

<b>Sampling</b>	<b>496</b>
Samplers, gas .....	496
Samplers, Solids .....	497
Samplers, Liquids .....	505
Sample containers .....	511
Sample transport, storage .....	513
<b>Grinding</b>	<b>515</b>
Jaw breaker .....	515
Mortars .....	516
Mills .....	518
<b>Sieving</b>	<b>541</b>
Sieve shakers .....	541
Test sieves .....	544
Sample dividers .....	547
<b>Mixing, Homogenisation</b>	<b>548</b>
Dispersers .....	548
Ultrasonic homogenisers .....	557
Homogenisers .....	565

## Sampling/Samplers, gas



### 1 Sampling bags, FEP



Saint Gobain

Made from 5 mil (125 µm) FEP fluoropolymer film, these flexible, sturdy bags are heat sealed on all four sides for complete chemical resistance and leak-proof operation. They are inert to most chemicals and have low permeability which limits sample loss. Available with either a nickel-plated, brass on/off valve that accepts 6.4mm I.D. flexible tubing or with PTFE/silicone septum in polypropylene housing for use with a hypodermic needle. These FEP bags are easy to use. They can be stored for an unlimited period prior to use. Applications include gas sample analysis, extracting air samples from smokestack exhaust systems, monitoring air quality or calibrating instruments in the field. The bags are individually packaged.

- Chemically resistant
- Flexible
- Will not contaminate sample

Capacity L	Connection	Size mm	PK	Cat. No.
1.2	on/off	150 x 250	1	6.267 484
0.5	on/off	150 x 150	1	6.267 485
4.7	on/off	300 x 300	1	6.267 486
50.0	on/off	600 x 900	1	6.267 487
0.5	Septum	150 x 150	1	6.267 488
1.2	Septum	150 x 250	1	6.267 489
4.7	Septum	300 x 300	1	6.267 490
50.0	Septum	600 x 900	1	6.267 491



### 2 Sampling bags, PVF



Saint Gobain

Reusable bags made of 2 ml (50 µm) PVDF fluoropolymer film, Chemware® Gas Bags offer an economical alternative for analysis of noncorrosive gases. Durable, heat-sealed seams ensure leak-proof operation. Available with either a nickel-plated, brass on/off valve that accepts 6.4mm I.D. flexible tubing or with a PTFE/silicone septum in a polypropylene housing for use with a hypodermic needle. Applications include sampling carbon monoxide, sulfur dioxide, hydrogen sulfide, radon and mercaptan. The bags are individually packaged. When used for liquid samples, bags should be supported with a tray. Custom sizes and configurations available on request.

- Flexible
- Will not contaminate sample
- Choice of fitting style: on/off or septum
- For use in gas sampling trains
- Use for gas or liquid sample containment

Capacity L	Connection	Size mm	PK	Cat. No.
0.3	on/off	150 x 150	1	6.267 492
1.6	on/off	230 x 230	1	6.267 493
3.8	on/off	300 x 300	1	6.267 494
8.1	on/off	380 x 380	1	6.267 495
20.3	on/off	460 x 460	1	6.267 496
37.7	on/off	600 x 600	1	6.267 497
0.3	septum	150 x 150	1	6.267 498
3.8	septum	230 x 230	1	6.267 499
1.6	septum	300 x 300	1	6.267 600
8.1	septum	380 x 380	1	6.267 601
20.3	septum	460 x 460	1	6.267 602
37.7	septum	600 x 600	1	6.267 603



9.110 236

### Gas sampling tubes, DURAN® tubing

Lenz

Made of DURAN® tubing. Available with or without nozzle (with thread GL and septa), with two one-way stopcocks NS14 (with retaining device), connections: capillary tube (outer dia. 8mm, inner dia. 2.7mm), glass olive (outer dia. 8mm), with inscription label

Capacity ml	Length*	External body diam. mm	Type	PK	Cat. No.
150	155	42	Without sampling connections	1	9.110 215
350	200	54	Without sampling connections	1	9.110 220
500	220	65	Without sampling connections	1	9.110 225
1000	260	85	Without sampling connections	1	9.110 230
150	155	42	With sampling connections, GL 14	1	6.243 069
350	200	54	With sampling connections, GL 14	1	9.110 236
500	220	65	With sampling connections, GL 14	1	9.110 237
1000	260	85	With sampling connections, GL 14	1	7.623 930

\* Body length (mm)

E &amp; OE.

### 1 2 Sampler Silo Drill, aluminium or stainless steel V2A

Designed for sampling powders, granulates or semi-solids from silos and vehicle tankers.

Bürklee

When bulk goods are transported over a long distance (e.g. by HGV) the material can separate out, so if a sample is then taken only from the surface the result may not be representative. With the Silo Drill a sample can be drawn from deeper levels. The Silo Drill is screwed manually into the material and only opened once at the required sample depth. Depths of up to 2.5m can be reached by using extension rods. The Silo Drill is not only suitable for silos, but also can be used in numerous bulk goods containers in the pharmaceutical, chemical, foodstuffs and semi-luxury goods sectors.

Spiral diameter: 90mm, chamber: diameter 40mm, capacity 400ml.

Type	Length cm	PK	Cat. No.
Silo drill, aluminium	150	1	9.303 858
Silo Drill, V2A	150	1	9.303 868
Extension rods, V2A	100	1	9.303 859



### 3 4 Zone samplers, Multi/All-layer/Jumbo, steel V4A or aluminium

For sampling bulk goods of all types. Available in various different lengths and materials:

Bürklee

#### Multi-sampler:

With several closed chambers for multi-target samples from several preset sample depths. Available in stainless steel V4A/PTFE, stainless steel V4A/V4A or aluminium. Tube diameter: 25mm.

#### All-layer-sampler:

With open chambers for cross-sectional sampling through all layers of the sample. Emptied via the open tube end of the collector. Available in stainless steel V4A or aluminium. Tube diameter: 25mm.

#### Jumbo-sampler:

Generally as the All-layer-sampler with open tube end. Tube diameter is 50mm making the sampler very good for coarser granule samples and large sample volumes. Available in stainless steel V4A or aluminium.

#### Uno-sampler:

with a closed chamber, for target samples from a pre-determined sample depth.

Easy emptying with the emptying device.



Type	Material	Length cm	Imm. depth mm	Number openings	Chamber Capacity ml	PK	Cat. No.
Multi-Sampler	Stainless steel (V4A )/PTFE	55	430	3	14	1	9.303 860
Multi-Sampler	Stainless steel (V4A )/PTFE	85	710	3	17	1	9.303 862
Multi-Sampler	Stainless steel (V4A )/PTFE	150	1355	5	17	1	9.303 864
Multi-Sampler	V4A/V4A	55	430	3	14	1	7.631 201
Multi-Sampler	V4A/V4A	85	710	3	17	1	7.653 124
Multi-Sampler	V4A/V4A	150	1355	5	17	1	9.303 866
Multi-Sampler	Aluminium	55	430	3	14	1	9.303 870
Multi-Sampler	Aluminium	85	710	3	17	1	9.303 872
Multi-Sampler	Aluminium	150	1355	5	17	1	9.303 874
Cross-section sampler	Aluminium	55	430	3	70	1	9.303 875
Cross-section sampler	Aluminium	85	710	3	130	1	9.303 876
Cross-section sampler	V4A/V4A	150	1355	5	260	1	9.303 865
Cross-section sampler	Aluminium	150	1355	5	260	1	9.303 877
Cross-section sampler	V4A/V4A	55	430	3	70	1	6.232 190
Cross-section sampler	V4A/V4A	85	710	3	130	1	6.234 598
Jumbo sampler	Aluminium	85	710	3	880	1	9.303 878
Jumbo sampler	Aluminium	150	1355	5	1700	1	9.303 879
Jumbo sampler	Aluminium	250	2355	7	2900	1	9.303 883
Jumbo sampler	Aluminium/PTFE	85	710	3	390	1	6.240 956
Jumbo sampler	Aluminium/PTFE	150	1355	5	650	1	7.625 884
Jumbo sampler	Aluminium/PTFE	250	2355	7	910	1	6.236 850
Uno-Sampler	Stainless steel (V4A )/PTFE	55	430	1	17	1	9.303 886
Uno-Sampler	Stainless steel (V4A )/PTFE	85	710	1	17	1	9.303 887
Uno-Sampler	Stainless steel (V4A )/PTFE	150	1355	1	17	1	9.303 888

→ Wide mouth bottles please see page 60.



### 1 Emptying device, stainless steel

**NEW!**

Bürkle

Emptying zone samplers were often a matter of patience and a steady hand. Now it's easier and faster with Bürkle's emptying device. Just lay the zone sampler onto the stainless steel stand, adjust the funnels along the sample chambers, and, after turning the sampler, the media will directly flow into the containers below. Quality materials ensure that the sampler is autoclavable.

Description	PK	Cat. No.
Emptying device	1	6.236 050



### 2 Zone sampler, accessory cleaning brush, PVC/stainless steel

**NEW!**

Bürkle

For thoroughly cleaning of Zone samplers.

Length cm	Diam. mm	PK	Cat. No.
40	25	1	6.223 345
60	25	1	9.303 880
80	25	1	9.303 882
100	25	1	9.303 884
100	50	1	9.303 885



### 3 Sampler QuickPicker, Stainless steel V4A or PP

Bürkle

Suitable for removing bulk materials from sacks or large bags and depositing them directly into sample bottles. Simple to use and clean. Crevice-free to prevent sample residues causing cross-contamination which could affect subsequent sample results. Complete with cleaning brush and two 250ml sample bottles.

Material	Length cm	Imm. depth mm	Capacity ml	PK	Cat. No.
PP clear	50	300	75	1	6.205 458
V4A	50	300	75	1	9.303 850

### Sample bottles for QuickPicker Sampler

**NEW!**

Capacity ml	Description	Material	PK	Cat. No.
250	round, natural colored, with screw cap	LDPE	10	9.073 512
500	sterile, transparent, moulded graduation with tamper-evident cap	PET	1	9.001 054



### 4 Sampler Tubus, V4A stainless steel, according to ISTA

Bürkle

Sampler for free flowing, bulk goods up to approx. 1cm diameter. This makes it possible, for example, to remove hazel nuts, blends of tea, grain or similar items from large sacks. Operation: Insert Tubus into a sack to the desired sampling depth, while keeping the collection tube closed using your hand. When you take away your hand, the sample flows directly through the open tube into the container or sampling bag beneath it.

- choice of 2 lengths, 40cm and 80cm
- also for coarse-grained bulk goods
- AISI 316 stainless steel
- corresponds to ISTA standard for seed lengths of 10mm and 5mm

Length cm	Diam. mm	PK	Cat. No.
40	40	1	6.200 394
80	40	1	6.204 492



### 5 Sampling lance milky, stainless steel V4A, acc. to EN ISO 707

Bürkle

Universal powder and granules sampler collector made of AISI 316 stainless steel. Developed especially for milk powder samples, conforms to standards of DIN and IDF (Int. Dairy Federation). The collector is inserted into bags or casks and the sample is removed using a semi-circular profile lance.

Length cm	Imm. depth mm	Capacity ml	PK	Cat. No.
48	385	150	1	6.051 629

➔ For wide neck bottles with screw caps - please see page 69.

# From the clean room to pure sampling

Disposable samplers for highest specifications

Bürkle sets standards in disposable sampling –  
e.g. by producing samplers in our own clean room.  
As a matter of course we can also make them  
from the sustainable bio-plastic *Green PE* and  
deliver them gamma sterilised. All these samplers  
come with EU foodstuffs and FDA approval.


Your requirements – our benchmark!



[www.buerkle.de/videos](http://www.buerkle.de/videos)

Rheinauen 5 | D-79415 Bad Bellingen | Phone +49 (0) 76 35 8 27 95-0 | Fax +49 (0) 76 35 8 27 95-31 | [info@buerkle.de](mailto:info@buerkle.de) | [www.buerkle.de](http://www.buerkle.de)

[www.wenk-labtec.com](http://www.wenk-labtec.com)

 **SteriPlast**

 **SteriPlast**  
Bio

 **LaboPlast**

 **LaboPlast**  
Bio



#### Disposable Samplers DispoSampler

In numerous situations, rapid and contamination-free samples have to be taken. DispoSamplers are perfect for this applications. They are individually packed and always ready to use. Avoid expensive decontamination or cleaning of soiled samplers. Gamma sterilised versions are also available.

Bürkle

##### LiquiDispo

For liquids with low viscosity up to 10000cP.

##### MicroDispo

For pourable bulk goods up to 0.5mm diameter.

##### ViscoDispo

For high viscous media up to 100000cP.

##### PowderDispo

Disposable sampler for taking a cross sectional sample from within a bulk powder.

##### ZoneDispo

Disposable sampler for pourable bulk goods up to 2 mm particle size. Hole Ø 11 mm.

Type	Length mm	Capacity ml	Material	PK	Cat. No.
LiquiDispo	500	100	PE-HD	20	<b>9.303 720</b> 1
LiquiDispo	1000	190	PE-HD	20	<b>9.303 722</b>
MicroDispo	500	10	PE-HD	20	<b>9.303 728</b> 2
ViscoDispo	500	100	PE-HD	20	<b>9.303 732</b> 3
ViscoDispo	1000	190	PE-HD	20	<b>9.303 734</b>
PowderDispo	620	100	PE-HD	20	<b>9.303 736</b> 4
ZoneDispo	620	100	PE-HD	20	<b>7.655 427</b> 5



9.303 720



9.303 728



9.303 732



9.303 736



7.655 427



#### 6 Disposable spatulas LaboPlast/SteriPlast, PS/Green PE, white



Bürkle



The LaboPlast and SteriPlast spatulas made of polystyrene are clean-room produced and individually packed for one-way needs. The LaboPlast Bio products are entirely made of renewable resources. Not only with regard to quality but also with regard to its characteristics for high-quality sampling, it is perfectly comparable with conventional polyethylene.

Due to their long, ergonomic and solid handles and pointed blades they can be easily pierced into paper and plastic bags. The spatulas are ideal for sampling of powder, granules and pastes. The spatulas are also available with a transparent sheath to close them immediately after the sampling procedure to secure a sterile and contamination-free sample. Additionally the SteriPlast spatulas are gamma radiation sterilized.

- Individually packed
- Production, assembling and packaging acc. to clean-room class 7 (10 000)
- According to EU food and FDA guidelines

Type	Length mm	Imm. depth mm	Version	Description	Material	PK	Cat. No.
LaboPlast	263	150	without sheath	non-sterile	PS	10	<b>6.265 035</b>
LaboPlast	268	150	with sheath	non-sterile	PS	10	<b>6.265 036</b>
SteriPlast	263	150	without sheath	sterile	PS	10	<b>6.265 047</b>
SteriPlast	268	150	with sheath	sterile	PS	10	<b>6.265 048</b>
LaboPlast Bio	263	150	without sheath	non-sterile	Green PE	10	<b>6.265 062</b>
SteriPlast Bio	263	150	without sheath	sterile	Green PE	10	<b>6.265 061</b>

### 1 2 3 Control seals for sampling **close-it**

**NEW!**

Bürkle

Printed or plain. **close-itfood** is an aluminium backed, vapour-proof adhesive label with extremely strong adhesion. Sacks, boxes etc. which have been pierced with samplers can be hermetically resealed. Can even adhere to slightly moist or dusty sacks coated with fine powders, e.g. plaster, flour etc.

**close-itfood** ensures aswell the necessary success when resealing sample openings, as it reliably prevents products from escaping after sampling. The adhesive complies with the European guidelines for foodstuffs. Just like the original, **close-itfood** has a barrier layer of aluminium foil. This means that **close-itfood** is suitable for sampling foodstuffs, pharmaceuticals, cosmetics, food additives - in short, for all applications in which the product must not be contaminated by contact with the adhesive.

Type	Colour	Description	PK	Cat. No.
close-it	Red	Printed, 95 x 95mm	500	9.303 910
close-it	Green	Printed, 95 x 95mm	500	9.303 911
close-it	Yellow	Printed, 95 x 95mm	500	9.303 912
close-it	Blue	Printed, 95 x 95mm	500	9.303 913
close-it	Black	Printed, 95 x 95mm	500	9.303 914
close-it	White	Plain, 95 x 95mm	500	9.303 915
Roller for close-it	-	-	1	9.303 919
close-it Maxi	Red	Printed, 150 x 150mm	250	9.303 980
close-it Maxi	Green	Printed, 150 x 150mm	250	9.303 981
close-it Maxi	Yellow	Printed, 150 x 150mm	250	9.303 982
close-it Maxi	Blue	Printed, 150 x 150mm	250	9.303 983
close-it Maxi	Black	Printed, 150 x 150mm	250	9.303 984
close-it Maxi	White	Plain, 150 x 150mm	250	9.303 985
Roller for close-it Maxi	-	-	1	9.303 989
close-itfood	Red	Printed, 95 x 95mm	500	6.228 255
close-itfood	Green	Printed, 95 x 95mm	500	9.303 998
close-itfood	Yellow	Printed, 95 x 95mm	500	9.303 996
close-itfood	Blue	Printed, 95 x 95mm	500	9.303 997
close-itfood	Black	Printed, 95 x 95mm	500	9.303 999
close-itfood	White	Plain, 95 x 95mm	500	9.303 986
close-itfood Maxi	Red	Printed, 150 x 150mm	250	9.303 990
close-it tape Maxi	White	Plain, 150 x 150mm	250	9.303 991
close-itfood Maxi	yellow	Printed, Roll, 150mm x 150mm	250	9.304 000
close-itfood Maxi	blue	Printed, Roll, 150mm x 150mm	1	9.304 001
close-itfood Maxi	green	Printed, Roll, 150mm x 150mm	250	9.304 002
close-itfood Maxi	black	Printed, Roll, 150mm x 150mm	1	9.304 003
close-it tape	White	Roll, 95mm x 50m	1	9.303 992
close-it tape Maxi	White	Roll, 150mm x 50m	1	9.303 993
close-it tape food	White	Roll, 95mm x 50m	1	9.303 994
close-it tape food Maxi	White	Roll, 150mm x 50m	1	9.303 995



### 4 Anti-tamper seal-it, self-adhesive roll


  
Bürkle

If a container opening is closed with Seal-it, then the container cannot be opened without destroying the Seal-it label. Seal-it is additionally provided with several cross-perforations which immediately tear when manipulated like a motorcar tax disc. Seal-it can be used to securely seal bottles, sample bags, specimen bags, envelopes, etc. The white labelling field on Seal-it can be written on with all conventional writing tools with, for example contents information, sampling date, name of operator, etc.

- Clear identification via numbers in sequence
- Integrated control label with the same number, for accompanying documents
- 500 consecutively numbered labels in each roll
- Format 178mm long, 30mm wide
- Tear-off perforation for each label

Type	PK	Cat. No.
Seal-it	500	7.622 477



➔ For sample containers - please see page 513



#### 1 Dispensing scoops, Aluminium

Schröder

Capacity ml	Overall length mm	Length Scoop mm	PK	Cat. No.
42	135	80	1	9.201 113
105	185	113	1	9.201 118
140	210	120	1	9.201 121
260	250	145	1	9.201 125
340	265	155	1	9.201 126
555	310	185	1	9.201 131
675	350	220	1	9.201 135
1510	400	270	1	9.201 140
3000	430	300	1	9.201 143



#### 2 FoodScoop, Stainless steel

**NEW!**

Bürkle

Very stable hand scoop for various applications, particularly suited for the food industry. Seamless connection of scoop and hollow handle, therefore without crevices and edges. Especially smooth, highly polished surface.

- Especially sturdy model
- Stainless steel V2A (1.4301)
- With handy suspension eyelet

Capacity ml	Overall length mm	Length Scoop mm	PK	Cat. No.
100	215	120	1	6.254 785
200	230	140	1	6.252 363
250	245	155	1	6.254 786
350	290	180	1	6.242 476
500	350	220	1	6.072 181



#### 3 Scoops, 18/10 steel

Dimensions scoop (W x L): 25 x 60mm

Isolab

Overall length mm	PK	Cat. No.
200	1	4.008 514



#### 4 Dispensing scoops, stainless steel

Remanit® 4301

RSG

Capacity ml	Overall length mm	Length Scoop mm	Diam. mm	PK	Cat. No.
120	190	100	50	1	9.201 219
450	250	150	75	1	9.201 222
1000	310	200	105	1	9.201 232
1500	350	240	120	1	9.201 235
2000	365	250	150	1	6.080 286





### 1 2 Sampling scoops and spoons, PS, sterile

- White or red high-impact polystyrene plastic.
- Individually sealed and sterilised in a polyethylene bag ready for one time use and disposal
- Long handle increases the distance between the hand and the sample
- Scoop stays vertical when packed or unpacked for use as weighing boat
- Red colored scoops reduces the chance of residual sample staying in the scoop or the scoop being accidentally left behind in a sample
- Colour can serve as a code to avoid cross contamination
- Made from FDA grade materials
- Lot stamped for accurate lot tracing; shipped with a Certificate of Processing for Sterilization

Bel-Art Products

Type	Capacity ml	Colour	PK	Cat. No.
Scoop	60	white	1	9.150 461
Scoop	125	white	1	9.150 462
Scoop	250	white	1	9.150 463
Scoop	60	red	1	9.150 464
Scoop	125	red	1	6.242 234
Scoop	250	red	1	9.150 465
Spoon	1.25	white	1	9.150 639
Spoon	2.46	white	1	9.150 640
Spoon	4.93	white	1	9.150 641
Spoon	14.79	white	1	9.150 642

Other sampling devices are available on request.

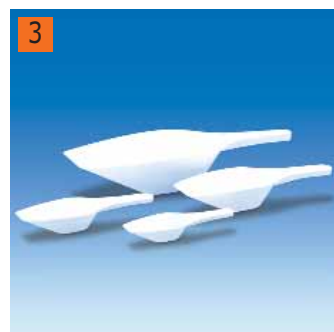


### 3 Measuring scoops, PP

White measuring scoops which are also suitable as weighing scoops.  
With precision formed filling edge and comfortable, stable handle.  
Easily readable volume quantities on the upper side of the handle.  
Food-safe products according to EC Directive No. 10/2011.

VITLAB

Capacity ml	Length mm	PK	Cat. No.
2	60	1	9.201 052
5	82	1	9.201 053
10	100	1	9.201 055
25	135	1	9.201 057
50	160	1	9.201 058
100	200	1	9.201 059
250	260	1	9.201 061
500	315	1	9.201 062
1000	385	1	9.201 065



### 4 Measuring scoops, PE-HD

Natural colouring. Conical in shape with tapered filling edge.  
Food-safe product according to EC Directive No. 10/2011.

VITLAB

Capacity ml	Length mm	PK	Cat. No.
15	115	1	7.008 959
25	135	1	7.008 960
65	185	1	7.008 961
110	215	1	7.008 962
150	250	1	9.201 025
350	310	1	9.201 030
750	350	1	9.201 035
1250	400	1	9.201 040





### 1 2 Disposable scoops LaboPlast/SteriPlast, PS/Green PE, white



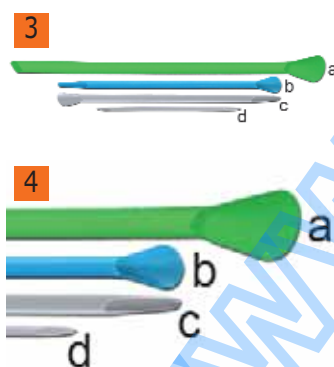
Bürkle



The LaboPlast and SteriPlast scoops made of polystyrene are clean-room produced and individually packed for one-way needs. The LaboPlast Bio products are entirely made of renewable resources. Not only with regard to quality but also with regard to its characteristics for high-quality sampling, it is perfectly comparable with conventional polyethylene. They are ideal for sampling of powder, granules and pastes. The scoops are also available with transparent cover to close them immediately after the sampling procedure to secure a sterile and contamination-free sample. Additionally the SteriPlast scoops are gamma radiation sterilized.

- Individually packed
- Production, assembling and packaging acc. to clean-room class 7 (10 000)
- According to EU food and FDA guidelines

Type	Capacity ml	Length mm	Version	Description	Material	PK	Cat. No.
LaboPlast	25	141	without lid	non-sterile	PS	10	6.265 025
LaboPlast	25	142	with lid	non-sterile	PS	10	6.265 026
LaboPlast	50	161	without lid	non-sterile	PS	10	6.265 027
LaboPlast	50	161	with lid	non-sterile	PS	10	6.265 028
LaboPlast	100	205	without lid	non-sterile	PS	10	6.265 029
LaboPlast	100	206	with lid	non-sterile	PS	10	6.265 030
LaboPlast	150	216	without lid	non-sterile	PS	10	6.265 031
LaboPlast	150	218	with lid	non-sterile	PS	10	6.265 032
SteriPlast	25	141	without lid	sterile	PS	10	6.265 037
SteriPlast	25	142	with lid	sterile	PS	10	6.265 038
SteriPlast	50	160	without lid	sterile	PS	10	6.265 039
SteriPlast	50	161	with lid	sterile	PS	10	6.265 040
SteriPlast	100	205	without lid	sterile	PS	10	6.265 041
SteriPlast	100	206	with lid	sterile	PS	10	6.265 042
SteriPlast	150	216	without lid	sterile	PS	10	6.265 043
SteriPlast	150	218	with lid	sterile	PS	10	6.265 044
LaboPlast Bio	25	141	-	non-sterile	Green PE	10	6.265 055
LaboPlast Bio	50	160	-	non-sterile	Green PE	10	6.265 056
LaboPlast Bio	100	205	-	non-sterile	Green PE	10	6.265 057
LaboPlast Bio	150	216	-	non-sterile	Green PE	10	6.265 058
SteriPlast Bio	25	141	-	sterile	Green PE	10	6.265 049
SteriPlast Bio	50	160	-	sterile	Green PE	10	6.265 050
SteriPlast Bio	100	205	-	sterile	Green PE	10	6.265 051
SteriPlast Bio	150	216	-	sterile	Green PE	10	6.265 052



### 3 4 Powder spatula smartSPATULAS®, PP



Heathrow Scientific

Single use polypropylene lab tools made to increase productivity and reduce costly contamination errors. They offer a clean alternative to metal spatulas.

