



GERMANY

LABORATORY TECHNOLOGY®
Buddeberg

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LABORATORY

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partner of the



Lab Logistics Group

2007/2008



Welcome to Buddeberg,

Buddeberg is your competent and friendly supplier of laboratory equipment. We can provide the complete range of products for your requirements.

As a modern service provider for laboratory supply, our policy is to ensure the highest quality of products and services, advice and consultancy, rapid delivery times and a "can-do" attitude to customer support.

As shareholders in LLG (Lab Logistics Group) and therefore backed by an extensive stock and warehousing facility, Buddeberg can react very quickly and effectively to your requirements.

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Do you need chemicals ?

We offer the complete range needed in your laboratory.

- Chemicals and reagents
- Solvents for HPLC, analysis and synthesis
- Buffers and ready-to-use reagents for gel electrophoresis, scintillation and histochemistry
- Products for the biomolecular laboratory

Please contact us. We would be pleased to inform you on the variety of our product range.

Buddeberg GmbH
Mallaustr. 49
D - 68219 Mannheim, Germany

- **Sampling** **371**
- **Grinding** **376**
- **Sieving** **396**
- **Mixing and Homogenization** **404**





1 Chemistry dippers

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

Bürkle

Capacity	Length*	Stem dia.	Cat. No.	PK
ml	mm	mm		
250	1000	20	9.303 840	1
500	1000	20	9.303 842	1
1000	1000	20	9.303 844	1

* Stem



2 TeleScoop Telescopic rods

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

Bürkle

Type	Cat. No.	PK
0.65 to 1.20 m	9.303 800	1
0.95 to 2.80 m	9.303 801	1
1.25 to 2.50 m	9.303 802	1
1.15 to 3.00 m	9.303 804	1
1.65 to 4.50 m	9.303 806	1
1.75 to 6.00 m	9.303 807	1



3 Industrial dip samplers, sample beakers, angled for TeleScoop

With individually variable angle adjustment.

Bürkle

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



4 Pendulum beaker for TeleScoop

For industrial dip samplers. Automatically swings into a vertical position. Ideal for narrow shafts.

Bürkle

Capacity	Cat. No.	PK
ml		
500	9.303 820	1
1000	9.303 822	1
2000	9.303 824	1



5 Bottle holder for TeleScoop

For industrial dip samplers. Holds bottles up to max. 95 mm diameter. Suitable for plastic and glass bottles. With universal quick-action clamping strap.

Bürkle

Type	Cat. No.	PK
Bottle holder	9.303 830	1



6 Dip sampler, stainless steel, for TeleScoop

For pasty or powdery materials

Bürkle

- with lip for scraping
- sterilizable

Capacity	Cat. No.	PK
ml		
1000	9.303 846	1

1 behrotest® water samplers

For sampling from the water surface.
Adjustable clamping device and end rod made of stainless steel, with choice of sample container as indicated. For sampling in accordance with DIN 38409 to H14/AOX a 1 litre borosilicate beaker is required. With 3-part handle, which is continuously adjustable between 1 and 3.75 m.
Ideal for use at sites which are difficult to access.

Behr

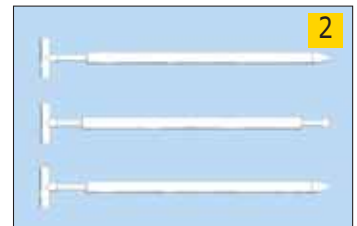


Type	Glass	Cat. No.	PK
PB 1000	With boro. glass beaker	9.920 630	1
PF 1000	With dispensing bottle	9.920 631	1
PP 1000	With PP beaker	9.920 632	1
PT 1000	With PTFE beaker	9.920 633	1
PV 1000	With stainless steel beaker	9.920 634	1

2 Disposable Samplers DispoSampler

In numerous situations, rapid and contamination-free samples have to be taken. DispoSamplers are perfect for this application. They are individually packed and always ready to use. Avoid expensive decontamination or cleaning of soiled units. Max. capacity 190 ml
Non-sterile and sterile versions available.
LiquiDispo
For liquids with low viscosity up to 10000 cP.
MicroDispo
For semi-solid goods up to 0.5 mm diameter.
ViscoDispo
For high viscous media up to 10000 cP.

Bürkle



Type	Length cm	Capacity ml	Material	Cat. No.	PK
LiquiDispo	500	100	HDPE	9.303 720	20
LiquiDispo	500	100	HDPE/sterile	9.303 721	20
LiquiDispo	1000	190	HDPE	9.303 722	20
LiquiDispo	1000	190	HDPE/sterile	9.303 723	20
MicroDispo	500	5	HDPE	9.303 724	20
MicroDispo	500	5	HDPE/sterile	9.303 725	20
MicroDispo	1000	5	HDPE	9.303 726	20
MicroDispo	1000	5	HDPE/sterile	9.303 727	20
MicroDispo	500	10	HDPE	9.303 728	20
MicroDispo	500	10	HDPE/sterile	9.303 729	20
MicroDispo	1000	10	HDPE	9.303 730	20
MicroDispo	1000	10	HDPE/sterile	9.303 731	20
ViscoDispo	500	100	HDPE	9.303 732	20
ViscoDispo	500	100	HDPE/sterile	9.303 733	20
ViscoDispo	1000	190	HDPE	9.303 734	20
ViscoDispo	1000	190	HDPE/sterile	9.303 735	20

3 LiquiSampler

DIN 53242. For liquids. Choice of construction. PTFE/FEP for contamination-free sampling, or transparent PP. Practical pushbutton, 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 25 mm 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	Dia. mm	Cat. No.	PK
PTFE/FEP	1000	25	9.303 950	1
PTFE/FEP	2000	25	9.303 951	1
PP, transparent	1000	25	9.303 955	1
PP, transparent	2000	25	9.303 956	1



1 Sampler ViscoSampler

Ultra-pure sampler with powerful suction for viscous substances. Choice of construction. PTFE/FEP or PP.

Bürkle

Specially designed for viscous substances, such as lime water, slurries, wet clay and soil samples, sediment, 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	Dia. mm	Cat. No.	PK
PTFE/FEP	1000	25	9.303 960	1
PTFE/FEP	2000	25	9.303 961	1
PP	1000	25	9.303 965	1
PP	2000	25	9.303 966	1



2 MiniSampler PE

Taking samples is quick, easy, clean and practical

Bürkle

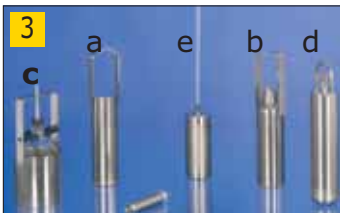
With the MiniSampler, the sample liquid only comes into contact with the suction hose and the sample bottle. Cross contamination is largely prevented. Bottles can be tightly sealed immediately after the sample is taken with a tamper-evident cap.

