

The behr range for Extraction/ Distillation



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The behr range for the extraction

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The behr range for the distillation

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The behr range for the

extraction process



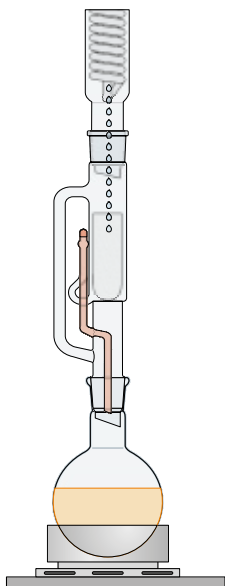
Extraction processes (more precisely: solid-liquid extraction process) are used to separate soluble components from a solid sample.

Examples:

- Determining the fat content in foods
- Determining an impurity (e.g. PCB, abandoned armaments) in soil samples
- Examining the components of natural substances.

Even brewing coffee is an extraction process. However, in the laboratory the focus is on completely dissolving the examined components from the sample under defined conditions and in a not unnecessarily diluted form. In the laboratory, solvents such as ligroin or hexane are used as extraction agents.

The objective of all extraction processes is to dissolve as much of the soluble components as possible with a specific amount of solvent. This is achieved by constantly vaporising the solvent and allowing it to drip into the sample from a reflux condenser. In contrast to a coffee machine, the same solvent is constantly sent back to the sample. The extracted component accumulates in the distillation flask.



Soxhlet

Classic extraction: Soxhlet

The standard extraction method is the Soxhlet method. behr apparatus for Soxhlet extractions fulfil all the various requirements in everyday laboratory practice.

- Practical brackets for condensers and intermediate extraction pieces for safe storage between extractions
- Extractor sizes from 30 ml to 5000 ml
- Compact apparatus with one sample position
- Series extraction devices with 4, 6 or 8 sample positions
- Extractors with specially developed siphon tubes (make: "Bröckerhoff") guarantee consistent results across all sample positions.
- Extractors with taps remove the need for additional distillation after the extraction
- Condensers with screw connections improve work safety
- The hydrolysis units (1, 4 or 6 sample positions) also enable acid digestion prior to extraction (determination of the total fat content according to Weibull and Stoldt).

Hot extraction according to Twisselmann

In the Twisselmann process, the vessel in which the extraction thimble is placed is open at the bottom; the extract immediately flows back into the distillation flask. The extraction thimble is constantly rinsed by the solvent from above and hot steam circulates from below.

Hot extraction according to Randall

The hot extraction process according to Randall consists of three steps:

- Boiling
- Rinsing
- and evaporation.

Boiling

In the first step, the extraction thimble with the sample is located in the vessel with the boiling extraction agent - similar to a tea bag in a cup of hot water. Most of the substance to be extracted should dissolve in this step and is distributed in the solvent. The top part of the apparatus simply acts as a reflux condenser; the condensate drips into the extraction thimble and helps to dissolve the substance.

Rinsing

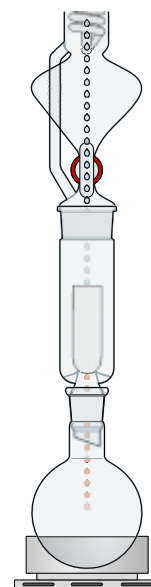
In the second step, the extraction thimble is lifted out of the pool. Extract may still adhere to the thimble; and some of the substance that has not yet dissolved may still be located in the sample. The condensate from the condenser flushes the remaining extract and progressively dissolves the previously undissolved portion. If the dissolved extract is to be subjected to further processing, the extraction is now complete. Otherwise, the solvent is removed in the third step.

Evaporation

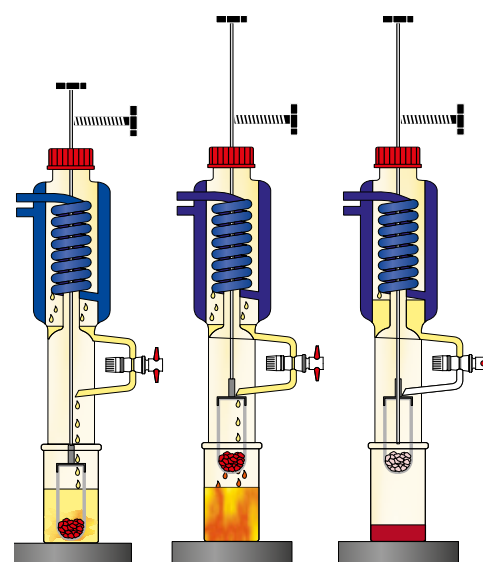
Connect the recirculating tap to the condenser for evaporation. The condensate collects in the lower part of the condenser; it can be reused for the next extraction. Thanks to the short path to the apparatus, the sample can be evaporated until it is almost dry. Benefits of the hot extraction process include

- A compact apparatus with short process paths,
- Low solvent requirement,
- Short extraction period - Typically about an hour.

Due to the short extraction period, hot extraction is also gentle on the extract. There are now also an increasing number of analysis processes that use hot extraction.



Twisselmann



Randall

The “right” extraction for your task - examples



Are you looking to analyse encased and bound fat in food?

- Hydrolysis
- Then use the standard Soxhlet extraction, e.g. fat determination according to Weibull-Stoldt or the AOAC international hydrolysis method



Are you looking to determine the raw fat content in food and processed animal feed (with homogeneous composition)?

- Direct hot extraction according to Randall
- Hydrolysis to determine the total fat content for some samples prior to extraction if required



Are you looking to examine the composition of packaging material or consumer products?
For example

- Hot extraction according to Randall to determine plasticisers in packaging
- Soxhlet extraction of organic compounds from plant tissue



Are you looking to analyse pesticide residues in grain products?

- Extraction of the residues and contaminants from food and fodder samples or other organic materials under inert conditions. The necessary detection limits are reached by higher sample weights

Introduction

from sample preparation to extraction

Only necessary on high fat content and bound fat

Hydrolysis principle

This acid digestion process dissolves both “free fats” as well as “bound fats” from the overall fat content.

The fat is frequently naturally enclosed in the cell matrix of the food or fodder or chemically bound. In these cases, a hydrolysis step before extraction completely releases the fat. Determination of the total fat content according to Weibull and Stoldt.

The user filters the hydrolysate of the separated sample by using a glass sample tube filled with sand or Celite.

The user then rinses the fatty filter residue with water in order to remove the acid.



HY 6

Sample preparation

After drying, the filter residue is finally extracted.
This is done by applying one of the 3 following methods:

Classic extraction:
Soxhlet



R 108 S

Hot extraction
according to Twisselmann



R 106 T

Hot extraction
according to Randall



ES 6

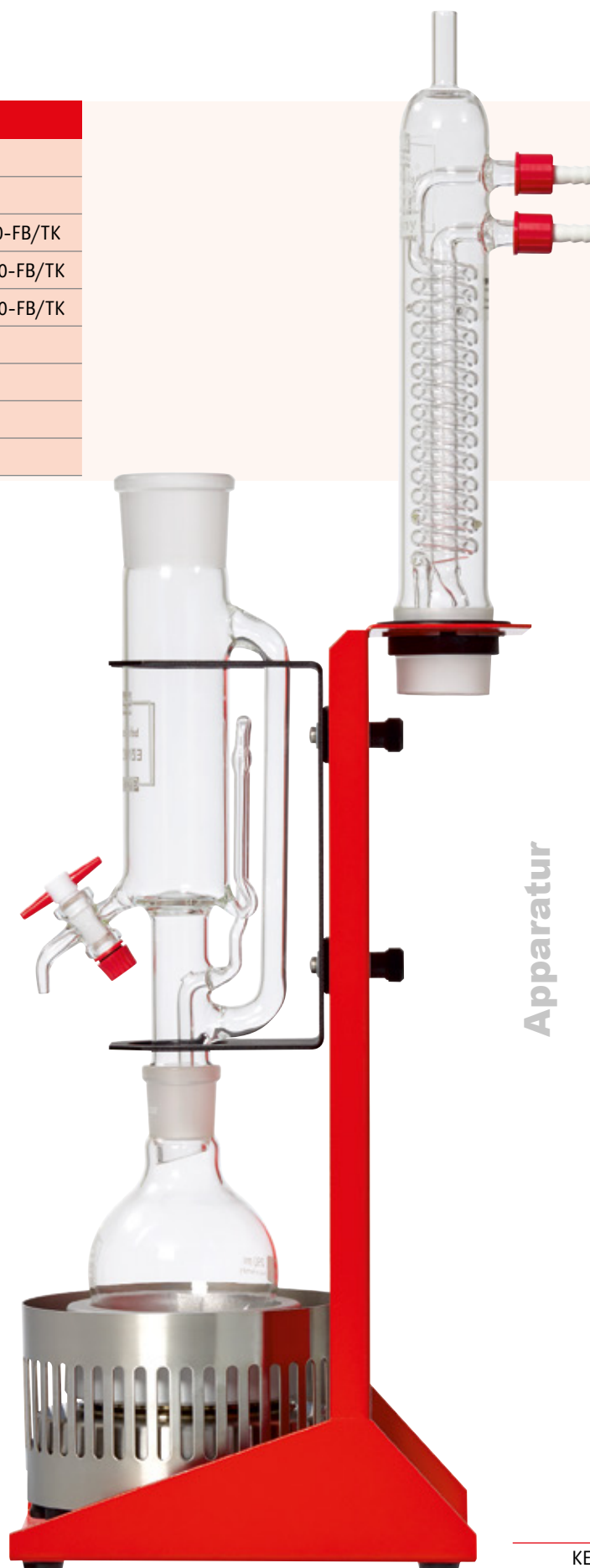
Extraction

Assembly of separate components

for Soxhlet extractions

behr apparatur
KEXM 30/ KEXM 30 F
KEX 60 / KEX 60 F
KEX 100/ KEX 100 F/ KEX 100 F-FB/ KEX 100-FB/TK
KEX 150/ KEX 150 F/ KEX 150 F-FB/ KEX 150-FB/TK
KEX 250/ KEX 250 F/ KEX 250 F-FB/ KEX 250-FB/TK
KEX 500 TK/ KEX 500 F-TK
KEX 1.000 F-TK
KEX 2.000 F-TK
KEX 5.000 TK