- Size related designs to fit perfectly with standard 0.5, 1.5/2.0, 15 and 50 mL tubes
- Ideal for dispensing or sample collection of powders or soft solids
- Shatter resistant in liquid nitrogen and resistant to dilute acids and bases and can be used with hot liquids
- Anti-static, sterile and Eco-friendly versions available
- Autoclavable and complies with FDA standards for food contact

Description	Colour	For tubes ml	Length mm	Diam. mm	Figure	PK	Cat. No.
Micro Antistatic	Natural	0.2	140	3.5	d	300	6.256 896
Eco	Natural	15/1.5/2.0	140	7.0	-	300	6.256 894
Standard	Blue	15/1.5/2.0	210	7.0	b	300	6.256 893
Standard	Natural	15/1.5/2.0	210	7.0	c	300	6.256 895
Standard sterile	Natural	15/1.5/2.0	210	7.0	-	100	6.256 898
Macro	Green	50	310	1.0	a	150	6.256 897

### 1 LLG-Sampling Dippers, PS, sterile, with screw cap and handle



Blue sample container with PP lid (30ml) or metal cover with PVC seal (100 ml, 250 ml). Easy to transport after sampling by breaking the handle.

- For sterile sample collection and dispatch
- To minimize the risk of cross contamination
- Individually wrapped and EO sterilised
- Leakproof-tested screw cap
- Handle easily breakable after sampling

Capacity ml	Length Handle mm	Material container	Material Lid	PK	Cat. No.
30	200	PS	PP	50	6.265 643
100	385	PS	metal	50	6.265 644
250	330	PS	metal	50	6.265 645



### 2 Chemistry scoop, PP, with rod handle

Suitable for aggressive liquids. With beaker and PP rod handle.

Bürkle

Capacity ml	Stem mm	Stem diam. mm	PK	Cat. No.
250	1000	20	1	9.303 840
600	1000	20	1	9.303 842
1000	1000	20	1	9.303 844



### Sample Taking system INGENIOUS

A new, easy-to-handle sample taking system for manual sampling. General purpose thanks to

Windaus-Labortechnik

- quick and easy exchange of the sample taking equipment
- simple change by pressing the spring mechanism
- extremely strong fiber glass telescopic poles, non-corrosive
- for up to 20 different sample taking devices
- four different fiber glass telescopic poles extensible from 1.5m up to 6.00m in length

### 3 4 5 Fiber glass telescopic pole



Very robust telescopic pole, ideal for sample taking. Fiber glass makes it almost indestructible and non-corrosive.

Comfortable to carry even at low temperatures. Simple extension and adjustment mechanism.

You can change the length easily by a quarter rotation. (Pic. 3). At telescope poles of 3.85 to 6 meter the length could be easily changed by using the clamp (Pic. 2). Comfortable use of spring mechanism. This type can take all samplers and catchers with universal connecting part.

Length m	PK	Cat. No.
1.45 - 2.75	1	6.801 684
1.50 - 3.85	1	6.241 444
1.50 - 5.00	1	6.263 282
1.50 - 6.00	1	6.263 283





#### 1 Waterlanding net

**NEW!**

Very robust, with nylon net, for catching flees, bugs, floating particles and water insects. Mesh width 0.8mm. With robust galvanized ring of 200mm diameter. Double stitched execution between nylon mesh and linen. With universal connecting part. With universal connecting part.

Type	Material	Aperture size mm	PK	Cat. No.
Waterlanding net	nylon	0.8	1	6.263 284



#### 2 Wire sieve net

**NEW!**

Robust wire sieve net, very robust and reinforced net version with crossed protection strings at the outside (to prevent the net from deforming). This landing net also has a reinforced net at the edges and therefore allows you to catch small animals directly off the ground. A possible bending is avoided by the strong and simple construction. Net diameter of 200mm, mesh width 1.5mm. With universal connecting part.

Type	Material	Aperture size mm	PK	Cat. No.
Wire sieve net	metal	1.5	1	6.263 285



#### 3 Dip net

**NEW!**

For sample taking of solid material and organisms from water surfaces. Large version with 320x300mm width and length. Net made of polyamide (mesh width approx. 2 to 5mm), frame made of PVC material. With universal connecting part.

Type	Material	Aperture size mm	PK	Cat. No.
Dip net	polyamide	2 - 5	1	6.263 286



#### 4 Vegetation scraping net

**NEW!**

With its double reinforced aluminum ring this version can be used for scraping off particles from bushes, and trees. The net is made of nylon, mesh width 0.2mm, diameter is 280mm, net depth 500mm. With universal connecting part.

Type	Material	Aperture size mm	PK	Cat. No.
Vegetation scraping net	nylon	0.2	1	6.263 287



#### 5 Plankton net

**NEW!**

Mesh width 65µm, robust version with sturdy galvanized ring of 200mm diameter. The ring is covered with green linen fabric to protect the silk gauze from ripping up. With 100ml collecting vessel (100ml Kautex flask). Net could be opened at the bottom for filling the bottles. With universal connecting part.

Type	Material	Mesh size µm	PK	Cat. No.
Plankton net	silk gauze	65	1	6.263 288



#### 6 Pendulum beaker

**NEW!**

Made of stainless steel; nothing can be spilt because beaker automatically swings into a vertical position. Dimension of the beaker: 100mm diameter, 130mm height, 1 liter volume. With universal connecting part.

Type	Material	Capacity Litres	PK	Cat. No.
Pendulum beaker	stainless steel	1	1	6.263 290



### Sampling system TeleScoop

TeleScoop is a versatile sampling system with exchangeable tools for a wide range of applications.

The tools (angular beaker, pendulum beaker, bottle holder, stainless steel beaker and catch net e.g. for taking solid and organic samples from water courses) are attached to the rod by a practical snap-in joint. Ideal for sampling from baths, tanks, shafts, open water courses etc. Sampling depths down to 6M can be reached with the adjustable telescopic aluminum rod.

Bürkle

#### 1 TeleScoop Telescopic rods, aluminium

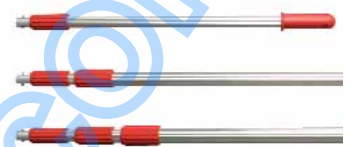


Aluminium, with red plastic fittings. The special construction prevents the bars rotating during retrieval of a sample. With screw clamps and end-stops to prevent the sections sliding apart.

Bürkle

Length m	PK	Cat. No.
0.65 - 1.20	1	9.303 800
0.70 - 1.80	1	6.266 590
0.95 - 2.80	1	9.303 801
1.25 - 2.50	1	9.303 802
1.15 - 3.00	1	9.303 804
1.65 - 4.50	1	9.303 806
1.75 - 6.00	1	9.303 807

1



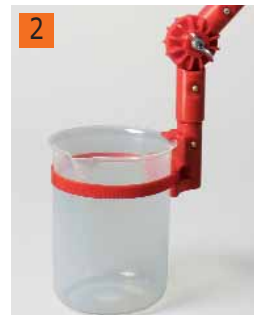
#### 2 Angular, sample beakers, angled for TeleScoop, PP

With individually variable angle adjustment.

Bürkle

Capacity ml	Material	PK	Cat. No.
600	PP	1	9.303 810
1000	PP	1	9.303 812
2000	PP	1	9.303 814

2



#### 3 Pendulum beaker for TeleScoop, PP

Automatically swings into a vertical position. Nothing can be spilt. Ideal for deep and narrow shafts.

Bürkle

Capacity ml	Material	PK	Cat. No.
600	PP	1	9.303 820
1000	PP	1	9.303 822
2000	PP	1	9.303 824

3



#### 4 Bottle holder for TeleScoop, PP/PA

For industrial dip samplers. Holds bottles up to max. 88mm diameter incl. 750ml bottle. Suitable for plastic and glass bottles. With universal quick-action clamping strap.

Bürkle

Type	PK	Cat. No.
Bottle holder	1	9.303 830

4



#### 5 Dip sampler for TeleScoop, stainless steel V2A

Beaker with scraper for pasty or powdery materials

Bürkle

- With lip for scraping
- Sterilisable

Capacity ml	PK	Cat. No.
1000	1	9.303 846

5





#### 1 2 Catch nets for TeleScoop, PVC/PA - PP/PA

Ideal for sampling from basins, tanks, shafts, open waters etc. The telescopic aluminium rods TeleScoop allow sampling up to 6m depth.

- For industries and water treatment
- Mesh width: 2mm up to 5mm
- Depth catch, net depth: 250mm

Bürkle

Type	Material	Dimensions (W x D) mm	PK	Cat. No.
Surface catch net	PVC / PA	310 x 280	1	9.303 828
Depth catch net	PP / PA	190 x 430	1	9.303 829



#### 3 Liquid sampler MiniSampler, PE

Taking samples is quick, easy, clean and practical. With the MiniSampler, the sample liquid only comes into contact with the suction hose and the sample bottle. Cross contamination is largely prevented. Bottles can be tightly sealed immediately after the sample is taken with a tamper-evident cap.

Bürkle

The single use, PE suction hose can be quickly replaced, ensuring that samples are never contaminated. A new hose can be used for each sample if required. Because of its small diameter (8mm) and flexibility the hose can reach sampling areas that are otherwise inaccessible.

##### Included:

Supplied with ten 100ml PE bottles, 10m of PE suction hose (6 x 8mm), 1 hose cutter, 1 stainless steel hose weight and 20 seal-it safety seal labels in a carrying case.

Type	PK	Cat. No.
MiniSampler	1	9.303 970



#### 4 Mini-Sampler PTFE

For ultrapure sampling.

Bürkle

Also suitable for viscous oils.

Complete with one PFA Sample Jar 180 ml, 5 m PTFE suction tubing (6 x 8 mm), one tubing cutter, one stainless steel tubing weight and 20 seal-it safety seal labels in case.

Type	PK	Cat. No.
Mini sampler	1	9.303 975



#### 5 Sampler ProfiSampler, aluminium

Vacuum-operated sample collector for sampling solvents and flammable liquids in "Explosion Categories IIA and IIB) out of drums, tanks, road tankers, railway wagons, ships, lakes, ground water.

Bürkle

- filling level control, automatic return flow and overflow protection by built-in venting valve.
- optimized draw volume: 200ml, suction pressure 0.5 bar and suction depth down to 4m of water.
- with bottle thread GL 45 (suitable for Schott glass bottles 100 to 1000ml)
- can be supplied with optimized, straight suction tube for simpler sampling.
- transport case for tidy transport and disposal
- Always check the chemical resistance of parts coming into contact with the sample.

wear protective clothing!

When taking samples of flammable liquids, the device must be earthed. Antistatic-Set available as accessory.

ProfiSampler Aluminium

Comprises: aluminium vacuum pump, with feet, venting valve and GL45 bottle thread, 1 x 500ml glass bottle, 5 x 220mm long, conductive, black PA suction tubes, 1 tubing cutter, 1 brass hose weight, 24 seal-it bottle seals, earthing cable.

Type	PK	Cat. No.
ProfiSampler Aluminium	1	6.225 622
PA suction tubes, black, 220cm length, pack of 10 pieces	10	6.226 207

### 1 Sampler UniSampler "Ex", for sampling class A1 flammable liquids

Specially developed for sampling class A1 flammable liquids (e.g. benzene, petrol).  
Glass bottles and tubing electrically connected and grounded via an earthing cable.  
The UniSampler "EX" was developed in cooperation with "Gütegemeinschaft Tankschutz e.V."

Bürkle



#### Operation:

1. Earth the Uni-Sampler.
2. Lower the suction hose to the desired depth.
3. Attach the adapter to the sample bottle.
4. Generate vacuum with the hand pump and collect sample.
5. Remove the filled sample bottle, seal and label.

- PTB approval D-333-009 618/00
- Comprises 4M of sample tubing, glass sample bottle, manual vacuum pump and earthing cable in carry case

Type	PK	Cat. No.
UniSampler "Ex"	1	9.303 831

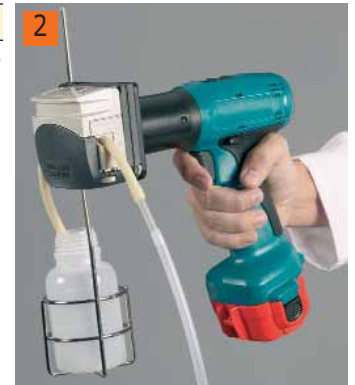
### 2 Vampire Sampler

For field sampling of liquids.  
Portable, peristaltic tubing pump for all liquids. Ideal for sampling from drums, tanks, wells, water separators, sewage installations and treatment plants.

Bürkle

- Simple cleaning, liquids pumped only come into contact with tubing
- Independent of mains power with rechargeable battery and charger
- Sample taken directly into specific sample bottle
- Maximum depth that samples can be withdrawn: 5M
- Also suitable for contaminated or particle-laden liquids
- Good chemical resistance
- High flow rate up to 2.0L/min.

Supplied with bottle basket, drive unit, two re-chargeable batteries, battery charger, peristaltic pump 250ml LDPE bottle and 5M of PE suction tubing.



Type	PK	Cat. No.
Vampire sampler, complete	1	9.303 851
Extension tubing, PE, 5m	5	9.303 839
Wide-mouth sampling bottle, 250ml	1	9.303 854
Wide-mouth sampling bottle, 500ml	1	9.303 855
Bottle holder for 500ml bottle	1	9.303 845

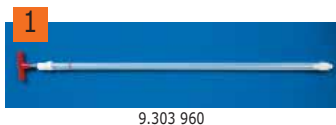
### 3 Sampler LiquiSampler, PTFE/FEP or PP

DIN 53242. For liquids. Made of ultra pure and chemically inert PTFE/FEP or PP for contamination-free sampling. Practical push button, single-handed operation. Suitable for point, cross-sectional, and bottom sampling. Ideal for sampling from open and closed drums, kegs, tanks, silos, water sources (ponds, lakes, streams, rivers). Suitable for all commercial kegs and drums with openings of at least 25mm diameter. All surfaces are non-porous and crevice-free preventing accumulation of dirt. Only round-profile screwthreads, suitable for food hygiene applications, are used.. Simple to dismantle and clean.

Bürkle

Material	Length mm	Diam. mm	PK	Cat. No.
PTFE/FEP	600	25	1	6.255 307
PTFE/FEP	1000	25	1	9.303 950
PTFE/FEP	2000	25	1	9.303 951
PP, transparent	600	25	1	6.901 807
PP, transparent	1000	25	1	9.303 955
PP, transparent	2000	25	1	9.303 956





9.303 960

### Sampler ViscoSampler, PTFE/FEP or PP

Ultra-pure sampler with powerful suction for tough substances.

Bürklee

Choice of construction. PTFE/FEP or PP.

Specially designed for tough substances, such as slime, slurries, wet clay and soil samples, sediments, oils, emulsions and creams.

The filter flask sucks up and discharges the material. All surfaces are non-porous and crevice-free, preventing dirt accumulation. Only round-profile threads, suitable for food hygiene applications, are used. Allow easy dismantling and cleaning.

Material	Length mm	Diam. mm	PK	Cat. No.
PTFE/FEP	600	25	1	6.803 102
PTFE/FEP	1000	25	1	9.303 960 1
PTFE/FEP	2000	25	1	9.303 961
PP	600	25	1	6.253 163
PP	1000	25	1	9.303 965
PP	2000	25	1	9.303 966



### (Liquid samplers, vessels and bottles) Dipping vessels

According to DIN 51750 pt. 2

Bürklee

#### Dipping Vessel

For sampling liquids from tanks, lorry tankers, etc. Made for Ex-use or stainless steel V2A. 1L capacity, 81mm diameter, 400mm high. Without lowering cable.

Operation: Lower vessel into liquid. Bottom and cap valves open automatically. Liquid flows through the vessel. The valves close at the target depth, and the desired sample can be collected.

#### Dipping bottle EX

For sampling flammable liquids.

For sampling group A mineral oil products, Explosion Categories IIA, IIB and IIC. Made from brass that do not produce sparks, 89mm diameter, 385mm high, weight 3kg. Without lowering cable.

Operation: 1. Lower bottle into liquid. 2. Pull the cable when the target spot has been reached and the stopper opens. 3. Sample flows in. 4. Pull up dipping bottle and remove sample. Use an electrically conductive, manually operated reel and lowering cable or chain.

#### Dipping bottle glass

For sewage disposal plants, sludge and water samples. Nickel-plated brass frame with glass sample bottle. 1000ml capacity, 148mm diameter, 330mm high, weight 3.1kg. Without lowering cable.

Operation: 1. Lower bottle into liquid. 2. Pull cable when target depth is reached and open stopper. 3. Sample flows in. 4. Pull bottle back up and remove sample.

#### Immersion Cylinders

For target spot and bottom samples of mineral oil products. Made of nickel-plated brass. Heavy, robust design (4.1kg). Without lowering and pull cables

Target spot sample: 1. Immersion cylinder is lowered in the tank to be sampled by the manually operated reel. 2. The separate pull cable is used to open the valve when the target spot is reached and the sample then enters the immersion cylinder.

Bottom sample: 1. Lower the immersion cylinder to the bottom. 2. The weight of the immersion cylinder opens the valve automatically when the bottom is reached and the sample then enters the immersion cylinder.

#### Target immersion cylinder

With the Target immersion cylinder, liquid samples can be taken from a particular point. The immersion cylinder is lowered on a strong and sealed tube. When the target has been reached, a valve at the tube end is opened. This vents the immersion cylinder and fills it with the sample. The immersion cylinder is pulled up and emptied via the screw thread. Weight 2.5kg. With 5M venting tube. Screw off top enables easy cleaning.

#### Mini immersion cylinder

For sampling liquids in narrow places where access is difficult. Can also be used in curved dipping tubes and barrels with narrow openings. Capacity 50ml, 32mm diameter, height 180mm, weight 280g. Without lowering cable.

Upper body unscrews for easy cleaning.



Type	PK	Cat. No.
Dipping vessel, nickel-plated brass	1	9.303 935 2
Dipping vessel, stainless steel V2A	1	9.303 936
Dipping bottles Ex	1	9.303 937 3
Dipping bottle	1	9.303 938 4
Immersion cylinder	1	9.303 939
Target immersion cylinder	1	7.623 934 5
Mini immersion cylinder	1	9.303 933
Manual cable reel, PP green, without cable	1	6.200 263
Manual cable reel Ex, black with grounding cable, without cable	1	6.234 815
Cable, V2A stainless steel conductive	1	9.303 943
AISI 304 stainless steel lowering cable/PTFE-coated, length 10m	1	6.087 044
lowering PP cable, length 10m	1	7.620 817



### 1 Sample bags SteriBag, PE, sterile

Sterile, PE, liquid sample bags. For samples from chemistry, pharmaceutical, medical, food technology applications etc.

Bürkle

Type A: Without write-on panel

Type B: With write-on panel.

Filling volume approx ml	Width mm	Length mm	Description	PK	Cat. No.
60	76	127	A	500	9.404 114
60	76	127	B	500	9.404 119
150	76	178	A	500	9.404 115
150	76	178	B	500	9.404 120
450	114	229	A	500	9.404 116
450	114	229	B	500	9.404 121
650	140	229	A	500	9.404 117
650	140	229	B	500	9.404 122
900	114	305	A	500	9.404 118
900	114	305	B	500	9.404 123
1650	178	305	A	250	6.223 094
1650	178	305	B	250	6.223 093



### 2 Sample bags SteriBag StandUp, PE, sterile, with write-on panel

Sterile, PE, liquid sample bags. For samples from chemistry, pharmaceutical, medical, food technology applications etc.

Bürkle

This makes SteriBag StandUp stable and able to stand on its own without a separate stand or support, leaving both your hands free to take the sample and fill the bag.

Filling volume approx ml	Width mm	Length mm	PK	Cat. No.
400	114	229	500	9.404 124
600	140	229	500	9.404 125



### Whirl-Pak® Sample bags, PE, sterile

**NEW!**

Nasco

Whirl-Pak® bags are sterile polyethylene laboratory sample bags used to transport samples for biological testing and other applications.

With or without write-on strip. Bags should not be used at temperatures above 82°C. Bags can be frozen to any temperature, even liquid nitrogen temperatures down to -210°C - careful handling required after freezing.

Filling volume approx ml	Thickness mm	Dimensions (D x W) mm	Description	PK	Cat. No.
30	0,057	65x125	with label	500	7.080 208
60	0,057	75x125	with label	500	7.058 005
120	0,057	75x185	with label	500	7.077 212
530	0,064	115x230	with label	500	7.058 120
710	0,076	150x230	with label	500	6.242 083
2720	0,102	254x380	with label	250	6.266 304
60	0,057	75x125	without label	500	6.091 055
120	0,057	75x185	without label	500	9.404 234
207	0,076	95x180	without label	500	7.981 345
1240	0,076	150x380	without label	500	6.266 302
530	0,064	115x230	without label	500	9.404 235
710	0,076	150x230	without label	500	6.228 639
1060	0,076	125x380	without label	500	9.404 236
2040	0,076	190x380	without label	500	6.305 117



7.080 208

➔ Adhesive Labels - please see page 156

➔ Pressure-seal bags - please see page 181.

1



6.263 368

### Whirl-Pak® Filter bags, PE, sterile

**(NEW!)**

Nasco

All the bags use the same filter material. These special bags contain a third layer of finely perforated polyethylene, which filters out the solids in the sample when used in a homogeniser blender. This allows for easy pipetting of the sample. The hole diameter in the filter layer measures 0.33 mm and there are 285 holes per square cm. The filter is sealed into the perimeter of the bag on the sides and bottom, allowing the sample to be placed in the bag on either side. The liquid will transfer through the filter, but the solids stay on one side.

Filling volume approx ml	Thickness mm	Dimensions (D x W) mm	Description	PK	Cat. No.
710	0,102	150x230	with label	250	<b>7.970 783</b>
1627	0,102	190x300	with label	250	<b>6.263 368 1</b>

2



9.404 231

### Whirl-Pak® Sample bags, PE, sterile, free standing

**(NEW!)**

Nasco

The Whirl-Pak® Stand-Up Bags make sample handling and testing much easier. They give users the ability to perform important laboratory functions with both hands, because the bag will stand completely by itself. No rack or other holder is needed to keep the bag upright. When the sample is placed inside, the specially gusseted bottom flattens out, allowing the bag to stand up on its own. It works just like a beaker or bottle, however, it costs less, is sterilized, won't break, and uses only a fraction of storage space as the other containers.

The white, easy-to-write-on strip makes sample identification easier and more convenient.

Bags should not be used at temperatures above 82°C. Bags can be frozen to any temperature, even liquid nitrogen temperatures down to -210°C - careful handling required after freezing.

Filling volume approx ml	Thickness mm	Dimensions (D x W) mm	Description	PK	Cat. No.
120	0,064	75x185	with label, free standing	500	<b>9.404 231 2</b>
530	0,076	115x230	with label, free standing	500	<b>9.404 232</b>
750	0,076	150x230	with label, free standing	500	<b>6.266 303</b>
1065	0,102	125x380	with label, free standing	250	<b>6.260 542</b>
2041	0,102	190x380	with label, free standing	250	<b>6.260 543</b>

3



6.052 018

### Whirl-Pak® Sample bags/Homogenizing bags, PE, sterile

- Sterile, solid bags for the homogenization of liquids and solids
- With and without labelling strips

Nasco

Filling volume approx ml	Thickness mm	Dimensions (D x W) mm	Description	PK	Cat. No.
380	0,076	130x190	without label	500	<b>6.052 018 3</b>
710	0,102	150x230	without label	500	<b>9.404 233</b>
710	0,102	150x230	with label	500	<b>7.059 854</b>
1630	0,102	190x300	with label	500	<b>7.059 855</b>

4



6.260 544

### Whirl-Pak® Special sample bags, PE, sterile

**(NEW!)**

Nasco

Whirl-Pak® bags are sterile polyethylene laboratory sample bags used to transport samples for biological testing and other applications.

Following special versions are available:

- With outside pocket for paperwork. Keeps important paperwork dry, clean, and separate from the sample.
- Made of black pigmented PE-film providing maximum protection for samples that are sensitive to light.
- Including a sterile polyethylene glove and a special dry sponge free of bactericides and non-inhibitory
- With sterile 60 ml-scoop. For fast, convenient sampling of a variety of materials.
- Bags can be frozen to any temperature, even liquid nitrogen temperatures down to -210°C - careful handling required after freezing.
- Bags should not be used at temperatures above 80°C

Filling volume approx ml	Thickness mm	Dimensions (D x W) mm	Description	PK	Cat. No.
710	0,064	150x230	with document bag	500	<b>6.260 544 4</b>
530	0,064	115x230	with light protection, black	500	<b>6.260 459</b>
530	0,064	115x230	with specimen sponge and gloves	100	<b>7.970 688</b>
530	0,064	115x230	with scoop (60ml)	50	<b>7.970 696</b>

### 1 Whirl-Pak® Thio-Bag® sample bags



Nasco

The Whirl-Pak® Thio-Bag® is specially designed for sampling chlorinated water from for example swimming pools. Each sterile bag contains a nontoxic, nonnutritive tablet containing 10 mg of active sodium thiosulfate to neutralize chlorine at the time of collection. The bag is EPA approved and has the additional benefits of saving time, utility costs, storage space, disposal costs, and replacing sample containers. No. 6.266 300 has a convenient write-on strip and 4 oz and 100 ml fill lines to help collect the correct amount of water as required by Standard Methods (fill lines are approximate).

No. 6.266 301 contains three times the amount of sodium thiosulfate as the smaller Thio-Bag® and holds 300 ml when filled to the top of the white write-on strip (fill line)

Filling volume approx ml	Thickness mm	Dimensions (D x W) mm	Description	PK	Cat. No.
100	0,057	75x185	with label	100	6.266 300
300	0,064	115x230	with label	100	6.266 301

1



### 2 LLG-Transport tubes, PP, with screw cap

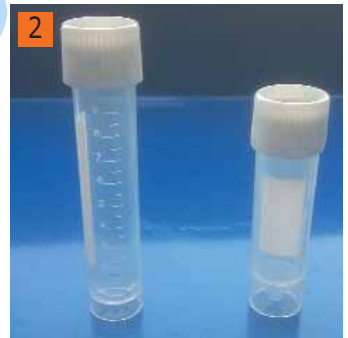


For convenient storage and dispatch of samples.

- Conical bottom
- Free standing
- Printed graduation
- 1 1/4 turn thread design for super fast screwing

Capacity ml	Outer diam. mm	Height with cap mm	PK	Cat. No.
5	16	60	100	6.265 667
10	16	80	100	6.265 668

2



### 3 LLG-Sample containers, PP, with screw cap, HDPE



Ideal for liquid specimen collection, transportation and storage.

- Container made of non-cytotoxic polypropylene
- Very solid quality
- Top and bottom gripping assures easy opening and closing when wearing gloves
- Half-transparency containers
- With graduation
- With label

Capacity ml	Height mm	Outer diam. mm	Ø Cover mm	PK	Cat. No.
20	42	32	37	1000	6.265 649
40	40	45	50	500	6.265 650
60	58	45	50	500	6.265 651
90	77	45	50	300	6.265 652
120	77	53	58	300	6.265 653
250	52	89	97	154	6.265 654
500	110	89	97	132	6.265 655
1000	138	111	120	64	6.265 656

3



### 4 LLG-Sample containers with tamper-evident cap, PS and PP



White with tamper-evident cap. Multi-purpose containers e.g. for storage or transport of samples.

