ml	B00373235



InKjel 1210 M

InKjel 1210 P rapid digestion system with 25 freely configurable programs for energy and digestion time for 12 sample slots, 100 ml

Rapid digestion system with 25 freely configurable programs for energy and digestion time and direct heating of the samples using high-quality quartz infrared heaters (1500 W).

- 12 glass digestion tubes of 100 ml
- Constant heating of all samples to 410 °C in approx. 10 minutes
- Uniform heating of all sample slots
- Energy savings compared to aluminium block

Complete system with tiered rack, fume removal unit, insert rack and glass digestion tubes.

Type	Product description	Art. No.
InKjel 1210 P	Programmable infrared digestion system for 12 glass tubes of 100 ml	B00497540



InKjel 1210 P

InKjel 1225 M rapid digestion system with manual energy control for 12 sample slots, 250 ml

Rapid digestion system with manual energy control and direct heating of the samples using high-quality quartz infrared heaters (1500 W).

- 12 glass digestion tubes of 250 ml
- Constant heating of all samples to 410 °C in approx. 10 minutes
- Uniform heating of all sample slots
- Energy savings compared to aluminium block

Complete system with tiered rack, fume removal unit, insert rack and glass digestion tubes.

Type	Product description	Art. No.
InKjel 1225 M	Manually controllable infrared digestion system for 12 glass tubes of 250 ml	B00218103



InKjel 1225 M



InKjel 1225 P

InKjel 1225 P rapid digestion system with 25 freely configurable programs for energy and digestion time for 12 sample slots, 250 ml

Rapid digestion system with 25 freely configurable programs for energy and digestion time and direct heating of the samples using high-quality quartz infrared heaters (1500 W).

- 12 glass digestion tubes of 250 ml
- Constant heating of all samples to 410 °C in approx. 10 minutes
- Uniform heating of all sample slots
- Energy savings compared to aluminium block

Complete system with tiered rack, fume removal unit, insert rack and glass digestion tubes.

Type	Product description	Art. No.
InKjel 1225 P	Programmable infrared digestion system for 12 glass tubes of 250 ml	B00218106



InKjel 450 M

InKjel 450 M rapid digestion system with manual energy control for 4 sample slots, 500 ml

Rapid digestion system with manual energy control and direct heating of the samples using high-quality quartz infrared heaters (1500 W).

- 4 glass digestion tubes of 500 ml
- Constant heating of all samples to 410 °C in approx. 10 minutes
- Uniform heating of all sample slots
- Energy savings compared to aluminium block

Complete system with tiered rack, fume removal unit, insert rack and glass digestion tubes.

Type	Product description	Art. No.
InKjel 450 M	Manually controllable infrared digestion system for 4 glass tubes of 500 ml	B00218067



InKjel 450 P

InKjel 450 P rapid digestion system with 25 freely configurable programs for energy and digestion time for 4 sample slots, 500 ml

Rapid digestion system with 25 freely configurable programs for energy and digestion time and direct heating of the samples using high-quality quartz infrared heaters (1500 W).

- 4 glass digestion tubes of 500 ml
- Constant heating of all samples to 410 °C in approx. 10 minutes
- Uniform heating of all sample slots
- Energy savings compared to aluminium block

Complete system with tiered rack, fume removal unit, insert rack and glass digestion tubes.

Type	Product description	Art. No.
InKjel 450 P	Programmable infrared digestion system for 4 glass tubes of 500 ml	B00218107

InKjel 475 M rapid digestion system with manual energy control for 4 sample slots, 750 ml

Rapid digestion system with manual energy control and direct heating of the samples using high-quality quartz infrared heaters (1500 W).

- 4 glass digestion tubes of 750 ml
- Constant heating of all samples to 410 °C in approx. 10 minutes
- Uniform heating of all sample slots
- Energy savings compared to aluminium block

Complete system with tiered rack, fume removal unit, insert rack and glass digestion tubes.

Type	Product description	Art. No.
InKjel 475 M	Manually controllable infrared digestion system for 4 glass tubes of 750 ml	B00218068



InKjel 475 M

InKjel 475 P rapid digestion system with 25 freely configurable programs for energy and digestion time for 4 sample slots, 750 ml

Rapid digestion system with 25 freely configurable programs for energy and digestion time and direct heating of the samples using high-quality quartz infrared heaters (1500 W).

- 4 glass digestion tubes of 750 ml
- Constant heating of all samples to 410 °C in approx. 10 minutes
- Uniform heating of all sample slots
- Energy savings compared to aluminium block

Complete system with tiered rack, fume removal unit, insert rack and glass digestion tubes.