Extraction
30 ml
60 ml
100 ml
150 ml
250 ml
500 ml
1.000 ml
2.000 ml
5.000 ml



KEX 100 F

Round-bottomed flask	Flat-bottomed flask	Extractor	Extraction thimbles	Glass condenser	Titanium condenser
100 ml	-	30 ml	EX 30 HS	RFK 30	-
250 ml	-	60 ml	EX 60 HS	RFK 60	-
250 ml	250 ml	100 ml	EX 100 HS	RFK 100	TK 45-GL
500 ml	500 ml	150 ml	EX 150 HS	RFK 100	TK 45-GL
500 ml	500 ml	250 ml	EX 250 HS	RFK 100	TK 45-GL
1.000 ml	-	500 ml	EX 500 HS	-	TK 60-GL
2.000 ml	-	1.000 ml	EX 1000 HS	-	TK 71-GL
5.000 ml	-	2.000 ml	-	-	TK 45-GL
10.000 ml	-	5.000 ml	-	-	TK 45-GL

Round-bottomed flask

or

Flat-bottomed flask

Extractor

Extraction thimbles

Glass condenser

or

Titanium condenser



RK 250



FB 70/250



EZ 100



EX 100 HS



RFK 100



TK 45-GL

Soxhlet extraction

Classic fat determination



Complete single extraction units

The standard extraction method is the Soxhlet method. The apparatus for Soxhlet extractions fulfil all the various requirements in everyday laboratory practice.

- Practical brackets for condensers and intermediate extraction pieces for safe storage between extractions
- Extractor sizes from 30 ml to 5000 ml
- Extractors with specially developed siphon tubes (make: „Bröckerhoff“) guarantee consistent extraction cycles across all sample positions
- Extractors with taps remove the need for additional distillation after the extraction
- Condensers with threaded fittings

Complete single extraction units

Complete single extraction units with base frame, heating device, bracket, tubes and glass apparatus (reaction flask, extractor, Dimroth condenser for extraction). Infinitely variable heating control. After the extraction cycle, the extractors with tap conduct the solvent directly into the dispensing bottle.

Includes extraction thimble and boiling chips in a sample pack.

Technical data the Soxhlet extraction

	KEXM 30	KEX 60	KEX 100	KEX 150	KEX 250
Voltage/Frequency	230 VAC/ 50/60 Hz				
Power consumption	250 W	450 W			
Weight	approx. 7,5 kg				
Dimensions in cm (W x D x H)	approx. 23 x 33 x 71,5	approx. 23 x 33 x 80			

Complete single extraction units with glass condenser

Type	Product description	Art. No.
KEXM 30	for 30 ml extraction	B00826901
KEX 60	for 60 ml extraction	B00441131
KEX 100	for 100 ml extraction	B00217708
KEX 150	for 150 ml extraction	B00727097
KEX 250	for 250 ml extraction	B00217737
KEX 60 F	for 60 ml extraction with tap	B00441132
KEX 100 F	for 100 ml extraction with tap	B00217710
KEX 150 F	for 150 ml extraction with tap	B00726789
KEX 250 F	for 250 ml extraction with tap	B00217732



KEX 250 F



KEX M 30 F-FB

Complete single extraction units

Complete single extraction units with base frame, heating device, bracket, tubes and glass apparatus (reaction flask, extractor, Dimroth condenser for extraction). Infinitely variable heating control. After the extraction cycle, the extractors with tap conduct the solvent directly into the dispensing bottle.

Includes extraction thimble and boiling chips in a sample pack.

Complete single extraction units – broad surface flat-bottomed flask

Type	Product description	Art. No.
KEX M 30 F-FB	für die 30 ml Extraktion mit Hahn und 100 ml Stehkolben	B00797705
KEX 100-FB	for 100 ml extraction and 250 ml flat-bottomed flask	B00722656
KEX 150-FB	for 150 ml extraction and 500 ml flat-bottomed flask	B00722660
KEX 250-FB	for 250 ml extraction and 500 ml flat-bottomed flask	B00722661
KEX 100 F-FB	for 100 ml extraction with tap and 250 ml flat-bottomed flask	B00722639
KEX 150 F-FB	for 150 ml extraction with tap and 500 ml flat-bottomed flask	B00722641
KEX 250 F-FB	for 250 ml extraction with tap and 500 ml flat-bottomed flask	B00722642

Complete single extraction units – broad surface flat-bottomed flask and titanium condenser

Type	Product description	Art. No.
KEX 100-FB/TK	for 100 ml extraction, 250 ml flat-bottomed flask and titanium condenser	B00722662
KEX 150-FB/TK	for 150 ml extraction, 500 ml flat-bottomed flask and titanium condenser	B00722663
KEX 250-FB/TK	for 250 ml extraction, 500 ml flat-bottomed flask and titanium condenser	B00722664
KEX 100 F-FB/TK	for 100 ml extraction with tap, 250 ml flat-bottomed flask and titanium condenser	B00722644
KEX 150 F-FB/TK	for 150 ml extraction with tap, 500 ml flat-bottomed flask and titanium condenser	B00722645
KEX 250 F-FB/TK	for 250 ml extraction with tap, 500 ml flat-bottomed flask and titanium condenser	B00722646



KEX 100 F-FB

Technical data for the single extraction units

	KEXM 30	KEX 60	KEX 100	KEX 150	KEX 250
Voltage/Frequency	230 VAC/ 50/60 Hz				
Power consumption	250 W	450 W			
Weight	approx. 7,5 kg				
Dimensions in cm (W x D x H)	approx. 23 x 33 x 71,5	approx. 23 x 33 x 80			

Complete single extraction units with integrated magnetic stirrer and titanium condenser

The heating mantle is continuously variable and has an integrated magnetic stirrer to ensure a better heat distribution of solvent and to avoid boiling retardation.

- Practical holders for the titanium condenser (page 20) and extractor (middle piece) for deposition between extractions
- Extractor sizes of 500 ml up to 5000 ml
- Extractors with and without a tap

Complete single extraction units with tap – with a round-bottom flask, a magnetic stirrer and a titanium condenser

Type	Product description	Art. No.
KEX 500 F/TK	for 500 ml extraction with tap, 1000 ml round-bottomed flask and titanium condenser	B00722647
KEX 1000 F/TK	for 1000 ml extraction with tap, 2000 ml round-bottomed flask and titanium condenser	B00722651
KEX 2000 F/TK	for 2000 ml extraction with tap, 5000 ml round-bottomed flask and titanium condenser	B00722652

Complete single extraction units without tap – with a round-bottom flask, a magnetic stirrer and a titanium condenser

Type	Product description	Art. No.
KEX 500-TK	for 500 ml extraction, 1000 ml round-bottomed flask and titanium condenser	B00722666
KEX 5000-TK	for 5000 ml extraction, 10.000 ml round-bottomed flask and titanium condenser	B00696159

Type	Product description	Art. No.
PLP 2201	behrotest® laboratory peristaltic pump, 0.07–2200 ml/min, including a 2-meter Viton tube, for pumping larger volumes of solvents	B00734904

Technical data for the single extraction units with Magnetic stirrer

	KEX 500	KEX 1000	KEX 2000	KEX 5000
Voltage/Frequency	230 VAC/ 50/60 Hz			
Power consumption	350 W	450 W	800 W	1200 W
Weight approx.	8,5 kg	8,5 kg	16 kg	32 kg
Dimensions in cm (W x D x H) approx.	23 x 35 x 95	23 x 35 x 95	52 x 150 x 40	60 x 190 x 58