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 (8 mm) and flexibility the hose can reach sampling areas that are otherwise inaccessible.

Accessories:

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

Type	Cat. No.	PK
MiniSampler	9.303 970	1



3 4 Liquid samplers, vessels and bottles

Choice of vessels for withdrawing samples from storage and transport tanks.

Bürkle

a) Dipping vessel to DIN 51750 chrome plated, brass or stainless steel V2A. Capacity 1 litre, 75 mm diameter, height 400 mm.

b) Dipping bottle calibrated to deliver to DIN EN 58 for sampling flammable liquids. Constructed in spark-suppressing metals (nickel-plated brass bottle) capacity 1 litre, 75 mm diameter, height 385 mm.

c) Dipping bottle to DIN EN 58 for sludge and water sampling. Nickel-plated brass support with glass bottle. Capacity 1 litre, 125 mm diameter, height 330 mm.

d) Immersion bomb to DIN EN ISO 3170 for spot and bottom sampling of oil products, insulating oils, petroleum spirit and fuel oils. Nickel-plated brass. capacity 1 litre, 75 mm diameter, height 380 mm.

e) Immersion bomb Target available on request.



Type	Picture	Cat. No.	PK
Dipping vessel to DIN 51750, nickel-plated brass	3 a	9.303 935	1
Dipping vessel to DIN 51750, stainless steel V2A	3 a	9.303 936	1
Dipping bottle (Ex) to DIN EN 58	3 b	9.303 937	1
Dipping bottle to DIN EN 58	3 c	9.303 938	1
Immersion bomb to DIN EN ISO 3170	3 d	9.303 939	1
Manual cable reel, black PP, electrically conductive, without cable	4	9.303 941	1
Cable, V2A steel conductive	4	9.303 943	1



5 Sampler Uni-Sampler "Ex"

Specially developed for sampling class A1 flammable liquids (e.g. benzene, petrol). Glass bottles and tubing electrically connected and grounded via an earthing cable.

Bürkle

The "Ex" sampler was developed in cooperation with Gütegemeinschaft Tankschutz e.V.

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 4 metres of sample tubing, glass sample bottle, manual vacuum pump and earthing cable in carry case

Type	Cat. No.	PK
Uni-Sampler "Ex"	9.303 831	1

1 Liquid sampler, UniSampler with flexible sample tubing

For deep, narrow, difficult-to-access areas. A heavy, stainless steel tube end-section sinks the tubing hose to the desired depth.

- PVC sample tubing, 2.5 m long
- incl. 1000 ml sample bottle, manual vacuum pump and adapter for sample bottle, V2A hose weight, 20 seal-it safety seal labels, supplied complete in carrying case

Bürkle



Type	Cat. No.	PK
Liquid sampler, UniSampler	9.303 834	1

2 Accesories for UniSampler liquid samplers

Bürkle

Type	Cat. No.	PK
Sample bottle 250 ml	9.001 062	1
Sample bottle 500 ml	9.001 063	1
Sample bottle 1000 ml	9.001 064	1
Spare tube PVC, 2.5 m	9.303 838	1



3 Sampler, Vampire

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.

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

Supplied with bottle basket, driving unit, battery charger, peristaltic pump and 5 metres of PE suction tubing.

Bürkle



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

4 Sampler QuickPicker

Stainless steel.

Suitable for removing bulk materials from sacks or large bags and depositing 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 500 ml sample bottles.

Bürkle



Length	Imm. depth	Capacity	Cat. No.	PK
mm	mm	ml		
500	300	75	9.303 850	1

Sample bottles for QuickPicker Sampler

Bürkle

Type	Capacity	Cat. No.	PK
	ml		
PET, clear	250	9.001 053	1
PET, clear	500	9.001 054	1
PP, transparent	250	9.001 057	1
PP, transparent	500	9.001 058	1



1 Silo drill

Designed for sampling powders, granulates or semi-solids from silos and vehicle tankers. When bulk goods are transported over a long distance (e.g. by HGV) the material can separate out. 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 2.5 metres can be reached by using extension rods. The Silo drill is not only suitable for silos, but also but can also be used in numerous bulk goods containers in the pharmaceutical, chemical, foodstuffs and semi-luxury goods sectors. Spiral diameter: 90 mm, chamber: diameter 40 mm, capacity 400 ml.

Bürkle

Type	Length mm	Cat. No.	PK
Silo drill	1500	9.303 858	1
Extension rods	1000	9.303 859	1



2 StickProof Sampler

For pharmaceutical powders. Electropolished, stainless steel V4A. Supplied with fixing clip and 100 x PE sample bags 120 x 170 mm. The particularly fine point can be inserted easily and deeply. Sample volumes can be varied (up to approx. 50 cm³) via the tapered sampling orifice. StickProof is manufactured from one piece, without edges, grooves or crevices for perfect and easy cleaning. The sample can be filled directly into sampling bags.

Bürkle

Handle dia.: 25 mm
Drill dia.: 20 mm
Chamber length: 120 mm

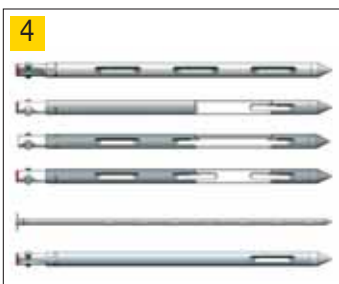
Length mm	Cat. No.	PK
410	9.303 945	1
1100	9.303 946	1



3 Zone sampler, accessory cleaning brush

For basic cleaning of Zone samplers.

Length mm	Dia. mm	Cat. No.	PK
600	25	9.303 880	1
1000	25	9.303 884	1
1000	50	9.303 885	1



4 5 Zone samplers

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

Bürkle

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

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. Aluminium. Tube diameter: 25 mm.

Jumbo-sampler: Generally as the All-layer-sampler with open tube end. Tube diameter is 50 mm making the sampler very good for coarser granule samples and large sample volumes. Aluminium.