Type	Product description	Art. No.
InKjel 475 P	Programmable infrared digestion system for 4 glass tubes of 750 ml	B00218108



InKjel 475 P

Technical data for digestion systems

	InKjel M	InKjel P
Voltage	230 VAC	
Frequency	50/60 Hz	
Power consumption	1500 W	1500 W
Current consumption	8 A	8 A
Weight (incl. vessels)	approx. 20 kg	approx. 20 kg
Dimensions in cm (W x D x H)	approx. 54 x 44 x 75	approx. 54 x 44 x 75
Energy setting range	0... 100%, continuously variable, manually adjustable	0... 100%, in steps of 1 %
Time setting range	–	0... 199 min, in steps of 1 min
Programs	–	25

Rapid Infrared Digestion Systems

behrotest® InKjel TC



Rapid Infrared Digestion Systems with Temperature Control

behr InKjel TC rapid infrared devices with temperature control combine the advantages of infrared digestion and block digestion in one unit: Their fast infrared digestion at controlled temperatures enables an extremely high sample throughput.

With the programmable models of the InKjel TCP line the analyst has the choice from 25 individually configurable programs for temperature and digestion time.

You can reach a radiation temperature of 830 °C within one minute and heat up the samples in 10 minutes to their boiling temperature of 410°C. High-quality quartz heaters instead of the usual steel tubular heating elements ensure particularly uniform heating of all sample slots.



InKjel 1225 TCP

Digestion systems with temperature control

Type	Product description	Art. No.
InKjel 625 TCP	Programmable rapid infrared digestion system for 6 reaction vessels with 250 ml volume. Temperature control.	B00636206
InKjel 1210 TCP	Programmable rapid infrared digestion system for 10 reaction vessels with 100 ml volume. Temperature control.	B00636207
InKjel 1225 TCP	Programmable rapid infrared digestion system for 12 reaction vessels with 250 ml volume. Temperature control.	B00636208
InKjel 450 TCP	Programmable rapid infrared digestion system for 4 reaction vessels with 500 ml volume. Temperature control.	B00636209
InKjel 475 TCP	Programmable rapid infrared digestion system for 4 reaction vessels with 750 ml volume. Temperature control.	B00636210

Accessories for behr InKjel



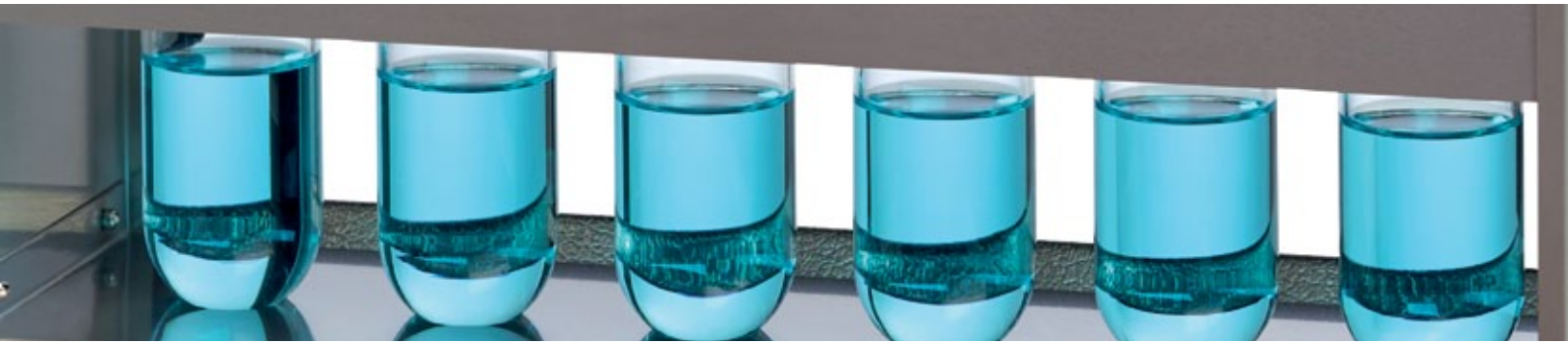
AE 6



EG 6

Accessories for behr InKjel

Type	Product description	Art. No.
AE 4	Fume removal equipment for InKjel 450 and InKjel 475 (M and P)	B00218088
AE 6	Fume removal equipment for InKjel 625 (M and P)	B00218089
AE 12/100	Fume removal equipment for InKjel 1210 (M and P)	B00218070
AE 12	Fume removal equipment for InKjel 1225 (M and P)	B00218090
EG 12/100	Insert rack for 12 digestion vessels of 100 ml in the InKjel 1210 (M and P)	B00218069
EG 6	Insert rack for 6 digestion vessels of 250 ml in the InKjel 625 (M and P)	B00218086
EG 12	Insert rack for 12 digestion vessels of 250 ml in the InKjel 1225 (M and P)	B00218087
EG 4/500	Insert rack for 4 digestion vessels of 500 ml in the InKjel 450 (M and P)	B00218085
EG 4/750	Insert rack for 4 digestion vessels of 750 ml in the InKjel 475 (M and P)	B00218080