KEX 500 F/TK



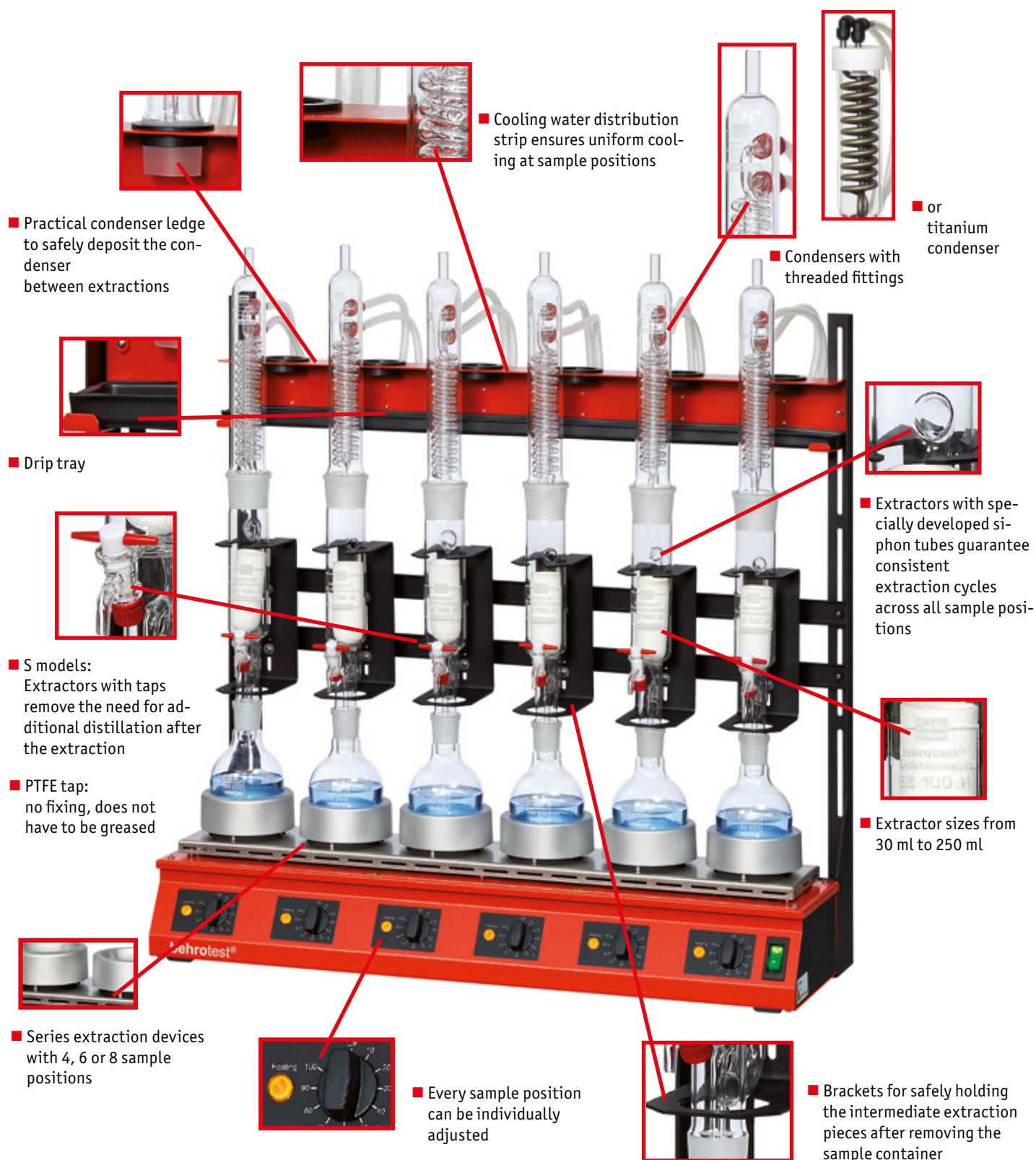
KEX 2000 F/TK



KEX 5000-TK

behrotest® series extraction devices

precisely aligned to your needs





behrotest® series extraction devices

behrotest® series extraction devices are the cost-effective and user-friendly solution for classic Soxhlet and fat extractions:

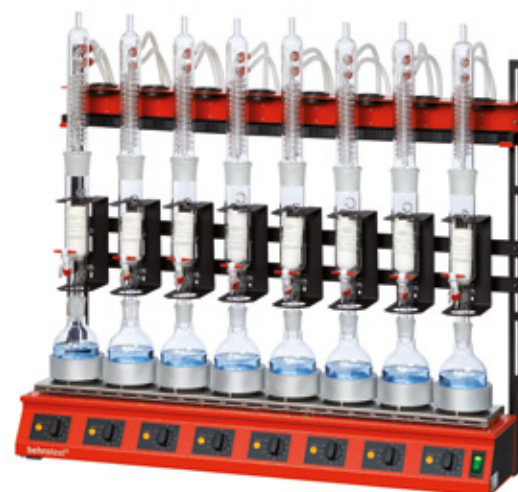
- Complete with reaction vessels, intermediate extraction pieces and condensers
- Energy individually adjustable for every sample position
- Cooling water distribution strip ensures uniform cooling at sample positions
- Extractors with specially developed siphon tubes (make: "Bröckerhoff") guarantee consistent extraction cycles across all sample positions
- Practical condenser ledge to safely deposit the condenser between extractions
- Brackets for safely holding the intermediate extraction pieces after removing the sample container
- S models: Extractors with taps remove the need for additional distillation after the extraction

Series extraction devices - round-bottom flasks

Type	Sample positions	Round-bottom flasks ml	Tap	Extractor content ml	Art. No.
RM 304	4	100	-	30	B00826902
RM 306	6	100	-	30	B00826903
RM 308	8	100	-	30	B00828266
RM 304 S	4	100	+	30	B00828267
RM 306 S	6	100	+	30	B00818310
RM 308 S	8	100	+	30	B00828268
R 604	4	250	-	60	B00218453
R 606	6	250	-	60	B00218454
R 604 S	4	250	+	60	B00218455
R 606 S	6	250	+	60	B00218456
R 104 S	4	250	+	100	B00218425
R 106 S	6	250	+	100	B00218424
R 108 S	8	250	+	100	B00441134
R 254 S	4	500	+	250	B00218435
R 256 S	6	500	+	250	B00218436



RM 306 S



R 108 S



Series extraction devices – broad surface flat-bottomed flask

Type	Sample positions	Flat-bottomed flask ml	Tap	Extractor content ml	Art. No.
RM 304 S-FB	4	100	+	30	B00826899
RM 306 S-FB	6	100	+	30	B00817022
RM 308 S-FB	8	100	+	30	B00826900
R 104 S-FB	4	250	+	100	B00705758
R 106 S-FB	6	250	+	100	B00705278
R 108 S-FB	8	250	+	100	B00713792
R 254 S-FB	4	500	+	250	B00723562
R 256 S-FB	6	500	+	250	B00723563
R 258 S-FB	8	500	+	250	B00723564

Series extraction devices – broad surface flat-bottomed flask and titanium condenser

Type	Sample positions	Flat-bottomed flask ml	Tap	Extractor content ml	Art. No.
R 104 S-FB/TK	4	250	+	100	B00726459
R 106 S-FB/TK	6	250	+	100	B00705289
R 108 S-FB/TK	8	250	+	100	B00726460
R 254 S-FB/TK	4	500	+	250	B00726461
R 256 S-FB/TK	6	500	+	250	B00726464
R 258 S-FB/TK	8	500	+	250	B00726465

Technical data for the series extraction devices

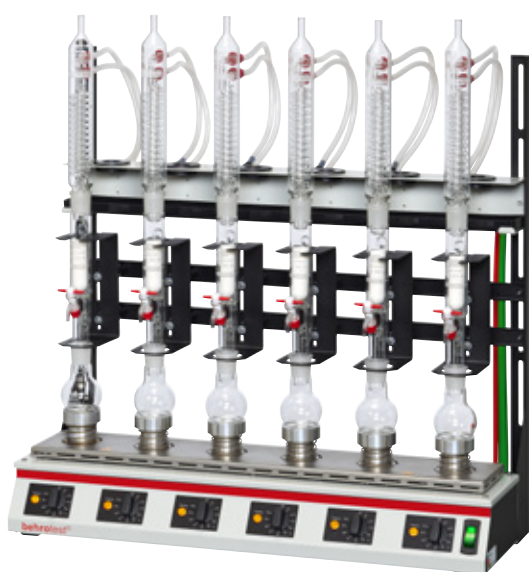
	4 Sample positions	6 Sample positions	8 Sample positions
Voltage	230 VAC		
Frequency	50/60 Hz		
Power consumption	1500 W	2160 W	2900 W
Energy consumption	7 A	10 A	13 A
Weight (without glass)	approx. 15 kg	approx. 20 kg	approx. 25 kg
Dimensions in cm (W x D x H) (without glass)	approx. 53 x 32 x 74	approx. 76 x 32 x 74	approx. 90 x 32 x 74



RM 306 S



R 108 S-FB



RM 306 S-FB



R 106 S-FB/TK

Accessories for the Soxhlet extraction



RK 250



FB 70/250



AM 100/SET



EZ 100 H

Round-bottomed flask

Type	Product description	Art. No.
RK 100	100 ml, for 30 ml extraction, (NS29/32)	B00218501
RK 250	250 ml, for 60 ml and 100 ml extraction, (NS 29/32)	B00218499
RK 500	500 ml, for 250 ml extraction, (NS 29/32)	B00218500
RK 1000	1000 ml, for 500 ml extraction, (NS 29/32)	B00218502
RK 2000	2000 ml, for 1000 ml extraction, (NS 29/32)	B00652062
RK 5000	5000 ml, for 2000 ml extraction, (NS 29/32)	B00703312
RK 10000	10000 ml, for 5000 ml extraction, (NS 29/32)	B00703313

Broad surface flat-bottomed flask

Type	Product description	Art. No.
FB 70/250	250 ml, for 100 ml extraction	B00693984
FB 70/500	500 ml, for 150 ml and 250 ml extraction	B00713799