Uno-sampler: With a closed chamber, for target samples from a pre-determined sample depth.



Type	Material	Length mm	Imm. depth mm	Capacity ml	No. of cham- bers	Cat. No.	PK
Multi-Sampler	Stainless steel (V4A)/PTFE	550	430	14	3	9.303 860	1
Multi-Sampler	Stainless steel (V4A)/PTFE	850	710	17	3	9.303 862	1
Multi-Sampler	Stainless steel (V4A)/PTFE	1500	1355	17	5	9.303 864	1
Multi-Sampler	Anodized aluminium	550	430	14	3	9.303 870	1
Multi-Sampler	Anodized aluminium	850	710	17	3	9.303 872	1
Multi-Sampler	Anodized aluminium	1500	1355	17	5	9.303 874	1
Cross-section sampler	Anodized aluminium	550	430	70	3	9.303 875	1
Cross-section sampler	Anodized aluminium	850	710	130	3	9.303 876	1
Cross-section sampler	Anodized aluminium	1500	1355	260	5	9.303 877	1
Jumbo sampler	Anodized aluminium	850	710	880	3	9.303 878	1
Jumbo sampler	Anodized aluminium	1500	1355	1700	5	9.303 879	1
Jumbo sampler	Anodized aluminium	2500	2355	2900	7	9.303 883	1
Uno-Sampler	Stainless steel (V4A)/PTFE	550	430	17	1	9.303 886	1
Uno-Sampler	Stainless steel (V4A)/PTFE	850	710	17	1	9.303 887	1
Uno-Sampler	Stainless steel (V4A)/PTFE	1500	1355	17	1	9.303 888	1

1 | 2 Control seals for sampling close-it®

Printed or plain.

close-it® 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.

Bürkle



Type	Colour	Description	Cat. No.	PK
Printed	red	Standard 95 x 95 mm	9.303 910	500
Printed	green	Standard 95 x 95 mm	9.303 911	500
Printed	yellow	Standard 95 x 95 mm	9.303 912	500
Printed	blue	Standard 95 x 95 mm	9.303 913	500
Printed	black	Standard 95 x 95 mm	9.303 914	500
Plain	white	Standard 95 x 95 mm	9.303 915	500
Roller	-	95 x 95 mm	9.303 919	1
Printed	red	Maxi 150 x 150 mm	9.303 980	250
Printed	green	Maxi 150 x 150 mm	9.303 981	250
Printed	yellow	Maxi 150 x 150 mm	9.303 982	250
Printed	blue	Maxi 150 x 150 mm	9.303 983	250
Printed	black	Maxi 150 x 150 mm	9.303 984	250
Plain	white	Maxi 150 x 150 mm	9.303 985	250
Roller	-	150 x 150 mm	9.303 989	1

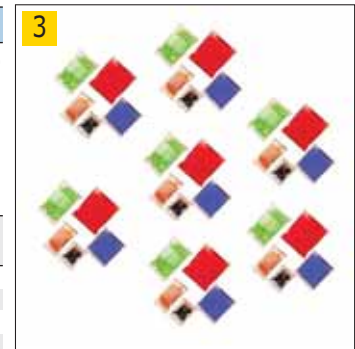
3 Sample bags, SteriBag

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

Type A: Without write-on panel

Type B: With write-on panel.

Bürkle



Type	Capacity ml	Width mm	Length mm	Cat. No.	PK
A	60	127	76	9.404 114	500
B	60	127	76	9.404 119	500
A	180	178	76	9.404 115	500
B	180	178	76	9.404 120	500
A	540	229	114	9.404 116	500
B	540	229	114	9.404 121	500
A	720	229	140	9.404 117	500
B	720	229	140	9.404 122	500
A	810	305	114	9.404 118	500
B	810	305	114	9.404 123	500

4 Jaw crushers, BB 51 series

- Feed size up to 35 mm (feed opening 40 mm)
- Choice of crushing jaw material as indicated
- Throughput/charge: single items, charges to 1000 ml
- Dimensions (W x D x H): 360 x 580 x 510 mm
- Weight: approx. 80 kg
- Supply requirements: 230V 50Hz

Retsch



Type	Material	Cat. No.	PK
BB 51	Stainless steel	9.739 075	1
BB 51	Tungsten carbide	9.739 076	1
BB 51	Zirconium oxide	9.739 077	1
BB 51	Manganese steel	9.739 078	1



1 Jaw crushers, BB 100, BB 200

For rapid and gentle coarse grinding and crushing of hard, brittle and tough materials. With stepless gap adjustment and scale, excellent performance with a high degree of ultimate fineness, robust construction, fitted with quick-release hopper, receiver with safety switch and casing. Standard model is supplied with manganese steel crushing jaws. Models with jaws made of stainless steel or tungsten carbide are available on request. Supply requirements: 400 V/50 Hz 3-ph.

Retsch

Type	Feed size up to mm	max. Throughput/ Charge kg*	Dimensions (W x D x H) mm	Weight kg	Cat. No.	PK
BB 100	50	200 kg*	320 x 800 x 960	137	9.739 098	1
BB 200	90	300 kg*	450 x 900 x 1160	300	9.519 120	1
BB 300	150	600 kg*	670 x 1450 x 1600	700	9.739 093	1

*kg/24 hrs.



2 Ultra centrifugal mill ZM 200

Precise and very quick cutting up by two-stage rotor ring sieve system. The new power drive provides higher output with stronger torque and also copes with temporary overloads. For sample quantities from a few grammes to 5 litres; also suitable for cryogenic grinding. Will process soft, medium and fibrous materials. Ideal for chemicals, feeds, food, detergents, plastics, fertilizers and pharmaceutical raw and finished products. Wide speed range, adjustable from 6000 to 18000 rpm, fine control for sample feed. Safety plastic housing with automatic cover closure. All parameter data can be recalled or set up using a graphics display and one-button operation. Electronic safety and diagnostic system.

- Feed size up to 10 mm
- Ultimate fineness approx. to 40 µm
- Throughput/load to 900/5000 ml (with cyclone)
- Dimensions (W x H x D): 410 x 365 x 515 mm
- Weight: approx. 38 kg
- Supply requirement 230 V 50/60 Hz, power capacity approx. 1300 W

Scope of supply: ZM 200 with 900 ml cassette
Please order rotor and ring sieves separately.
Further rotors and ring sieves are available on request (e.g. for heavy metal-free grinding).