SR 3i SR 4 KJ 500 KJ 750

Digestion vessels for InKjel

Type	Product description	Art. No.
SR 3i	Round bottom digestion vessel, 250 ml	B00217959
SR 4	Round bottom digestion vessel, 100 ml for micro Kjeldahl	B00217960
KJ 500	Round bottom digestion vessel, 500 ml	B00218195
KJ 750	Round bottom digestion vessel, 750 ml for InKjel	B00218218

behrotest® fully equipped work stations

for nitrogen determination according to Kjeldahl

Based on our block or infrared digestion systems, we have put together various full configurations for users with diverse requirements.

Basic system for Kjeldahl digestion and distillation:

Type ASB work stations

- Digestion units for 6 samples (Infrared: InKjel 625 M) or 8 samples (block digestion: K 8) simultaneous.
- Standard digestion in vessels à 250 ml.
- Extraction system with water jet pump and neutralisation phase (SIMVAC).
- Steam distiller (S1).

Type		Art. No.
ASB-IR	Infrared with energy control	B00637679
ASB-K	Block digestion with temperature control	B00637682

Full system for the determination of nitrogen incl. titration:

Type ASM work stations

- Programmable digestion units for 12 samples (Infrared: InKjel 1225 P, block digestion: K 12) simultaneous.
- Standard digestion in vessels à 250 ml.
- Scrubber (behrosog 3).
- Steam distiller (S 3).
- Titration station (STI).

Type		Art. No.
ASM-IR	Infrared with energy control	B00637680
ASM-K	Block digestion with temperature control	B00637683

Full system for the determination of nitrogen:

Type ASE work stations

- Programmable digestion units for 12 samples (Infrared: InKjel 1225 TCP with temperature control) or 20 samples (block digestion: K 20) simultaneous.
- Standard digestion in vessels à 250 ml.
- Scrubber (behrosog 3) with additional cooling system (ACS).
- Steam distiller (S 5).
- Connection option for external titrator (e.g. TB 2).

Type		Art. No.
ASE-IR	Infrared with temperature control	B00637681
ASE-K	Block digestion with temperature control	B00637684
TB 2	Titration module for connection to the S 5 steam distilling apparatus, with Kjeldahl method and evaluation. Printer upon request	B00645403