Capacity ml	Diam. with cap mm	Height with cap mm	Material container	Material Lid	PK	Cat. No.
40	36	52	PS	PE-LD	10	9.402 350
100	58	58	PP	PP	10	9.402 353
250	64	95	PS	PE-LD	10	9.402 356
1000	116	116	PP	PP	5	9.402 359

4



➔ More containers - please see page 41.

## Sampling/Sample transport, storage-Grinding/Jaw breaker



### 1 LLG-Round sample containers, PP

White with screwed on lid.

Capacity ml	Diam. with cap mm	Height with cap mm	PK	Cat. No.
30	58	19	10	<b>9.402 310</b>
75	58	47	10	<b>9.402 313</b>
310	81	81	10	<b>9.402 318</b>
600	119	67	10	<b>9.402 321</b>
1250	119	130	5	<b>9.402 324</b>



### 2 3 Sample bottles, PP, for water sampling, sterile



Isolab

These sterile bottles are specially designed for taking, handling, transporting and storing water samples. Manufactured either as clear or amber colour from low density polypropylene. Clear bottles are manufactured from glass-like transparent special grade polypropylene. Amber bottles are manufactured from an amber coloured clear polypropylene which is highly translucent but still preventing the UV light penetrating inside the bottle. Square body form offers easy handling, and optimum space saving solutions during storage period. Wide bottle neck (GL 50) provides easy filling and pouring. Cap is made from high density polypropylene with self sealing lock with integral security ring. Unique cap inner design ensures hermetical closure and guarantees an excellent leak and contamination proof bottle. Embossed graduation (precision of  $\pm 2\%$ ) on side wall enables volume verifications. Each bottle is labelled specifying e.g. sample and source descriptions, code and lot numbers and expiry date. Bottles with liquid sodium thiosulfate (20 mg/lit - acc to ISO/FDIS 19458:2006) are ideal to analyse water meant for human consumption, swimming pools, and any other water where chlorine may modify the composition of the sample. Empty bottles, without sodium thiosulfate; ideal to sample water for physical and chemical analysis, as well as for other sample requirements that demands sterile bottles. Single packed bottles available on request.



Capacity ml	Description	PK	Cat. No.
250	clear, sterile R, without sodium thiosulfate	108	<b>9.001 075</b>
500	clear, sterile R, without sodium thiosulfate	84	<b>9.001 076</b>
1000	clear, sterile R, without sodium thiosulfate	30	<b>9.001 077</b>
250	amber, sterile R, without sodium thiosulfate	108	<b>9.001 078</b>
500	amber, sterile R, without sodium thiosulfate	84	<b>9.001 079</b>
1000	amber, sterile R, without sodium thiosulfate	30	<b>9.001 080</b>
250	clear, sterile R, with sodium thiosulfate	108	<b>9.001 081</b>
500	clear, sterile R, with sodium thiosulfate	84	<b>9.001 082</b>
1000	clear, sterile R, with sodium thiosulfate	30	<b>9.001 083</b>
250	amber, sterile R, with sodium thiosulfate	108	<b>9.001 084</b>
500	amber, sterile R, with sodium thiosulfate	84	<b>9.001 085</b>
1000	amber, sterile R, with sodium thiosulfate	30	<b>9.001 086</b>





### 1 Jaw Crusher, BB 50

Benchtop Jaw Crusher for the rapid and gentle, coarse and preliminary size reduction of hard, brittle and ductile materials. Continuous digital gap width adjustment with scale, enhanced ultimate fineness up to 0.5mm.

- Large fold-back hopper
- Removable crusher arm for easy cleaning
- Adjustable speed allows adaptation to sample characteristics
- Convenient operating keypad with digital display
- Memory for gap width setting
- Wear compensation with zero-point adjustment

#### Features:

- Throughput/charge: single items, charges to 3000ml
- Supply requirements: 220-240V, 50Hz

Type	Material breaking jaws	Feed size up to mm	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
BB 50	Manganese steel	to 40	420 x 560 x 460	79	1	9.738 770
BB 50	Stainless steel	to 40	420 x 560 x 460	79	1	9.738 771
BB 50	Tungsten carbide	to 40	420 x 560 x 460	79	1	9.738 772
BB 50	Zirconia	to 40	420 x 560 x 460	79	1	9.738 773
BB 50*	Steel 1.1750	to 40	420 x 560 x 460	79	1	9.738 774

\* for heavy metal free grinding.

Other power supply variants are available on request at the same price.

Retsch



### 2 Jaw Crushers, BB 100, BB 200, BB 300

For rapid and gentle coarse grinding and crushing of hard, brittle and tough materials.

Continuous gap adjustment with scale and zero-point adjustment for wear compensation. Excellent performance with enhanced final fineness, robust construction, fitted with quick-release hopper, receiver with safety switch and casing. Standard model is supplied with manganese steel breaking jaws.

#### Features:

- High throughput
- Continuous gap width adjustment
- Braking motor with safety switch
- Final fineness approx. 2 to 5mm
- Easy cleaning of grinding chamber
- Supply requirements 400 V 3-ph, 50 Hz

Type	Feed size up to mm	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
BB 100	50	320 x 800 x 960	137	1	9.739 098
BB 200	90	450 x 900 x 1160	300	1	9.519 120
BB 300	130	670 x 1600 x 1450	700	1	9.739 093

Retsch



### 3 Jaw crushers PULVERISETTE 1 classic line (2 Models)

Ideal for fast and effective pre-crushing of hard and very hard brittle materials in the areas of mining and metallurgy, chemistry, geology and mineralogy, glass industry, ceramics industry, rocks and soils. The final fineness can be easily set from the outside (10 different stages are possible).

#### Equipment Model I/II:

With crushing jaws and lateral support walls made of tempered steel. Crushers are also available in other voltages and with crushing jaws and lateral support walls made of stainless steel, chromium-free steel, hardmetal tungsten carbide, zirconium oxide and manganese steel.

Max. feed size:

#### Model I/Model II

approx. 60mm/approx. 95mm

Throughput:

up to 140kg/h/up to 200kg/h

Gap widths (final fineness):

1 to 15mm/1 to 15mm

Supply requirements:

400V/3~, 50-60Hz/400V/3~, 50-60Hz

Dimensions (WxDxH):

400 x 800 x 800mm/400 x 800 x 800mm

Net weight:

177kg/202kg

Fritsch



Type	Rating W	PK	Cat. No.
Jaw crusher PULVERISETTE 1 classic line, Modell I	1450	1	9.519 213
Jaw crusher PULVERISETTE 1 classic line, Modell II	2780	1	9.519 223

The Jaw Crushers PULVERISETTE 1 are also available as premium line models with increased performance, even easier to operate and fast cleaning.



### 1 LLG-Mortars only, porcelain

Capacity	Ext. diam.	Height	DIN	Description	PK	Cat. No.
ml	mm	mm				
25	51	32	12906	rough inside	1	9.164 410
70	63	41		rough inside	1	6.227 149
75	76	45		rough inside	1	9.164 411
110	83	50	12906	rough inside	1	6.232 577
160	90	56		rough inside	1	6.243 865
220	105	64		rough inside	1	9.164 412
400	125	71	12906	rough inside	1	9.164 413
2250	224	127		rough inside	1	6.252 383
110	83	50		glazed	1	6.227 289
220	105	64		glazed	1	6.234 591



### 2 LLG- Pestle only, porcelain

Head diam.	Length	DIN	Description	PK	Cat. No.
mm	mm				
14	54	12906	rough	1	6.227 150
24	115		rough	1	9.164 420
30	135		rough	1	6.232 574
36	150	12906	rough	1	9.164 421
42	175	12906	rough	1	9.164 422
74	250	12906	rough	1	6.252 384
42	175	12906	glazed	1	6.227 292
36	150	12906	glazed	1	6.234 592



### 3 Mortars only, porcelain

To DIN 12906. With spout, pestle not supplied. Glazed externally. Inside rough.

Haldenwanger

Capacity	Int. diam.	PK	Cat. No.
ml	mm		
70	65	1	9.164 206
170	90	1	9.164 209
400	130	1	9.164 212
700	150	1	9.164 215
1000	180	1	9.164 218
2600	240	1	9.164 225
6000	330	1	9.164 235



### 4 Pestles only, porcelain

To DIN 12906. With glazed handle. Unglazed grinding surface.

Haldenwanger

Nominal diam.	Head diam.	Length	PK	Cat. No.
mm	mm	mm		
63	24	115	1	9.164 306
90	30	135	1	9.164 309
125	36	150	1	9.164 312
150	42	175	1	9.164 315
180	55	210	1	9.164 318

Nominal size = mortar internal diameter  
Special sizes available on request.



### 5 Mortar with pestle, porcelain

Unglazed, with wooden handled pestle.

Ext. diam.	PK	Cat. No.
mm		
115	1	9.164 373
135	1	9.164 374
150	1	9.164 375

### 1 Mortars and pestles, MF

White. Melamine formaldehyde (MF). With spouted mortar. Resistant to boiling. Autoclavable at 121°C.

BRAND

Diam. mm	Height mm	PK	Cat. No.
125	80	1	9.164 355
150	90	1	9.164 357



### 2 Mortars and Pestles, Achat, black

Manufactured from agate stone. Recommended for use in laboratories demanding contamination free results. It has a hardness of 7 Mohs providing very good resistance during crushing the samples. Complete with relevant size a agate pestle.

NEW!

Isolab

Capacity ml	Int. diam. mm	PK	Cat. No.
20	50	1	6.267 372
60	75	1	6.267 373
125	100	1	6.267 374
250	125	1	6.267 375



### 3 Mortars and pestles, Agate

Agate. Polished. Standard quality. Other sizes available on request.

Capacity ml	Ext. diam. mm	Int. diam. mm	PK	Cat. No.
9	50	40	1	9.164 050
25	75	60	1	9.164 075
50	100	85	1	9.164 100
100	125	100	1	9.164 125



### 4 Mortar, stainless steel

Mortar and pestle head are both made from stainless steel.

Bochem

Description	Capacity ml	PK	Cat. No.
Mortar	250	1	6.900 119
Pestle (140mm)		1	6.079 568





#### 1 Laboratory blender MemoryBlender2

ROTOR

The Laboratory Memory Blender 2 is a compact programmable commercial blender, driven by a high power ventilator cooled motor. The high-quality construction and the electronically controlled speed cycles guarantee a maximum performance. The microprocessor based controller features 6 push buttons with 12 optimized pre-programmed cycles which are suitable for most applications. Using the built-in "Memory" function, these cycles can be replaced with individual programs with different time and speed settings. Even the speed of the "Pulse" function can be changed. It's possible to disable the "Memory" function, to prevent unwanted overwriting. The blender can also be operated in a manual mode with 6 fixed speeds. The easy to understand LEDs show the state of the controller.

The high performance programmable commercial silent blender.

- 12 programmable cycles for automatic processing
- 6 fixed speeds in manual mode
- very quiet, space saving, solid and elegant
- polished stainless steel
- easy cleaning

##### Safety features:

- By opening the plastic cover the motor stops immediately.
- A protective switch prevents the motor from overloading and overheating.
- Rugged main switch.
- The blender conforms to the international IEC standards

##### Please order mixing containers separately.

Before starting each operation the durability and resistance of all blender materials, e. g. glass, CNS, PP, rubber have to be checked concerning their tolerance against the substances to process.

##### Specifications

Motor input power:	1000W
Speed range:	2000 to 15000rpm, programable
Dimensions (WxDxH):	225 x 265 x 505mm/225 x 410 x 610mm (open)
Protection class acc. to EN 60335-1.	

Description	PK	Cat. No.
Laboratory blender MemoryBlender2 incl. sound protection hood	1	9.571 309
2l stainless steel container HighPower, with lid and knife kit	1	7.631 205
2l polycarbonate container HighPower, with lid and knife kit	1	9.571 308
125ml glass container without baffles, without lid	1	9.571 301
250ml glass container without baffles, without lid	1	9.571 302
500ml glass container without baffles, without lid	1	9.571 303
1000ml glass container without baffles, without lid	1	9.571 304
1000ml glass container with baffles, without lid	1	9.571 305



#### 2 Mixers MICROTRON® MB 550/MB 800

**NEW!**

KINEMATICA GmbH

The systems MICROTRON® MB 550 and MB 800 are specially designed for mixing, dispersing, homogenizing, emulsifying and size reduction of cuttable materials. Four different attachments made from glass with volumes of 125ml, 250ml, 500ml and 1000ml are available for the MICROTRON® MB 550. Attachments made from stainless steel with volumes of 2000ml and 4000ml are available for the MICROTRON® MB 800. Both systems are safety laboratory devices: grounded, double safety isolated, radio screened. A safety system prevents uncontrolled starting and therewith personal injuries: the mixer can only be started with well attached safety hood or lid. In case the hood or lid will be removed during operation the device will be stopped automatically. The systems comply with the CE guidelines for industrial machines. Both systems are designed to withstand high loads; they are space saving and always ready to use.

**Mixing jars and protective hoods - please order separately. Mixer MICROTRON® MB 550 can only be started with attached safety hood.**

##### Specifications

Motor input power	
MB 550:	550W
MB 800:	800W
Speed range	
MB 550:	Stepless, 600 to 14.000 min <sup>-1</sup>
MB 800:	Stepless, 500 to 17.000 min <sup>-1</sup>
Dimensions (Ø x H):	190 x 245mm
Protection class acc. to EN 60335-1.	

Type	PK	Cat. No.
MB 550	1	6.241 879
MB 800	1	6.259 416



### Accessories for Mixer MICROTRON® MB 550/MB 800



KINEMATICA GmbH

Mixing attachments including cutter head.  
The mixing attachments MBA 125 to 1000ml can be dismantled completely and easily.  
All parts are dishwasher safe and rust free.  
The mixing attachments MBA 2000 and MBA 4000 are made of dishwasher safe stainless steel.  
Their robust safety lids have an integrated feed opening for dosing.

For the operation of the mixer 550 MB MICROTRON a safety hood is mandatory.

Type	Description	Volume ml	Material	For	PK	Cat. No.
MBA 125	Mixing attachment	125	Glass	MB 550	1	6.257 342
MBA 250	Mixing attachment	250	Glass	MB 550	1	6.260 922
MBA 500	Mixing attachment	500	Glass	MB 550	1	6.241 880
MBA 1000	Mixing attachment	1000	Glass	MB 550	1	6.260 923 <sup>1</sup>
MBA 2000	Mixing attachment with safety lid	2000	Stainless steel	MB 800	1	6.260 924 <sup>2</sup>
MBA 4000	Mixing attachment with safety lid	4000	Stainless steel	MB 800	1	6.259 417
MBH 125	Safety hood for MBA 125	-	Acrylic glass	MB 550	1	6.257 343
MBH 250	Safety hood for MBA 250	-	Acrylic glass	MB 550	1	6.260 925
MBH 500	Safety hood for MBA 500	-	Acrylic glass	MB 550	1	6.241 881
MBH 1000	Safety hood for MBA 1000	-	Acrylic glass	MB 550	1	6.260 926 <sup>3</sup>

1



6.260 923

2



6.260 924

3



6.260 926

### Dry Mill, POLYMIX® PX - MFC 90 D

The PX-MFC 90 D is suitable for dry sample grinding in the laboratory.  
It's possible to change the hammer and cutting Mill sets.

KINEMATICA GmbH

- The blade grinding attachment is used for processing of dried, stringy and fibrous and grease-free materials  
Application: Wood, straw, dried grease-free meat, leather, paper, carbon, synthetic etc.
- The hammer grinding attachment is used for processing of dried, brittle and grease-free materials  
Application: Dried grain, dried beans, bones, rock, ceramics etc.
- Sieves 0.2mm up to 6mm diameter
- Hopper volume 300ml
- If the door is opened during operation for any reason, the motor is stopped

#### Specifications

Application volume:	Hopper 300ml
Sieves:	0.2, 0.5, 0.8, 1.0, 1.5, 2.0, 3.0, 4.0, 5.0, 6.0mm
Motor input power:	1000W
Speed range:	speeds up to 6000min <sup>-1</sup>
Drive Dimensions (L x W x H):	251 x 325 x 480mm
Tested to:	IEC/EN 61000-6-2/EN 61000-6-3 IEC/EN 61010-2-51

4



6.241 371

5



9.571 495

Type	PK	Cat. No.
PX - MFC 90 D drive unit 230V/EU, with hammer grinding attachment	1	6.241 371 <sup>4</sup>
Blade grinding attachment for PX-MFC 90 D	1	9.571 495 <sup>5</sup>

Sieves 0.2 to 6.0mm also available.



### 1 Cyclone Mill TWISTER

#### Application:

Retsch

The Cyclone Mill TWISTER is specially designed for the processing of foods and feeds for subsequent NIR analysis. The optimized form of rotor and grinding chamber generates an air jet which carries the ground sample through the integrated cyclone into the sample bottle. The air jet prevents the material from heating up, thus preserving the moisture content.

#### Features:

- Ideal for grinding feeds, grains, forage and other similar products
- 3 controlled speeds
- Cyclone separator with 250 ml collecting bottle for quick extraction of sample
- No cross contamination thanks to easy cleaning
- Convenient operating panel
- Professional industrial design with long lifetime

#### Specifications:

- Feed size: <10mm
- Final fineness: <500µm
- Batch size/feed quantity: <250 ml
- Speed setting: 10.000/12.000/14.000 rpm
- Dimensions (WxDxH): 449 x 283 x 427mm
- Weight: approx. 14kg
- Power supply: 230 V, 50/60 Hz

#### Supplied with:

Cyclone Mill TWISTER complete with rotor, grinding ring, sieve inserts (1.0mm and 2.0mm) and 10 sample bottles 250ml.

Type	PK	Cat. No.
TWISTER	1	6.256 514

Further inserts and accessories available on request.



### 2 Ultra Centrifugal Mill ZM 200

#### Application:

Retsch

Extremely rapid and gentle size reduction of soft to medium-hard and fibrous materials.

Ideal for grinding, e.g., chemicals, foods and feeds, washing powder, plastics, fertilizers, pharmaceutical raw materials and finished products. Also suitable for cryogenic grinding.

#### Features:

- gentle on the material thanks to 2-step rotor/screen system
- wide speed range, adjustable from 6 000 to 18 000 min<sup>-1</sup>
- patented cassette system for maximum sample recovery and easy cleaning
- defined final fineness due to ring sieves with aperture sizes from 0.08 to 10 mm
- comfortable safety housing with automatic cover closure
- motor compartment and electronics protected against dust and material penetration
- wide range of accessories with different rotors, ring sieves and cassettes

#### Specifications:

- Feed size: up to 10mm
- Final fineness: down to 40µm
- Batch: up to 300/4500ml (with cyclone)
- Size (WxDxH): 410 x 365 x 515 mm
- Weight: approx. 38 kg
- Mains connection: 230 V, 50/60 Hz

#### Supplied with:

ZM 200 with cassette 900 ml.

Rotors and ring sieves have to be ordered separately.

Further rotors and ring sieves on request (e.g. for grinding without heavy metal contamination).

Type	PK	Cat. No.
ZM 200	1	9.738 970

### Accessories for Ultra Centrifugal Mill ZM 200



Retsch

Description	PK	Cat. No.
Rotor, stainless steel, 6 teeth	1	9.739 064
Rotor, stainless steel, 12 teeth	1	9.739 065
Rotor, stainless steel, 24 teeth	1	9.739 066
Ring sieve, trapezoid holes 0.08mm	1	9.738 972
Ring sieve, trapezoid holes 0.12mm	1	9.738 973
Ring sieve, trapezoid holes 0.20mm	1	9.738 974
Ring sieve, trapezoid holes 0.25mm	1	9.738 975
Ring sieve, trapezoid holes 0.50mm	1	9.738 976
Ring sieve, trapezoid holes 0.75mm	1	9.738 977
Ring sieve, trapezoid holes 1.00mm	1	9.738 978
Ring sieve, trapezoid holes 1.50mm	1	9.738 979
Ring sieve, trapezoid holes 2.00mm	1	9.738 980
Ring sieve, round holes 3.00mm	1	9.738 981
Ring sieve, round holes 4.00mm	1	9.738 982
Ring sieve, round holes 5.00mm	1	9.738 983
Ring sieve, round holes 6.00mm	1	9.738 984
Conversion kit for grinding small quantities, consisting of push-fit rotor with 8 teeth, labyrinth disc, cassette 50 ml	1	9.738 987
Feeder kit, DR 100, drive unit for 220-240V, 50Hz, with feed attachment, with 40mm push-fit feed chute, funnel and stand	1	9.738 971
Cyclone with 5 litres collecting receptacle and filter bag	1	9.738 990

Further Ring sieves and rotors available on request.

### 1 Rotor Beater Mill SR 300



Retsch

The rotor beater mill SR 300 is ideally suited for use in the laboratory and for small series production due to its robust design and the possibility to process large sample volumes. Grinding chamber, feed hopper and material inlet and outlet are completely made of high-quality stainless steel. The variable speed of up to 10.000rpm allows for adaptation to specific application requirements.

#### Features:

- High throughput for batchwise size reduction of large sample volumes
- Speed from 3.000 to 10.000rpm
- Optional 180° grinding insert suitable for grinding hard, brittle samples
- Defined final fineness due to bottom sieves with aperture sizes from 0.08 to 10mm
- Easy cleaning thanks to removable cassette, hopper and push fit rotor
- Optional distance rotor suitable for heat-sensitive samples
- Ring filter and collecting vessel with convenient, dust-tight bayonet catch
- Quick-action door lock and motor brake

#### Function principle:

Size reduction and deagglomeration in the SR 300 are achieved by hammering, impact and shear effects. The quick-acting door lock ensures easy access to the grinding chamber for quick cleaning. With their motor brake (braking time < 0.5s), safety switch, splashback and access barrier in the inlet and outlet areas, Rotor Beater Mills offer the highest degree of operating safety.

**Scope of supply:** Mill with rotor, 5l collecting vessel and filter hose.

Base frame, sieves and sieve frames, please order separately.

#### Specifications

Feed size:	<25mm
Final fineness:	<0.05 mm
Speed range:	3000 to 10000rpm
Dimensions (WxDxH) with base frame:	600 x 700 x 1200mm
Weight:	approx. 60kg
Power supply:	220-240V, 50/60Hz

Type	PK	Cat. No.
SR 300, stainless steel	1	6.268 106

### Accessories for Rotor Beater Mill SR 300



Retsch

Description	PK	Cat. No.
Retaining frame 360°, stainless steel	1	6.268 107
Ring sieve, trapezoid holes 0.25mm	1	9.738 914
Ring sieve, trapezoid holes 0.50mm	1	9.738 915
Ring sieve, trapezoid holes 0.75mm	1	9.738 916
Ring sieve, trapezoid holes 1.00mm	1	9.738 917





#### 1 Cross beater mill SK 300

**NEW!**

Retsch

The cross beater mill SK 300 is used for batch-wise or continuous preliminary and fine size reduction. This robust mill is suited for laboratories as well as for the rough conditions of a production environment. Thanks to the powerful drive and rotor speed up to 4000rpm it is often possible to achieve a final fineness <100 microns in one process.

##### Features:

- High throughput for batch-wise size reduction of large sample volumes
- Suitable for feed sizes up to 25mm
- Adjustable speed from 2000 to 4000rpm
- Defined final fineness due to bottom sieves with aperture sizes from 0.12 to 10mm
- Rapid cleaning thanks to easily removable cassette, hopper and push fit rotor
- Ring filter and collecting vessel with convenient, dust-tight bayonet catch
- Quick-action door lock safety lock and electric brake

##### Function principle:

Size reduction in the SK 300 takes place by hammering, impact and shearing effects. The air drawn in through the hopper by the cross beater accelerates the discharge of the ground material. The airborne fine fraction is separated off by a downstream filter system.

**Supplied with:** Cross Beater Mill with grinding insert, cross beater, baffle plates, filter hose and 5l collecting vessel.

Bottom sieves and base frame, please order separately.

Feeders and bottom sieves in further sizes are available on request.

##### Specifications

Feed size:	up to 25mm
Final fineness:	approx. 0.1mm
Speed range:	2000 to 4000rpm
Dimensions (WxDxH) with base frame:	600 x 700 x 1200mm
Weight:	approx. 57kg
Power supply:	220-240V, 50/60Hz

Type	PK	Cat. No.
SK 300, hardened steel	1	6.268 112
SK 300, cast iron	1	6.268 113
SK 300, stainless steel	1	6.268 114

#### Accessories for Cross Beater Mill SK 300

**NEW!**

Retsch

Description	PK	Cat. No.
Base frame for SK 300	1	6.268 115
Bottom sieve trapezoid holes 0.12mm	1	6.268 116
Bottom sieve trapezoid holes 0.20mm	1	6.268 117
Bottom sieve trapezoid holes 0.25mm	1	6.268 118
Bottom sieve trapezoid holes 0.50mm	1	6.268 119
Bottom sieve trapezoid holes 0.75mm	1	6.268 120
Bottom sieve trapezoid holes 1.00mm	1	6.268 121
Bottom sieve trapezoid holes 1.50mm	1	6.268 122
Bottom sieve trapezoid holes 2.00mm	1	6.268 123
Bottom sieve round holes 3.00mm	1	6.268 124
Bottom sieve round holes 4.00mm	1	6.268 125
Bottom sieve round holes 5.00mm	1	6.268 126
Bottom sieve round holes 6.00mm	1	6.268 127
Bottom sieve round holes 8.00mm	1	6.268 128
Bottom sieve round holes 10.00mm	1	6.268 129
Ring filter for 5l collecting vessel	1	6.268 130



1 Cutting Mill SM 100/200/300

Rapid and gentle size reduction of bulky, soft, medium-hard, fibrous, elastic and thermally sensitive materials. The most powerful model, the SM 300, is especially suitable for cutting heterogeneous mixtures such as household waste, plastic materials, computer and electronic scrap. The mills are also used for organic materials like wood, roots, bones, plants and feed pellets. They can be equipped with various rotors and hoppers. The SM 300 features a variable speed which makes it perfectly adaptable to the particular application requirements.

Retsch

Features:

- powerful size reduction thanks to 3kW drive with high torque and RES technology (SM 300)
- perfect adaptation to application requirements by variable speed from 700rpm to 3000rpm (SM 300)
- optimum cutting effects thanks to double acting cutting bars (SM 200, SM 300)
- quick and easy cleaning without tools due to fold-back housing with smooth surfaces and push-fit rotor and sieves (SM 200, SM 300)
- defined final fineness due to bottom sieves with aperture sizes from 0.25mm to 20mm
- wide range of accessories including various hoppers, collection systems, rotors and sieves

Supplied with:

**SM 100** with 5L collecting receptacle. Please order rotor, hopper and bottom sieve and base frame (option) separately.