Retsch

Type	Cat. No.	PK
ZM 200	9.738 970	1



3 Accessories for ultra centrifugal mill ZM 200

Retsch

Description	Cat. No.	PK
Rotor, stainless steel, 6 teeth	9.739 064	1
Rotor, stainless steel, 12 teeth	9.739 065	1
Rotor, stainless steel, 24 teeth	9.739 066	1
Ring sieve, Conidur holes 0.08 mm	9.738 972	1
Ring sieve, Conidur holes 0.12 mm	9.738 973	1
Ring sieve, Conidur holes 0.20 mm	9.738 974	1
Ring sieve, Conidur holes 0.25 mm	9.738 975	1
Ring sieve, Conidur holes 0.50 mm	9.738 976	1
Ring sieve, Conidur holes 0.75 mm	9.738 977	1
Ring sieve, Conidur holes 1.00 mm	9.738 978	1
Ring sieve, Conidur holes 1.50 mm	9.738 979	1
Ring sieve, Conidur holes 2.00 mm	9.738 980	1
Ring sieve, Round holes 3.00 mm	9.738 981	1
Ring sieve, Round holes 4.00 mm	9.738 982	1
Ring sieve, Round holes 5.00 mm	9.738 983	1
Ring sieve, Round holes 6.00 mm	9.738 984	1
Cyclone, with passage container and holder, with 5 litre collector	9.738 985	1
Cyclone, with passage container and holder, with 3 litre collector	9.738 986	1
Replacement grinding set for the grinding of very small quantities of material, 8 tooth push-fit rotor, labyrinth disk and 50 ml cassette	9.738 987	1
Feeder kit, DR 100, drive unit for 220-240 V 50 Hz, with feed attachment with 40mm push-fit feed chute, funnel and stand	9.738 971	1

1 Rotor beater mills, SR 200 and SR 300

Retsch

For batch and continuous coarse, fine and ultra-fine grinding as well as for breaking down dry, soft, medium-hard, organic and inorganic substances. SR 300 obtains larger throughput with the highest product fineness due to the higher rotor speed and drive capacity. Milling and sieve inserts are easily interchangeable. Stainless steel

- Feed size up to 15 mm
 - Ultimate fineness: <0.08 mm
 - Throughput/charge: 5 L or 30 L up to 120 or 360 kg/h
- Supply requirements: 400 V/50 Hz 3-ph.

Items supplied: Mill with rotor and 5 L stainless steel receiver incl. filter tubing.
SR 300 is also available with base frame. Sieves for sieve frames and grinding assemblies are available on request.

Type	Cat. No.	PK
SR 200 for 400 V/50 Hz 3-ph., grey cast iron	9.739 081	1
SR 300 for 400 V/50 Hz 3-ph., stainless steel	9.738 905	1
Base SR 200	9.738 811	1



2 Accessories for Rotor beater mills, SR 200 and SR 300

Retsch

Type	Cat. No.	PK
Base frame 360°, stainless steel	9.738 909	1
Ring sieve, Conidur holes 0.25 mm	9.738 914	1
Ring sieve, Conidur holes 0.50 mm	9.738 915	1
Ring sieve, Conidur holes 0.75 mm	9.738 916	1
Ring sieve, Conidur holes 1.00 mm	9.738 917	1



3 Cross beater mill SK 100 Comfort

Retsch

For simple, rapid grinding of medium-hard and brittle materials, in batch or continuous operation. Versatile use due to large selection of accessories. Safety quick-acting closure and motor brake give excellent operating safety.

- Feed size: up to 15 mm
- Ultimate fineness: approx. 0.1 mm
- Throughput/charge: up to 80 kg/hr.
- External dimensions (W x D x H): with base stand 560 x 700 x 1150 mm
- Weight approx.: 54 kg
- Supply requirements: 400 V/50 Hz 3-ph.

Grinding assembly available in chrome steel or cast iron in standard form.
A stainless steel assembly version is available on request.

Items supplied: Cross beater mill with cross beater, impact plates, filter tubing for 5 litre receiver.
Receiver and underframe please order separately. Alternative power supply versions available on request.
Feeder kit on request.

Type	Cat. No.	PK
SK 100 Comfort, special steel	9.739 020	1
SK 100 Comfort, cast iron	9.739 021	1
SK 100 Comfort, stainless steel	9.739 022	1



Cross beater mill SK 100 Comfort, accessories

Retsch

Type	Aperture size mm	Cat. No.	PK
Base for SK 100 Comfort	-	9.738 811	1
Receiver, Conidur holes	0.12	9.738 671	1
Receiver, Conidur holes	0.50	9.738 912	1
Receiver, Conidur holes	1.00	9.738 660	1
Receiver, Conidur holes	2.00	9.738 662	1
Receiver, Round holes	5.00	9.738 665	1
Receiver, Round holes	10.00	9.738 670	1





1 Cutting mill SM 100 Comfort

Rapid, smooth milling of bulky, soft, fibrous and tough materials using cutting and shearing action. Ideal for laboratories involved in agricultural research and for the plastic and cellulose industry. Excellent operating safety by the door safety quick-locking and braking motor. The rotor has 3 hardened, adjustable cutting plates. Economical re-useable cutting plates and cutting block. Grey finish, cast iron mill. 3 hopper types available (see accessories).

- Feed size: up to 80 x 60 mm
- Ultimate fineness: 0.25 to 20 mm
- Throughput/charge: up to 30 l/h.
- External dimensions (W x D x H): with base stand 460 x 700 x 1525 mm
- Weight approx.: 64 kg
- Supply requirements: 230 V/50 Hz or 400 V/50 Hz 3-ph.

Retsch

Items supplied: Cutting mill with parallel cut rotor from stainless steel, filter tubing and 5 litre receiver. Please order feed hopper, receiver and stand separately.

Alternative power supply versions and cutting materials for heavy metal-free grinding are available on request.

Type	Cat. No.	PK
SM 100 comfort, 230 V/50 Hz 1-ph.	9.739 036	1
SM 100 comfort, 400 V/50 Hz 3-ph.	9.739 037	1



2 High-speed cutting mill SM 2000

Rapid, gentle milling of bulky, soft and tough materials. Powerful even when working with difficult materials, e.g. refuse, plastics, metal scrap, and also for biological materials such as wood, roots, bones, plants and animal feed. 6-blade rotor with 18 spirally-arranged cutting plates produces many transverse cuts. Material is fed using a contact hopper into the mill. The ultimate fineness is dependent on the selection of bottom screen. Easy to clean milling area thanks to unfolding aluminium grinding chamber, with easily interchangeable bottom screen. Control panel allows convenient and secure operation.