ASB-IR



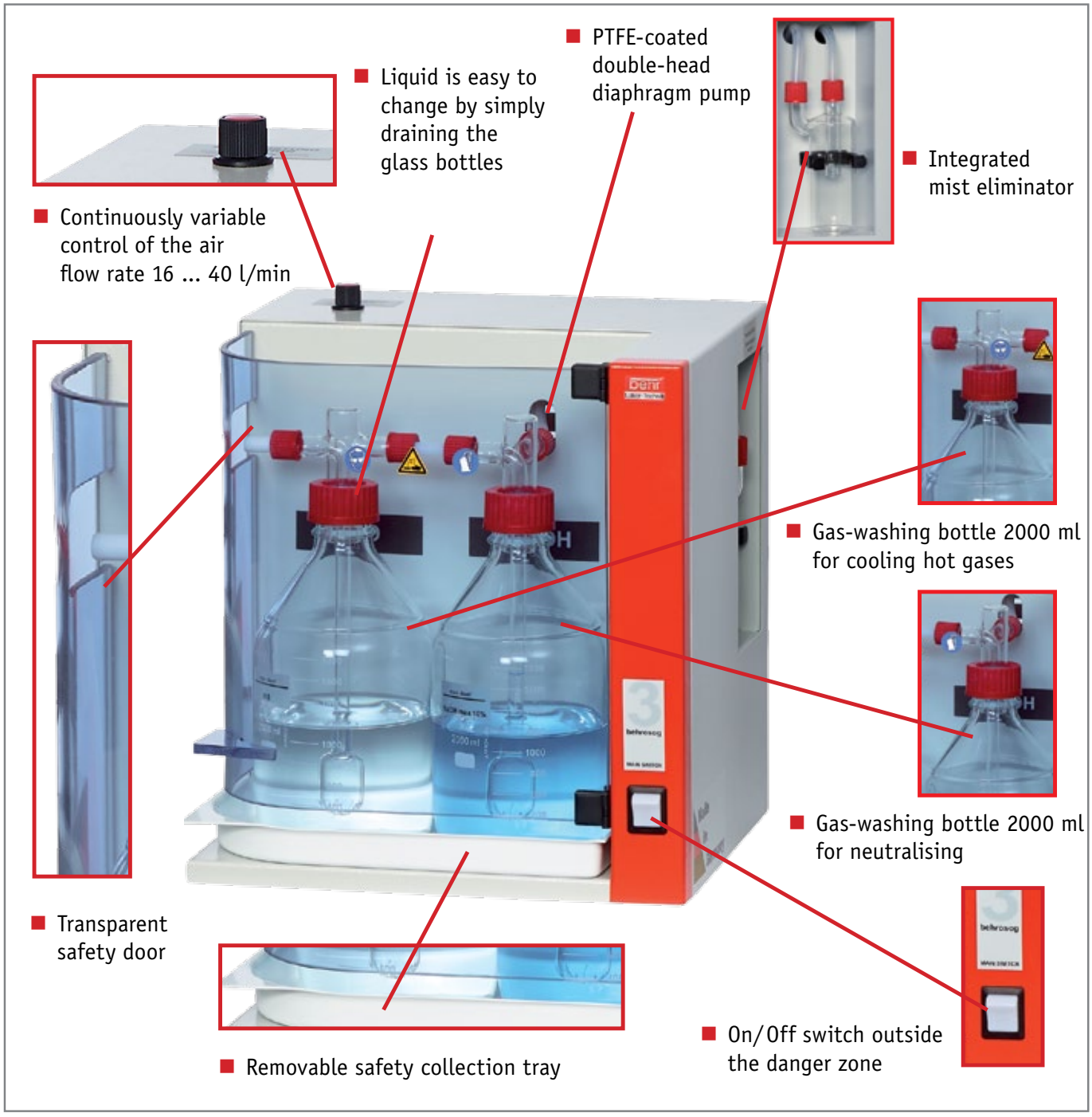
ASM-IR



ASE-IR

behrosog 3 Scrubber

Scrubber



Scrubber

The two-stage behrosog process extraction system (scrubber) – pre-separator plus safety stage – prevents any acid fumes whatsoever from reaching the environment. Compact process extraction system for extracting and neutralising aggressive acid fumes, especially from the Kjeldahl digestion method for nitrogen determination. An upstream two-stage pre-separator washes out the toxic substances. The process extraction system is equipped with a vacuum pump 40 l/min. There is no need to connect to the water supply.

- Efficient running costs
- Continuously variable intake flow
- Both cleaning stages (condensation and neutralisation stage) prevent the emission of toxic substances into the environment

Optionally, the additional cooling system for the behrosog 3 ACS can be connected to the system, consisting of stand, bottles and cooler.



behrosog 3

Scrubber

Type	Product description	Art. No.
behrosog 3	Scrubber with suction pump (40 l/min), cooling stage, neutralisation stage and drip catcher	B00217925
ACS	Additional cooling system for behrosog 3, for samples with high water content	B00217927
	Bromothymol blue Indicator	B00682430



behrosog 3
with ACS

Technical data for the behrosog 3 scrubber

Voltage	230 VAC
Frequency	50/60 Hz
Power consumption	80 W
Weight	approx. 18 kg
Dimensions in cm (W x D x H)	approx. 38 x 34 x 40
Pump delivery rate	max. 40 l/min without backpressure

SIMVAC

Suction device with water jet pump and neutralisation bottle incl. hose and frame.
Without fittings!

Type	Article description	Art. No.
SIMVAC	water jet pump based neutralisation	B00217922

Air suction	Water consumption
20 l/min	13 l/min
28 l/min	16 l/min



SIMVAC

behr steam distillers S 1 to S 5

Customised features



Exemplary safety for the steam distillation

behr steam distillers are not only efficient and reliable partners in everyday laboratory life. An important issue during the development and design of the equipment was also the safety of users.

Therefore, all steam distillers have:

- a protection switch as master switch, which automatically trips in the event of overload and short-circuit
- a mechanical overpressure safety valve to prevent excessive pressure in the steam generator
- vessel monitoring (distillation is not possible until a vessel has been inserted)
- a door contact switch, which automatically switches off the distiller if the door is open
- a resettable excess temperature thermostat (in the event of lack of water in the steam generator)
- cooling circuit monitoring by means of pressure switches
- temperature-controlled steam heating phase and pressure control via solenoid valve

Steam distillers

behr S series steam distillers are the optimum addition to the behr Kjeldahl digestion system. Depending on the requirements, the user can choose between five automatic steam distillers. These have identical basic designs, however, their ease of use and degree of automation differ. The top of the range unit, the behr S 5, is prepared for work with an external titrator.