Positioning cradles

Type	Product description	Art. No.
AM 100/SET	for 100 ml round-bottomed flask incl. distance inlay	B00217701
AM 250/SET	for 250 ml round-bottomed flask incl. distance inlay	B00694928
AM 500/SET	for 500 ml round-bottomed flask incl. distance inlay	B00713234

Extractors

Type	Product description	Art. No.
EZ 30	Soxhlet extractor, 30 ml	B00217966
EZ 30 H	Soxhlet extractor, 30 ml, with Tap	B00217977
EZ 60	Soxhlet extractor, 60 ml	B00592289
EZ 60 H	Soxhlet extractor, 60 ml, with Tap	B00592290
EZ 100	Soxhlet extractor, 100 ml	B00217967
EZ 100 H	Soxhlet extractor, 100 ml, with Tap	B00217970
EZ 150	Soxhlet extractor, 150 ml	B00705755
EZ 150 H	Soxhlet extractor, 150 ml, with Tap	B00705756
EZ 250	Soxhlet extractor, 250 ml	B00217974
EZ 250 H	Soxhlet extractor, 250 ml, with Tap	B00217973
EZ 500	Soxhlet extractor, 500 ml	B00217980
EZ 500 H	Soxhlet extractor, 500 ml, with Tap	B00217981
EZ 1000 H	Soxhlet extractor, 1000 ml, with Tap	B00373164
EZ 2000 H	Soxhlet extractor, 2000 ml, with Tap	B00688801
EZ 5000	Soxhlet extractor, 5000 ml	B00703314

Extraction thimbles

Type	Product description	Art. No.
EX 30 HS	for EZ 30 (EZ 30 H), package includes 25 units	B00600440
EX 60 HS	for EZ 60 (EZ 60 H), package includes 25 units	B00604374
EX 100 HS	for EZ 100 (EZ 100 H), package includes 25 units	B00600442
EX 150 HS	for EZ 150 (EZ 150 H), package includes 25 units	B00713795
EX 250 HS	for EZ 250 (EZ 250 H), package includes 25 units	B00217975
EX 500 HS	for EZ 500 (EZ 500 H), package includes 25 units	B00600462
EX 1000 HS	for EZ 1000 H, package includes 25 units	B00602316



EX 100 HS

Extraction thimbles glassware

Type	Product description	Art. No.
EX 2000 HSG	for EZ 2000 H, glassware	B00688800
EX 5000 HSG	for EZ 5000, glassware	B00704619



SIST 100

Boiling stones

Type	Product description	Art. No.
SIST 100	behrotest® boiling stones, capacity 100 g	B00217914

Stands

Type	Product description	Art. No.
RIP 4	for 4 extraction thimbles up to ø 38 mm	B00602349
RIP 6	for 6 extraction thimbles up to ø 38 mm	B00602350



RIP 4 and RIP 6



EXK 300

Desiccator/ Silica gel

Type	Product description	Art. No.
EXK 300	behrotest® Desiccator, borosilicate glass 3.3, with plastic knob and porcelain plate (DN 300)	B00711550
SG 500	behrotest® Silica gel with self-indicating (orange gel), 1-3 mm, 500 g	B00726297
SG 1000	behrotest® Silica gel with self-indicating (orange gel), 1-3 mm, 1000 g	B00726298



SG 1000

Extraction devices with a water bath

Extraction devices - with water bath for highly flammable solvents

The behrotest® waterbath extraction units are suitable for ideal and gentle extractions when using highly inflammable solvents.

- Maximum temperature of heat transfer medium up to 100°C
- Extraction cooler made of shatter-resistant material (titanium)
- On breakage of the vessel, the solvent flows in to the water

Extraction devices - with water bath, includes glassware, connection tubes and with titanium coolers



WABEX 110



WABEX 210



WABEX 425

Type	Product description	Extraktor Inhalt ml	Art. No.
WABEX 110	1 sample position	100	B00725955
WABEX 125	1 sample position	250	B00725962
WABEX 210	2 sample positions simultaneously	100	B00726455
WABEX 225	2 sample positions simultaneously	250	B00726458
WABEX 410	4 sample positions simultaneously	100	B00513701
WABEX 425	4 sample positions simultaneously	250	B00513702
WABEX 610	6 sample positions simultaneously	100	B00513703
WABEX 625	6 sample positions simultaneously	250	B00513704

Technical data

	WABEX 110/125	WABEX 210/225
Dimensions in cm (H x W x D)	70 x 41 x 40	70 x 41 x 40
Weight (without glass)	9 kg	10 kg
Nominal voltage	230 V	230 V
Power consumption	1500 W	1500 W

	WABEX 410/425	WABEX 610/625
Dimensions in cm (H x W x D)	81 x 68 x 32	81 x 98 x 32
Weight (without glass)	15 kg	19 kg
Nominal voltage	230 V	230 V
Power consumption	1000 W	1500 W

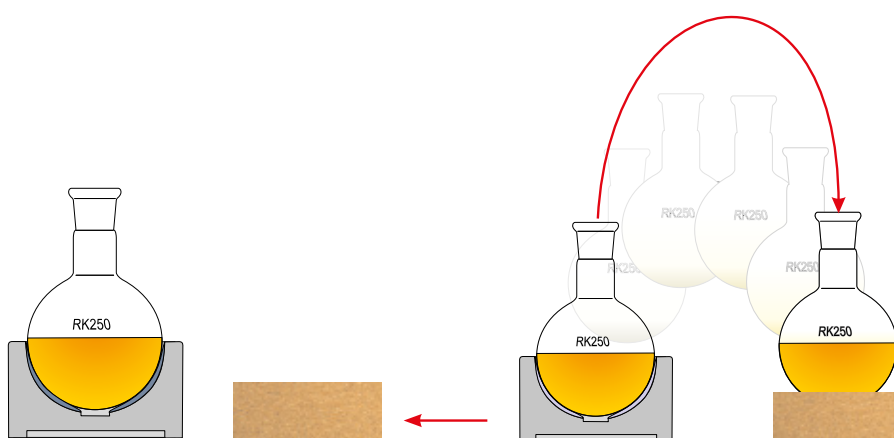
Benefits and Applications

of the new broad surface flat-bottomed flask from behr

behrotest® Flat-bottomed with broad surface: Safe and practical

behr precision aluminum adapters are required for classical use of round-bottom flasks. When using the new behrotest® flat-bottom flasks these are not required.

For conventional round-bottomed flasks the user needs additional cork rings to position the flask on the working surface.



RK 250

Why not use a flat-bottomed flask which really stands firmly?

Working with behrotest® flat-bottomed flasks, enables the user to position the glassware on any level surface.



- Stands safely, no wobbling, does not tilt
- Magnetic stirring rods rotate evenly
- 4 x times higher contact surface, enabling quicker heating while saving energie
- Version with ground glass joint for insertion in complex apparatuses



FB 70/250



RFK 100

Application of the behr RFK glass cooler

behr extraction condenser RFK

behr extraction condensers RFK ensure minimal loss of solvent also at higher room or cooling water temperatures.

- More coils
- Optimized gradient cooling coil
- Maximal cooling surface
- Cooling attachments with threaded screw

behr glass condenser

Type	Product description	Art. No.
RFK 30	for 30 ml extractors	B00217955
RFK 60	for 60 ml extractor	B00592291
RFK 100	for 100 ml und 250 ml extractors	B00218214



TK 45

Application of the behr TK titanium condenser

behr extraction condenser TK

behr titanium condensers provide a high cooling capacity at higher room or cooling water temperatures.

- 20 times higher heat dissipation than glass
- Durable material (titanium)
- Retrievable cooling coil for easy cleaning
- GL Screw Cap GL60

behr titanium condenser

Type	Product description	Art. No.
TK 45-GL	for 100 ml und 250 ml extractors, NS 45	B00820776
TK 60-GL	for 500 ml extractors, NS 60	B00828270
TK 71-GL	for 1000 ml extractors, NS 71	B00828271

Application of the behrotest® PTFE sleeve



PTFE sleeves

Type	Product description	Art. No.
PTFE 29	PTFE sleeves for 30 ml extractors	B00217905
PTFE 34	PTFE sleeves for 60 ml extractors	B00602392
PTFE 45	PTFE sleeves for 100 ml and 250 ml extractors	B00217909
PTFE 60	PTFE sleeves for 500 ml extractors	B00602391
PTFE 71	PTFE sleeves for 1000 ml extractors	B00602374

Application of the behrotest® DOS

behrotest® dispenser for metering acid and solvent

Type	Product description	Art. No.
DOS 50	behrotest® dispenser for metering solvent, 5-50 ml adjustable without bottle	B00661157
DOS 100	behrotest® dispenser for metering solvent, 10-100 ml adjustable without bottle	B00217810
LGF 2000	Laboratory with ISO-Thread, 2000 ml with pitch, crystal clear with ring stopper, without cap	B00225419



behrotest® Hot extraction

according to Twisselmann



KEX 100 T



The extraction according to Twisselmann is a continuous hot extraction. It functions in a similar manner to the Soxhlet extraction. However, the temperature in the sample in the Twisselmann extractor is extremely hot, i.e. close to the solvent's boiling point. This improves solubility and shortens the extraction time.

The higher extraction temperature results from the condensed solvent flowing through the extraction thimble from above mixing with the rising, hot solvent vapour from below. The temperature of the mixture is much higher than that of the condensed solvent.

The Twisselmann extraction reduces the extraction time by up to 50% compared to the Soxhlet extraction.