Retsch

- Feed size: up to 80 x 60 mm
- Ultimate fineness: 0.25 to 20 mm
- Throughput/charge: up to 50 L/h
- External dimensions (W x D x H): with base stand 550 x 600 x 1510 mm
- Weight: approx. 95 to 126 kg (according to construction)

Items supplied: high speed cutting mill SM 2000 with 5 litre receiving bowl and 696 mm high stand. Rotor, funnel and sieves - please order separately!

Type	Cat. No.	PK
SM 2000, rotor speed 695 rpm	9.739 043	1
SM 2000, rotor speed 1390 rpm	9.739 044	1
6-blade-rotor for 695 rpm	9.739 045	1
6-blade-rotor for 1390 rpm	9.739 046	1
Parallel cut rotor for 750 to 835 rpm	9.739 047	1
Parallel cut rotor for 1430 to 1690 rpm	9.739 048	1



3 High-speed cutting mills SM 100 and SM 2000, accessories

Retsch

Type	Aperture size mm	Cat. No.	PK
Base for SM 100 Comfort	-	9.738 811	1
Cascade hopper for bulk material	-	9.739 058	1
Standard hopper	-	9.739 057	1
Funnel for individual output	-	9.739 056	1
Bottom screen, Conidur holes	0.25	9.738 854	1
Bottom screen, Conidur holes	0.50	9.738 855	1
Bottom screen, Conidur holes	0.75	9.738 856	1
Bottom screen, Conidur holes	1.00	9.738 857	1
Bottom screen, Conidur holes	1.50	9.738 858	1
Bottom screen, Conidur holes	2.00	9.738 859	1
Bottom screen, square holes	4.00	9.738 815	1
Bottom screen, square holes	6.00	9.738 816	1
Bottom screen, square holes	8.00	9.738 817	1
Bottom screen, square holes	10.00	9.738 818	1
Bottom screen, square holes	20.00	9.739 055	1
Receiver for 30 L	-	9.738 812	1
Filter tubing for receiver 30 L	-	9.738 813	1

1 Knife mill, Grindomix GM 200

For the rapid and gentle grinding and homogenization of dry, soft, and liquid-based, materials of all types. Comfortable, reproducible adjustment for different grinding requirements. Timed operation for coarse crushing and mixing.

Retsch

Automatic switch-off at the end of the milling process.

Simple handling reduces set-up, shut-down and cleaning time to a minimum.

- Feed size 10 to 40 mm
- Charge/sieve load of variable milling area: 100 to 700 ml
- Dimensions (W x D x H): 200 x 270 x 370 mm
- Weight (without accessories) approx. 7.5 kg
- Ultimate fineness <300 µm
- Supply requirements: 230 V 50/60 Hz, 30 W

Items supplied: Knife mill complete with 1 litre plastic receiver, plastic cover and stainless steel knife.



Type	Cat. No.	PK
GM200	9.739 207	1

Knife mill, Grindomix GM200, accessories

Retsch

Description	Cat. No.	PK
Plastic container, 1 litre	9.739 213	1
Glass container, 1 litre	9.739 208	1
Stainless steel container 1 litre	9.739 248	1
PP standard lid 1 litre for glass, steel and plastic containers	9.739 214	1
PP gravity lid for 1 litre glass container	9.739 209	1
PP gravity lid for 1 litre plastic container	9.739 218	1
PP gravity lid for 0.3 litre glass and steel containers	9.739 211	1
PP gravity lid for 0.3 litre standard container	9.739 210	1
PP lid for chamber reduction to 0.5 litres	9.739 222	1
Scraper	9.739 212	1
Stainless steel cutter	9.739 215	1

Titanium cutters available on request!



2 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 or for preparing samples for analysis.

Retsch

The robustness and performance of the mills allow them to be used in technical training facilities and provide a larger amount of samples in serial testing.

- feed size: up to 20 mm
- ultimate fineness: up to 0.1 mm
- throughput: up to 150 kg/h
- dimensions (W x D x H): 440 x 400 x 870 mm
- weight: approx. 140 kg
- supply requirement: 400 V 50/60 Hz 3ph.

Disc mill DM 200 supplied without grinding assembly.

Please order grinding assembly separately!



Type	Cat. No.	PK
Disc mill DM 200	9.739 030	1

Accessories for disc mill DM 200

Retsch

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





1 Mortar grinder RM 200

Suitable for the dry and wet grinding of soft, brittle and hard samples. Depending on the sample, amounts from approx. 10 ml up to 190 ml can be reduced in size, triturated and homogenised. With beech wood scraper (special accessory) for use in the pharmaceutical and homeopathic industries. 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. Please order mortar and pestle separately.

Retsch

Specifications

Feed size*:	max. 8 mm
Batch size/Feed volume:	10 to 190 ml
Ultimate fineness*:	approx. 10 µm
Dimensions (W x D x H):	400 x 370 x 480 mm
Weight: approx:	approx. 24 kg (without grinding set)
Supply requirements:	220 - 240 V 50 Hz
*depending on feed material	

Type	Cat. No.	PK
RM 200	9.738 170	1

Mortars and pestles made from zirconium oxide, sintered corundum, steel and tungsten carbide as well as for 300 ml batches are available on request.

Accessories for Mortar Grinder RM 200

Retsch

Type	Cat. No.	PK
Mortar, hard porcelain	9.738 151	1
Mortar, Agate	9.738 172	1
Pestle, hard porcelain	9.738 173	1
Pestle, Agate	9.738 174	1

Mortars and pestles made from zirconium oxide, sintered corundum, steel and tungsten carbide as well as for 300 ml batches are available on request.



2 Mixer mills MM 200 and MM 301

For dry, wet and cold grinding of small quantities as well as for homogenising and mixing of powders and suspensions. Dust-tight grinding jars with lid for the MM301 are available, so that also wet grinding with solvents is possible.