Maintenance set for behrotest® steam distillers

The set comes with all the necessary spare parts for the working area as well as for the interior of the behrotest® steam distillers.

The maintenance set included are exactly those

- screw caps,
- seals,
- tubes and
- valves

which are prone to wear out during everyday use in the laboratory.

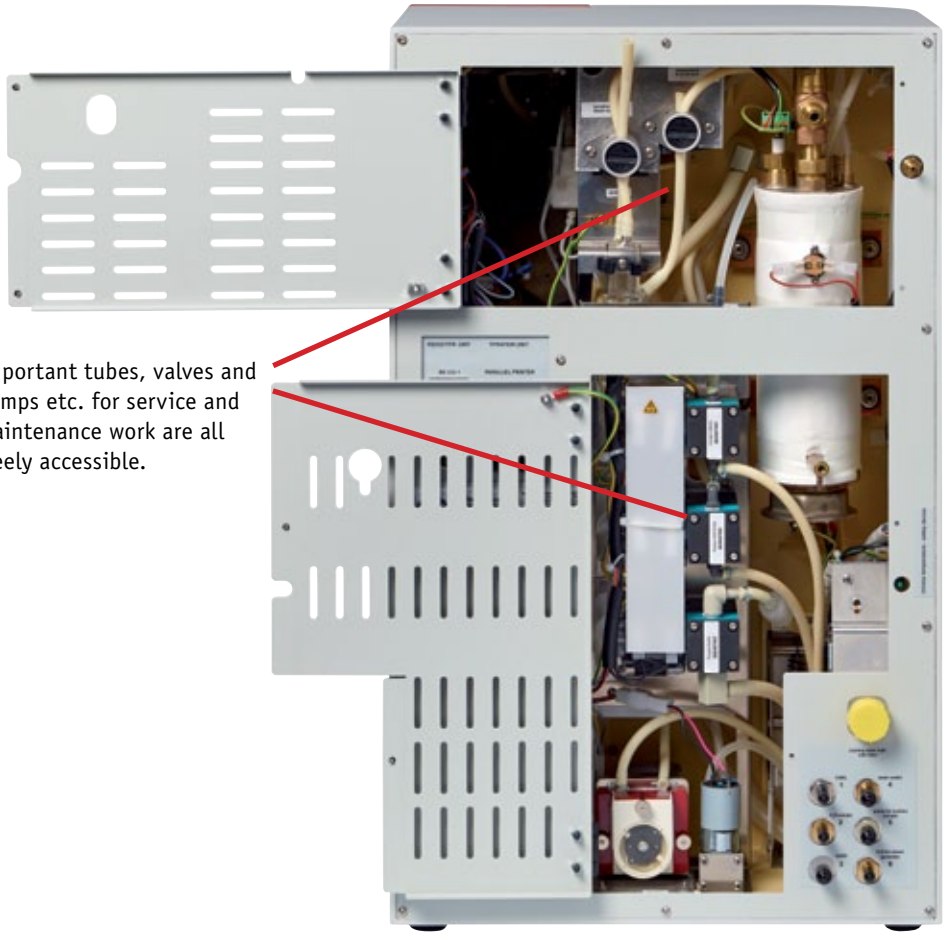
Type	Art. No.
behrotest® maintenance set	B00606938



behrotest®
maintenance set

Maintenance friendly design





Important tubes, valves and pumps etc. for service and maintenance work are all freely accessible.

User friendly design:

doors at the rear can be opened simply without tools and give access for routine maintenance work.



S 1

Steam distiller S 1 with automatic addition of NaOH

- Exemplary safety and reliability
- Robust and insensitive housing made of polyurethane
- Distillation time approx. 3 min per sample
- Detection limit 0.1 mg N
- Retrieval rate > 99.5%
- Reproducibility ± 1%
- Adjustable steam output (10% - 100%)
- Particularly easy, menu-driven operation using a single control (behr single-knob control)
- Programmable reaction time
- Programmable distillation time
- USB interface
- Level monitoring for the canister set
- Practical quick-release clamping device, which the user can also easily operate with their left hand

S 1

Type	Product description	Art. No.
S 1	Steam distiller, semi-automated	B00218025
KAS 20	Canister set for S 1 and S 2, consisting of 2 canisters à 20 l, incl. float switches	B00218041
KAS 20/10	Canister set for S 1 and S 2, consisting of 2 canisters à 10 l, incl. float switches	B00704640