Single extraction unit for hot extraction according to Twisselmann

Complete single extraction unit with base frame, heating device, bracket, tubes and glass apparatus (reaction flask, extractor, Dimroth condenser for extraction) as well as a sample pack with extraction thimbles and boiling chips.

Type	Product description	Art. No.
KEX 30 T	Single extraction unit for 30 ml hot extraction according to Twisselmann	B00722667
KEX 100 T	Single extraction unit for 100 ml hot extraction according to Twisselmann	B00217734

behrotest® series extraction devices for hot extraction according to Twisselmann

Cost-effective and user-friendly apparatus for hot extraction according to Twisselmann

- Energy individually adjustable for every sample position
- Cooling water distribution strip ensures uniform cooling at sample positions
- Practical condenser ledge to safely deposit the condenser between hot extractions
- Brackets for safely holding the intermediate extraction pieces after removing the sample container

behrotest® series extraction devices for hot extraction according to Twisselmann - round-bottomed flasks

Type	Product description	Art. No.
R 306 T	Complete for 6 positions simultaneously with 100 ml round-bottomed flasks	B00722668
R 104 T	Complete for 4 positions simultaneously with 250 ml round-bottomed flasks	B00218447
R 106 T	Complete for 6 positions simultaneously with 250 ml round-bottomed flasks	B00218445

behrotest® series extraction devices for hot extraction according to Twisselmann - broad surface flat-bottomed flask

Type	Product description	Art. No.
R 104 T-FB	Complete for 4 positions simultaneously – broad surface flat-bottomed flask 250 ml	B00707366
R 106 T-FB	Complete for 6 positions simultaneously – broad surface flat-bottomed 250 ml	B00707715
R 108 T-FB	Complete for 8 positions simultaneously – broad surface flat-bottomed 250 ml	B00711548



R 106 T



R 108 T-FB

Accessories for Hot extraction

according to Twisselmann



RK 250

FB 70/250



AM 100/SET

Round-bottomed flask/ Broad surface flat-bottomed flask

Type	Product description	Art.-Nr.
RK 100	Round-bottomed flask, 100 ml, for 30 ml extraction	B00218501
RK 250	Round-bottomed flask, 250 ml, for 100 ml extraction	B00218499
FB 70/250	Broad surface flat-bottomed, 250 ml, for 100 ml extraction	B00693984

Positioning cradles

Type	Product description	Art. No.
AM 100/SET	for 100 ml round-bottomed flask incl. distance inlay	B00217701
AM 250/SET	for 250 ml round-bottomed flask incl. distance inlay	B00694928

Extractors

Type	Product description	Art.-Nr.
EZT 30	Extractor, 30 ml, for the Twisselmann extractors	B00521000
EZT	Extractor, 100 ml, for the Twisselmann extractors	B00217978

Extraction thimbles

Type	Product description	Art.-Nr.
EX 30 HS	Extraction thimbles for EZT 30, package includes 25 units	B00600440
EX 100 HS	Extraction thimbles for EZT, package includes 25 units	B00600442

Extraction condenser

Type	Product description	Art.-Nr.
RFKT 30	Condenser for 30 ml Twisselmann extractors	B00688032
RFKT	Condenser for 100 ml Twisselmann extractors	B00217979

PTFE sleeves

Type	Product description	Art.-Nr.
PTFE 29	PTFE sleeves for 30 ml extractors, package includes 12 units	B00217905
PTFE 45	PTFE sleeves for 100 ml extractors	B00217909



RFKT



EZT

Hot extraction according to Randall

for faster extraction



behrotest® semi-automatic equipment

for hot extraction according to Randall

The semi-automatic extraction systems ES 2+2 / ES 6 save time and costs by a fast extraction.

The hot extraction system following Randall is several times faster than the conventional Soxhlet extraction.



ES 6



TGE 6



TGE 4



FF 30

Good to know:

For particularly high fat contents and bound fats we recommend the compatible HY6 hydrolysis unit for total fat determination

Multi-position extraction units:

- Step-by-step user-friendly instructions on the display
- One heating program for all sample positions, but separate heating for each sample position
- Cooling water manifold ensures uniform cooling at all sample locations
- Low solvent losses due to the specially designed behrotest® coolers
- 31 freely configurable programs for your individual extraction applications
- behr one-button operation for particularly fast and easy programming
- Audible and visual error messages
- Integrated overtemperature protection
- Resource-saving cooling water saving program

Semi-automatic hot extraction apparatus according to Randall

Type	Product description	Art. No.
ES 2+2	for 4 sample places with 100 ml extraction tubes	B00704623
ES 6	for 6 sample places with 100 ml extraction tubes	B00704624

Technical data

	ES 2+2	ES 6
Number of sample positions	4	6
Dimensions (W x D x H)	56 x 52 x 67 cm	72 x 52 x 67 cm
Weight	42 kg	50 kg
Nominal voltage	230 V~, 50/60 Hz	
Nominal power	1000 W	1500 W
Display	LCD	
Solution volume	60 ml; max 75 ml	
Solvent recovery	Up to 90 %	
Reproducibility	± 1%	
Temperature range	From 20 to 260 °C	
Time setting range	1 – 999 min, digitally adjustable	
Programs	31	
Water consumption	2 l/min	



Accessories

Type	Product description	VPE	Art. No.
FF 30	behrotest® beaker for extraction		B00687525
MCR	Clamping ring, magnetic		B00707723
EX 75 HS	Extraction sleeve suitable for FF30	Pack of 25	B00600441
SIST 100	behrotest® boiling stones	100 g	B00217914
TGE 4	Heat shield/support frame for 4 extraction beakers		B00734885
TGE 6	Heat shield / support frame for 6 extraction beakers		B00734886
DEH	behrotest® PTFE lid, white		B00707719
VSL	Viton sealing ring		B00734892
BSL	Butyl sealing ring		B00734878
PSL	PTFE sealing ring		B00734879
HST 6	Stand for 6 extraction sleeves		B00734880
ESG 6	Desiccator stand for 6 extraction cups		B00734881
WAN	PTFE weighing rack		B00734884
EXK 300	behrotest® Desiccator, borosilicate glass 3.3, with plastic knob and porcelain plate (DN 300)		B00711550
SG 500	behrotest® Silica gel with self-indicating (orange gel), 1-3 mm	500 g	B00726297
SG 1000	behrotest® Silica gel with self-indicating (orange gel), 1-3 mm	1000 g	B00726298
HHR	Hot Hand		B00738628



EXK 300



ESG 6



SG 1000



HST 6

WAN plus MCR
und EX 75 HS

EX 100 HS

Hydrolysis

Sample preparation for the extraction

The Weibull-Stoldt method

The quantitative determination of the fat content of food is performed by extraction with a solvent. The "free fat" is determined by direct extraction. The "total fat content" includes both the "free fat" and the "bound fats" that are dissolved by acid digestion (hydrolysis).



HY 6

State-of-the-art equipment

behrotest® hydrolysis unit for acid digestion

HY 6 is an apparatus equipped with manual energy control for 6 sample positions with highly uniform and rapid heating provided by the built-in high-quality quartz infrared emitters. Full heating power is reached within 1 minute, which eliminates the need for preheating.

With the behrotest® **quick-engagement system**, the individual sample vessels can be quickly and easily inserted into the IR heating system and brought out. Each sample vessel can then be filtered off and flushed in parallel or individually.

The HY 6 hydrolysis-filtration unit as basic unit consists of:

- Quick digestion system with manual energy control and direct heating of the samples
- Round bottom digestion vessel 250 ml
- Glass crucible, porosity 1
- Suction tubes
- Suction bridge with PTFE plug and one suction connection with threaded fitting
- Celite 545, 1 kg
- Quartz sand, 2 kg

Optional: For continuous vacuum during acid hydrolysis and subsequent filtration please use our optional behrotest® suction units.

behrotest® hydrolysis unit HY6

Type	Product description	Art. No.
HY 6	for 6 sample places	B00734467

Technical data HY 6

Number of sample positions	6
Dimensions (W x D x H)	54 x 37 x 63 cm
Weight	20 kg
Nominal voltage	230 V~, 50/60 Hz
Nominal power	1500 W
Energy adjustment range	0 - 100 %

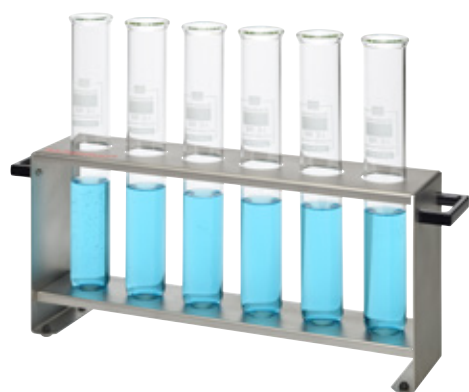


Accessories

Type	Product description	VPE	Art. No.
AST 6	Stand for round-bottom digestion vessels SR3i		B00734893
TST 6	Stand for glass crucibles		B00734894
HYR	Tube holder for the glass crucibles		B00707740
GT	Glass crucible		B00734888
SR3i	Round bottom digestion vessel		B00217959
ASR	Suction tubes		B00734889
ASB 6	Suction bridge with PTFE plug and one suction connection with threaded fitting		B00734890
CEL	Celite 545	1 kg	B00734882
QSH	Quartz sand	1 kg	B00734883



SR 3i



AST 6



TST 6



GT



HYR



CEL



QSH



EXR 4

Classical apparatus

behrotest® hydrolysis unit for acid digestion

Hydrolysis-digestion apparatus with 4 or 6 sample positions.