**SM 200/SM 300** with 5L collecting receptacle, base frame. Please order rotor, hopper and bottom sieve separately.

Accessories available on request.

Specifications

Feed size:	up to 60 x 80mm
Final fineness:	0.25 to 20mm
Retractable hopper:	-/yes/yes
Push-fit rotor:	yes/ yes/yes
Speed at 50 Hz:	1500rpm (SM 300) variable 700 to 3000rpm
Drive power:	1.5/2.2/3kW
Mains connection:	3/N~ 400V, 50Hz (SM 300) 220-230V, 50/60Hz

Type	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
SM 100	582 x 700 x 1675	73	1	9.739 069
SM 200	576 x 760 x 1675	90	1	9.739 067
SM 300	576 x 750 x 1677	160	1	9.739 083

Further voltages and versions for heavy-metal free grinding on request.



Rotors and Receptacles SM 100/200/300

Further accessories as hoppers and bottom sieves available on request.

Retsch

Description	PK	Cat. No.
6-disc rotor stainless steel, with reversible cutting tips	1	9.739 074
Parallel section rotor stainless steel	1	7.900 427
Collecting receptacle, 30L plastic, incl. adapter and filter hose	1	9.739 607
Collecting unit 250/500ml incl. 2 sample bottles	1	9.739 608
V rotor stainless steel for SM 300	1	6.267 310



### 1 Knife Mills GRINDOMIX GM 200/GM 300

The Knife Mills Grindomix GM 200 and GM 300 are suitable for the rapid and reproducible size reduction and homogenisation of food and feed materials. They can process substances with a high water, oil or fat content just as quickly and reliably as dry, soft and medium-hard products.

Retsch

#### Features:

- Very fast and reproducible grinding and homogenisation of foodstuffs, final fineness < 300 µm
- Speed-controlled industrial motor
- Autoclavable grinding tools
- For sample volumes up to 700ml (GM 200) or 4500ml (GM 300)
- Digital display of grinding time and speed
- Interval operation possible
- Optional gravity lid for automatic adjustment of grinding chamber volume
- 10 parameter combinations can be stored (GM 300)
- Drive power : ~ 900W (GM 200); continuous 1.1kW, short term peak 3 kW (GM 300)
- Electrical supply data: 220-240V, 50-60Hz

Supplied with:

**GM 200** complete with 1L plastic container, standard lid and stainless steel knife.

**GM 300** complete with 5L plastic container, standard lid, stainless steel knife and scraper.

Type	Feed size up to mm	Maximum Throughput/ Charge	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
GM 200	40	700 ml	350 x 392 x 275	10.0	1	9.739 252
GM 300	approx. 130	4500 ml	440 x 440 x 340	30.0	1	9.738 500

### Accessories for Knife Mill GM 200/300



Retsch

Type	Description	PK	Cat. No.
GM 200	Grinding container, 1 litre, plastic, autoclavable	1	9.738 510
GM 200	Grinding container, PP, 1L	1	9.739 213
GM 200	Grinding container, glass, 1L	1	9.739 208
GM 200	Grinding container, stainless steel, 1L	1	9.739 248
GM 200	Standard lid, PP for grinding container of autoclavable plastic, PP, glass or steel	1	7.930 430
GM 200	Reduction lid, PP for volume reduction to 0.5L for grinding container of autoclavable plastic or PP	1	9.739 222
GM 200	Gravity lid, PP for grinding container of autoclavable plastic and PP	1	9.739 210
GM 200	Gravity lid, PP with overflow channels for grinding container of autoclavable plastic and PP	1	9.739 218
GM 200	Gravity lid, PP for grinding container of glass or steel	1	9.739 211
GM 200	Gravity lid, PP with overflow channels for grinding container of glass or steel	1	9.739 209
GM 200	Scraper	1	9.739 212
GM 200	Stainless steel knife for GM 200	1	7.930 431
GM 200	Knife, stainless steel with serrated blades	1	6.267 311
GM 200	Knife, pure titanium for heavy-metal free grinding	1	9.739 254
GM 300	Grinding container, plastic, transparent, autoclavable and scratch-resistant, 5L, including knife holder	1	9.738 501
GM 300	Grinding container, plastic, transparent, autoclavable and scratch-resistant, 5L, without knife holder	1	9.738 502
GM 300	Grinding container, stainless steel, autoclavable, 5L, including knife holder	1	9.738 503
GM 300	Grinding container, stainless steel, autoclavable, 5L, without knife holder	1	9.738 504
GM 300	Standard lid, plastic, transparent, autoclavable and scratch-resistant	1	9.738 505
GM 300	Gravity lid, plastic, autoclavable and scratch-resistant	1	9.738 506
GM 300	Gravity lid, plastic, with overflow channels, autoclavable and scratch-resistant	1	9.738 507
GM 300	Standard knife, stainless steel, autoclavable	1	9.738 508
GM 300	Knife, stainless steel (full metal blade and cylinder), autoclavable	1	6.267 312
GM 300	Knife, stainless steel with serrated blades, autoclavable	1	6.267 313
GM 300	Knife, titanium-niob coating, autoclavable, for grinding without heavy metal contamination	1	6.267 314
GM 300	Scraper	1	9.738 509

### 1 Disc Mill DM 200

The DM 200 disc mills are mainly used for preliminary and fine grinding of medium-hard and hard-brittle substances in batches. Grinding discs are available in 4 different materials.

Retsch

#### Specifications:

- feed size: up to 20mm
- ultimate fineness: up to 0.1mm
- batch: up to 2.5l
- dimensions (WxDxH): 440 x 400 x 870mm
- weight: approx. 140kg
- supply requirement: 3/N~ 400 V, 50/60 Hz

Supplied with: disc mill DM 200 without grinding discs.

**Please order grinding discs separately.**

Type	PK	Cat. No.
DM 200	1	9.739 030

### Accessories for Disc Mill DM 200

Retsch

Type	PK	Cat. No.
Grinding discs - hardened steel	1	9.739 031
Grinding discs - manganese steel	1	9.739 032
Grinding discs - tungsten carbide	1	9.739 033
Grinding discs -- zirconium oxide	1	9.739 034



### 2 Mortar Grinder RM 200

Suitable for dry and wet grinding of soft, brittle, hard and paste-like samples. Depending on the sample, amounts from approx. 10ml up to 190ml can be reduced in size, triturated and homogenised. With beech wood scraper (special accessory) for pharmaceutical and homeopathic applications. The RM 200 is exceptionally easy to operate and clean. With digital time control and performance display, scale for reproducible pestle setting, built-in automatic switch-off and rapid motor-stop.

Retsch

**Please order mortar and pestle separately.**

#### Specifications

Feed size*:	max. 8mm
Batch size/Feed volume:	10 to 190ml
Final fineness*:	approx. 10µm
Dimensions (WxDxH):	400 x 370 x 480mm
Weight: approx:	approx. 24 kg (without grinding set)
Supply requirements:	220 - 240V 50Hz

Type	PK	Cat. No.
RM 200	1	9.738 170

\*depending on feed material



### Accessories for Mortar Grinder RM 200

Retsch

Description	PK	Cat. No.
Mortar, hard porcelain	1	9.738 151
Mortar, agate	1	9.738 172
Pestle, hard porcelain	1	9.738 173
Pestle, agate	1	9.738 174

Mortars and pestles made from zirconium oxide, sintered corundum, steel and tungsten carbide are available on request.

E &amp; OE.



9.739 080

### Mixer Mills MM 200/400

The mixer mills are true laboratory "all-rounders". They have been developed specially for grinding, homogenising and mixing of small amounts of sample in only a few seconds. They are also perfectly suitable for the disruption of biological cells as well as for DNA/RNA recovery. The MM 400 can also be used for cryogenic and wet grinding.

Retsch

#### Features:

- 2 milling stations
- Digital setting of time and vibration intensity
- 9 separate programmes can be stored
- Wide selection of grinding jar sizes and materials
- Self-locking and self-centering, clamping device for grinding jars (MM 400)
- Screw-top grinding jars up to 50ml, especially suitable for wet and cryogenic grinding (MM 400)

Accessories for cryogenic grinding and adapter with centrifuge tubes for cell disruption available on request.

**Grinding jars and balls please order separately.**

#### Specifications

Feed size\*

MM 200: up to 6mm

MM 400: up to 8mm

Ultimate fineness\*

MM 200: < 10µm

MM 400: < 5µm

Charge

MM 200: max. 2 x 10ml

MM 400: max. 2 x 20ml

Digital preselection of vibrational frequency

MM 200: 3 to 25Hz (180 to 1500rpm.)

MM 400: 3 to 30Hz (180 to 1800rpm.)

Power supply: 100 - 240V 50/60Hz

Type	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
MM 200	371 x 461 x 266	25.00	1	9.739 080 1
MM 400	371 x 461 x 266	26.00	1	9.739 091

\*depending on feed material



### 2 Grinding Jars for Mixer Mill MM 200

Retsch

Material	Capacity ml	PK	Cat. No.
Stainless steel	1.5	1	9.738 823
Stainless steel	5.0	1	9.738 829
Stainless steel	10.0	1	9.738 835
Stainless steel	25.0	1	9.738 839
Agate	5.0	1	9.738 827
Agate	10.0	1	9.738 833

Mixing beakers available on request.



### 3 Grinding Jars for Mixer Mill MM 400

With screw cap.

Retsch

#### Advantages:

- simple and safe handling
- dust and air-tight
- Suitable for wet and cryogenic grinding

Material	Capacity ml	PK	Cat. No.
Stainless steel	1.5	1	9.738 848
Stainless steel	5.0	1	9.738 849
Stainless steel	10.0	1	9.738 960
Stainless steel	25.0	1	9.738 964
Stainless steel	35.0	1	9.738 875
Stainless steel	50.0	1	9.738 885
Agate	5.0	1	9.738 852
Agate	10.0	1	9.738 961
Zirconium oxide	10.0	1	9.738 962
Zirconium oxide	25.0	1	9.738 965
Zirconium oxide	35.0	1	9.738 880
Tungsten carbide	10.0	1	9.738 963
Tungsten carbide	25.0	1	9.738 864
Hardened steel	25.0	1	9.738 869
PTFE	25.0	1	9.738 874
PTFE	35.0	1	9.738 966



### 1 Mixer Mill CryoMill

The CryoMill is designed for the cryogenic size reduction of materials which cannot be ground at room temperature or whose composition would be changed by it. The grinding jar is cooled before and during the grinding process with liquid nitrogen through an integrated cooling system. Thus the sample is embrittled and its volatile components are preserved. The size reduction principle is the same as that of the well-proven Mixer Mill MM 400. The CryoMill can also be operated without the cooling system which makes it suitable for a wide range of applications.

Retsch



#### Features:

- Powerful cryogenic grinding by impact and friction, up to 30 Hz
- Closed LN<sub>2</sub>-system (autofill) for enhanced safety, avoids any contact of the user with LN<sub>2</sub>
- Screw-top grinding jars for convenient, leak-proof operation
- Clearly structured user interface, memory for 9 SOPs
- Wide range of accessories including LN<sub>2</sub> feeding systems, various jar and ball sizes, adapter racks, materials

#### Specifications

Feed size	up to 8mm
Ultimate fineness	< 5µm
Charge	max. 1 x 20ml
Adjustable frequency range	3 to 30Hz (180 to 1800rpm.)
Dimensions (WxDxH)	385 x 675 x 370mm
Weight	40kg
Power supply:	100 - 240V, 50/60Hz

Type	PK	Cat. No.
CryoMill	1	9.739 299

Please order Autofill, grinding jars and grinding balls separately.

### Ball charge table for grinding jars MM 200/MM 400/CryoMill

Grinding jars	Volume	Feed size up to	Ball diam.	Bulbs
ml	ml	mm	mm	
1.5	0.2 - 0.5	1	5	1 - 2
5.0	0.5 - 2.0	2	7	1 - 2
10.0	2 - 4	4	10 / 12	1-2 / 1-2
25.0	4 - 10	6	10 / 12 / 15	5-6 / 2-4 / 1-2
35.0	6 - 15	6	10 / 12 / 15 / 20	6-9 / 4-6 / 2-3 / 1
50.0	8 - 20	8	10 / 12 / 15 / 20 / 25	12-14 / 6-8 / 3-4 / 1 / 1

### 2 Grinding balls for Mixer Mill MM 200/MM 400/CryoMill

Retsch



Material	Diam. mm	PK	Cat. No.
Zirconium oxide	10	1	9.738 419
Zirconium oxide	20	1	9.738 847
Hardened steel	10	1	9.738 381
Hardened steel	12	1	9.738 868
Stainless steel	5	1	9.738 870
Stainless steel	7	1	9.738 871
Stainless steel	10	1	9.738 382
Stainless steel	12	1	9.738 873
Stainless steel	20	1	9.738 387
Stainless steel	25	1	9.738 403
Tungsten carbide	7	1	9.738 877
Tungsten carbide	10	1	9.738 384
Tungsten carbide	15	1	9.738 414
PTFE with steel core	20	1	9.738 888
Agate	5	1	9.738 860
Agate	7	1	9.738 861
Agate	10	1	9.738 383

Further grinding balls available on request.

### 1 Vibratory Disc Mill RS 200



Retsch

The Vibratory Disc Mill RS 200 is suitable for the extremely quick, loss-free and reproducible grinding of hard, brittle and fibrous materials to analytical fineness. The grinding results achieve a high degree of reproducibility even after very short grinding times. The RS 200 is primarily used for sample preparation for spectral analysis.

#### Features:

- Reproducible results due to "Stabilized-Plane-Drive"
- Variable speed 700 to 1500rpm, stepless
- Extremely short grinding time
- 10 Standard Operating Procedures storable
- Grinding tools in 5 different materials
- Easy handling of the grinding set due to new ergonomic design and new carry handle
- New quick-action grinding set clamping system for convenient and safe tightening
- Protection of the grinding set (reduced maximum speed of 1200 and 700 rpm respectively) due to automatic tungsten carbide and agate detection
- Easy 1-button operation with colored graphics display and optimized menu structure

#### Specifications

Feed size*:	< 15mm
Ultimate fineness**:	< 20µm
Batch size/Feeding quantity:	35 to 150ml
Grinding time setting:	digital, 1 second - 99 minutes 59 seconds
Dimensions (WxDxH):	836 x 780 x 1220mm
Weight:	approx. 210 kg

\* depending on feed material and grinding set volume

\*\*depending on feed material

Type	PK	Cat. No.
Vibratory Disc Mill RS 200	1	9.738 781
Grinding set, hardened steel, 50ml	1	9.738 952
Grinding set, hardened steel, 100ml	1	9.738 955
Grinding set, hardened steel, 250ml	1	9.738 782
Grinding set, tungsten carbide, 50ml (only for 1200rpm)	1	9.738 783
Grinding set, tungsten carbide, 100ml (only for 1200rpm)	1	9.738 784
Grinding set, tungsten carbide, 250ml (only for 1200rpm)	1	9.738 785
Grinding set, agate, 50ml (only for 700rpm)	1	9.738 953
Grinding set, agate, 100ml (only for 700rpm)	1	9.738 956
Grinding set, zirconium oxide, 50ml	1	9.738 786
Grinding set, zirconium oxide, 100ml	1	6.222 238
Carry handle for RS 200 grinding sets	1	9.738 787
Carry handle insert for 50ml grinding set hardened steel or tungsten carbide	1	9.738 788
Carry handle insert for 50ml grinding set agate	1	9.738 789
Carry handle insert for 50ml grinding set zirconium oxide	1	9.738 790
Carry handle insert for 100ml grinding set tungsten carbide	1	9.738 791



### 1 Planetary Ball Mills PM 100/100 CM/200/400

Planetary Ball Mills are suitable for mixing and grinding soft, medium-hard, extremely hard, brittle and fibrous materials. They are used whenever high degrees of fineness down to the submicron range are to be achieved in a very short time. In addition to dry and wet grinding, they are also suitable for colloidal grinding and mechanical alloying. Typical materials are minerals, ores, chemicals, ceramics, soils, household and industrial waste etc.

Retsch

#### Features:

- extremely high ultimate fineness down to submicron range
- 1, 2 or 4 grinding stations
- grinding jar volumes from 12ml to 500ml
- suitable for long-term trials and continuous use
- programmable starting time
- power failure back-up ensures storage of remaining grinding time
- reproducible results due to digital parameter setting
- 10 parameter combinations can be stored
- single button operation with graphic display
- automatic grinding chamber ventilation for cooling the grinding jars
- grinding jars in 7 sizes and 8 different materials available

Supplied with: Planetary Ball Mill only. Grinding jars and grinding balls have to be ordered separately.  
The PM 100 CM is a Planetary Ball Mill with a speed ratio of 1:-1. Size reduction is not so much achieved by impact but by pressure and friction which is more gentle on the material.

#### Specifications

Ultimate fineness:	< 1µm
Dimensions (WxDxH):	630 x 415 x 468mm
PM 400	836 x 780 x 1220mm
Supply requirements:	230V, 50-60Hz



Type	Grinding stations	Grinding jars ml	Feed size up to mm	Maximum Throughput/ Charge	Weight kg	PK	Cat. No.
PM 100	1	12 to 500	up to 10	up to 220 ml	86.00	1	9.739 270
PM 100 CM	1	12 to 500	up to 10	up to 220 ml	86.00	1	9.739 275
PM 200	2	12 to 125	up to 4	up to 2 x 50 ml	72.00	1	9.739 271
PM 400	4	12 to 500	up to 10	up to 4 x 220 ml	290.00	1	9.739 274

Please order grinding jars and grinding balls separately.

### 2 Grinding Jars for Planetary Ball Mills PM 100/100 CM/200/400

(NEW)

Material	Capacity ml	PK	Cat. No.
Hardened steel*	500	1	9.738 222
Stainless steel	125	1	9.738 340
Stainless steel*	500	1	9.738 223
Tungsten carbide	50	1	9.738 311
Tungsten carbide*	250	1	9.738 218
Agate	125	1	9.738 345
Sintered aluminium oxide	50	1	9.738 327
Sintered aluminium oxide*	500	1	9.738 226
Zirconium oxide	50	1	9.738 325
Zirconium oxide*	250	1	9.738 221
Zirconium oxide*	500	1	9.738 227
Silicon nitride	125	1	9.738 343
Silicon nitride	250	1	9.738 354
Silicon nitride	500	1	6.267 315

\*not suitable for PM 200.

Further grinding jars on request



### Ball charge table for grinding jars PM 100/100 CM/200/400

Grinding jars	Volume	Feed size up to mm	Ball diam.	Bulbs
ml	ml		mm	
50.0	5 - 20	3	5 / 10 / 15 / 20	200 / 10 / 7 / 3
80.0	10 - 35	4	5 / 10 / 15 / 20	250 / 25 / 10 / 5
125.0	15 - 50	6	5 / 10 / 15 / 20	500 / 30 / 18 / 7
250.0	25 - 120	10	5 / 10 / 15 / 20 / 30	1200 / 50 / 45 / 15 / 6
500.0	75 - 220	10	5 / 10 / 15 / 20 / 30 / 40	2000 / 100 / 70 / 25 / 8 / 4



### 1 Grinding Balls for PM 100/100 CM/200/400

**NEW!**

Retsch

Material	Diam. mm	PK	Cat. No.
Agate	10	1	9.738 383
Sintered aluminium oxide	10	1	9.738 380
Sintered aluminium oxide	20	1	9.738 385
Sintered aluminium oxide	30	1	9.738 390
Sintered aluminium oxide	40	1	9.738 395
Hardened steel	10	1	9.738 381
Stainless steel	10	1	9.738 382
Stainless steel	20	1	9.738 387
Stainless steel 0.5 kg	2	1	9.738 425
Stainless steel 0.5 kg	3	1	9.738 426
Zirconium oxide	10	1	9.738 419
Zirconium oxide	20	1	9.738 847
Zirconium oxide	30	1	9.738 417
Zirconium oxide	40	1	9.738 418
Silicon nitride	10	1	9.738 400
Silicon nitride	20	1	9.738 305
Silicon nitride	30	1	9.738 304
Silicon nitride	40	1	9.738 303
Tungsten carbide	10	1	9.738 384
Tungsten carbide	20	1	9.738 389
Tungsten carbide	30	1	9.738 394

Further Grinding balls available on request.



### 2 High Energy Ball Mill Emax

**NEW!**

Retsch

The Emax is an entirely new type of ball mill for high energy milling for medium-hard, hard, brittle and fibrous materials. The combination of high friction and impact results in extremely fine particles within the shortest amount of time. Thanks to the cooling system with water, the high energy input is effectively used for the grinding process without overheating the sample. The Emax is capable of continuous grinding operation without interruptions for cooling down. The high energy input in combination with the unique cooling system provides perfect conditions for effective mechanical alloying or grinding down to the nanometer range.

#### Features:

- Speed of 2000rpm allows for ultra-fast and fine pulverization of the sample
- Controlled water cooling allows for continuous operation without cool down breaks
- Temperature-controlled grinding
- Narrow particle size distribution thanks to special jar design which improves mixing of the sample
- 10 combinations of grinding parameters storable
- Operation with 2 grinding jars with integrated safety closure
- Range of jar materials allow for contamination free grinding

#### Specifications

Material feed size:	< 5mm
Final fineness:	< 80nm
Batch size/feed quantity:	2 x 45ml
Dimensions (WxDxH):	625 x 645 x 525mm
Power supply:	1-phase
Weight:	approx. 120kg

Type	PK	Cat. No.
High Energy Ball Mill Emax	1	9.738 775
Grinding jar, 50 ml, stainless steel	1	9.738 776
Grinding jar, 125 ml, stainless steel	1	9.738 777
Grinding jar, 50 ml, zirconium oxide	1	9.738 778
Grinding jar, 120 ml, zirconium oxide	1	9.738 779
Grinding jar, 50 ml, Tungsten carbide	1	9.738 780

Please order grinding balls separately. Grinding balls for colloid grinding available on request.

### Ball charge table for grinding jars Emax

Retsch

Grinding jars nominal volume	Volume	Feed size up to	Ball diam.	Bulbs
ml	ml	mm	mm	
50	5 - 20	4	5 / 10 / 12	160 / 16 / 8 - 12
125	15 - 50	5	5 / 10 / 12 / 15	400 / 50 / 35 / 15 - 18



### 1 Disk mill PULVERISETTE 13 *classic line*

Ideal for intermittent and continuous fine grinding of hard-brittle and medium-hard solids in the areas of mining and metallurgy, glass industry, ceramics industry, soil research, rocks and soils.

Fritsch

Max. feed size:	20mm
Throughput:	up to 150kg/h
Final fineness:	0.1 to 12mm
Supply requirements:	400V/3~, 50-60Hz, 1830W
Dimensions (WxDxH):	440 x 870 x 40mm
Net weight:	140kg



Type	PK	Cat. No.
Disk Mill PULVERISETTE 13 <i>classic line</i>	1	9.739 001

Instrument also available in other voltages.

Fixed and movable grinding disks must be ordered additionally.

The Disk Mill is also available as *premium line* model: even more powerful, safer and easier to operate due to easy reproducible gap width setting via display.

### Accessories for disk mill PULVERISETTE 13 *classic line*

Fritsch

Type	Description	PK	Cat. No.
Fixed grinding disk	hardened steel cast	1	9.739 002
Mobile grinding disk	hardened steel cast	1	9.739 003
Fixed grinding disk	zirconium oxide	1	9.739 006
Mobile grinding disk	zirconium oxide	1	9.739 007

Grinding disks are also in manganese steel and hardmetal tungsten carbide available.

### 2 Mortar grinder PULVERISETTE 2

Ideal for universal fine grinding of hard-brittle to soft samples, dry or in suspension, as well as for preparing and homogenising pastes and creams on a laboratory scale.

Fritsch

The PULVERISETTE 2 is an essential instrument in the chemical/pharmaceutical as well as in food processing laboratories. The Mortar grinder is easy to clean ensures reproducible and precise grinding results, due to precise adjustment and pestle pressure readout. Also working with liquid nitrogen for cooling/embrittlement is no problem.

Max. feed size:	8mm
Max. sample quantity:	up to 190ml
Final fineness:	10 to 20µm
Supply requirements:	100-120/200-240V/1~, 50-60Hz, 250W
Dimensions (WxDxH):	310 x 460 x 410mm
Net weight:	24kg



Type	PK	Cat. No.
Mortar Grinder PULVERISETTE 2	1	9.738 200

Mortar and pestle must be ordered additionally.

### Accessories for mortar grinder PULVERISETTE 2

Fritsch

Material	PK	Cat. No.
Grinding set agate	1	9.738 211
Grinding set stainless steel	1	9.738 235
Grinding set hard porcelain	1	9.738 240

Mortars and pestles are also available in sintered corundum, hardmetal tungsten carbide and zirconium oxide.



### 1 Planetary ball mills PULVERISETTE 5 classic line



Fritsch

For the finest rapid, batchwise comminution of hard to soft grinding material, dry or in suspension, down to colloidal fineness. For mixing and perfect homogenising of emulsions and pastes.

#### Areas of application

Geology, chemistry, mineralogy, ceramics industry, construction materials industry, metallurgy, electrical industry, glass industry, nuclear research, soil research

#### Method of operation

The grinding sample is primarily comminuted by high-energy impacts from grinding balls and partially by friction between balls and the grinding bowl wall.

#### Features overview

- Toothed belt drive for bowls provides constant transmission ratio
- Rotational speed regulated by microprocessor
- Digital display of the actual rotational speed of the supporting disk
- Programmable grinding and pause times and grinding sequences - for short-time operation adjustable down to the second
- Smaller grinding bowls also possible with an adapter
- RS232 interface for transmission of process parameters (validation)
- Reversing function
- Overload protection with automatic rotational speed adjustment and display
- Maintenance-free drive due to electronically regulated rotary current motor (1.5 kW) with frequency converter and permanently lubricated bearings
- Grinding chamber hood safety lock with stoppage monitoring
- Membrane keyboard
- Robust housing of impact-resistant plastic
- Grinding chamber with forced air ventilation
- Gas pressured springs for easy opening of the cover
- Energy-save-function (electricity-saving mode)
- Certified safety CE
- 2-year guarantee

#### Equipment

The standard equipment delivered with the Planetary Mill PULVERISETTE 5 classic line includes 4 bowl fasteners and „safe lock“ clamping; however, it includes no grinding bowls or balls, which are available in 8 different materials and must be ordered as accessories. The voltage specified in the order is preset.