S 2

Steam distiller S 2 with automatic addition of NaOH and H_2O

- Exemplary safety and reliability
- Robust and insensitive housing made of polyurethane
- Distillation time approx. 3 min per sample
- Detection limit 0.1 mg N
- Retrieval rate > 99.5%
- Reproducibility ± 1%
- Adjustable steam output (10% - 100%)
- Particularly easy, menu-driven operation using a single control (behr single-knob control)
- Programmable reaction time
- Programmable distillation time
- USB interface
- Level monitoring for the canister set
- Practical quick-release clamping device, which the user can also easily operate with their left hand

S 2

Type	Product description	Art. No.
S 2	Steam distiller, semi-automated	B00233702
KAS 20	Canister set for S 1 and S 2, consisting of 2 canisters à 20 l, incl. float switches	B00218041
KAS 20/10	Canister set for S 1 and S 2, consisting of 2 canisters à 10 l, incl. float switches	B00704640

Steam distiller S 3 with automatic addition of NaOH and H_2O with automatic extraction of the sample residues and with 10 programs

- Exemplary safety and reliability
- Robust and insensitive housing made of polyurethane
- Distillation time approx. 3 min per sample
- Detection limit 0.1 mg N
- Retrieval rate > 99.5%
- Reproducibility ± 1%
- Adjustable steam output (10% - 100%)
- Particularly easy, menu-driven operation using a single control (behr single-knob control)
- Programmable reaction time
- Programmable distillation time
- USB interface
- Level monitoring for the canister set
- Practical quick-release clamping device, which the user can also easily operate with their left hand



S 3

S 3

Type	Product description	Art. No.
S 3	Steam distiller, semi-automated	B00233703
KAS 30	Canister set for S 3, consisting of 3 canisters à 20 l, incl. float switches	B00218042
KAS 30/10	Canister set for S 3, consisting of 3 canisters à 10 l, incl. float switches	B00736342

Steam distiller S 4 with automatic addition of NaOH, H_2O and H_3BO_3 with automatic extraction of the sample residues and with 99 programs

- Exemplary safety and reliability
- Robust and insensitive housing made of polyurethane
- Distillation time approx. 3 min per sample
- Detection limit 0.1 mg N
- Retrieval rate > 99.5%
- Reproducibility ± 1%
- Adjustable steam output (10% - 100%)
- Particularly easy, menu-driven operation using a single control (behr single-knob control)
- Programmable reaction time
- Programmable distillation time
- USB interface
- Level monitoring for the canister set
- Practical quick-release clamping device, which the user can also easily operate with their left hand



S 4

S 4

Type	Product description	Art. No.
S 4	Steam distiller, fully automatic	B00218032
KAS 40	Canister set for S 4 and S 5, consisting of 4 canisters à 20 l, incl. float switches	B00218043
KAS 40/10	Canister set for S 4 and S 5, consisting of 4 canisters à 10 l, incl. float switches	B00513618



S 5

Steam distiller S 5 with automatic addition of NaOH, H_2O and H_3BO_3 with automatic extraction of the sample residues, with 99 programs and a connection option for external titrator

- Exemplary safety and reliability
- Robust and insensitive housing made of polyurethane
- Distillation time approx. 3 min per sample
- Detection limit 0.1 mg N
- Retrieval rate > 99.5%
- Reproducibility ± 1%
- Adjustable steam output (10% - 100%)
- Particularly easy, menu-driven operation using a single control (behr single-knob control)
- Programmable reaction time
- Programmable distillation time
- USB interface
- Level monitoring for the canister set
- Practical quick-release clamping device, which the user can also easily operate with their left hand

S 5

Type	Product description	Art. No.
S 5	Steam distiller, fully automatic, prepared for external titrator (e.g. TB 2)	B00218034
KAS 40	Canister set for S 4 and S 5, consisting of 4 canisters à 20 l, incl. float switches	B00218043
KAS 40/10	Canister set for S 4 and S 5, consisting of 4 canisters à 10 l, incl. float switches	B00513618
TB 2	Titration module for connection to the S 5 steam distilling apparatus, with Kjeldahl method and evaluation. Printer upon request	B00645403

Technical data for steam distillers

	S 1	S 2	S 3	S 4	S 5
Voltage	230 VAC/115 VAC				
Frequency	50/60 Hz				
Power consumption	1700 W				
Current consumption	9 A				
Cooling water consumption	approx. 5 l/min				
Distillation time	approx. 2 - 4 min per sample				
Storage container	Any size required. Recommendation: behrotest® KAS canister sets				
Interface	USB				
Display	LCD				
Programs	1	1	10	99	99
Dimensions (W x H x D in cm)	approx. 41 x 67.5 x 41				
Weight	approx. 20 kg	approx. 21 kg	approx. 23 kg	approx. 24,5 kg	approx. 29 kg
Titrator connection	no	no	no	no	yes