Complete with:

- 600 ml beaker
- Water-cooled condenser with cool water distribution
- Condenser stand with drip tray
- Heating positions individually infinitely adjustable
- Main power switch with pilot light

Fully assembled complete device with all the necessary accessories.

behrotest® hydrolysis unit for acid digestion

Type	Product description	Art. No.
EXR 4	Hydrolysis unit, 4 sample positions	B00218446
EXR 6	Hydrolysis unit, 6 sample positions	B00218448



EXR 6

Technical data

	EXR 4	EXR 6
Number of sample positions	4	6
Dimensions (W x D x H)	53 x 32 x 74 cm	76 x 32 x 74 cm
Weight (without glass)	15,1 kg	19,8 kg
Nominal voltage Heating bench	230/ 115 V~	230/ 115 V~
Frequency	50/60 Hz	50/60 Hz
Rated power Heating bench	1440 W	1960 W
Power consumption at 230 V	8 A	10 A
Power consumption at 115 V	16 A	20 A

behrotest® filtration unit

behrotest® filtration units are designed for filtering aqueous solutions, diluted acids, and alkalis—including those at temperatures up to 50°C—with the filtrate being extracted and discarded. Not suitable for organic solvents.

Technical data

	FU 4/FU 6	FU 4-2/FU 6-2
Filter attachments	400 ml with a screw thread	125 ml
Funnel	Threaded PP funnel	Borosilicate glass 3.3
Screen plate	Slotted screen plate with 2 gaskets	Screen plate
Frame/Casing	Powder-coated steel	Powder-coated steel



FU 6

Filtration unit for hydrolysis

Type	Product description	Art. No.
FU 4	Filtration unit for hydrolysis with 4 positions	B00441135
FU 6	Filtration unit for hydrolysis with 6 positions	B00441144
FU 4-2	Filtration unit for hydrolysis with 4 positions with borosilicate glass 3.3	B00659410
FU 6-2	Filtration unit for hydrolysis with 6 positions with borosilicate glass 3.3	B00659411



FU 6-2

behrotest® Suction Units

SIMVAC

Suction unit with water jet pump and neutralization tank, including hose and stand. Fittings not included!

Technical data SIMVAC

Airflow (air)	Water consumption
20 l/min	13 l/min
28 l/min	16 l/min

AF 2000

The extraction unit is designed to capture and neutralize the gases produced, as well as to generate the necessary negative pressure.

Technical data AF 2000

Flow rate	7 l/min
Stepless speed control	
Maximum final vacuum	130 mbar

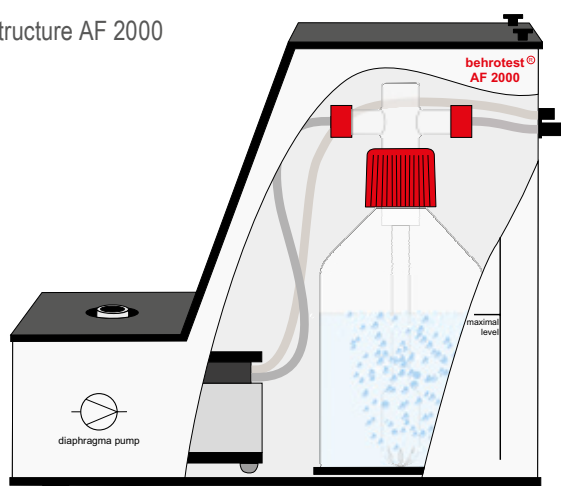


SIMVAC

behrotest® suction units

Type	Product description	Art. No.
SIMVAC	behrotest® suction unit with water jet pump, collection bottle 2 l and tubes	B00217922
AF 2000	behrotest® suction unit with diaphragm vacuum pump, 2 L collection bottle and hoses	B00800250

Structure AF 2000



AF 2000

Solutions for Delayed Boiling

the behrotest[®] Boiling stones



SIST 100

Solutions for Delayed Boiling

Why does a liquid get bumping?

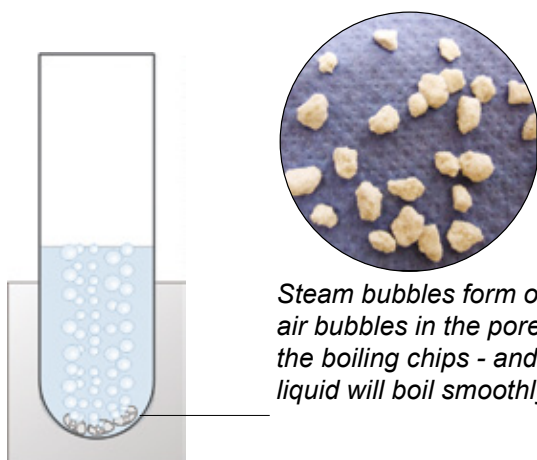
If you heat a liquid to its boiling temperature, you'd expect it to get boiling. But in a pure liquid that is not moving, there is nothing where the steam bubbles can start forming. You might say the bubbles don't know where to form.

Water can sometimes be heated as high as 10° beyond its boiling point before it starts boiling. But organic solvents can be overheated too. Then the least disturbance will cause a violent start of boiling.

And how can I avoid bumping?

An overheated liquid is like a thermodynamic house-of-cards. The longer it is left to itself, the more heat will pile up until it will unload, and the more violently boiling will start then. So we need to provide starting points for the steam bubbles. This can best be achieved with boiling chips.

Boiling chips are made of a porous mineral (pumice). The pores contain small air bubbles. When the liquid is heated, these air bubbles provide a start where the steam bubbles can form. To make sure the boiling chips cannot discharge any substances into your sample, they have been pre-treated during the manufacturing process by annealing and boiling with acid.



Steam bubbles form on the air bubbles in the pores of the boiling chips - and the liquid will boil smoothly



The behr range for Distillation



Determination of the alcohol and volatile acid content



D 1



D 2



behrotest®
maintenance set

Steam distillation units D 1 and D 2

- Alcohol
- Organic acids SOS
- Beer fermentation process
- Ammonium chloride in liquorice products

Apparatus for determining the alcohol content and the volatile acids in wine and other alcoholic drinks. Complete glassware set with volumetric flask and pycnometer. behr D 1 and D 2 are particularly well suited for high sample throughputs due to their speed.

Type	Product description	Art. No.
D 1	behrotest® steam distilling apparatus for determining the alcohol content, distillation in a pycnometer	B00218039
D 2	behrotest® steam distilling apparatus for determining organic acids, distillation in a 500 ml Erlenmeyer flask	B00218040
D 1-AM	behrotest® steam distilling apparatus for determining alcohol using Areometer, distillation in reaction vessel 750 ml	B00712946

Accessories

Type	Product description	Art. No.
D 1-AM-Set	behrotest® accessories set for D1-AM consisting of: Areometer and areometer cylinder 500 ml	B00723220
D 1 & D 2-Set	behrotest® maintenance set	B00606938

Technical data for behr D 1, D 2 and D 1-AM

Dimensions in cm (W x H x D)	approx. 41 x 67,5 x 41	
Weight	approx. 32 kg	
Nominal voltage	230 VAC	50 Hz/ 60 Hz
Power consumption	1700 W	9 A / 18 A
Cooling water consumption	approx. 5 l/min	
Storage container	any size, recommendation: behrotest® canister set	
Display	LCD	
Programs	1	

behrotest® distillation apparatus

For phenol and ammonium nitrogen

WE1/H Unit with glass sets for a wide range of applications

Standard-compliant distillation

Using GSPH glassware sets for phenol distillation in accordance with DIN 38409-16 and GSAS glassware sets for ammonium nitrogen distillation in accordance with DIN 38406-5. DIN 38409-16 and ISO 6439 require the distillation of a large volume of liquid in a short time for both the determination of the phenol index and for ammonium nitrogen according to DIN 38406-5.

Immediate availability of steam

The steam is available almost immediately—that is, within 30 seconds at most. The maximum duration of steam delivery—and thus the duration of distillation—is not limited by an internal reservoir in the device, but depends solely on the size of the external container used by the user.

Automatic ultrapure water supply

The ultrapure water used for steam generation is supplied automatically, which simplifies operation and increases efficiency.

Efficient sample preparation

While steam is being introduced, the samples are heated to prevent condensation in the reaction vessels and to increase the rate of distillation.

Shorter distillation time

The behrotest® steam distiller significantly reduces distillation times. For a typical distillation of about 70 ml, the device takes only about 8 minutes, whereas a standard distillation setup takes around 30 minutes.

Excellent reproducibility

Tests using standardized reference solutions show that the behrotest® apparatus provides significantly higher reproducibility of measurement results than conventional distillation methods.

High accuracy

The precise control and advanced technology of the behrotest® steam distiller ensure high accuracy with every distillation.