Max. feed size: 10mm  
 Final fineness: < 1µm  
 Grinding bowl sizes: 80, 250, 500ml  
 Supply requirements: 100-120/200-240V/1~, 50-60Hz  
 Dimensions (WxDxH): 580 x 670 x 570mm

Type	No. of grinding stations	Rotation speed	Sample volume	Weight	PK	Cat. No.
		rpm	ml	kg		
classic line Modell I	4	50-400	900	155	1	9.738 255
classic line Modell II	2	50-400	450	135	1	9.738 257

Grinding bowls and grinding balls must be ordered additionally.  
 Further models of planetary mills on request.



### 2 Grinding bowls for planetary ball mills PULVERISETTE 5/6 classic line

Fritsch

Material	Volume ml	PK	Cat. No.
Tempered steel	80	1	9.738 515
Tempered steel	250	1	9.738 525
Tempered steel	500	1	9.738 535
Stainless steel	80*	1	9.738 516
Stainless steel	250	1	9.738 526
Stainless steel	500	1	9.738 536
Sintered corundum	80*	1	9.738 512
Sintered corundum	250	1	9.738 522
Sintered corundum	500	1	9.738 532
Zirconium oxide	80*	1	9.738 518
Zirconium oxide	250	1	9.738 528
Zirconium oxide	500	1	9.738 538
Hardmetal tungsten carbide**	80*	1	9.738 514
Hardmetal tungsten carbide**	250	1	9.738 524
Adapter for grinding bowls	80	1	9.738 315

\* One grinding bowl holder can hold either 2 x 80ml bowls or 1 x 80ml bowl together with a grinding bowl adapter mounted one on top of the other.

\*\* Grinding bowl in a steel casing.

Grinding bowls are also available in agate and silicon nitride. Special gassing lids for grinding in an inert atmosphere and for mechanical alloying as well as the GTM-system (Gas pressure and temperature measuring system) for measuring gas pressure and temperature during the grinding process are available.

### 1 Grinding balls for grinding bowls PULVERISETTE 5/6 classic line

Fritsch

Material	Ball diam. mm	PK	Cat. No.
Tempered steel	10	1	9.738 555
Tempered steel	20	1	9.738 565
Tempered steel	30	1	9.738 575
Tempered steel	40	1	9.738 585
Stainless steel	10	1	9.738 556
Stainless steel	20	1	9.738 566
Stainless steel	30	1	9.738 576
Stainless steel	40	1	9.738 586
Sintered corundum	10	1	9.738 552
Sintered corundum	20	1	9.738 562
Sintered corundum	30	1	9.738 572
Sintered corundum	40	1	9.738 582
Zirconium oxide	10	1	9.738 558
Zirconium oxide	20	1	9.738 568
Zirconium oxide	30	1	9.738 578
Zirconium oxide	40	1	9.738 588
Hardmetal tungsten carbide	10	1	9.738 554
Hardmetal tungsten carbide	20	1	9.738 564
Hardmetal tungsten carbide	30	1	9.738 574
Hardmetal tungsten carbide	40	1	9.738 584

Grinding bowls are also available in agate and silicon nitride.

Grinding balls are also offered in the diameters 0.1mm to 3mm (to achieve a fineness down to the nanometer-range) as well as in 5mm and 15mm (have a look at grinding balls for grinding bowls for planetary micro mill PULVERISETTE 7 premium line).



### Recommended number of grinding balls per grinding bowl for PULVERISETTE 5/6 classic line

Grinding bowl Useful capacity (sample volume)	500ml 80 - 225ml	250ml 30 - 125ml	80ml 10 - 30ml
Ball diameter			
5mm	2000	1200	250
10mm	100	50	25
15mm	70	45	10
20mm	25	15	5
30mm	8	6	
40mm	4		

### 2 Grinding balls for grinding bowls PULVERISETTE 7 premium line

(NEW)

Fritsch

Material	Ball diam. mm	PK	Cat. No.
Stainless steel	5	1	9.738 560
Stainless steel	15	1	9.739 165
Sintered corundum	15	1	9.739 162
Zirconium oxide	5	1	9.739 160
Zirconium oxide	15	1	9.739 166
Hardmetal tungsten carbide	5	1	6.050 329
Hardmetal tungsten carbide	15	1	9.739 163

Grinding bowls are also available in agate, tempered steel and silicon nitride.

Grinding balls are also offered in the diameters 0.1mm to 3mm (to achieve a fineness down to the nanometer-range) as well as in 10mm and 20mm (have a look at grinding balls for grinding bowls for planetary mono mill PULVERISETTE 6 classic line and planetary mill PULVERISETTE 5 classic line).



### Recommended number of grinding balls per grinding bowl for PULVERISETTE 7 premium line

Grinding bowl Useful capacity (sample volume)	20ml 1 - 9ml	45ml 3 - 20ml	80ml 10 - 30ml
Ball diameter			
5mm	80	180	250
10mm	10	18	25
15mm	-	7	10
20mm	-	-	5



#### 1 Planetary micro mill PULVERISETTE 7 premium line

Fritsch

As extension of the existing *classic line* planetary mills, FRITSCH now offers a new *premium line* generation. For the first time ever, it is possible to reach rotational speeds never known before, which achieves ultrafine grinding results down to the nano range.

FASTER, SIMPLER AND SAFER THAN EVER.

##### Features:

- Extremely high-speed milling thanks to sunken grinding bowls with up to 1100rpm
- Sensational centrifugal accelerations of up to 95 times the force of gravity for better results in shorter times
- 150% greater energy application than conventional Planetary Ball Mills
- Extremely easy grinding bowl change with just two motions
- Highest safety due to unique SelfLock-grinding bowl-clamping
- For the first time, the bowl and lid form a single unit, no additional tensioning, no incorrect operation
- Automatic check of the grinding bowl locks in the mill
- Blockage in the event of impermissible operating state
- Automatic parameter check performed before every grinding, guarantees exact reproducibility
- Via USB all data can be easily exported to save time

Max. feed size:	5mm
Max. sample quantity:	70ml
Final fineness:	< 100nm
Rotational speed of main disk:	100 to 1100rpm
Supply requirements:	100-240V/1~, 50-60Hz, 1100W
Dimensions (WxDxH):	400 x 580 x 360mm
Net weight:	44kg

Type	PK	Cat. No.
Planetary Micro Mill PULVERISETTE 7 premium line	1	6.233 706

Grinding bowls and grinding balls must be ordered additionally.

For fast high-tech grinding of larger sample quantities down to the nano range, the Planetary Mono Mill PULVERISETTE 6 premium line is available.



#### 2 Grinding bowls for planetary micro mill PULVERISETTE 7 premium line

Fritsch

Description	Capacity ml	PK	Cat. No.
Stainless steel*	20	1	9.738 455
Stainless steel*	45	1	9.738 454
Stainless steel*	80	1	9.738 453
Sintered corundum*	20	1	9.738 459
Sintered corundum*	45	1	9.738 460
Sintered corundum*	80	1	9.738 461
Zirconium oxide*	20	1	9.738 458
Zirconium oxide*	45	1	9.738 457
Zirconium oxide*	80	1	9.738 456
Hardmetal tungsten carbide*	20	1	6.237 286
Hardmetal tungsten carbide*	45	1	9.738 231
Hardmetal tungsten carbide*	80	1	9.738 232

\* Grinding bowl in a steel casing.

Special gassing lids for grinding in an inert atmosphere and for mechanical alloying as well as the EASY GTM - Gas pressure and temperature measuring system, for measuring gas pressure and temperature during the grinding process and for controlling the grinding process are available.





### 1 Mini mill PULVERISETTE 23

Ideal for fine comminution of smallest quantities for wet and dry grinding as well as for cryogenic grinding. Its special spherical grinding bowl ensures much better performance in grinding, mixing and homogenising compared with similar models for example in chemical analysis, chromatography, mass spectrometry or x-ray structural analysis, preparation of samples for genetic research, homogenising of active ingredients, preparation of extracts in the forensic analysis, grinding of pigments and precious materials.

Fritsch

Max. feed size:	6mm
Max. sample quantity:	up to 5ml
Final fineness:	5µm
Supply requirements:	100-240V/1~, 50-60Hz
Dimensions (WxDxH):	200 x 300 x 300mm
Net weight	7kg

Type	PK	Cat. No.
Mini Mill PULVERISETTE 23	1	9.739 345

Grinding bowls and grinding balls must be ordered additionally.



### 2 Grinding bowls and grinding balls for mini mill PULVERISETTE 23

Fritsch

Type	PK	Cat. No.
Grinding bowl, PTFE, 5ml	1	9.739 343
Grinding bowl, stainless steel, 10ml	1	9.739 346
Grinding bowl, stainless steel, 15ml	1	9.739 347
Grinding ball, 5mm, stainless steel	1	9.738 560
Grinding ball, 10mm, stainless steel	1	9.738 556
Grinding ball, 15mm, stainless steel	1	9.739 165

Grinding bowls and balls are also offered in zirconium oxide and tempered steel, as well as grinding balls in 15mm diameter (have a look at grinding balls for grinding bowls: planetary micro mill PULVERISETTE 7 premium line).



### Recommended number of grinding balls per grinding bowl for mini mill PULVERISETTE 23

Grinding bowl Useful capacity (sample volume)	5ml 0.1 - 1ml	10ml 0.2 - 1ml	15ml 0.5 - 5ml
Ball diameter			
5mm	20	30	60
10mm	1	3	5
15mm	-	1	2

### 3 Variable Speed Rotor Mill PULVERISETTE 14

Fritsch

Ideal for fast, effective comminution of soft to medium-hard, brittle, fibrous materials, as well as difficult-to-mill and temperature-sensitive samples. Cryogenic grinding, dispersion and homogenisation are also one of the areas of operation. The variable speed rotor mill is an ultra-centrifugal mill with variable speed settings between 6.000rpm and 20.000rpm and automatic speed regulation for constant milling in the areas of analytic, biology, chemistry, agriculture and forestry, foodstuffs, plastics and textiles, pharmaceuticals, environment/RoHS. For optimal material feeding the Vibratory Feeder LABORETTE 24 (optional) is recommended.

#### Specifications

Max. feed size:	10mm
Throughput:	up to 5L/h
Sieve inserts:	0.08 to 6mm
Final fineness (d <sub>50</sub> ):	40µm
Rotor speed:	6.000 to 20.000rpm
Dimensions (WxDxH):	310 x 480 x 470mm
Net weight:	20kg

Type	Supply requirements	PK	Cat. No.
Variable Speed Rotor PULVERISETTE 14	100-120 V/1~, 50-60 Hz, 1200 watt	1	9.738 276
Variable Speed Rotor PULVERISETTE 14	230-240 V/1~, 50-60 Hz, 1200 watt	1	9.738 277

Impact rotor and sieve ring must be ordered additionally.

The variable speed rotor mill PULVERISETTE 14 is also available as premium line model and can be used as impact mill, cutting mill and knife mill due to a multi-functional tool system. Instrument also available in other voltages.





9.738 421



9.739 300

### Cutting mill PULVERISETTE 15 and universal cutting mill PULVERISETTE 19

Ideal for pre and fine grinding of soft to medium-hard as well as fibrous or tough materials. They are essential for the areas of plastics, textiles, agriculture and forestry, environmental, construction materials, chemistry, foodstuffs and for sample preparation for RoHS analysis. All grinding parts can be removed for cleaning in just a few seconds without tools, unbeatable fast, simple and efficient. Different rotors, various knife geometries and replaceable blades ensure maximum flexibility and durability. For controlling the abrasion properties, the grinding tools are offered in different materials. The optimum airflow ensures fast grinding and secure protection against clogging. The patented FRITSCH sample exhauster with cyclone separator (optional) ensures simple feeding, fast throughput and good cooling.

Fritsch

Max. feed size:	up to 70 x 80mm*
Throughput:	up to 60L/h*
Sieve inserts:	0.2 to 20mm*
Supply requirements:	400V/3~, 50-60Hz
Dimensions (WxDxH):	420 x 480 x 690mm resp. 440 x 550 x 630mm*

\* depending on the instrument type

Type	Feed size up to mm	Throughput max. l/h	Rotation speed rpm	Weight kg	PK	Cat. No.
Cutting mill PULVERISETTE 15	70 x 70	50	2800-3400	42	1	9.738 421 1
Universal cutting mill PULVERISETTE 19	70 x 80	60	2800-3400	56	1	9.739 300 2

Instruments also available in other voltages.

Funnels, rotors, sieve inserts/sieve cassettes and collecting vessels must be ordered separately.

Further Cutting mills available on request.



### 3 Accessories for cutting mill PULVERISETTE 15

Fritsch

Type	PK	Cat. No.
Protected funnel with sample pusher	1	7.900 140
Rotor with straight cutting edges and fixed knives made of tool steel	1	9.738 424
Sieve insert, trapezoidal perforation 0.25mm	1	9.738 432
Sieve insert, trapezoidal perforation 0.5mm	1	9.738 433
Sieve insert, trapezoidal perforation 1mm	1	9.738 435
Sieve insert, trapezoidal perforation 2mm	1	9.738 437
Sieve insert, square perforation 4mm	1	9.738 441
Sieve insert, square perforation 6mm	1	9.738 442
Collecting vessel, 3.5L	1	6.231 269
Collecting vessel, 60L with filter hose	1	9.738 449
Universal support stand	1	9.738 429

Alternative funnels as well as sieve inserts made of stainless steel are also available in other perforations. Rotors as well as the sieve inserts are also offered in chromium-free steel.



### 4 Accessories for universal cutting mill PULVERISETTE 19

Fritsch

Type	PK	Cat. No.
Standard funnel for long and bulk solids	1	6.510 319
Standard rotor with V-cutting edges and fixed knives made of hardened stainless steel	1	9.739 321
Sieve cassette, trapezoidal perforation 0.5mm	1	9.739 331
Sieve cassette, trapezoidal perforation 1mm	1	9.739 333
Sieve cassette, trapezoidal perforation 2mm	1	9.739 335
Sieve cassette, square perforation 4mm	1	9.739 340
Sieve cassette, square perforation 6mm	1	9.739 341
Collecting vessel, 3L	1	9.739 350
Large collecting vessel, 10L	1	9.739 351
Universal support stand	1	9.738 429

Alternative funnels, rotors in other materials and designs, sieve cassettes in other perforations and materials as well as a sample exhauster with cyclone separator are available on request.

Batch mill Tube Mill control



The world's first patented Tube Mill control is a batch mill for disposable and reusable grinding chambers (please order separately). Eliminates the possibility of cross-contamination and the effort of cleaning. The grinding chamber and cover are made from a transparent material so grinding tests can be observed at any time. The mill can be used for hard (Mohs hardness up to 3), dry and brittle materials. It is especially suitable for grinding seeds, such as corn and wheat. During development of the mill, particular emphasis was placed on security. The mill will only start when the hood is closed. When the grinding chamber is not inserted properly or not closed properly, the drive unit will display an error message and the drive will not start. During operation, the grinding chamber cannot be opened. The drive and the grinding chambers are secured with a labyrinth seal. No dust can escape from the chamber or penetrate the drive.

- Clearly arranged, multilingual OLED-display
- USB interface for control and documentation of all the parameters
- Interval operation available
- Various operating modes
- Adjustable safety speed
- Adjustable safety time
- Programmable and storable test conditions
- Error Code Display
- Reproducible test results
- Easy operation with touch keypad
- Dust proof sealed housing
- Quiet operation

Specifications

Operating principle	cutting/impact
Motor rating input/output:	100/80W
Speed:	5000 to 25000rpm
Chamber vol.:	40ml
Timer:	5s to 3min
Interval timer:	5s to 60s
Overload protection:	yes
Circumferential speed:	65m/s
Max. feed hardness:	5Mohs
Dimensions (WxDxH):	180 x 300 x 170mm
Weight:	2.7kg
Protection class according to DIN EN 60529:	IP 30
Power supply:	220-240V, 50/60Hz

Type	PK	Cat. No.
Tube Mill control	1	9.737 790 <b>1</b>
Disposable grinding chamber MT 40	10	9.737 791 <b>2</b>
Grinding chamber MMT 40.1	1	7.639 994 <b>3</b>
Spare parts set for grinding chamber MMT 40.1*	1	4.653 944

\*Supplied with: 100 x sealing, 10 x beater, 10 x coupling



1



2

9.737 791



3

7.639 994

1



### 1 Grinding mill, A 10 basic

NEW!

IKA

Newly designed batch mill for grinding of hard, brittle, soft and fibrous materials for volumes up to 50 ml. Because samples may be embrittled directly in the grinding chamber; tough, oily and aqueous samples can also be grinded. During development of the mill, particular emphasis was placed on safety. The mill will only start when the lid is closed and it can only be opened at standstill. A quick stop feature further increases the safety of user.

- Digital timer
- Counter: Display of grinding time
- Interval operation
- Brushless motor for long life and low noise
- Integrated cooling connections
- Error Code Display
- Easy handling with keypads
- Easy exchangeable beater/cutter for a variety of applications
- Grinding chamber reduction for small sample amounts ( included with delivery)
- Easy opening and closing of the lid with a bayonet lock

#### Specifications

Motor rating input/output:	300/240W
Speed:	25 000rpm
Chamber vol.:	50ml
Power-on time ON/OFF:	5/10min
Auto power off:	yes
Tangential speed:	73m/s
Max. sample granule size:	6mm
Dimensions (WxDxH):	130 x 145 x 250 mm
Weight:	2.9 kg
Protection class DIN EN 60529:	IP 21
Supply requirements:	220 - 240 V 50/60 Hz

Type	PK	Cat. No.
A 10 basic	1	4.653 943
A 10 basic S2 UK	1	6.265 902
A 10 basic S3 CH	1	6.265 903

2



### 2 Grinding mill, A11 basic

IKA

Batch mill for 2 different grinding procedures:

Impact grinding of hard, brittle or non-elastic grinding materials with high-grade stainless steel beater. This beater can be used for a Mohs hardness up to 6 (incl. with delivery).

Cutting grinding for pulverizing soft, fibrous materials with a cutting blade (not incl. with delivery).

- Moist and gluey materials can be pulverized by adding water
- Grinding chamber made of Tefcel (PTFE, glass fibre-reinforced) with stainless steel inlet (1.4571), useful volume 80ml (incl. with delivery). For embrittlement of grinding materials with liquid nitrogen in the grinding chamber
- Optionally, a 250ml grinding chamber is available

#### Specifications

Motor rating input/output:	160/100W
Speed:	28000rpm (off load)
Chamber vol.:	80ml
Power-on time ON/OFF:	1/10 min
Auto power off:	yes
Tangential speed:	53m/sec.
Max. sample granule size:	10mm
Dimensions (WxDxH):	85 x 85 x 240mm
Weight:	1.5kg
Protection class DIN EN 60529:	IP 43
Supply requirements:	230V 50/60Hz
Tested to DIN EN IEC 61010-1.	

Type	PK	Cat. No.
A 11 basic	1	9.737 801
A 11 basic UK	1	6.202 305

Accessories please order separately.



### 1 Universal mill M20

Batch mill suitable for dry grinding of hard and brittle substances.

IKA

- Double-walled grinding chamber can be cooled with water through two hose adapters
- Removable grinding chamber, easy to clean
- Two grinding chambers can be alternately operated using one drive
- M 21 blade incl. with delivery

#### Specifications

Motor rating input/output:	440/225W
Speed:	max. 20000rpm. off load
Overload protection:	current limiter
Throughput/Charge max:	250ml
Material:	stainless steel (AISI 304)
Feed size:	max. 5 to 7mm
Dimensions (WxDxH):	170 x 170 x 350mm
Weight:	6.6kg
Supply requirements:	230V 50/60Hz
Protection class DIN EN 60529:	IP21
Tested to DIN EN IEC 61010-1.	

Type	PK	Cat. No.
M 20	1	9.737 828
M 20 UK	1	4.007 942

1



### 2 Accessories for Grinding mill, A10 basic

(NEW)

IKA

#### A 10.1 Cutter, stainless steel

For most brittle materials with a Mohs hardness up to 5.

#### A 10.3 Cutter, hard metal

Made from tungsten carbide for hard materials with a Mohs hardness up to 9.

#### A 10.2 Star-shaped Cutter, stainless steel

For specific lightweight materials like paper, dried plant parts, plastics and for smooth-elastic materials.

#### A 10.4 Grinding chamber reduction

For small grinding volumes.

Type	Description	PK	Cat. No.
A 10.1	Cutter, stainless steel*	1	6.265 588
A 10.3	Cutter, hard metal	1	6.265 589
A 10.2	Star-shaped cutter, stainless steel	1	6.265 590
A 10.4	Grinding chamber reduction*	1	6.265 591

\*included in delivery

2



### 3 Accessories for Grinding mill, A11 basic

IKA

#### A 11.1 Spare beater

For pulverising substances with a Mohs hardness up to 6.

#### A 11.2 Cutter

For pulverising soft, fibrous grinding materials.

#### A 11.3 Beater, hard metal

For pulverising substances with a Mohs hardness up to 9, chrome-carbide coated

#### A 11.4 Grinding container, 250ml

Made of polycarbonate with stainless steel inlet. Not suitable for cooling with N<sub>2</sub>, only applicable with double beater A 11.6.

#### A 11.5 Spare grinding container, 80ml

Made of Tefcel (PTFE, glass fiber-reinforced) with stainless steel inlet. Excellent resistance to chemicals and low temperatures (- 200°C).

#### A 11.6 Dubbel beater

For use up to Mohs hardness 3. Only applicable with grinding chamber A 11.4.

#### A 11.7 Funnel

Prevents splashing by pouring in liquid nitrogen in the grinding chamber A 11.5.

Type	Description	PK	Cat. No.
A 11.1	Spare beater*	1	9.737 815
A 11.2	Cutter	1	9.737 806
A 11.3	Beater	1	9.737 807
A 11.4	Grinding container, 250ml	1	9.737 805
A 11.5	Spare grinding container, 80 ml*	1	9.737 816
A 11.6	Double beater	1	9.737 817
A 11.7	Funnel	1	9.737 818

\*included in delivery

3





### 1 Universal mill M 20, accessories and spares

IKA

Type	Description	PK	Cat. No.
M 21	Spare cutter for M 20*	1	9.737 829
M 22	Hard metal cutter (tungsten carbide)	1	9.737 830
M 23	Star-shaped cutter (stainless steel)	1	9.737 831
M 20.1	Grinding chamber	1	9.737 832

\*included in delivery

### Drive unit MF 10 basic

Universal laboratory grinder, comprising powerful drive unit for use with a choice of accessory grinding heads. The user can choose between the impact grinding head for milling hard, brittle materials (see fig.) and the cutting head for processing fibrous material. The maximum granule size output can be set by using various insert sieves (with apertures between 0.25mm and 3mm) placed above the outlet. There is an NS29 standard ground joint at the outlet for attachment of receiving flasks. Grinding/cutting heads not included.

IKA

#### Specifications

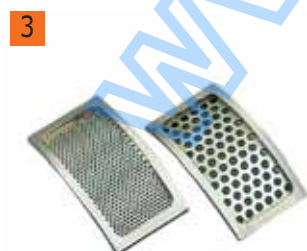
Motor rating input/output:	1000/500W
Speed range:	3000 to 6500rpm.
Tangential speed with impact grinding head:	31.4 m/sec.
Tangential speed with cutting head:	22.5 m/sec.
Material in contact with product:	Stainless steel AISI 316 L
Power-on time ON/OFF:	120/130mins.
Auto power off:	yes
Dimensions with grinding head (WxDxH):	320 x 300 x 380mm
Weight with grinding head:	9.7kg
Protection class DIN EN 60529:	IP22
Supply requirements:	230V 50/60Hz.
Tested to DIN EN IEC 61010-1.	

Type	Description	PK	Cat. No.
MF 10 basic	Drive unit without head	1	9.737 780 2

Accessories please order separately.



9.737 780



### 3 Accessories for microfine grinder MF10 basic, for in-line processes

IKA

Type	Description	PK	Cat. No.
MF 10.1	Cutting head	1	9.737 781
MF 10.2	Impact grinding head	1	9.737 782
MF 0.25	Sieve	1	9.737 783
MF 0.5	Sieve	1	9.737 784
MF 1.0	Sieve	1	9.737 785
MF 2.0	Sieve	1	9.737 787
MF 3.0	Sieve	1	9.737 788
MF 4.0	Sieve	1	9.737 789

### 1 2 Analytical Sieve Shakers AS 200 basic/digit/control, AS 300 control, AS 450 basic/control

Sieve shakers are used in research & development, quality control of raw materials, interim and finished products as well as in production monitoring.

Retsch

#### Features:

- Sieving with 3D effect
- For wet and dry sieving
- Short sieving times
- Low-noise, maintenance-free

**Please order clamping device, test sieves and collecting pan separately.**

**AS 200 basic:** favourably priced basic model.

**AS 200 digit:** powerful comfort model with touch-sensitive keypad, digital display, interval sieving.

**AS 200 control:** like AS 200 digit, but microprocessor-controlled, with freely selectable intervals and digital vibration amplitude setting. It can be calibrated and, for the first time, allows 100% reproducible sieving results worldwide, even if different instruments are used. The AS 200 control has an integrated interface for the evaluation software EasySieve®. At the same time it also offers all the requirements for test materials monitoring according to ISO 9000.

**AS 300 control:** like AS 200 control; also suitable for sieves up to 315mm diameter and for higher loads.

**AS 450 basic:** budget-priced basic model for sieving up to 15kg of material.

**AS 450 control:** like AS 200 control but only suitable for 400mm diam. and 450mm diam. sieves. The optimized electromagnetic drive with RETSCH's CET technology allows for an amplitude up to 2.2mm even with maximum loads up to 25kg. Manual re-sieving is no longer required.

#### Specifications

Max. number of fractions (depending on sieve size):

AS 200, AS 300:	9/17
AS 450 basic:	11/7
AS 450 control:	13/9
Movement of sample:	orbital with vibration
Height of sievetower	
AS 200, AS 300:	up to approx. 450mm
AS 450 basic:	up to approx. 830mm
AS 450 control:	up to approx. 960mm
Max. charge/quantity of sample:	
AS 200:	3kg
AS 300:	6kg
AS 450 basic:	15kg
AS 450 control:	25kg
Timer:	
AS 200 digit, control, AS 300, AS 450:	digital
AS 200 basic:	analog

Type	Measuring range	Dimensions (W x D x H) mm	Weight kg	For Sieve sizes (diam.) mm	PK	Cat. No.
AS 200 basic	20µm to 25mm	400 x 350 x 230	30	100 / 150 / 200 / 203	1	9.739 223
AS 200 digit	20µm to 25mm	400 x 350 x 230	30	100 / 150 / 200 / 203	1	9.739 224
AS 200 control	20µm to 25mm	400 x 350 x 230	30	100 / 150 / 200 / 203	1	9.739 273
AS 300 control	20µm to 40mm	400 x 400 x 235	35	100 / 150 / 200 / 203 / 305 / 315	1	9.739 241
AS 450 basic	25µm to 125mm	680 x 680 x 280	140	400 / 450	1	9.739 278
AS 450 control	25µm to 125mm	715 x 658 x 435	200	400 / 450	1	9.739 277





#### Analytical Sieve Shakers AS 400 control, AS 200 tap/ jet

##### AS 400 control:

The AS 400 control is used for the sieving of dry goods with test sieves of a diameter up to 400mm. The uniform, horizontal circular motion ensures exact separation of the product to be sieved.