Retsch

- 2 grinding positions
- digital presetting for process and swing frequency
- 3 parameter programme memory
- safety grinding jar holder with automatic centring and self-securing lock (MM 301)
- Jar with screwtop lid up to 50 ml, best solution for wet and cryogenic grinding (MM 301)

Accessories for cryogrinding on request

Specifications

feed size	
MM 200:	up to 6 mm
MM 301:	up to 8 mm
final finess:	
MM 200:	approx: 10 µm
MM 301:	approx: 5 µm
charge:	
MM 200:	max: 2 x 10 ml
MM 301:	max: 2 x 20 ml

Type	Dimensions (W x D x H)	Weight	Supply requirements	Cat. No.	PK
	mm	kg			
MM 200	300 x 465 x 182	20.00	220 - 240/50-60 Hz	9.739 080	1
MM 301	300 x 470 x 225	20.00	220 - 240/50-60 Hz	9.739 090	1



3 Grinding jars with lid for MM 200

Retsch

Material	Cat. No.	PK
stainless steel 1.5 ml	9.738 823	1
stainless steel 5 ml	9.738 829	1
stainless steel 10 ml	9.738 835	1
stainless steel 25 ml	9.738 839	1
agate 5 ml	9.738 827	1
agate 10 ml	9.738 833	1

Grinding jars made of chrome steel, metal, sintered corundum, zirconium oxide and teflon are available on request.

Ball charge table for grinding jars in MM 200/MM 301

Retsch

Grinding jars	Capacity	Ball dia.	Bulbs
ml	ml	mm	
1.5	0.2 to 0.5	5	2
5.0	0.5 to 2.0	7	2
10.0	2.0 to 4.0	9/10/12	2
25.0	4.0 to 10.0	12/20	2
35.0	> 15.0	20/25	1
50.0	> 20.0	25/30	1


1 Mixer mill MM 301, accessories
Grinding jars with lid

Retsch

Advantages:

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

Material	Capacity ml	Cat. No.	PK
Stainless steel	1.5	9.738 848	1
Stainless steel	5	9.738 849	1
Stainless steel	10	9.738 960	1
Stainless steel	25	9.738 964	1
Stainless steel	35	9.738 875	1
Stainless steel	50	9.738 885	1
Agate	5	9.738 852	1
Agate	10	9.738 961	1
Zirconium oxide	10	9.738 962	1
Zirconium oxide	25	9.738 965	1
Zirconium oxide	30	9.738 880	1
Tungsten carbide	10	9.738 963	1
Tungsten carbide	25	9.738 864	1
Chrome steel	25	9.738 869	1
Teflon	25	9.738 874	1



Accessories for mixer mills MM200 and MM301

Retsch

Description	Cat. No.	PK
Accessories for the cold grinding MM301:	9.738 473	1
Cryokit for the cooling of grinding jars using liquid nitrogen		
Adapter rack, 200/301mm, for 10 x standard reaction vessels	9.738 462	1
Grinding balls, 3 mm, stainless steel	9.738 463	200
Grinding balls, 4 mm, stainless steel	9.738 466	200
Grinding balls, 5 mm, stainless steel	9.738 467	200
Holder MM 200/301 for 5 x 2.0 - 1.5 - 0.7 ml reaction tubes	9.738 712	1
Grinding balls, 3 mm, Tungsten carbide	9.738 464	200
Holder MM 200/301 for 10 x 0.4 - 0.2 ml reaction tubes	9.738 713	1
Grinding balls, 4 mm, Tungsten carbide	9.738 469	200
Grinding balls, 5 mm, Tungsten carbide	9.738 470	200
Grinding balls, 3 mm, Zirconium oxide	9.738 465	200
Grinding balls, 5 mm, Zirconium oxide	9.738 468	200

Other diameters and glass beads on request available.





1 Mixer mill MM 200/MM 301, accessory grinding balls

Retsch

Material	Dia. mm	Cat. No.	PK
Zirconium oxide	12	9.738 846	1
Zirconium oxide	15	9.738 405	1
Zirconium oxide	20	9.738 847	1
Zirconium oxide	25	9.738 401	1
Chrome steel	15	9.738 407	1
Stainless steel	5	9.738 870	1
Stainless steel	7	9.738 871	1
Stainless steel	10	9.738 872	1
Stainless steel	12	9.738 873	1
Stainless steel	15	9.738 408	1
Stainless steel	20	9.738 387	1
Stainless steel	25	9.738 403	1
Tungsten carbide	10	9.738 878	1
Tungsten carbide	12	9.738 879	1
Tungsten carbide	15	9.738 414	1
Teflon with steel core	15	9.738 420	1
Teflon with steel core	20	9.738 888	1
Polyamide	10	9.738 883	1
Agate	5	9.738 860	1
Agate	7	9.738 861	1
Agate	10	9.738 862	1
Agate	12	9.738 863	1



2 Planetary ball mills PM 100 and PM 200

Retsch

For grinding and mixing of soft, medium to extremely hard, brittle and fibrous materials. Dry and wet grinding, also suitable for colloidal milling and mechanical alloying processes. For use with materials including: minerals, ores, chemicals, ceramics, soils, domestic and industrial waste and more.

- Very high grinding rate and short processing times.
- Ultimate fineness within the submicron range.
- Reproducible results due to energy and speed control.
- Low-vibration, benchtop models.
- Safety plastic housing with automatic cover closure.
- All parameter data can be recalled or set up using a graphics display and one-button operation.
- A choice of grinding jars in different materials guarantee contamination-free sample preparation.
- Programmable starting time
- Power failure backup and storage of remaining grinding time

Specifications

Ultimate fineness:	< 1µm
Dimensions (W x D x H):	630 x 468 x 415 mm
Supply requirements:	230 V 50/60 Hz

Type	Grinding stations	Grinding jars ml	Feed size up to mm	max. Throughput/ up to Charge	Weight kg	Cat. No.	PK
PM 100	1	12 to 500	up to 10	up to 300 ml	80.00	9.739 270	1
PM 200	2	12 to 125	up to 4	up to 2 x 70	72.00	9.739 271	1

Please order grinding jars and grinding balls separately.



3 Planetary Ball Mill PM 400

Retsch

Loss-free, gentle size reduction, dry and in suspensions, down to the sub-micron range. Suitable for hard, brittle and fibrous materials. In addition to sample preparation for spectral analyses it can also be used for mechanical alloying and colloidal grinding.

- Simultaneous grinding of 2, 4 or 8 samples
 - Grinding jars in various sizes and materials
 - Programmable starting time
 - Power failure backup and storage of remaining grinding time
 - Convenient 1-button operation with graphics display
- Please order grinding jars and grinding balls separately.