Type	Art. No.
WE 1/H behrotest® Single-unit steam generator with adjustable heating and automatic distilled water supply	B00218234

Glass set

Type	Art. No.
GSPH for phenol distillation in accordance with DIN 38409-16	B00218235
GSAS for ammonium nitrogen. Distillation in accordance with DIN 38406-5	B00218236

Technical data behrotest® WE 1/H

Dimensions in cm (B x H x T)	ca. 29 x 67 x 38	
Weight	ca. 12,8 kg	
Rated voltage	230 VAC/ 115 VAC	50 Hz/ 60 Hz
Performance-/ Power consumption	400 W	3 A/ 6 A
Cooling water consumption	ca. 5 l/min	
Distillation time	ca. 10 min je Probe	
Storage container	Any size; recommended: behrotest® canister set	



WE 1/H with GSPH



WE 1/H with GSAS



Determination of the phenol index and ammonium nitrogen

behrtest® Phen 5 and behrtest® Ammon 5 distillation apparatus

DIN 38409-16 and ISO 6439 require the distillation of a large volume of liquid in a short period of time, both for the determination of the phenol index and for ammonium nitrogen in accordance with DIN 38406-5. To comply with these requirements, a high-performance distillation apparatus is necessary, especially when processing multiple samples simultaneously.

The behrotest® WE 5 five-channel steam generator enables the simultaneous, rapid, and gentle overdistillation of up to five samples. The introduction of steam into the samples guarantees particularly uniform distillation and ensures high reproducibility of the recovery rate across the entire range.

Workstation for the separation of water-soluble phenols

Water-soluble phenols are separated from other water constituents by distillation. Water samples of up to 500 mL can be used. The phenols in the distillate are determined photometrically. This method detects all phenolic compounds that form a colored reaction with 4-aminoantipyrine. The limit of quantification for this method is 10 µg/L based on phenol.



Phen 5

Type	Product description	Art. No.
Phen 5	behrtest® distillation apparatus for determining the phenol index in accordance with DIN 38409-16, fully equipped for 5 samples simultaneously	B00491229
Ammon 5	behrtest® distillation apparatus for the determination of ammonium nitrogen in accordance with DIN 38406-5, fully equipped for 5 samples simultaneously	B00728286

Technical data

Tension	230 VAC
Frequency	50/60 Hz
Power consumption heating block	8 A
Power consumption steam distillation	10 A
Power consumption heating block	1500 W
Power consumption steam distillation	2000 W
Weight (with glass)	ca. 56 kg
Dimensions in cm (W x D x H)	ca. 50 x 50 x 100



Ammon 5

Determination of volatile fatty acids according to Markham

The behrotest® WE5/VFA distillation apparatus is used to determine the volatile fatty acids in natural rubber latex concentrates in accordance with ISO 506.

Sample preparation and distillation.

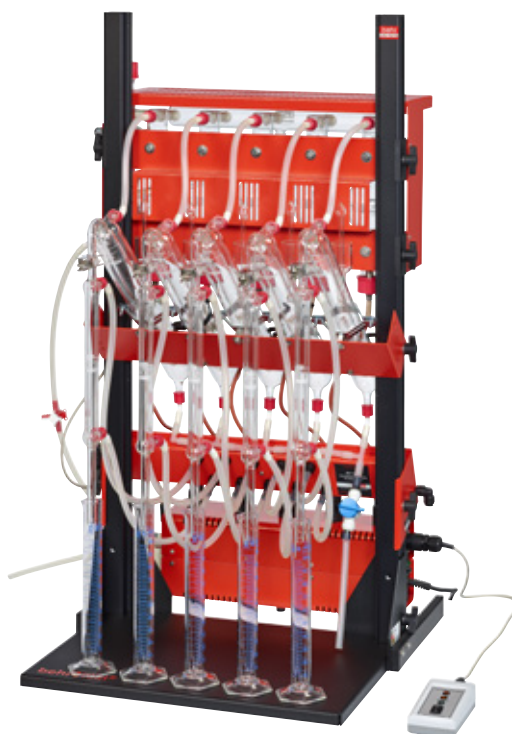
The test sample is coagulated with ammonium sulfate, the resulting serum is separated, and the serum is acidified with sulfuric acid. The acidified serum is then steam-distilled using the WE5/VFA. The volatile acids present in the sample are determined by titrating the distillate with a volumetric standard barium hydroxide solution.

Immediate availability of steam

The steam is available almost immediately—that is, within 30 seconds at most. The maximum duration of steam supply, and thus the distillation time, is not limited by an internal reservoir but depends on the size of the external container used by the user.

Efficient distillation

The behrotest® five-channel serial water vapor generator enables the simultaneous, rapid, and gentle overdistillation of up to five samples. The introduction of water vapor into the samples ensures particularly uniform distillation and guarantees high reproducibility of the recovery rate across the entire range.



WE5/VFA

Type	Product description	Art. No.
WE5/VFA	behrotest® Markham-type distillation apparatus for the determination of volatile fatty acids in accordance with ISO 506, complete set for 5 samples simultaneously	B00723332

Technical data

Tension	230 VAC
Frequency	50/60 Hz
Power consumption	2000 W
Weight	ca. 40 kg
Dimensions in cm (W x D x H)	ca. 55 x 55 x 100

Determination of the essential oil content



KOL



CLE

Systems for determining the essential oil content

Complete compact system for determining the essential oil content in

- Pharmaceuticals,
- Spices
- Seasoning and
- Herbs

according to ISO 6571.

With base frame, heating devices, brackets, coolant hoses and glass apparatus.

Systems for determining the essential oil content

Type	Product description	Art. No.
KOL	1 sample position with 500 ml flask	B00217736
KOL 2	1 sample position with an integrated magnetic stirrer in a 1000 ml flask	B00602393
KOL 6	6 sample positions with an integrated magnetic stirrer, 6 sample positions with 1000 ml flasks	B00705271

Complete compact system for determining the essential oil content in citrus fruits and their derivatives according to Clevenger (ISO 1955).

Type	Product description	Art. No.
CLE-RK1	Compact system for determining the essential oils in citrus fruits and their derivatives, round bottom flask 1000 ml	B00696819
CLE	Compact system for determining the essential oils in citrus fruits and their derivatives, Erlenmeyer flask 3000 ml	B00217741

Water content



KWA 500

System for determining the water content by azeotropic distillation

Complete compact system for determining the water content by azeotropic distillation. Suitable for inhomogeneous, bulky food such as dried fruit, sauerkraut, etc. With base frame, heating device, bracket and glass apparatus.

Type	Product description	Art. No.
KWA 500	1 sample position, behrotest® compact apparatus	B00217690
KWA 500/4	4 sample positions, behrotest® series water distiller	B00632492
KWA 500/6	6 sample positions, behrotest® series water distiller	B00632493

Reflux distillation

Single reflux distillation apparatus

Complete apparatus for reflux distillation, consisting of

- Complete frame with condenser support panel and condenser bracket
- Positioning cradle
- Reaction flask
- behr high-performance glass cooler
- Tubing

Single reflux distillation apparatus

Type	Product description	Art. No.
KRD 50	1 heating position for 50 ml round-bottomed flasks, complete	B00602400
KRD 100	1 heating position for 100 ml round-bottomed flasks, complete	B00602401
KRD 250	1 heating position for 250 ml round-bottomed flasks, complete	B00602402
KRD 500	1 heating position for 500 ml round-bottomed flasks, complete	B00602403
KRD 1000	1 heating position for 1,000 ml round-bottomed flasks, complete with magnetic stirrer	B00602404



KRD 100

Technical data for the single reflux distillation apparatus

	KRD 50/100/250/500	KRD 1000
Rated voltage	230 / 115 V~, 50 / 60 Hz	200 - 240 V~, 50 / 60 Hz
Power consumption	450 W	350 W
Power consumption	bei 230 V: 3 A; bei 115 V: 6 A	
Weight	ca. 7,5 kg	ca. 8 kg
Dimensions in cm (W x H x D)	ca. 23 x 81 x 33	ca. 23 x 81 x 33



KRD 1000

Reflux distillation



RH 254

Reflux distillation apparatus

Complete apparatus for reflux distillation, consisting of

- Hot bar, 4 heating positions
- Positioning cradles
- Support rods
- Cooling water distribution with condenser support panel and condenser brackets
- Reaction flask
- behr high-performance glass coolers

Series reflux distillation apparatus

Type	Product description	Art. No.
RH 104	4 heating positions for 100 ml round-bottomed flasks, complete	B00602394
RH 106	6 heating positions for 100 ml round-bottomed flasks, complete	B00602397
RH 254	4 heating positions for 250 ml round-bottomed flasks, complete	B00602395
RH 256	6 heating positions for 250 ml round-bottomed flasks, complete	B00602398
RH 504	4 heating positions for 500 ml round-bottomed flasks, complete	B00602396
RH 506	6 heating positions for 500 ml round-bottomed flasks, complete	B00602399



RH 256 M

Series reflux distillation apparatus with magnetic stirrer

Type	Product description	Art. No.
RH 256 M	6 heating positions for 250 ml flat bottom reaction vessel, complete, block with integrated magnetic stirrer	B00696821
RH 506 M	6 heating positions for 500 ml flat bottom reaction vessel, complete, block with integrated magnetic stirrer	B00726590
RH 1006 M	6 heating positions for 1000 ml flat bottom reaction vessel, complete, block with integrated magnetic stirrer	B00726591

Technical data for reflux distillation apparatus

	4 sample positions	6 sample positions	6 sample positions with magnetic stirrer
Voltage	230 VAC		
Frequency	50/60 Hz		
Power consumption	1500 W	2250 W	2050 W
Power consumption	7 A	10 A	9 A
Weight (without glass)	approx. 15 kg	approx. 20 kg	approx. 48 kg
Dimensions in cm (W x D x H) (without glass)	approx. 53 x 32 x 74	approx. 76 x 32 x 74	approx. 75 x 40 x 100