Features of the various units

	S 1	S 2	S 3	S 4	S 5
Automatic addition of H_2O	–	+	+	+	+
Automatic addition of NaOH	+	+	+	+	+
Automatic addition of H_3BO_3	–	–	–	+	+
Automatic extraction of the sample residues	–	–	+	+	+
Number of programs	1	1	10	99	99
Titrator connection option	–	–	–	–	+
Programmable reaction time	+				
Programmable distillation time	+				
Automatic steam generation	+				
Adjustable steam output (10% – 100%)	+				
Separate purging program	+				
Display language selectable by user	+				
Optical error indications	+				
Acoustic error indications	+				
Door safety contact switch	+				
USB interface	+				
Standby mode between distillations	+				
Level monitoring for the canister set	+				
Different glass digestion tubes can be used	+				

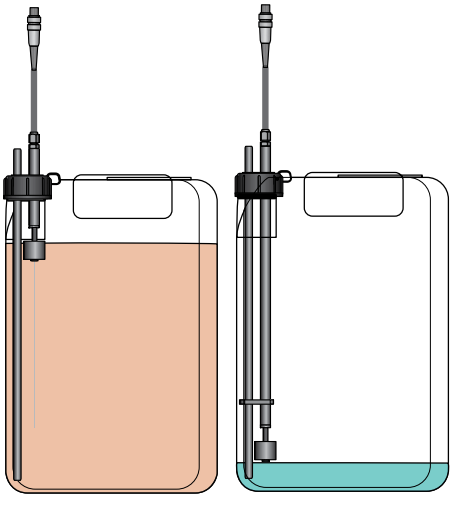
Canister sets

behr canister sets are based on hazardous goods canisters with UN approval.

The level sensors form a unit with the screw caps. If necessary, the user can therefore also directly connect commercial chemical containers without any need for dangerous refilling or transfer actions.

Canister sets

Type	Product description	Art. No.
KAS 20	Canister set for S 1 and S 2, consisting of 2 canisters à 20 l, incl. float switches	B00218041
KAS 20/10	Canister set for S 1 and S 2, consisting of 2 canisters à 10 l, incl. float switches	B00704640
KAS 30	Canister set for S 3, consisting of 3 canisters à 20 l, incl. float switches	B00218042
KAS 30/10	Canister set for S 3, consisting of 3 canisters à 10 l, incl. float switches	B00736342
KAS 40	Canister set for S 4 and S 5, consisting of 4 canisters à 20 l, incl. float switches	B00218043
KAS 40/10	Canister set for S 4 and S 5, consisting of 4 canisters à 10 l, incl. float switches	B00513618



Canister with level sensor for waste disposal

Canister with level sensor for NaOH

Adapter for the use of different digestion vessels







Our practical adapter ensures that you can use digestion vessels by manufacturers, who deviate from standard sizes in our behrotest® steam distillers.

Adapter for the use of different digestion vessels

Product description	Art.-No.
Microadapter 100 ml PTFE for Micro-Kjeldahl vessels SR4	B00232266
PP-adapter for Büchi-vessels of S 1 - S 5	B00232254



STI



TS

Manual titration station STI

The STI manual titration station consists of:

- a burette with digital display and
- a magnetic stirrer with precise fitting holder for an Erlenmeyer flask

A screen serves as a neutral background and enables the user to precisely determine the colour alteration at the end of the titration. This means that the titrations are always performed under similar optical conditions. This improves the accuracy and reproducibility of the results.

The precise positioning of the vessel in the holder at the top of the magnetic stirrer also contributes towards this. The angular sides of the screen provide additional protection against lateral glare.

Manual titration station STI

Type	Product description	Art. No.
STI	Manual titration system for the determination of nitrogen using the Kjeldahl method	B00218002
TS	Tashiro mixed indicator, 1 l	B00491148

Technical data for the manual titration station STI

Voltage	230 VAC
Frequency	50/60 Hz
Weight	approx. 3.5 kg
Dimensions in cm (W x D x H)	approx. 33 x 20 x 60



DOS 25

Type	Product description	Art. No.
DOS 25	behrotest® dispenser for metering sulfuric acid, 2.5-25 ml adjustable without bottle	B00661157
LGF 2000	behrotest® Laboratory bottle with ISO-Thread 2000 ml with graduation, crystal clear	B00225419
LGFB 2000	behrotest® Laboratory bottle with ISO-Thread 2000 ml with graduation, brown	B00225423

Simple and secure data collation

and result calculation with a PC



behrotest® HTI 3:

the integrated collection and evaluation solution for nitrogen determination according to Kjeldahl

The behrotest® HTI 3 consists of analytical scales, the behrotest® titration station STI 2 and collection and evaluation software behrotest® KjelSoft. KjelSoft receives the data from the scales and titration station via USB-interface points, collates it and automatically calculates the nitrogen and protein content of the samples. Precise sample classification and manipulation assurance according to GLP are thus guaranteed.