Specifications

Feed size*:	< 10 mm
Final fineness*:	< 1 µm
No. of grinding stations:	4 or 2
Suitable grinding jars:	12 to 500 ml
Batch/Sample volume:	max. 4 x 300 ml/8 x 20 ml
Size (W x H x D):	836 x 1220 x 780 mm
Weight (net):	approx. 285 kg
Supply requirement:	220 - 230 V 50/60 Hz, 1.5 kW

*depending on feed material

Type	Cat. No.	PK
PM 400	9.739 274	1

1 Centrifugal ball mill S 100

Retsch

No-loss, rapid, inert, reproducible milling; e.g. for soil samples, glass and ceramics, paint industry, pharmaceutical industry, geology and mineralogy; suitable for wet and dry milling. High centrifugal force provides rapid milling. Safety lid with automatic power cut-out and motor brake (braking time < 1 sec.). Includes automatic reversing motion as standard.

- Feed size up to 10 mm
- Milling places: 1
- Grinding jars: 50 to 500 ml
- Ultimate fineness approx. < 1 µm
- Throughput/charge max. 250 ml/2 x 20 ml
- External dimensions (W x D x H) 350 x 510 x 420 mm
- Weight 42 kg

Supply requirements: 220-240V 50 Hz



Type	Cat. No.	PK
S 100	9.739 088	1

Please order grinding balls and jars separately!

2 Grinding jars for PM100/200/400/S100

Retsch

Material	Capacity ml	Cat. No.	PK
Chrome steel	50	9.738 320	1
Chrome steel	125	9.738 339	1
Chrome steel	250	9.738 216	1
Chrome steel	500	9.738 222	1
Stainless steel	50	9.738 321	1
Stainless steel	125	9.738 340	1
Stainless steel*	250	9.738 217	1
Stainless steel	500	9.738 223	1
Tungsten carbide	50	9.738 311	1
Tungsten carbide	125	9.738 338	1
Tungsten carbide*	250	9.738 218	1
Agate	50	9.738 328	1
Agate	125	9.738 345	1
Agate*	250	9.738 219	1
Agate**	500	9.738 224	1
Sinter I (99.8% alumina)	50	9.738 327	1
Sinter I (99.8% alumina)	125	9.738 344	1
Sinter I (99.8% alumina)*	250	9.738 220	1
Sinter I (99.8% alumina)*	500	9.738 226	1
Zirconium oxide	50	9.738 325	1
Zirconium oxide	125	9.738 342	1
Zirconium oxide*	250	9.738 221	1
Zirconium oxide**	500	9.738 227	1

* not suitable for PM 200

**not suitable for S 100 and PM 200

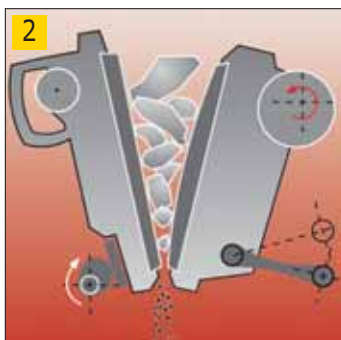




Planetary ball for mills PM 100/ PM 200/ PM 400/ S 100

Retsch

Material	Dia. mm	Cat. No.	PK
Agate	10	9.738 383	1
Agate	20	9.738 388	1
Agate	30	9.738 393	1
Agate	40	9.738 398	1
Sintered corundum (99.7% Al ₂ O ₃)	10	9.738 380	1
Sintered corundum (99.7% Al ₂ O ₃)	20	9.738 385	1
Sintered corundum (99.7% Al ₂ O ₃)	30	9.738 390	1
Sintered corundum (99.7% Al ₂ O ₃)	40	9.738 395	1
Chrome steel	10	9.738 381	1
Chrome steel	20	9.738 386	1
Chrome steel	30	9.738 391	1
Chrome steel	40	9.738 396	1
Stainless steel	10	9.738 382	1
Stainless steel	20	9.738 387	1
Stainless steel	30	9.738 392	1
Stainless steel	40	9.738 397	1
Stainless steel 0.5 kg	2	9.738 425	1
Stainless steel 0.5 kg	3	9.738 426	1
Zirconium oxide	10	9.738 419	1
Zirconium oxide	20	9.738 847	1
Zirconium oxide	30	9.738 417	1
Zirconium oxide	40	9.738 418	1
Zirconium oxide, yttrium stabilized, 0.5 kg	2	9.738 427	1
Zirconium oxide, yttrium stabilized, 0.5 kg	3	9.738 428	1
Silicon nitride	10	9.738 400	1
Silicon nitride	20	9.738 305	1
Tungsten carbide	10	9.738 384	1
Tungsten carbide	20	9.738 389	1
Tungsten carbide	30	9.738 394	1
Tungsten carbide	40	9.738 399	1



1 2 Jaw crushers, pulverisette 1

For intermittent, or continuous coarse-crushing, of medium-hard to extremely hard, soft to brittle and toughened substances.

Fritsch

Typical uses:

Mining and metallurgy, chemistry, geology and mineralogy, glass, ceramics, stone and earth.

Operational features:

The sample is crushed between two crushing plates in an enclosed chamber using high pressure.

Performance overview:

- very fast, uniform size reduction
- crushing plates available in 5 different materials and easily interchangeable
- gap adjustment, which enables continuous adjustment of the ultimate fineness
- closed grinding chamber with connection for dust extraction
- easy to clean
- can be combined with laboratory disk mill pulverisette 13
- tested safety (CE marked)
- 24 month warranty

Items supplied Type I/II:

With crushing plates and side support walls made of hardened tool steel.

Crushers are also available in other voltages and with fittings made of stainless steel, hardened alloy. Tungsten carbide, zirconium oxide and manganese steel. These can easily be exchanged or the jaw crusher can be ordered ready-equipped with the fittings required - details on request.

Specifications

	Type I	Type II
Hopper opening	65 x 65 mm	100 x 100 mm
Max. feed size	approx. 60 mm	approx. 95 mm
Throughput volume	up to 140 kg/h	up to 200 kg/h
Gap width (fineness)	1 to 15 mm	1 to 15 mm
Supply requirements:	400 V 50/60 Hz 3-ph.	400 V 50/60 Hz 3-ph.
Dimensions (W x D x H):	400 x 800 x 800 mm	400 x 800 x 800 mm
Net weight	177 kg	205 kg

Type	Rating W	Cat. No.	PK
pulverisette 1 type I	1450	9.519 213	1
pulverisette 1 type II	2780	9.519 223	1

1 | 2 Disc mill, pulverisette 13

For intermittent and continuous fine grinding of brittle and very hard, solid materials.