- Sieving with circular sieving motion according to DIN 53477
- Free digital adjustment of all process parameters (time, speed or sieve acceleration, interval)
- Memory for up to 9 SOPs
- Integrated interface for evaluation software EasySieve®
- Electrical supply data: 100-240 V, 50/60 Hz

**Please order clamping device, test sieves and collecting pan separately.**

The clamping devices of AS 200 and AS 300 are also suitable for the AS 400.

Retsch

##### AS 200 tap:

For sieve analysis of certain products such as activated carbon, abrasives, coal, spices and diamonds, as specified in the corresponding standards.

- Horizontal, circular sieving motion with vertical taps
- Suitable for dry sieving
- Robust and maintenance-free
- Electrical supply data: 230 V, 50 Hz

**Please order test sieves and collecting pan separately.**

##### AS 200 jet:

The air jet sieving machine AS 200 jet is particularly suitable for light materials with particle sizes in the lower micron range which tend to agglomerate.

- Open Mesh Function to reduce the number of near-mesh particles
- Operation with standard Retsch sieves, 203 mm (8") diameter, 1" or 2" high
- Adapter for 200mm sieves optional
- Free manual (standard) or automatic (accessory) pressure regulation
- High flexibility through adjustable nozzle speed
- Memory for up to 9 SOPs, additional Quick Start mode
- Electrical supply data: 230 V, 50/60 Hz

**Please order test sieve and vacuum cleaner separately.**

##### Specifications

Max. number of fractions (depending on sieve size):

AS 400 control:	7/9/17
AS 200 tap:	7/13
AS 200 jet:	1 (2 with cyclone)

Movement of sample:

AS 400 control:	circular
AS 200 tap:	circular with taps
AS 200 jet:	dispersion by air jet

Height of sievetower

AS 400 control:	up to approx. 450mm
AS 200 tap:	up to approx. 350mm
AS 200 jet:	up to approx. 50mm

Max. charge/quantity of sample:

AS 400 control:	5kg
AS 200 tap:	3kg
AS 200 jet:	0.3 to 100g

Timer: digital



Type	Measuring range	Dimensions (W x D x H) mm	Weight kg	For Sieve sizes (diam.) mm	PK	Cat. No.
AS 400 control	45 µm to 63 mm	540 x 507 x 260	70	100 / 150 / 200 / 203 / 305 / 315 / 400	1	9.739 242 1
AS 200 tap*	20 µm to 25 mm	735 x 530 x 675	92	200 / 203	1	6.238 947 2
AS 200 jet	10 µm to 4 mm	460 x 305 x 288	14	203	1	6.238 239 3

\*with sound protection cabinet

#### Test sieve sets for Sieve Shakers AS series

Each set with one collecting pan.

Retsch

For	Diam. mm	Description	PK	Cat. No.
AS 200	200	45µm, 63µm, 125µm, 250µm, 500µm, 1mm, 2mm, 4mm	1	9.739 255
AS 300	305	630µm, 1.25mm, 2.5mm, 5mm, 10mm, 20mm, 31.5mm	1	9.739 256
AS 400	400	500µm, 1mm, 2mm, 5mm, 10mm, 20mm	1	9.739 257
AS 450	450	63µm, 125µm, 250µm, 500µm, 1mm, 2mm, 4mm	1	9.739 279

Other accessories, such as sieve lids and intermediate receivers, are available on request.



### 1 Vibratory sieve shaker ANALYSETTE 3 PRO and SPARTAN

Fritsch

For quantitative particle size analysis of dry samples and suspensions of all kind by dry and wet sieving with woven test sieves. FRITSCH Sieve Shakers satisfy all requirements for accurate and reproducible sieving analysis and perform automatic sieve analysis with the control and evaluation software AUTOSIEVE. The top model ANALYSETTE 3 PRO guarantees absolutely reproducible sieving results due to automatic amplitude control, programme selection, can be integrated as testing device into any quality management systems, has an RS232-interface, to mention only some of its innovative and practical features.

Sieving:	dry or wet
Sieve diameters:	100mm, 150mm, 200mm or 8"
Maximum number of sieves:	10 x 50mm (full) or 18 x 25mm (half) height
Sieves:	woven mesh metal sieves
Measuring range:	Dry sieving: 32µm to 63mm Wet sieving: 20µm to 10mm
Sample quantity:	Dry sieving: up to 2kg (depending on the sample material and sieve used) Wet sieving: 20 to 100g
Sieving time:	Dry sieving: 3 to 20 min Wet sieving: 5 to 10 min
Power supply:	100-240V/1~, 50-60Hz
Dimensions (WxDxH):	370 x 400 x 200mm
Net weight:	21kg



Type	PK	Cat. No.
Sieve Shaker ANALYSETTE 3 PRO	1	9.826 402
Sieve Shaker ANALYSETTE 3 SPARTAN	1	9.826 403

Clamping lid, sieve pan and sieves must be ordered separately.  
Further sieve shakers available on request.

### Accessories for sieve shakers ANALYSETTE 3 PRO and SPARTAN

Fritsch

Type	For	PK	Cat. No.
Clamping lid, Plexiglas for 8" / 200mm diam. sieves	Dry sieving	1	9.826 404
Clamping lid, polyamide (without window) for all test sieves up to 200mm / 8" diam.	Dry sieving	1	9.826 405
Sieve tensioning system TorqueMaster (incl. clamping lid and electrical tool)	Dry sieving	1	9.826 943
Interposed sieve pan made of stainless steel 200mm diam., 50mm height	Dry sieving	1	9.826 939
Interposed sieve pan made of stainless steel 8" diam., 2" height	Dry sieving	1	9.826 940
Sieve pan, stainless steel 200mm diam., 50mm high	Dry sieving	1	9.826 444
Sieve pan, stainless steel 8" diam., 2" high	Dry sieving	1	9.826 406
Clamping lid, Plexiglas with 2 rotation nozzles for test sieves 8" / 200mm diam.	Wet sieving	1	9.826 401
Sieve pan, stainless steel with outlet 200mm diam., 50 mm high	Wet sieving	1	9.826 446
Interposed sieve ring with 3 nozzles for test sieves 200mm diam.	Wet sieving	1	9.826 447
Sieve pan, stainless steel with outlet, 8" diam., 2" high	Wet sieving	1	9.826 449
Interposed sieve ring with 3 nozzles for test sieves 8" diam.	Wet sieving	1	9.826 450

Test sieves as well as accessories for micro-precision sieving and for use of the ANALYSETTE 3 as Micro Mill (for grinding small sample quantities) on request.  
Sieves, clamping lid and sieve pans with and without outlet are also available for 100 mm sieves.



### Test Sieves

#### Features:

- Previously unattained product quality owing to advanced manufacturing processes and continuous optical inspection.
- High quality joining technology guarantees permanently taut wire mesh.
- High level of corrosion resistance and easy to clean owing to the use of high-alloy stainless steel.
- "one-piece cast" sieve frame and seamless mesh joint prevent cross contamination.
- Maximum stability and optimum density of the sieve stack.
- 15% lighter than traditional sieves whilst at the same time having larger sieving area.
- Clear sieve marking and traceability by individual laser engraving on each sieve.

**Test sieves with height 25mm available on request.**

Retsch



### 1 Test Sieves, 200 x 50 mm.

Retsch

Mesh size µm	PK	Cat. No.
20	1	9.226 650
25	1	9.226 651
32	1	9.226 652
36	1	9.226 653
38	1	9.226 654
40	1	9.226 655
45	1	9.226 656
50	1	9.226 657
53	1	9.226 658
56	1	9.226 659
63	1	9.226 660
71	1	9.226 661
75	1	9.226 662
80	1	9.226 663
90	1	9.226 664
100	1	9.226 665
106	1	9.226 666
112	1	9.226 667
125	1	9.226 668
140	1	9.226 669
150	1	9.226 670
160	1	9.226 671
180	1	9.226 672
200	1	9.226 673
212	1	9.226 674
224	1	9.226 675
250	1	9.226 676
280	1	9.226 677
300	1	9.226 678
315	1	9.226 679
355	1	9.226 680
400	1	9.226 681
425	1	9.226 682
450	1	9.226 683
500	1	9.226 684
560	1	9.226 685
600	1	9.226 686
630	1	9.226 687
710	1	9.226 688
800	1	9.226 689
850	1	9.226 690
900	1	9.226 691



### 2 Sieving aids

For difficult to separate materials which require dry sieving.  
Different aids are used according to mesh size.

Retsch

Type	PK	Cat. No.
Steatite ball, 6mm dia., 150g	1	9.739 238
Nylon brushes (pack of 3)	1	9.826 131
Vulkollan cube 12 x 12 x 12mm	10	9.826 132
Rubber ball, 20mm dia.	5	9.826 133
Agate ball, dia. 10mm	10	9.826 134
Test sieve rack for max. 10 sieves up to 203mm dia., 50mm height	1	9.739 243

### 1 Test Sieves, 200 x 50mm

DIN ISO 3310-1 and BS 410-1. Dimensions (dia. x h): 200mm x 50mm.

Retsch

**Test sieves with height 25mm available on request.**

Aperture size mm	PK	Cat. No.
1.00	1	9.226 692
1.12	1	9.226 693
1.18	1	9.226 694
1.25	1	9.226 695
1.40	1	9.226 696
1.60	1	9.226 697
1.70	1	9.226 698
1.80	1	9.226 699
2.00	1	9.226 700
2.24	1	9.226 701
2.36	1	9.226 702
2.50	1	9.226 703
2.80	1	9.226 704
3.15	1	9.226 705
3.35	1	9.226 706
3.55	1	9.226 707
4.00	1	9.226 708
4.50	1	9.226 709
4.75	1	9.226 710
5.00	1	9.226 711
5.60	1	9.226 712
6.30	1	9.226 713
6.70	1	9.226 714
7.10	1	9.226 715
8.00	1	9.226 716
9.00	1	9.226 717
9.50	1	9.226 718
10.00	1	9.226 719
11.20	1	9.226 720
12.50	1	9.226 721
13.20	1	9.226 722
14.00	1	9.226 723
16.00	1	9.226 724
18.00	1	9.226 725
19.00	1	9.226 726
20.00	1	9.226 727
22.40	1	9.226 728
25.00	1	9.226 729
26.50	1	9.226 730
28.00	1	9.226 731
31.50	1	9.226 732
35.50	1	9.226 733
37.50	1	9.226 734
40.00	1	9.226 735
45.00	1	9.226 736
50.00	1	9.226 737
53.00	1	9.226 738
56.00	1	9.226 739
63.00	1	9.226 740
71.00	1	9.226 741
75.00	1	9.226 742
80.00	1	9.226 743
90.00	1	9.226 744
100.00	1	9.226 745
106.00	1	9.226 746
112.00	1	9.226 747
125.00	1	9.226 748



### 2 Analytical Sieve Test Sand

Test materials can be used to check analytical sieves between the scheduled calibration dates and to demonstrate the presence of the required properties, as well as the suitability of analytical sieves. A test material for analytical sieves with frequent mesh widths (2.0mm - 1.0mm - 0.5mm - 0.25mm - 0.125mm ).

- Pack of 3 bottles, 202g each
  - Grain size : from 0.125mm to 2.00mm
  - Data sheet for the use of traceability for analytical sieves
- Each bottle contains a mixture of different sizes.

Normensand

Description	PK	Cat. No.
Analytical Sieve Test Sand	3	9.739 500



1



#### 1 Ultrasonic sieve-bath Sonorex Super ultrasonic bath RK 106

**NEW!**

Bandelin

Ultrasonic bath for cleaning of 1 test sieve with 200 mm diameter

- Tank: stainless steel
- Housing: stainless steel drip-proof
- Outlet: ball valve, right side
- Degree of protection: IP 32
- Time switch: 1-15 min and ∞

Type	Description	PK	Cat. No.
RK 106	Ultrasonic bath for 1 test sieve EU-Plug	1	9.877 106
RK 106	Ultrasonic bath for 1 test sieve UK-Plug	1	9.877 105
RK 106	Ultrasonic bath for 1 test sieve CH-Plug	1	9.877 107
D 6	Lid for RK 106	1	9.877 606
SH 7	Sieve holder	1	9.877 784

2



#### 2 3 4 Mesh, polyester

Thermo-fixed PE mesh with temperature resistance from 75°C to +150°C (short). For long term heating max. 125°C. Resistant to acids but not alkalis. Dimensions: Minimum width 102cm, Length 100cm.

Other sizes available on request.

Mesh size µm	PK	Cat. No.
1	1	9.068 210
5	1	9.068 211
6	1	9.068 212
10	1	9.068 213
15	1	9.068 214
20	1	9.068 215
30	1	9.068 216
50	1	9.068 218
60	1	9.068 220
100	1	9.068 224
150	1	9.068 226
200	1	9.068 227
250	1	9.068 228
300	1	9.068 229

3



4



5



#### 5 6 7 Mesh, Polyamide

Thermo-fixed Polyamide (Nylon) mesh is temperature stable from -40°C to +115°C. Dry in water from 95°C to 100°C. Stability in acids is limited and dependant on concentration and temperature. Nylon exhibits outstanding stability in alkalis, including sodium and potassium solutions. Its chemical behaviour with respect to organic solvents is moderate to good. Minimum mesh width: 102cm, Length: 1m

Other sizes available on request.

Mesh size µm	PK	Cat. No.
1	1	9.068 276
5	1	9.068 277
10	1	9.068 279
30	1	9.068 282
40	1	9.068 283
50	1	9.068 284
60	1	9.068 285
80	1	9.068 287
90	1	9.068 288
100	1	9.068 289
125	1	9.068 290
150	1	9.068 291
200	1	9.068 292
250	1	9.068 293
300	1	9.068 294
400	1	9.068 295
500	1	9.068 296

6



7





### 1 Sample Splitters, RT series

To provide separation of pourable powders and bulk materials on site and in the laboratory. Operates independently of mains supply. Available in 6 sizes. Number of samples: 2.

Retsch

Type	Feed size up to mm	Maximum Throughput/ Charge	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
RT 6.5	4	3 l	300 x 270 x 250	3.50	1	9.739 200
RT 12.5	8	3 l	300 x 270 x 250	3.50	1	9.739 201
RT 25	16	16 l	620 x 420 x 260	21.50	1	9.739 202
RT 37.5	25	16 l	620 x 420 x 260	21.50	1	9.739 203
RT 50	33	16 l	620 x 420 x 260	21.50	1	9.739 204
RT 75	50	16 l	620 x 420 x 260	21.50	1	9.739 205



### 2 Sample Divider PT 100 with vibratory feeder DR 100

Rotary tube divider for the representative sample division with an extremely high division accuracy. Rapid and easy handling of sample vessels thanks to quick-release clamps. DR100/40: approx. 10kg, 220-240V, 50Hz

Retsch

Supplied with: PT 100 incl. dividing head with 8 quick-release sample outlets, vibratory feeder DR 100/40 and 10 sample bottles (250ml).

#### Specifications PT 100

Feed size:	up to 10mm
Number of samples:	8 (6 or 10 heads also available on request)
Throughput/charge:	up to 5000ml
Dimensions (WxDxH):	580 x 420 x 910mm
Weight: approx.:	34kg
Supply requirements:	230V, 50Hz

Type	PK	Cat. No.
Sample Divider PT 100	1	9.739 147



### 3 Rotary cone sample divider LABORETTE 27

Creates the optimal basis for reliable analysis of a representative sample! Representative samples division is the foundation for every precise analysis. The rotary cone sample divider LABORETTE 27 achieves due to its unique combination of three methods previously unheard of dividing precision. Variable division ratios and the design in several variants guarantee adaptation to a wide range of applications with a dividing accuracy of up to 99.9%. For optimal sample feeding the vibratory feeder LABORETTE 24 (optional) is recommended.

Fritsch

Division:	of solid samples and suspensions, without modification
Division ratio:	1:8, 1:10, 1:30
Number of sub-sets:	8, 10, 3
Max. particle size:	10mm, 2.5mm
Max. feed volume:	4000ml, 2500ml, 300ml
Sample bottle capacities:	15, 20, 25, 30, 250, 500ml
Power supply:	230V/1~, 50-60Hz
Dimensions (WxDxH):	270 x 450 x 460mm
Net weight:	7.7kg

Type	PK	Cat. No.
Rotary cone sample divider LABORETTE 27	1	9.738 310

Instrument also available in other voltages.  
Dividing heads must be ordered separately.



### Dividing heads for rotary cone sample divider LABORETTE 27

Fritsch

Division ratio	Material	Sample bottles ml	PK	Cat. No.
1:8	POM plastic	500	1	9.738 316
1:8	aluminium	500	1	9.738 313
1:10	POM plastic	250	1	9.738 317
1:10	aluminium	250	1	9.738 318
1:30	POM plastic	15	1	9.738 319
1:30	aluminium PTFE-coated	15	1	9.738 314

All dividing heads are delivered inclusive of sample bottles and funnels.

1



#### 1 Homogeniser, POLYTRON® PT 1200 E

This handheld homogeniser is ideal for quick processing of small sample quantities and volumes, for example in Life science or genetic.

KINEMATICA GmbH

Application volume: 0.05 to 250ml

- Soft start prevents splashing of homogenate from sample vessel
- Tip speed up to 12 m/s
- Ergonomic design and various models of dispersing aggregates in Easy-to-Clean design

Applications:

- General homogenisation applications (dispersion and emulsification)
- Sample preparation for subsequent extraction of pharmaceutical agents (API)
- Cell disruption, RNA/DNA isolation from tissue
- Dispersion of small quantities from plants, animals or human tissue

Please order tools separately.

##### Specifications

Application volume:	0.05 to 250ml
Motor input power:	100W
Aggregates:	dia. 3, 5, 7 and 12mm and dia. 20mm X EC-E116 Aggregat
Speed range:	Stepless up to 25.000min <sup>-1</sup>
Max. viscosity:	6000mPas
Drive Dimensions (L x W x H):	220 x 44 x 55 mm
Weight drive:	440g
Tested to:	EN/IEC 61010, 61326-1

Type	PK	Cat. No.
PT 1200 E, 230V (with EU-plug)	1	9.571 492

2



9.571 493

#### 2 Homogeniser, POLYTRON® PT 1300 D

This digital Homogeniser, is ideal for quick processing of small sample quantities and volumes, for example in Life science or genetic. Storing the desired speed ensures repetitive and reproducible homogenisations. When the unit is switched off, the last stored speed is saved. This drive can be controlled using our KIN software from a PC via USB or RS232.

KINEMATICA GmbH

- Application volume 0.05 to 250ml
- Soft start prevents splashing of homogenate from sample vessel
- Tip speed up to 14 m/s
- Speed remains constant even when viscosity changes
- PC interfaces (RS 232 and USB)
- MEMO function of the stored speed
- Ergonomic design and various models of dispersing aggregates in Easy-to-Clean design

Applications look also at PT 1200 E:

- Reproducible processes

##### Specifications

Application volume:	0.05 to 250ml
Motor input power:	100W
Aggregates:	dia. 3, 5, 7 and 12mm and dia. 20mm X EC-E116 Aggregate
Speed range:	Stepless up to 30.000min <sup>-1</sup>
Max. viscosity:	6000mPas
Drive Dimensions (L x W x H):	210 x 40 x 45mm Drive, 230 x 205 x 95mm Base
Weight drive:	620g
Tested to:	IEC/EN 61000-6-2/EN 61000-6-3/IEC/EN 61010-2-51

Type	PK	Cat. No.
PT 1300 D, 230V (with EU-plug)	1	9.571 493 2

### 1 Homogeniser, POLYTRON® PT 2500 E

1

The PT2500 E is the ideal solution for cost-conscious laboratories. It is able to perform a lot of applications.

KINEMATICA GmbH

- Application volume 0.05 to 2500ml
- Soft start prevents splashing of homogenate from sample vessel
- Tip speed up to 32 m/s
- Speed remains constant even when viscosity changes
- Various models of dispersing aggregates in Easy-to-Clean design

Applications:

- General homogenisation applications (dispersion and emulsification)
- Formulation of lotions, creams and food
- Production of oil-water emulsions

Please order tools separately.

#### Specifications

Application volume:	0.05 to 2500ml
Motor input power:	500W
Aggregates:	dia. 3, 5, 7 and 12mm and dia. 20mm and 25mm
Speed range:	Stepless up to 30.000min <sup>-1</sup>
Max. viscosity:	6000mPas
Drive Dimensions (L x W x H):	157 x 76 x 236mm
Tested to:	IEC/EN61326-1/IEC/EN 61000-6-2/EN 61000-6-4 IEC/EN 61010-2-51

Type	PK	Cat. No.
POLYTRON® PT 2500 E	1	4.013 108



### Dispersing aggregates for Homogeniser POLYTRON® 1200 E, 1300 D and 2500 E

KINEMATICA GmbH

For model	Type	Length	Diam.	Working volume	PK	Cat. No.
		mm	mm	ml		
PT 1200 E / PT 1300 D / PT 2500 E	PT-DA 03/2 EC-E050	50	3	0.05 - 2	1	6.258 269
PT 1200 E / PT 1300 D / PT 2500 E	PT-DA 05/2 EC-E085	85	5	0.1 - 5	1	9.570 223
PT 1200 E / PT 1300 D / PT 2500 E	PT-DA 07/2 EC-E107	107	7	0.3 - 10	1	6.258 271
PT 1200 E / PT 1300 D / PT 2500 E	PT-DA 07/2SYN-E082	82	7	0.3 - 10	25	6.258 273
PT 1200 E	PT-DA 12/2SYN-E126			0.05 - 250	10	6.261 033
PT 2500 E	PT-DA 12/2 EC-E157	157	12	2 - 250	1	9.570 225
PT 2500 E	PT-DA 20/2 EC-E192	192	2	100 - 2500	1	6.258 234
PT 1200 E / PT 1300 D / PT 2500 E	PT-DA 20/2X EC-E116	116	20	10 - 250	1	9.570 226
PT 2500 E	PT-DA 25/2 EC-E192	192	25	100 - 2500	1	9.570 227



6.258 269



6.258 273

### Dispersing aggregates for Homogeniser POLYTRON® 10-35 GT, 3100 D and 6100 D

KINEMATICA GmbH

For model	Type	Length	Diam.	Working volume	PK	Cat. No.
		mm	mm	ml		
PT 10-35 GT / PT 3100 D / PT 6100 D	PT-DA 20/2 EC-E192	192	2	100 - 2500	1	6.258 234
PT 10-35 GT / PT 3100 D / PT 6100 D	PT-DA 30/2 EC-F250	250	2	100 - 4000	1	9.570 228
PT 10-35 GT / PT 3100 D / PT 6100 D	PT-DA 30/4 EC-F250	250	4	100 - 4000	1	6.258 233
PT 10-35 GT / PT 3100 D / PT 6100 D	PT-DA 36/2 EC-F250	250	2	200 - 4500	1	9.570 229
PT 3100 D / PT 6100 D	PT-DA 40/2 EC-F250	250	2	200 - 5000	1	9.570 230
PT 3100 D / PT 6100 D	PT-DA 45/2 EC-F250	250	2	200 - 6000	1	9.570 231
PT 3100 D / PT 6100 D	PT-DA 45/6 EC-F250	250	6	200 - 6000	1	9.570 232
PT 3100 D / PT 6100 D	PT-DA 50/2 EC-F250	250	2	1000 - 10000	1	9.570 233

E &amp; OE.

1



#### 1 Homogeniser, POLYTRON® PT 10-35 GT

The powerful motor is useful for sample preparation and also for formulation in scaleup matters *KINEMATICA GmbH*

- Application volume 0.1 up to 10.000ml
- Soft start prevents splashing of homogenate from sample vessel
- Tip speed up to 32m/s
- Speed remains constant even when viscosity changes
- Various models of dispersing aggregates in Easy-to-Clean design

##### Applications:

- General homogenisation applications (dispersion and emulsification)
- Formulation of lotions, creams and food
- Production of oil-water emulsions
- Dispersion of small quantities from plants, animals or human tissue

##### Specification

Application volume:	0.1 to 10.000ml
Motor input power:	1200W
Aggregates:	ø 20, 30, 36mm
Speed range:	Stepless up to 30.000min <sup>-1</sup>
Max. viscosity:	6000mPas
Drive Dimensions (L x W x H):	95 x 210 x 247mm
Tested to:	IEC/EN 61000-6-2/EN 61000-6-3/IEC/EN 61010-2-51

Type	PK	Cat. No.
PT-MR 10-35 GT, 230V/EU package with ST-P10/600, drive holder, vessel holder, safety pos. ring	1	9.571 490

2



#### 2 Homogeniser, POLYTRON® PT 3100 D/PT 6100 D

These dispersion units are a unique class. Applications with highest demands on reproducibility or requiring a scale-up step are excellently served by this unit. The complete digitalised control and regulating system can be easily operated using the membrane keyboard. The bright and informative display shows all parameters. Via PC interface, diverse parameters such as speed profile or times can be specified using the enclosed KIN software. Results can be recorded as an Excel file. *KINEMATICA GmbH*

- Application volume 0.1 up to 30.000ml
- Soft start prevents splashing of homogenate from sample vessel
- Tip speed up to 32m/s
- Speed remains constant even when viscosity changes
- PC interfaces (RS 232 and USB)
- Digital display for showing different process parameters and messages
- Various models of dispersing aggregates in Easy-to-Clean design

##### Applications (see also POLYTRON® PT10-35-GT):

- reproducibility of work routine
- testing for scale-up

##### Specification

Application volume:	PT 3100 D 0.1 to 10 litres PT 6100 D 0.1 to 30 litres
Motor input power:	PT 3100 D with 1200W PT 6100 D with 1700W
Aggregates:	ø 20, 30, 36, 40, 45, 50mm
Speed range:	Stepless up to 30.000min <sup>-1</sup>
Max. viscosity:	6000mPas
Drive Dimensions (L x W x H):	PT 3100 D 240 x 130 x 265mm PT 6100 D 360 x 164 x 313mm
Tested to:	IEC/EN 61000-6-2/EN 61000-6-3/IEC/EN 61010-2-51

Type	PK	Cat. No.
PT-MR 3100 D, 230V/EU package with ST-F10/600	1	6.235 534
PT-MR 6100 D, 230V/EU package with ST-F11/855	1	9.571 491



### 4 Disperser System Ultra-Turrax® Tube Drive

1

Disperse, stir and grind using a single drive unit. Patented disposable disperser system for volumes from 2ml to 50ml with hermetically sealable, disposable sample tubes.