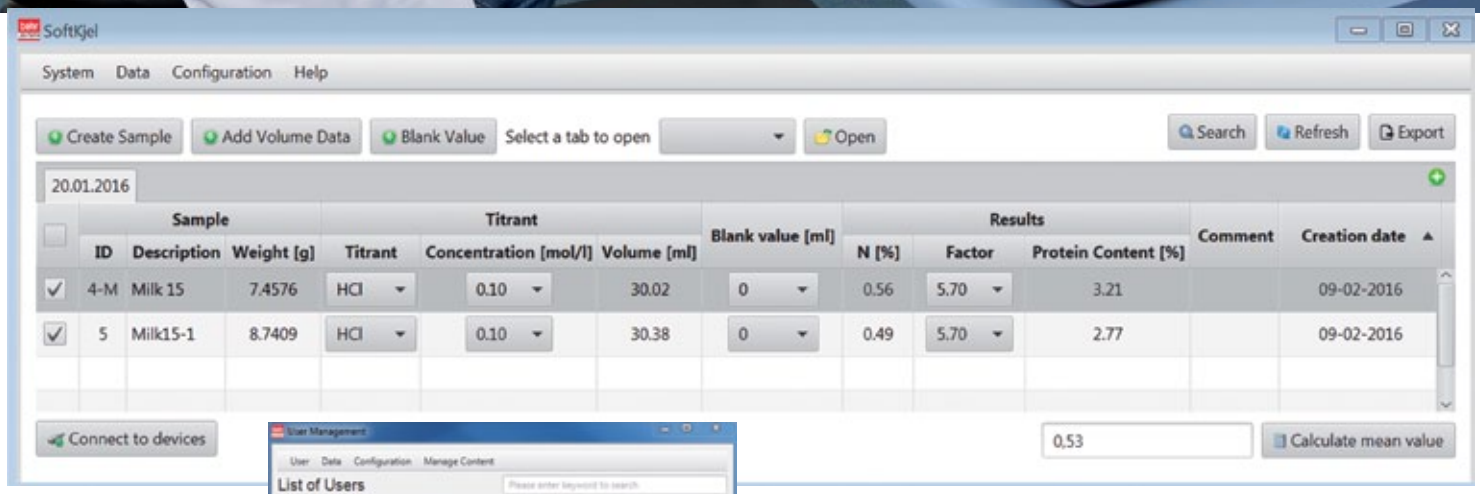
Export of all data in Excel format facilitates the transfer to a LIMS. For documentation there is an additional option for export in PDF format.

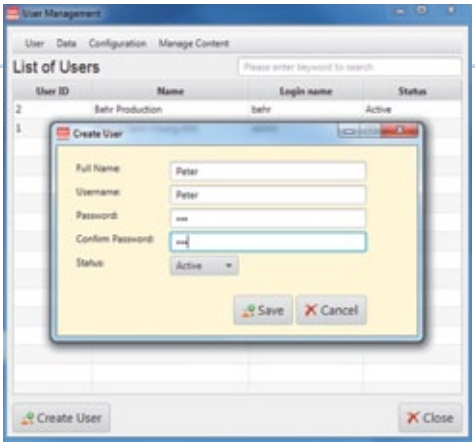
The behrotest® HTI 3 offers the user for the determination of nitrogen according to Kjeldahl:

- Simple collation and evaluation
- Manipulation assurance
- Precise sample identification
- Clear illustration of all values and results in the form of tables
- Simple operation
- User administration

Product description	Art. No.
behrotest® HTI 3	B00606548




SoftKjel
System
Data
Configuration
Help
Create Sample
Add Volume Data
Blank Value
Select a tab to open
Open
Search
Refresh
Export
20.01.2016
Sample
Titrant
Blank value [ml]
Results
Comment
Creation date
ID
Description
Weight [g]
Titrant
Concentration [mol/l]
Volume [ml]
N [%]
Factor
Protein Content [%]
4-M
Milk 15
7.4576
HCl
0.10
30.02
0
0.56
5.70
3.21
09-02-2016
5
Milk15-1
8.7409
HCl
0.10
30.38
0
0.49
5.70
2.77
09-02-2016
Connect to devices
0.53
Calculate mean value


List of Users
Create User
Full Name
Username
Password
Confirm Password
Status
Active
Save
Cancel
Create User
Close

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Certification

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B00520182 EN - V3_1_014