Saponification value

The method for the determination of saponification value in animal and vegetable fats and oils is effected in accordance with DIN EN ISO 3657. With an excess of ethanolic potassium hydroxide solution the tested sample is saponified by boiling under reflux and later titrated with standard hydrochloric acid solution until reaching the end point.

behrotest® distillation unit for the determination of saponification value

The complete programmable distillation unit consists of:

- 6 or 12 round digestion vessels SR 2, 250 ml, with standard ground joint NS 29 and container ring made of PVDF
- compact rack with cooler frame and holders
- behr high performance glass coolers
- cooling water distribution strip ensures uniform cooling at sample positions
- 25 freely configurable programs for block temperature and distillation time
- high-quality quartz infrared heaters (1500 W)
- integrated magnetic stirrer with the separate control unit
- Tubing



VFZ 12

Reflux distillation apparatus for the determination of saponification value

Type	Product description	Art. No.
VFZ 6	behrotest® reflux distillation apparatus for the determination of saponification value, 6 positions simultaneously	B00696815
VFZ 12	behrotest® reflux distillation apparatus for the determination of saponification value, 12 positions simultaneously	B00696816

Technical data

Sample positions	6 oder 12
Frequency	50/60Hz
Power consumption	1500 W
Power consumption	8 A

Optionally available in the behr program is the manual titration station HTI 9.

The HTI 9 W consists of a burette with digital display and a magnetic stirrer with fitting holder for SR2 reaction vessels.

Type	Product description	Art. No.
HTI 9 W	behrotest® manual titration station with digital burette, magnetic stirrer	B00729516



HTI 9 W

Determination of Vitamin A and E



VAE 6 together with KW 6

behrotest® saponification apparatus for determination of vitamin A and E

The method for the determination of vitamin A and vitamin E in foodstuffs by high-performance liquid chromatography (HPLC) is effected in accordance with DIN EN 12823-1 and DIN EN 12822. The sample preparation takes place in the behrotest® saponification apparatus. Since the samples are sensitive to atmospheric oxygen, the samples are saponified under reflux preferably under a nitrogen atmosphere.

The complete apparatus consists of:

- Reaction vessels
- behr high performance glass coolers
- Cooling water distribution strip ensures uniform cooling at sample positions
- Precision heating block with integrated magnetic stirrers
- Separate control unit with very precise temperature control
- Flowmeter for nitrogen

Saponification apparatus

Type	Product description	Art. No.
VAE 6	behrotest® saponification apparatus for the determination of vitamin A and E in the heating block with integrated magnetic stirrers, 6 positions with 250 ml vessels	B00707766

Optional: behrotest® cooling trough

Type	Product description	Art. No.
KW 6	behrotest® cooling trough for smple rack EG 6/RF	B00726596

Determination of sulfite



KSO 2N

The determination of sulfite (sulfurous acid) in food is carried out in accordance with DIN EN 1185 and DIN EN 1988-1 (optimized Monier-Williams method). The apparatus is for the release and distillation of sulfurous acid.

- reaction flask 500 ml or 1000 ml
- Systems available with one or two absorption vessels.
- Heating hood with an integrated magnetic stirrer for even mixing
- 1 or 6 sample positions possible
- The injection volume flow is set with a precision flow meter

Type	Product description	Art. No.
KSO 2N	Compact system for the determination of sulfurous acid in accordance with DIN EN 1185, 2 absorption vessels, magnetic stirrer.	B00604572
SO 2-6	Devices for the determination sulfurous acid in up to 6 sample positions simultaneously in accordance with DIN EN 1185. 2 absorption vessels. Magnetic stirrer.	B00218429
SU 1000	Compact system for the determination of Sulfite in accordance with DIN EN 1988-1 (Optimized Monier-Williams method)	B00652910

behrotest® SO₂-IR4 Apparatus

Digestion apparatus for the SO₂-determination

Specially developed for the cooking and distillation process with subsequent quantitative determination of the sulfur dioxide content based on the Monier-Williams method.

- Fast digestion system with freely configurable programs for energy and digestion time
- Direct heating of samples using high-quality quartz infrared heaters (1500 W)
- Integrated magnetic stirrer for uniform mixing

Digestion apparatus for the SO₂-determination

Type	Product description	Art. No.
SO ₂ -IR4	behrotest® digestion apparatus for the SO ₂ -determination	B00818257

Technical specifications

heating stations	4 positions
Voltage	230 VAC
Frequency	50/60Hz
Power consumption	1500 W
Current consumption	8 A
Weight	approx. 48 kg
Dimensions in cm (W x D x H)	approx. 55 x 48 x 76
Energy setting range	0... 100%, in steps of 1 %
Time setting range	0... 199 min, in steps of 1 min
Programs	10



Determining hydroxyproline content

Classic behrotest® digestion apparatus for determining hydroxyproline content

Apparatus for digestion testing when determining hydroxyproline content in meat, meat products and sausage products according to Sec. 64 LFGB (German Feed and Food Act). After acidic digestion, hydroxyproline is photometrically determined at 558 nm.

The equipment consists of:

- Serial heating block with 6 sample positions
- Each sample position individually adjustable
- Deposit pit
- Support rods
- Cooling water distribution with condenser console and holders
- Digestion vessels with a volume of 250 ml.
- for high-performance condensers

Digestion apparatus

Type	Product description	Art. No.
RH 4	behrotest® series heating block for determining hydroxyproline content with 4 sample positions, for 250 ml digestion vessels	B00218449
RH 6	behrotest® series heating block for determining hydroxyproline content with 6 sample positions, for 250 ml digestion vessels	B00218426



RH 6

Modern behrotest® digestion apparatus for determining hydroxyproline content

Apparatus for digestion testing when determining hydroxyproline content in meat, meat products and sausage products according to Sec. 64 LFGB (German Feed and Food Act). After acidic digestion, hydroxyproline is photometrically determined at 558 nm.

Modern infrared heating units from behr are equipped with high-quality quartz infrared heaters, built-in inductive magnetic stirrers and a temperature control.

- Apparatus with high-quality non-corrosive block casing made of stainless steel
- Insertable frame for 6 or 12 spaces
- Digestion vessels with a volume of 250 ml.
- Firmly sealing vessels with high temperature screw caps made of PP (GL 32) with welded PTFE membrane for pressure compensation, suitable for autoclaving
- 25 freely configurable programs for block energy and digestion time
- Even heating on all sample positions
- 6 or 12 digit integrated inductive magnetic stirrer
- behr one-button operation for extremely easy and quick programming
- Menu navigation in country language

Digestion apparatus for determining hydroxyproline content

Type	Product description	Art. No.
HDP 6	behrotest® digestion apparatus for determining hydroxyproline content with 6 sample positions, for 250 ml digestion vessels	B00696810
HDP 12	behrotest® digestion apparatus for determining hydroxyproline content with 12 sample positions, for 250 ml digestion vessels	B00696811



HDP 6



HDP 12

Recirculating cooler

behrotest® UK recirculating cooler

behrotest® UK series recirculating coolers are ideally suited for use with the behr separation and distillation systems. The new and improved successor models of our UK 12 series are just as reliable and suitable for everyday use as their predecessors, but their performance has improved by 20%.

They are also generally suited

- as replacements for condensing systems that are cooled using domestic water
- for the dissipation of process heat
- for the thermostatic control of apparatus such as centrifuges, microscopes, spectrometers, analysers, distillation apparatus, rotary evaporators, electrophoresis, reaction vessels

All recirculating coolers can be used as a closed or open system

Features:

- Electronic temperature control with LED display
- Float switch to monitor the coolant level
- Limit alarm if the permitted field of activity is exceeded
- Cooling unit: quiet, fully hermetic, air-cooled, low-maintenance
- 12 mm internally threaded tube connections (M10 x 1)
- 3/4" filler spout with vent valve on the surface of the device
- Stainless steel housing parts
- Non-ferrous metal heat exchanger
- Circumferential skirting protection rings both top and bottom



UK 12/1030

Type	Product description	Art. No.
UK 12/1030	1200 watt cooling capacity with circulating pump and digital temperature control for regulating the temperature and cooling individual or several apparatus	B00692940

Technical data

	UK 12/1030
Cooling capacity in watts	
at +21°	1200
at +11°	950
at +6°	740
Operating range	+5° to +40° C
Recirculating pump	
Flow rate	12 l/min
Flow pressur	2,9 bar
Electr. connection	
Volt	230
Hz	50
Amp	3,5
External dimensions in cm (W x L x H)	approx. 34 x 40 x 60
Weight	approx. 41 kg
Coolant container	4,6 l

This may also interest you



Further brochures with product overview

- The behr range for the Kjeldahl method of nitrogen determination
- The behr range for the food analysis
- behr Devices for standard analysis in fat and oil
- behr Devices for standard analysis in animal feed
- The behr range for water and soil analysis



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behr Labor-Technik GmbH • Spangerstraße 8 • 40599 Düsseldorf/Germany
Tel.: (+49) (0) 211 – 7 48 47 17 • Email: info@behr-labor.com
Internet: www.behr-labor.com

Subject to technical changes and errors.



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