IKA

Provides protection and safety from: Infectious samples, toxic substances, strong-smelling materials.

- no possibility of cross-contamination
- suitable for individual or serial operations
- increased safety due to low voltage (24V) power
- chemically resistant plastic containers
- anti-locking function
- patented
- worldwide service guaranteed by Ika®

#### ULTRA-TURRAX® Tube Drive Workstation additionally with:

- USB interface for experiment control and documentation
- Collecting tray for protection against leaking liquids
- Simple, precise and multilingual menu navigation with OLED display
- Programmable sample conditions (library)
- Turbo button for short-term, intensive mixing, dispersing and grinding
- Adjustable reverse operation

#### ULTRA-TURRAX® Tube Drive Workstation supplied with:

Ultra Turrax® Tube Drive, 2 x DT-20 dispersing tubes incl. hook for removing the rotor-stator unit, 2 x ST-20 stirring tubes, 2 x BMT-20 G/S Ball-mill-tubes (with glass balls/stainless steel balls, respectively), power supply and 1 x removal hook for removal the rotor-stator unit.

**Dispersing tubes (20ml and 50ml) with pierceable membrane and  $\gamma$ -sterilised are available on request.**

#### ULTRA-TURRAX® Tube Drive control Workstation supplied with:

ULTRA-TURRAX® Tube Drive control , 1 x ST-20, 1 x DT-20 incl. 1 removal hook for removal the rotor-stator unit, 2 x BMT-20 G/S, power supply.

#### Specifications

Motor rating input/output

ULTRA-TURRAX® Tube Drive:

20/17 W

ULTRA-TURRAX® Tube Drive control:

28/17 W

Volume:

2ml to 50ml

Viscosity max.:

5000mPas

Speed range

ULTRA-TURRAX® Tube Drive:

300rpm to 6000rpm

ULTRA-TURRAX® Tube Drive control:

400rpm to 8000rpm

Noise without element:

50dB(A)

Timer

ULTRA-TURRAX® Tube Drive:

1 to 59sec. (300 to 6000rpm)

1 to 29min. (300 to 4000rpm)

ULTRA-TURRAX® Tube Drive control:

1 sec. up to 30min. (continuously adjustable)

Protection class according to DIN EN 60529:

IP20

Supply requirements:

100v - 240V /50/60Hz

Tested to DIN EN IEC 61010-1.



2



9.570 506

3



4.008 150

4



Description	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
Ultra-Turrax® Tube Drive	100 x 160 x 40	0.75	1	9.570 500 1
Ultra-Turrax® Tube Drive Workstation	100 x 160 x 40	0.75	1	9.570 506 2
ULTRA-TURRAX® Tube Drive control	122 x 178 x 54	0.90	1	4.008 150 3
ULTRA-TURRAX® Tube Drive control Workstation	122 x 178 x 54	0.90	1	4.008 135
DT-20 Dispersing Tube with dispersing unit, 20ml			25	9.570 507
DT-20 eco Dispersing Tube with dispersing unit, 20ml			25	6.265 701
ST-20 Stirring Tube, 20ml			25	9.570 508
BMT-20 G Ball-Mill-Tube (with glass balls), 20ml			25	9.570 509
BMT-20 S Ball-Mill-Tube (with stainless steel balls), 20ml			25	9.570 510

50 ml tubes available on request.

1



#### 1 Homogeniser T 10 basic ULTRA-TURRAX®

Small dispersing instrument for volumes from 0.5ml to 100ml (H<sub>2</sub>O). It offers a wide speed range from 8000rpm to 30000rpm that enables users to work at high circumferential speeds even with small rotor diameters. A broad choice of dispersing elements guarantees a wide range of applications. IKA

- Quick-connect coupling for changing dispersing elements easily
- Ideal for manual operation due to its light weight and ergonomic design
- Extremely mobile due to direct line power (no transformer required)
- Stainless steel dispersing elements can be cleaned quickly and easily as they can be dismounted without tools
- Plastic disposable dispersing elements are available in two sizes, particularly suitable for PCR analysis
- High performance drive ensures immense speed stability
- Quiet operation

##### Specifications

Motor rating input/output:	125W/75W
Working volume range (H <sub>2</sub> O):	0.5ml to 100ml
Viscosity max.:	5000mPas
Speed range:	8000rpm to 30000rpm
Speed display:	scale
Speed control:	stepless
Noise without element:	65dB(A)
Extension arm diam./length:	8mm/130mm
Dimensions (WxDxH):	56 x 66 x 178mm
Weight:	0.5kg
Power supply:	230V, 50/60Hz
Protection class DIN EN 60529:	IP 30

Type	PK	Cat. No.
T 10 basic ULTRA-TURRAX®	1	9.570 940
T 10 basic S2 ULTRA-TURRAX® UK	1	9.570 941
T 10 basic S3 ULTRA-TURRAX® CH	1	9.570 942

2



#### 2 3 Dispersing instrument T 10 standard ULTRA-TURRAX® PCR Kit



Competitively priced dispersing instrument for volumes of 0.5ml to 100ml. IKA

- A wide speed range allows you to work at high circumferential speeds.
- maintains speed with various media thanks to high performance 125W drive
  - ideal for manual operation thanks to its light weight and ergonomic form
  - extremely mobile thanks to direct mains operation (no transformer required)
  - stainless steel dispersing elements (5mm, 8mm and 10mm diameter) can be cleaned quickly and easily as they can be dismantled without tools
  - plastic disposable dispersing elements in two sizes, particularly suitable for PCR analysis
  - quick-release coupling makes changing the dispersing elements easy

Supplied with: storage case incl. drive, clamp and plastic dispersing elements.

##### Specifications

Motor rating input/output:	125/75W
Working volume range (H <sub>2</sub> O):	0.5 to 100ml
maximum viscosity:	5000mPas
Speed range:	8000 to 30000rpm
Speed adjustment:	stepless
Speed display:	Scale (1 to 6)
Clamping rod diameter/length:	8 mm/100mm
Dimensions:	46 x 57 x 201mm
Weight:	0.4kg
Protection rating to DIN EN 60529:	IP30
Tested to DIN EN IEC 61010-1.	

3



Type	PK	Cat. No.
T 10 standard ULTRA-TURRAX® PCR Kit	1	9.570 959

### Dispersing heads Ultra Turrax® T 10 standard/T 10 basic

**NEW!**

Dispersing heads, plastic: Autoclavable. Dispersing heads, stainless steel: Ultimate fineness emulsions 1 to 10µm and suspensions 5 to 25µm, sterilisable by all methods.

IKA

Type	Material	Diam. rotor / stator mm	Max. immersion depth mm	Working volume ml	PK	Cat. No.
S 10 D-7 G-KS - 65	PC, PSU	4,8 / 7	65	1 - 20	24	6.262 140
S 10 D-7 G-KS - 110	PC, PSU	4,8 / 7	110	1 - 40	24	9.570 878 <b>1</b>
S 10 N - 5 G	PTFE, AISI 316L	3,8 / 5	75	0,5 - 10	1	7.631 964 <b>2</b>
S 10 N - 8 G	PTFE, AISI 316L	6,1 / 8	95	1 - 50	1	6.225 614 <b>3</b>
S 10 N - 10 G	PTFE, AISI 316L	7,6 / 10	100	1 - 100	1	6.225 477 <b>4</b>

**1**

9.570 878

**2**

7.631 964

**3**

6.225 614

**4**

6.225 477

### 5 Homogeniser T 18 digital ULTRA-TURRAX®

Competitively priced dispersing instrument for volumes from 1ml to 1500ml (H<sub>2</sub>O) with digital speed display. It offers a wide speed range from 500rpm to 25000rpm that enables users to work at high circumferential speeds even with small rotor diameters. A broad choice of dispersing elements guarantees a wide range of applications.

IKA

- Digital speed display
- Electronic speed control
- Electronic overload protection
- Stainless steel dispersing elements can be cleaned quickly and easily
- Plastic disposable dispersing elements are available in two sizes
- Error code display
- Quiet operation

#### Specifications

Motor rating input/output:	500W/300W
Working volume range (H <sub>2</sub> O):	1ml to 1500ml
Viscosity max.:	5000mPas
Speed range:	500rpm to 25000rpm
Speed display:	LED
Speed control:	stepless
Noise without element:	75dB(A)
Extension arm diam./length:	13mm/160mm
Dimensions (WxDxH):	87 x 106 x 271mm
Weight:	2.5kg
Power supply:	200-240 V, 50/60Hz
Protection class DIN EN 60529:	IP 20

Type	PK	Cat. No.
T 18 digital ULTRA-TURRAX®	1	9.570 943
T 18 digital S2 ULTRA-TURRAX® UK	1	9.570 944
T 18 digital S3 ULTRA-TURRAX® CH	1	9.570 945
T 18 digital ULTRA-TURRAX® Package	1	9.570 946
T 18 digital S2 ULTRA-TURRAX® Package UK	1	9.570 947
T 18 digital S3 ULTRA-TURRAX® Package CH	1	9.570 948

**5**

### 6 Dispersing heads for Ultra Turrax® T18 digital

Plastic dispersing heads: Autoclavable  
Stainless steel dispersing heads: Ultimate fineness emulsions 1 to 10µm and suspensions 10 to 50µm, sterilisable by all methods.

IKA

Type	Diam. rotor / stator mm	Max. immersion depth mm	Working volume ml	Material	PK	Cat. No.
S 18 D-10 G-KS	6.75 / 10	85	10 to 100	PC, PEEK	12	9.570 855
S 18 D-14 G-KS	9.5 / 14	85	10 to 500	PC, PEEK	12	9.570 857
S 18 N - 10 G	7.5 / 10	70	1 to 100	PTFE, AISI 316L	1	9.570 841
S 18 N - 19 G	12.7 / 19	170	10 to 1500	PTFE, AISI 316L	1	9.570 842

**6**

➔ Stands and fittings - please see page 556

1



### 1 Homogeniser T 25 digital ULTRA-TURRAX®

High-performance dispersing instrument for volumes from 1 to 2000ml (H<sub>2</sub>O) with digital speed display. It offers a wide speed range from 500 to 25000rpm that enables users to work at high circumferential speeds even with small rotor diameters. A broad choice of dispersing elements adds versatility. Applications ranges from homogenizing waste water samples, use in laboratory reactors, dispersion tasks under vacuum/pressure and sample preparation in medical diagnostics.

IKA

- Digital speed display
- Electronic speed control
- Electronic overload protection
- Stainless steel dispersing elements can be cleaned quickly and easily
- Plastic disposable dispersing elements are available in two sizes
- Error code display
- Quiet operation

#### Specifications

Motor rating input/output:	800/500W
Working volume range (H <sub>2</sub> O):	1 to 2000ml
Viscosity max.:	5000mPas
Speed range:	500 to 25000rpm
Speed display:	LED
Speed control:	stepless
Noise without element:	75dB(A)
Extension arm diam./length:	13mm/160mm
Dimensions (WxDxH):	87 x 106 x 271mm
Weight:	2.5kg
Power supply:	200-400 V, 50/60Hz
Protection class DIN EN 60529:	IP 20

Type	PK	Cat. No.
T 25 digital ULTRA-TURRAX®	1	9.570 949
T 25 digital S2 ULTRA-TURRAX® UK	1	9.570 950
T 25 digital S3 ULTRA-TURRAX® CH	1	9.570 951

### Dispersing heads for T25 basic Ultra-Turrax®

NEW!

Plastic dispersing heads: Autoclavable.

IKA

Stainless steel dispersing heads: Ultimate fineness: emulsions 1µm to 10µm and suspensions 5µm to 50µm, sterilisable by all methods.

Type	Diam. rotor / stator mm	Max. immersion depth mm	Working volume ml	Material	PK	Cat. No.
S 25 D-10 G-KS	6.75 / 10	85	10 - 100	PC, PEEK	12	9.570 859 <sup>2</sup>
S 25 D-14 G-KS	9.5 / 14	85	10 - 500	PC, PEEK	12	9.570 861 <sup>3</sup>
S 25 N - 8 G	6.1 / 8	85	1 - 50	PTFE, AISI 316L	1	9.571 098
S 25 N - 10 G	7.5 / 10	85	1 - 100	PTFE, AISI 316L	1	9.571 207
S 25 N - 18 G	12.7 / 18	165	10 - 1500	PTFE, AISI 316L	1	9.571 119
S 25 NK - 19 G	12.7 / 19	165	25 - 1500	PTFE, AISI 316L	1	9.571 121
S 25 KV - 25 G	17.0 / 25	225	50 - 2000	FFPM / SIC, AISI 316L	1	9.571 198
S 25 N - 25 G	17.0 / 25	165	50 - 2000	PTFE, AISI 316L	1	9.571 200 <sup>4</sup>
S 25 N - 25 F	18.0 / 25	165	100 - 2000	PTFE, AISI 316L	1	9.571 201
S 25 KV - 25 F	18.0 / 25	225	100 - 2000	FFPM / SIC, AISI 316L	1	9.571 199
S 25-KR-18 G	12.7 / 18	185	10 - 1500	FKM, PTFE, AISI 316L	1	4.653 931
S 25-KR-25 G	17.0 / 25	185	50 - 2000	FKM, PTFE, AISI 316L	1	4.653 932
S 25-KR-18 G-ST	13.4 / 18	185	10 - 1500	FKM, PTFE, AISI 316L	1	4.653 933
S 25-KR-25 G-ST	20.0 / 25	185	50 - 2000	FKM, PTFE, AISI 316L	1	4.653 934
S 25-KR-25 F	18.0 / 25	185	100 - 2000	FKM, PTFE, AISI 316L	1	4.653 935

Further dispersing heads are available on request.

2



9.570 859

3



9.570 861

4



9.571 200



### Cleaning tool TS 25-3 for Dispersing heads

**(NEW)**

For dispersing heads S25N-18G/18G-ST, S25N-25G/F/25G-ST, S25KR-18G/18G-ST, S25KR-25G/25F/25G-ST and S25KV-18G/25G/25F.

IKA

Type	PK	Cat. No.
TS 25-3	1	6.265 708

### 1 High-power homogeniser T 50 digital ULTRA-TURRAX®

1

Powerful dispersing instrument for volumes from 0.25 to 30l (H<sub>2</sub>O) with digital speed display. It offers a wide speed range from 500 to 10000rpm that enables users to work at high circumferential speeds even with small rotor diameters. A broad choice of dispersing elements guarantees a wide range of applications. Reproducible operations due to constant speed even with changes in viscosities.

IKA

- Digital speed display
- Electronic speed control
- Electronic overload protection
- Stainless steel dispersing elements can be cleaned quickly and easily
- Smooth start
- Error code display

#### Specifications

Motor rating input/output:	1100W/700W
Working volume range (H <sub>2</sub> O):	0.25 to 30l
Viscosity max.:	5000mPas
Speed range:	500 to 10000rpm
Speed display:	LED
Speed control:	stepless
Noise without element:	72dB(A)
Extension arm diam./length:	16mm/220mm
Dimensions (WxDxH):	115 x 139 x 355mm
Weight:	5.76kg
Power supply:	200-240 V, 50/60Hz
Protection class DIN EN 60529:	IP 20



Type	PK	Cat. No.
T 50 digital ULTRA-TURRAX®	1	9.570 952
T 50 digital S2 ULTRA-TURRAX® UK	1	9.570 953
T 50 digital S3 ULTRA-TURRAX® CH	1	9.570 954

### Dispersing heads for T50 digital ULTRA-TURRAX®

**(NEW)**

Stainless steel dispersing heads

IKA

Type	Diam. rotor / stator mm	Max. immersion depth mm	Working volume l	Ult. fineness suspensions / emulsions µm	Material	PK	Cat. No.
S 50 KG - HH - G 45 G, FDA	36.0 / 45	260	0.5 - 20	40 - 100 / 10 - 30	FFPM/SIC, AISI 316L	1	4.653 936
S 50 KG - HH - G 45 G - ST, FDA	36.0 / 45	260	0.5 - 20	40 - 100 / 10 - 30	FFPM/SIC, AISI 316L	1	4.653 937
S 50 KG - HH - G 45 M, FDA	40.5 / 45	250	0.5 - 15	25 - 50 / 5 - 20	FFPM/SIC, AISI 316L	1	4.653 938
S 50 KG - HH - G 45 F, FDA	40.0 / 45	250	0.25 - 10	10 - 30 / 1 - 10	FFPM/SIC, AISI 316L	1	4.653 939
S 50 KG - HH - G 45 F	40.0 / 45	250	0.25 - 10	10 - 30 / 1 - 10	FFPM/SIC, AISI 316L	1	9.570 898
S 50 N - G 45 G*	36.0 / 45	250	0.5 - 20	40 - 100 / 10 - 30	PTFE, AISI 316L	1	9.570 882 2
S 50 N - G 45 M*	40.5 / 45	250	0.5 - 15	25 - 50 / 5 - 20	PTFE, AISI 316L	1	9.570 886 3
S 50 N - G 45 F*	40.0 / 45	250	0.25 - 10	10 - 30 / 1 - 10	PTFE, AISI 316L	1	9.570 896 4

\* sterilisable by all methods

Further dispersing heads are available on request.

2



9.570 882

3



9.570 886

4



9.570 896

### Special dispersing heads for disperser T50 digital

#### R 50 "high speed" stirring shaft

IKA

Using the R 50 stirring shaft, the T50 digital is quickly converted into a high speed stirrer. 700W power and 10000rpm are provided for rapid mixing, dissolving, and breaking up pigment agglomerates. The conical shaft is supported by means of ball bearings, the mixing elements have a screw connection. For operational safety a protective cage is fitted around the mixing element.

#### S 50 N - W 80 SMK Jet mixer head

For shortening mixing and dissolving times. The vertical flow and the high tangential speed, up to 10000rpm, ensure intensive mixing. The head is used for adding gases or liquids, for lump-free suspension of difficult to dissolve powders or for dissolving sedimented, accreted substances.

#### S 50 N - W 65 SK Cutting head

To crush large pieces (up to 50mm) of fibrous materials, such as plant matter, vegetables and fruit.

Type	Max. immersion depth mm	Working volume l	PK	Cat. No.
R 50	180	0.25 to 30	1	9.571 350 1
S 50 N - W 80 SMK	350	1 to 50	1	9.570 926 2
S 50 N - W 65 SK	350	1 to 10	1	9.570 922 3



### Stands and fittings for Dispersers T 10/T 18/T 25/T 50

NEW!

IKA

Type	Description	Rod diam. mm	Height mm	For model	PK	Cat. No.
R 104	Stand	10	370	T 10	1	7.631 971 4
H 44	Bosshead			T 10	1	9.232 994 5
R 200	Clamp			T 10	1	6.225 158 6
R 1825	Stand with baseplate	16	560	T 18 / T 25	1	9.224 031 7
RH 5	Strap clamp			T 50	1	9.224 762
R 1826	Stand with baseplate	16	800	T 18 / T 25	1	9.224 032
R 1827	Stand with baseplate	16	1000	T 18 / T 25	1	9.224 033
R 182	Bosshead			T 18 / T 25	1	9.224 292 8
RH 3	Strap clamp			T 18 / T 25	1	9.224 761 9
R 2722	H-stand	34	1010	T 50	1	9.224 026
R 2723	Telescopic stand	34	620 - 1010	T 50	1	9.224 028
R 271	Bosshead			T 50	1	9.224 266



### 1 Ultrasonic Homogeniser SONOPULS mini20

Ready-to-operate for volumes from 0.1 ml to 25ml, consisting of HF generator mini20, ultrasonic converter mini20 and microtip MS 2.5, diameter 2.5mm. Max. 12W<sub>eff</sub> HF output. Automatic amplitude control.

- pulse: ON cycles 0.1 to 60 secs.; OFF cycles 0.2 to 60 secs.
- time modes, safety shut down: 59min, 59s
- energy monitoring in kJ
- remote control with PC: RS232 (infrared)
- HF power: max. 20W<sub>eff</sub>
- processing frequency 30kHz
- electrical supply data: 230 V~, 50/60 Hz

#### HF generator

Dimensions: 250 x 256 x 154mm  
Weight: 2.0kg

#### Converter

Dimensions, dia. x H: Approx. 50mm x 160mm

Weight: 270g

Titanium probes: Ø 1.5, 2.0, 2.5mm diameter

#### GM mini20

Dimensions: 250 x 256 x 154mm  
Weight: 2.0kg

#### UW mini20

Dimensions, dia. x H: Approx. 50mm x 160mm

Weight: 270g

Titanium probes: Ø 1.5, 2.0, 2.5mm diameter

Type	PK	Cat. No.
SONOPULS mini20	1	9.650 160

Bandelin



### 2 Ultrasonic homogenisers, Sonopuls HD 2070/HD 2200

For cell disruption, emulsification and homogenising of materials, liquid degassing, dispersion, extraction and for sonochemistry. Amplitude adjustable from 10 to 100%.

Values can be monitored on the digital display. Pulsation time and data can be stored in the integrated memory.

Processing frequency: 20 kHz, which is particularly effective. Fail-safe protection against operating when sample vessel empty and during continuous operation. For 230V 50/60Hz supplies, alternatively available for 115V~, 50/60Hz supplies on request. CE-marked, also as a medical device compliant to the in-vitro diagnostics directive 98/79/EG.

- On/off switch control: Possible directly at the converter, at the ultrasonic generator or via remote control (foot switch)
- Amplitude adjustment: Electronically stabilised from 10 to 100%, ±1%
- Pulsation control: 10 to 100% permits heat dissipation when processing sensitive samples
- Timer: 1 sec. to 99 mins. : 59 sec. or continuous operation

Bandelin



### 3 Ultrasonic homogeniser, SONOPULS HD 2070

For volumes from 2ml to 50ml. Ready to operate, standard unit with GM 2070 generator, UW 2070 ultrasonic converter, SH 70 G titanium stepped horn probe with external thread and MS 73 3 mm diameter micro tip. HF-output: max. 70 W<sub>eff</sub>. Titanium probes for other volumes (1ml to 200ml) are available with probes from 2mm to 13mm diameter.

Type	PK	Cat. No.
SONOPULS HD 2070	1	9.650 180

HD 2070 (stand and vessel are not included in delivery).

Bandelin



### 4 Ultrasonic homogeniser, SONOPULS HD 2200

For volumes from 20ml to 900ml. Ready-to-operate standard unit with GM 2200 generator, UW 2200 ultrasonic converter, SH 213 G booster horn with external thread and diameter 13mm titanium tip TT 13. HF-output: max. 200 W<sub>eff</sub>. Titanium probes for other volumes (2ml to 1000ml) are available with probes from diameter 2mm to 25mm.

Type	PK	Cat. No.
SONOPULS HD 2200	1	9.650 185

HD 2200 (stand and vessel are not included in delivery).

Bandelin



## Mixing, Homogenisation/Ultrasonic homogenisers

### Ultrasonic homogenisers, SONOPULS HD 3100/3200/3400

- Amplitron® control
- amplitude setting adjustable in % or alternatively power control in W
- Working frequency 20 kHz
- Pulsation: operation intervals from 0.2 s up to 600 secs, rest intervals from 0.3 secs up to 600 secs
- Timer 9 h: 59 min: 59 secs
- Display of energy delivered to the sample in kJ
- 9 user programmes
- Probe monitoring (of specific probes)
- Automatic amplitude limiting after preselection of the probe
- Temperature indication from 0 up to 120°C (248°F), either with unit shutdown or alarm indication when the maximum temperature is exceeded, using optional temperature sensor
- WINPULS® remote control for process organisation with PC via RS232 and IR interfaces with IR adapter
- Backlit graphics LCD readout
- 230V~, 50/60Hz or 115V~, 50/60Hz

Bandelin

SONOPULS ultrasonic homogenisers are CE-marked, also as a medical device compliant to the in-vitro diagnostics directive 98/79/EG.

**Applications:** Disruption of highly-resistant bacteria, cells or tissues - Production of fine emulsions - Homogenization - Degassing of liquids - Sample preparation for grain size analysis - Catalysis of chemical reactions

1



#### 1 Ultrasonic homogeniser, Sonopuls HD 3100

**High-Tech for research - using small volumes.**

Bandelin

For samples from 2 ml to 50ml, ready-to-operate standard set with GM 3100 generator, UW 3100 ultrasonic converter, SH 70 G standard horn and MS 73 microtip, diameter 3 mm.

Max. 100W HF-output. - Processing frequency 20kHz. - for 230V 50/60Hz or 115V 50/60Hz supplies - For volumes from 1 ml to 200ml - 5 titanium probes, 2mm to 13mm diameter, are available.

<b>HF generator</b>	<b>GM 3100</b>
Dimensions:	250 x 256 x 154mm
Weight:	2.0kg
<b>Converter</b>	<b>UW 3100</b>
Dimensions:	70 x 120mm diameter
Weight:	1kg
Titanium probes:	2mm, 3mm, 6mm, 13mm diameter (not supplied)

Type	PK	Cat. No.
SONOPULS HD 3100	1	9.650 170
HD 3100 (stand and vessel are not included in delivery)		

2



#### 2 Ultrasonic homogeniser, SONOPULS HD 3200

**High-Tech for research - using larger volumes**

Bandelin

For volumes from 20ml to 900ml, ready-to-operate standard set with generator GM 3200, ultrasonic converter UW 3200, booster horn SH 213 G and flat titanium tip TT 13 diameter 13 mm.

Max. 200W HF-output. - Processing frequency 20kHz. - For 230V 50/60Hz or 115V 50/60Hz supplies - For volumes from 2ml to 1000ml - 8 titanium probes available from 2mm to 25mm diameter.

<b>HF generator</b>	<b>GM 3200</b>
Dimensions:	250mm x 256mm x 170mm
Weight:	2.7kg
<b>Converter</b>	<b>UW 3200</b>
Dimensions:	70 diameter x 120mm
Weight:	1kg
Titanium probes (diameter):	2mm, 3mm, 6mm, 13mm, 19mm, 25mm (not supplied)

Type	PK	Cat. No.
SONOPULS HD 3200	1	9.650 175
HD 3200 (stand and vessel are not included)		





**SONOREX** High-power ultrasonic baths  
**SONOPULS** Ultrasonic homogenizers

- Disinfection and cleaning
- Homogenizing
- Emulsifying
- Degassing
- Preparation of samples



In our laboratory brochure you will find information on our products and a variety of possible applications !

BANDELIN electronic is specialized in the development and manufacturing of ultrasonic devices and is the worldwide only full-service provider of ultrasonic devices and disinfection and cleaning agents, with approvals and certifications according to EN ISO 9001 and 13485 for medical devices.

**Benefit from the expertise of the market leader !**



**RELAUNCH OF OUR WEBSITE**

[www.bandelin.com](http://www.bandelin.com)

look for more information about „Ultrasound in the laboratory“



### 1 Ultrasonic Homogeniser Sonopuls HD 3400

#### High tech for research and pilot plant stations

Bandelin

Ready-to-operate, basic unit for 100ml to 2500ml volumes consisting of generator GM 3400, ultrasonic converter UW 3400, threaded booster horn SH 3425 G and probe VS 200 T, 25mm diameter VS 190, T 19mm diameter on request. HF out put max. 400W<sub>eff</sub>.

<b>HF generator</b>	<b>GM 3400</b>
Dimensions:	324 x 230 x 131mm
Weight:	3.1kg
<b>Converter</b>	<b>UW 3400</b>
Dimensions, dia. x H:	90 x 180mm
Weight:	2.2kg
Titanium probes:	19mm; 25mm diameter (not supplied)

Type	PK	Cat. No.
SONOPULS HD 3400	1	9.650 195
HD 3100/HD 3200 (stand and glas not included in delivery)		



### 2 Ultrasonic homogeniser, SONOPULS HD 4050

NEW!

Bandelin

For volumes up to 100 ml. Ready-to-operate basic equipment for volumes from 0.5 ml to 100 ml consisting of:

- HF generator GM 4100
- ultrasonic converter UW 50
- titanium probe TS 102, dia. 2 mm

HF output max. 50 Weff

<b>HF generator</b>	<b>GM 4100</b>
Dimensions:	150 x 220 x 335mm
<b>Converter</b>	<b>UW 50</b>
Dimensions:	45 diameter x 175mm
Titanium probes (diameter):	2mm, 3mm, 4mm, 5mm (not supplied)

Type	PK	Cat. No.
SONOPULS HD 4050	1	9.650 151
HD 4050 (stand and vessel are not included)		



### 3 Ultrasonic homogeniser, SONOPULS HD 4100

NEW!

Bandelin

For volumes up to 250 ml. Ready-to-operate basic equipment for volumes from 2 ml to 250 ml consisting of:

- HF generator GM 4100
- ultrasonic converter UW 100
- standard horn SH 100 G
- titanium probe TS 103, dia. 3 mm

HF output max. 100 Weff

<b>HF generator</b>	<b>GM 4100</b>
Dimensions:	150 x 220 x 335mm
<b>Converter</b>	<b>UW 100</b>
Dimensions:	70 diameter x 150mm
Titanium probes (diameter):	2mm, 3mm, 4mm, 5mm (not supplied)

Type	PK	Cat. No.
SONOPULS HD 4100	1	9.650 152
HD 4100 (stand and vessel are not included)		



9.650 208



9.650 218



9.650 217



9.650 205

### Booster horns and stepped horns for SONOPULS Ultrasonic homogenisers, titanium alloy

NEW!

Bandelin

Booster horns, stepped horns (titanium alloy) for connection of interchangeable sonotrodes (probes). Further booster horns are available on request.

Type	Diam. mm	For	PK	Cat. No.
Booster horn SH 213 G	13	HD 2200 / HD 3200	1	9.650 208 4
Booster horn SH 219 G	19	HD 2200 / HD 3200	1	9.650 218 5
Booster horn SH 225 G	25	HD 2200 / HD 3200	1	9.650 217 6
Stepped horn SH 70 G	13	HD 2070 / HD 3100	1	9.650 205 7
Stepped horn SH 100 G	13	HD 4050 / HD 4100	1	9.650 156
Booster horn SH 3419	19	HD 3400	1	9.650 204
Booster horn SH 3425	25	HD 3400	1	9.650 209

### Ultrasonic homogenisers, SONOPULS, accessories

Stainless steel stands HG 5/11, with base plate.

Clamping device KL 7 with rod, swivelling clamp and quick clamp for reaction vessels of 15mm to 100mm diameter.

Support table AT 7 suitable for KL 7 or in LS 8 and LS 11, for the safe stationing of ultrasonic irradiation vessels.

Bandelin

Type	Description	For	PK	Cat. No.
HG 5	Stainless steel stand	HD 2070/ 3100 / 2200 / 3200	1	9.650 273 <b>1</b>
HG 10	Stainless steel stand	HD 3400	1	9.650 275
KL 7	Clamping device	HG 5 / HG 10	1	9.650 276 <b>2</b>
AT 7	Support table	KL 7 or LS 8 / LS 11	1	9.650 277 <b>3</b>

**1**



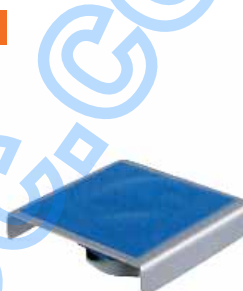
9.650 273

**2**



9.650 276

**3**



9.650 277

### Probes for Sonopuls Ultrasonic homogenisers, titanium

**NEW!**

Titanium probes.

For connection to stepped horns/booster horns.

Bandelin

Type	Diam. mm	Tip	For	For bottle ml	For	PK	Cat. No.
MS 72	2.0	microtip	SH 70 G	1 - 25	HD 2070 / 2200	1	9.650 244
			SH 213 G	2 - 30	HD 3100 / 3200		
MS 73	3.0	microtip	SH 70 G	2 - 50	HD 2070 / 2200	1	9.650 245 <b>4</b>
			SH 213 G	5 - 90	HD 3100 / 3200		
KE 76	6.0	tapered tip	SH 70 G	5 - 100	HD 2070 / 2200	1	9.650 246 <b>5</b>
			SH 213 G	10 - 350	HD 3100 / 3200		
TT 13	13.0	titanium flat tip	SH 70 G	10 - 200	HD 2070 / 2200	1	9.650 250
			SH 213 G	20 - 900	HD 3100 / 3200		
TT 13 FZ	13.0	titanium flat tip with hole	FZ 5 G	-	HD 2200 / 3200	1	9.650 247
			FZ 7 G				
TT 19	19.0	titanium flat tip	SH 219 G	25 - 900	HD 2200 / 3200	1	9.650 248
TT 25	25.0	titanium flat tip	SH 225 G	30 - 1000	HD 2200 / 3200	1	9.650 249
VS 70 T	13.0	probe long	SH 70 G	10 - 200	HD 2070 / 2200	1	9.650 239 <b>6</b>
			SH 213 G	20 - 900	HD 3100 / 3200		
VS 190 T	19.0	probe long	SH 219 G	25 - 900	HD 2200 / 3200	1	9.650 243
			SH 3419	500 - 1500	HD 3400		
VS 200 T	25.0	probe long	SH 225 G	30 - 1000	HD 2200 / 3200	1	9.650 240
			SH 3425	500 - 2500	HD 3400		
MS 1.5	1.5	microtip	UW mini20	0,1 - 10	Sonpuls mini20	1	9.650 165
MS 2.0	2.0	microtip	UW mini 20	0,25 - 20	Sonpuls mini20	1	6.251 521
MS 2.5	2.5	microtip	UW mini20	0,5 - 25	Sonpuls mini20	1	9.650 166
TS 102	2.5	titanium probe	SH 100 G	-	HD 4000 series	1	9.650 157
TS 103	3.0	titanium probe	SH 100 G	-	HD 4000 series	1	9.650 158
TS 104	4.5	titanium probe	SH 100 G	-	HD 4000 series	1	9.650 159

**4**



9.650 245

**5**



9.650 246

**6**



9.650 239



### 1 Flow-through standard horn for Sonopuls Ultrasonic homogenisers

- Flow-through standard horn FZ 5 G with external screwthread and titanium flat tip TT 13 FZ.
- Flow-through standard horn FZ 7 G with external screwthread and titanium flat tip TT 13 FZ.

Bandelin

Type	For	PK	Cat. No.
FZ 5 G	HD 2070 / HD 3100	1	9.650 241
FZ 7 G	HD 2200 / HD 3200	1	9.650 242



### 2 Flow-through cell for SONOPULS Ultrasonic homogenisers, stainless steel

Flow-through cell for continuous flow-through processing. Stainless steel, sealed, vibration-free reaction vessel with cooling jacket. For connection to SH 70 G or SH 213 G with TT 13. For HD 2070, HD 2200, HD 3100 and HD 3200 homogenisers. Flow rate up to 50 L/hr.

Bandelin

Type	PK	Cat. No.
DG 4 G (flow-through)	1	9.650 269



### 3 Ultrasonic processing vessels for SONOPULS Ultrasonic homogenisers, plastic

Ultrasonic processing vessels. Plastic. For indirect ultrasonic irradiation. If BB 2 G is ordered, titanium flat tip TT 13 is required. BB 6 fits directly to UW 2200/UW 3200. Microtube holder EH6. Stainless steel. For simultaneous, contact-free ultrasonic irradiation of up to 6 samples using the ultrasonic homogeniser HD 2200/HD 3200 and ultrasonic processing vessel BB 6.

Bandelin

Type	For	PK	Cat. No.
BB 6	HD 2200 / HD 3200	1	9.650 254
EH 6	BB6	1	9.650 258



### 4 Sleeve adapters for Sonopuls Ultrasonic homogenisers, PTFE

PTFE sleeve adapters for mounting probes into standard ground joint vessels.

Bandelin

For use with HD 2070/2200/3100/3200 homogenisers

- NA 29 G: for vessels with standard ground joint 29/32 and for SH 70/213 G horns
- NA 45 G: for vessels with standard ground joint 45/40 and for SH 70/213/219/225 G horns

Type	PK	Cat. No.
NA 29 G	1	9.650 228
NA 45 G	1	9.650 229



### 5 Ultrasonic homogeniser cup booster BR 30 for SONOPULS HD 2070/ 2200/ 3100/ 3200

For Sonopuls HD 2070, HD 2200, HD 3100 and HD 3200.

Bandelin

- BR 30 cup booster enables highly intensive sonication of small samples, disruption of cells or sonification of pathogenic or toxic substances.
- EH 3: Microtube holder for BR 30 for simultaneous sonification of up to 3 samples.

#### Specifications

Beaker capacity:	12ml
Int. height:	15mm
Int. diameter:	32mm
Max. ultrasound intensity:	3100 W/L (HD 2200/3200)
Material:	Titanium alloy

Type	PK	Cat. No.
BR 30	1	9.650 190 5
EH 3	1	9.877 745 6

Converter and stand are not included.

9.877 745



### Accessories for SONOPULS Ultrasonic homogenisers HD 2200, glass

Glass sample vessels for direct ultrasonic irradiation.

Bandelin

Type	For probes up to Ø mm	Capacity ml	For	PK	Cat. No.
KG 3 cooling vessel	13	15	HD 2070/2200/3100/3200	1	9.650 235 <b>1</b>
KG 5 cooling vessel	25	70	HD 2200/3200	1	9.650 223
DG 3 flow-through vessel with cooling jacket	13	15	HD 2070/2200/3100/3200	1	9.650 236 <b>2</b>
DG 5 flow vessel with cooling jacket	25	70	HD 2200/3200	1	9.650 224
RZ 1 rosett cell	13	25	HD 2070/2200/3100/3200	1	9.650 267
RZ 2 rosett cell	13	40	HD 2070/2200/3100/3200	1	9.650 268
RZ 3 rosett cell	13	110	HD 2070/2200/3100/3200	1	9.650 261 <b>3</b>
RZ 4 rosett cell	25	390	HD 2200/3200/3400	1	9.650 260
RZ 5 rosett cell	25	660	HD 2200/3200/3400	1	9.650 264

**1**

9.650 235

**2**

9.650 236

**3**

9.650 261

### 4 Sound proof boxes LS series

Provides considerable noise level reduction.

Bandelin

LS 4: Made of plastic-coated walls. 10dB(A) damping.

LS 8/11: Made of stainless steel, with damping plates. 20dB(A) damping. With rod, swivelling clamp and bosshead for height adjustment of sample vessels.

Type	For	PK	Cat. No.
LS 4	HD 2070 / 2200 / 3100 / 3200	1	9.650 271
LS 8	HD 2070 / 2200 / 3100 / 3200	1	9.650 281
LS 11	HD 3400	1	9.650 282

**4**

➔ For our Life Science product range - please see page 1180

### Accessories for sound proof box LS 8

For sonification using the BR 30 cup booster, support frame UG 6 allows BB 6 or BB 2G acoustic irradiation cups to rotate through 180° within the LS 8 noise protection box (not included with main instrument). Material: PTFE-coated, lacquered aluminium support with PTFE feet. Ultrasonic converter UW 2070/2200/3100/3200 can be securely attached using the rapid snap fastener.

Bandelin

Description	PK	Cat. No.
Support UG 6 for LS 8	1	9.650 238 <b>5</b>
Spacer AH 6 for LS 8*	1	9.650 225 <b>6</b>

\* Required for direct sonification using long probes.

**5**

9.650 238

**6**

9.650 225

➔ Noise protection - please see page 201.

### 3 Ultrasonic Processor UP50H/UP100H

For manual operation or for stand use, frequency 30kHz, automatic frequency tuning system, amplitude adjustable 20% to 100%, pulse 0 to 100%, dry running protected, in portable case, with mounting for stand STH-16 and mounting tools, 230V a.c.

Hielscher Ultrasonics

Type	Rating W	PK	Cat. No.
UP50H	50	1	9.106 600 1
UP100H	100	1	6.235 231 2



### Accessories for Ultrasonic Processor UP50H/UP100H

Sonotrode MS1, made of titanium, approx. length 80mm  
 Sonotrode MS3, made of titanium, approx. length 80mm  
 Sonotrode MS7, made of titanium, approx. length 80mm  
 Sonotrode MS10, made of titanium, approx. length 80mm (only for UP100H)

Hielscher Ultrasonics

Stand ST1-16, pole diameter 16mm, made of stainless steel, base (L x W x H) 300 x 150 x 600mm  
 Sound Protection Box SB2-16, with adjustable table and 16mm stand pole  
 Timer T1, from 00:00 to 99:59 (min:sec)

Type	Tip	For bottle ml	PK	Cat. No.
MS1	dia. 1mm	0,1 - 5,0	1	9.106 602
MS3	dia. 3mm	5,0 - 100	1	4.005 989
MS7	dia. 7mm	10,0 - 250	1	9.106 604
MS10	dia. 10mm	20,0 - 500	1	4.005 990
ST1-16			1	6.226 573
SB2-16			1	6.235 330
T1			1	6.235 003

### 4



### 4 Ultrasonic Homogeniser UP200St-G

**NEW!**

Hielscher Ultrasonics

Digital ultrasonic generator, UP200St-G, 200 watts, frequency 26kHz (auto-scan), amplitude 20-100%, pulse 10-100%, handheld and stand-mounted use, colored touch-screen, dry running protected, Ø45mm, approx. length 230mm, titanium horn Ø10mm (max. amplitude at horn 70µm), start/stop button, LEDs for sample illumination, simplified exchange sonotrodes, IP65 grade, amplitude or power control, countdown (timer): 0.1sec to 99 days, shutdown when final energy input reached (Ws, Wh, kWh), autom. Calibration of the amplitude-dependent idle power, data recording: amplitude, power, time, temperature on internal SD/USB ComboCard (1GB), display and remote control via browser on PC/MAC without software installation, remote control via PLC, with temperature sensor, temperature indication: °C/°F (-50°C to 200°C), temperature monitoring, power supply 100-240V~, 50-60Hz, IP51 grade, Carrying case incl. fixture for stand St1-Clamp and 3m network cable.

Type	PK	Cat. No.
Ultrasonic-Generator UP200St-G	1	9.106 621
Ultrasonic transducer UP200St-T	1	9.106 622

## Mixing, Homogenisation/Ultrasonic homogenisers-Homogenisers

## 1 Ultrasonic Homogeniser UP200Ht

NEW

1

Digital ultrasonic processor, 200 watts, for handheld and stand-mounted use, frequency 26kHz (auto-scan), amplitude 20-100%, pulse 10-100%, titanium horn Ø10mm (max. amplitude at horn 70µm), colored touch-screen, amplitude or power control, countdown (timer): 0.1sec to 99 days, shutdown when final energy input reached (Ws, Wh, kWh), autom. Calibration of the amplitude-dependent idle power, data recording: amplitude, power, time, temperature on internal SD/USB ComboCard (1GB), display and remote control via browser on PC/MAC without software installation, remote control via PLC, with temperature sensor, temperature indication: °C/°F (-50°C to 200°C), temperature monitoring, dry running protected, sample illumination, anti-bacterial plastic housing, simplified exchange sonotrodes, power supply 100-240V~, 50-60Hz, IP41 grade, set weight: 1300g, Carrying case incl. fixture for stand STH-12 and 3m network cable

Hielscher Ultrasonics



Type	PK	Cat. No.
UP200Ht	1	9.106 620

## 2 Accessories for Ultrasonic Homogeniser UP200St and UP200Ht

NEW

2

Sonotrode S26d2, titanium, approx. length 120mm  
 Sonotrode S26d7, titanium, approx. length 95mm  
 Sonotrode S26d14, titanium, approx. length 80mm  
 Sonotrode S26d40, titanium, approx. length 80mm  
 Sonotrode S26d7D, titanium, approx. length 95mm  
 Sonotrode S26d26G glass (DURAN®), approx. total length 200mm, approx. length of glass part 100mm

Hielscher Ultrasonics



## Flow Cell Reactor FC7K

stainless steel flow cell reactor with cooling jacket, for sonotrodes S26d2D or S26d7D, with NBR O-rings (19×3.2mm), hose connection, plastic clamps, and hose (2m), autoclavable

## Sound Protection Box SPB-L

sound protection box, acryl glass, with divisible rod Ø12mm, vertically adjustable table, anti-slip mat, dimensions (LxWxH): 29x20x35cm, weight: 13kg, sound insulation: 22dB (A) open air measurement

Type	Tip	For bottle ml	PK	Cat. No.
Sonotrode S26d2	diam. 2mm	0,15 - 50	1	9.106 623
Sonotrode S26d7	diam. 7mm	20 - 500	1	7.980 806
Sonotrode S26d14	diam. 14mm	50 - 1000	1	7.980 807
Sonotrode S26d40	diam. 40mm	100 - 1000	1	7.970 924
Sonotrode S26d7D	diam. 7mm	20 - 500	1	9.106 625
Sonotrode S26d26G	diam. 26mm	50 - 1000	1	7.980 808
Flow Cell Reactor FC7K	-	-	1	9.106 626
Sound Protection Box SPB-L	-	-	1	7.980 809

## Laboratory paddle blender MiniMix® 100

MiniMix® 100 paddle blenders, from the BagMixer® range, guarantees a quick and accurate blending of small samples. Thanks to the adjustable paddle system, blending is at its best. MiniMix® 100 is ideal for medical, veterinary and microbiological analysis.

interscience

Type	Volume ml	PK	Cat. No.
MiniMix® 100 P CC®	80-100	1	6.240 509 <sup>3</sup>
MiniMix® 100 W CC®	80-100	1	6.241 090 <sup>4</sup>

3



6.240 509

4



6.241 090

1



9.570 098

#### Laboratory mixer, BagMixer®

For sample preparation with easily adjustable paddle system. The BagMixer® is available in 3 sizes and blends all sample types prior to their microbial analysis. Thanks to their unique adjustable paddle system the blending chamber can be adjusted to the sample volume. Combined with the variable speed, a higher bacterial recovery rate is achieved. All BagMixer® units are fitted with a timer. Constructed in stainless steel. The fully opening door enables easy cleaning.

BagMixer® 400 P with stainless steel door.  
BagMixer® 400 W and 400 CC with see through glass door.

Click & clean® System (only BagMixer® 400 CC): removable and autoclavable paddles.

All units have a 3-year warranty and life guarantee for shock absorbers and window door.

Type	Volume ml	Length mm	Width mm	Height mm	PK	Cat. No.
BagMixer® 400 P	50 to 400	390	260	290	1	6.204 551
BagMixer® 400 W	50 to 400	390	260	290	1	6.224 287
BagMixer® 400 CC	50 to 400	420	260	265	1	9.570 098 1

#### Laboratory mixer, BagMixer® Series S



BagMixer® 400 S/400 SW is a new generation of lab blenders, silent, easy-to-use and new design. With great new features, along with the silent blending, it is adapted to all kinds of applications and with a guarantee of optimal bacterial extraction, it is a great tool for lab analyses avoiding all risks of cross-contamination. BagMixer® 400 S without viewing window, BagMixer® 400 SW with viewing window.

All units have a 3-year warranty and life guarantee for shock absorbers and window door.

Type	Volume ml	Length mm	Width mm	Height mm	PK	Cat. No.
BagMixer® 400 S	50 to 400	290	450	370	1	6.261 704 2
BagMixer® 400 SW	50 to 400	290	450	370	1	6.261 705 3

2



6.261 704

3



6.261 705

4



4 5

#### Rack form u for 14 stomacher bags, Stainless steel, seal bag clipsac, clips

Dimensions (LxDxH) : 360x180x195 mm

Description	PK	Cat. No.
Rack for 14 stomacher bag	1	9.570 018
Seal bag, stomacher clipsac green	50	9.570 017
Clips, blue for stomacher bag	10	9.570 016

5





### Blender bags, BagSystem®

These highly resistant bags provide increased safety. The filter bags automatically filter the sample during the blending process, withholding particles behind the filter.

interscience

The sterile BagPage® has a full-width membrane filter.

The sterile BagFilter® P has a non-woven lateral filter.

Sample bags, RollBag®

Sterile bags with seal reinforced with metal wire for BagMixer® lab blender and for collecting samples in the food, dairy, water, sewage, medical, veterinary, environmental, soil and industrial fields. By whirling, the RollBag® becomes a leakproof bag. RollBag® is also thick and robust in order to resist bursting when handling a variety of samples.

#### Specifications Blender bags, BagSystem®

Capacity:	450ml
Blended volume:	5 to 50ml
Capacity:	1300ml
Blended volume:	50 to 300ml

Type	Description	Width mm	Height mm	PK	Cat. No.
BagLight® 100	plain bag, sleeve 25	110	185	500	9.570 075 <sup>1</sup>
BagLight® 400	plain bag, sleeve 25	175	300	1000	9.570 097
BagLight® 3500	plain bag, sleeve 25	380	510	500	9.570 077
BagFilter® 400 P	side filter bag, sleeve 25	190	300	500	9.570 078 <sup>2</sup>
BagFilter® 3500 P	side filter bag, sleeve 10	380	510	100	9.570 079
BagPage® 100	full-size filter bag, sleeve 25	180	95	500	9.570 080
BagPage® Plus 400	full-size filter bag, sleeve 25	190	300	500	9.570 081
BagPage® 3500	full-size filter bag, sleeve 10	380	510	100	9.570 082
RollBag® 1300 ml	plain single bags	175	290	500	9.570 096 <sup>3</sup>



9.570 075



9.570 078



9.570 096

### 4 5 6 7 Accessories for blender BagSystem®

interscience

Type	Description	PK	Cat. No.
BagOpen® 80/100	bag opener	1	9.570 083
BagOpen® 400	bag opener	1	9.570 084
BagOpen® 3500	bag opener	1	9.570 085
BagRack® 80/100	bag storage for 11 bags	1	9.570 086
BagRack® 400	bag storage for 10 bags	1	9.570 087
BagClip® 80/100	bag closure clip	50	9.570 088
BagClip® 400	bag closure clip	50	9.570 089
BagClip® 3500	bag closure clip	50	9.570 090
BagPipet®	pipette with 3 fixed graduations: 0.1, 0.9, 1.0ml	1	9.570 091
BagTips® Regular	straws for BagPipet®, 19cm, sterile	1000	9.570 092
BagTips® Jumbo	straws for BagPipet®, 24cm, sterile	1000	9.570 093





#### 1 Gravimetric dilutor DiluFlow®, 1 or 2 pumps

**NEW!**

interscience

All stainless steel with a new design, ultra-low profile for easy use under laminar flow. USB port.

Available in 1 or 2 pumps.

- Quick and accurate
- Compact and user-friendly
- RS232 output for LIMS and printer, USB

##### Supplied with

1 BagOpen® 400 DiluFlow®, 1 fixed arm, 1 power cord, 1 Ø 6.4 mm tubings set per pump for GL45 bottle, 1 drip tray, 1 user's manual, guarantee

##### Specifications

Range:	from 0.1 g to 3000g
Dilution Precision:	>98%
Dimensions (W x L x H):	310 x 415 x 400mm
Weight:	10.5kg

Type	PK	Cat. No.
DiluFlow® with single pump	1	9.569 991
DiluFlow® with double pump	1	9.569 992



#### 2 Gravimetric dilutor DiluFlow® Pro, 1 or 2 pumps

**NEW!**

interscience

Fast and accurate gravimetric dilutor for the dilution of the sample. All stainless steel. Its robotic arm enables the secureness of the analyses and great user-comfort.

Available in 1 or 2 pumps.

- Quick and accurate
- High-speed robotic arm
- RS232 output for printer, USB (B) for computer, Jack plug for pedal

##### Supplied with

1 BagOpen® 400 DiluFlow®, 1 fixed arm, 1 power cord, 1 Ø 6.4 mm tubings set per pump for GL45 bottle, 1 drip tray, 1 user's manual, guarantee

##### Specifications

Range:	from 0.1 g to 5000g
Dilution Precision:	>98%
Dimensions (W x L x H):	310 x 415 x 375mm
Weight:	12.5kg

Type	PK	Cat. No.
DiluFlow® Pro with single pump	1	9.569 993
DiluFlow® Pro with double pump	1	9.569 994



#### 3 Gravimetric dilutor DiluFlow® Elite, 1 or 2 pumps

**NEW!**

interscience

Fast and accurate gravimetric dilutor for the dilution of the sample. All stainless steel. Its robotic arm enables the secureness of the analyses and great user-comfort. Use up to 6 pumps with bi-directional connectivity. Patented multi-dispenser mode.

Available in 1 or 2 pumps.

- Quick and accurate
- High-speed robotic arm
- 2 USB (A) port, 1 USB (B) port, Jack plug, Ethernet port for LIMS

##### Supplied with

1 BagOpen® 400 Diluflow®, 1 cap for 2 ends, 1 power cord, 1 Ø 6.4 mm tubings set per pump for GL45 bottle, 1 drip tray, 1 user's manual, guarantee

##### Specifications

Range:	from 0.1 g to 5000g
Dilution Precision:	>98%
Dimensions (W x L x H):	310 x 415 x 375mm
Weight:	13kg

Type	PK	Cat. No.
DiluFlow® Elite with single pump	1	9.569 995
DiluFlow® Elite with double pump	1	9.569 996