Fritsch

Typical uses:

Ideally for laboratories, in which many samples or samples in larger quantities must be prepared: Mining and metallurgy, ceramics, non-metallic minerals, earth sciences. The large throughput quantity permits also the use within the technical range or with very small production, e.g. to explanation from cinders to the recuperation of precious metals.

Procedure:

The material to be ground is milled using the crushing and cutting action of two contra-rotating grinding disks. The externally adjustable gap width between the milling discs determines the fineness of the final material. Adjustable even during operation.

Overview of performance features:

- reproducible milling results provided by sight glass and scaled crankfor gap adjustment (to 0.1 mm fineness)
- vacuum dust extraction connector gives easy cleaning and dust-free milling
- can be combined with pulverisette 1 laboratory jaw crusher
- lifespan of milling discs doubled due to reversible motor direction
- totally enclosed milling chamber
- safety tested (CE mark)
- 24 month warranty

Fine grinding from 95 mm to 0.1 mm in one process

The accessory chute mounting in combination with jaw crusher pulverisette 1, model I + II and disc mill pulverisette 13 permit the continuous milling of coarse material with a maximum initial particle size of 95 mm and ultimate fineness of 0.1 mm in one process.



Technical data:

Max. output particle size: 20 mm
 Throughput: to 150 kg/h
 Ultimate fineness: 0.1 to 12 mm
 Dimensions (W x D x H): 44 x 87 x 40 cm
 Weight nett: 140 kg

Disc mill pulverisette 13 Without milling discs, for 400 V 50/60 Hz 3-ph., 1830 Watt (please select fixed and mobile milling discs from the list below, as the mill will not operate without discs.)

Accessory chute mounting For continuous operation of pulverisette 1 and pulverisette 13

Type	Cat. No.	PK
Disc mill pulverisette 13	9.739 001	1
Chute mounting	9.739 010	1

Also available in other voltages.

3 Disc mill, pulverisette 13, accessories

Fritsch

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





1 Mortar grinder pulverisette 2

For the universal grinding of medium-hard to soft brittle material (dry or aqueous suspension) to analytical fineness. For the production and homogenization of pastes and creams to laboratory standards. The mortar grinder pulverisette 2 is the central cutting up equipment in the preparation laboratory.

Fritsch

Typical applications include:

Mining and metallurgy, chemistry, geology and mineralogy, glass, ceramics, agriculture, foodstuffs, metallurgy, pharmacy, non-metallic minerals, electronics industry.

Operation:

The principle involved is similar to a manual mortar and pestle, in that the material to be ground is reduced in size between the mortar bowl and pestle using pressure and friction. The mortar is rotated by a drive motor and in turn drives the mounted, free-rotating pestle by means of friction.

Performance features:

- rapid, constant, loss-free as well as dust-free grinding
- reproducible grinding results
- easy to adjust and read pestle pressure
- simple, easy dismantling of grinding components without tools aids cleaning
- 8 different mortar and pestle material types available for sample purity
- TÜV safety tested (CE mark)
- 24 month warranty

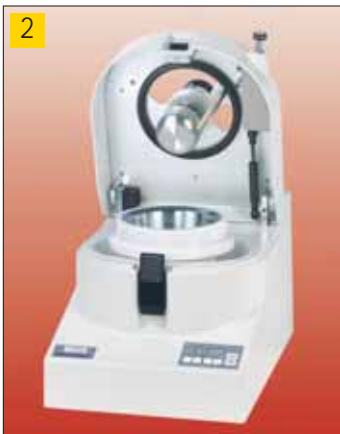
Supply requirements:

100-120/200-240V 50/60 Hz 1ph., 250 W (voltage is factory set - please specify on your order).

Requires, but is not supplied with, an accessory fittings set for operation. Please select fittings sets from the list below, as the grinder cannot be operated without them.

Max. output particle size:	8 mm
Max. output quantity:	30 to 150 ml
Ultimate fineness:	10 to 20 µm
Mortar bowl speed:	50 Hz: 70 rpm. 60 Hz: 80 rpm.
Dimensions (L x D x H):	310 x 460 x 410 mm
Weight:	24 kg

Type	Cat. No.	PK
pulverisette 2	9.738 200	1



2 Mortar grinder pulverisette 2, accessory fittings sets

Fittings sets comprise precisely centred and protected mortar, matching pestle in the same material and Vulkollan scraper. Fittings sets are also available in fused corundum, tungsten carbide, hardened steel and zirconium oxide.

Fritsch

Material	Cat. No.	PK
Agate	9.738 211	1
Stainless steel, monolithic	9.738 235	1
Hard porcelain	9.738 240	1



3 Planetary ball mill pulverisette 5 and 6 classic line

For rapid, intermittent fine grinding to colloidal fineness of hard to soft materials for dry or aqueous suspension grinding. For blending and perfect homogenization of emulsions and pastes as well as for mechanical alloying.

Fritsch

Typical applications:

Geology, chemistry, mineralogy, ceramics, construction, metallurgy, electronics industry, glass, nuclear research, soil pedology, biology, pharmacology and galenic research, medicine, technology, spectroscopy, x-ray fluorescence.

Operation:

Planetary ball mills operate according to the universal, well-known and proven planetary grinding system. The sample is ground using the high-energy impact of ball mills and friction between the balls and the internal wall of the mill jar.

Performance features:

- very rapid, constant milling
- Conical outlet in the grinding jar means no loss of material (even when handling suspensions)
- Controlled operation and programmable electronics give reproducible output
- Programmable milling and pause times and automatic reverse action facility
- RS232 interface for output of process data
- Microprocessor control and digital display for all functions (even rotation speed)
- Choice of 8, alternative, analytically pure, grinding component materials for contamination-free grinding
- Easy to clean
- safety tested (CE mark)
- 2 year warranty.

Three different models with various output quantities are available.

1 Planetary ball mills, pulverisette 5 (Types I and II)

Planetary mill pulverisette 5 (types I and II) Fritsch
 Type I holds 4, Type II holds 2 grinding jars.
 Supplied without grinding jar or grinding balls.
 For 100-120 V, 200-240V 50/60 Hz 1-ph. 1500/1300 W
 (factory set - please advise the voltage required when ordering).

Max. feed size: 10 mm
 Max. feed volume: Type I: up to 4 x 225 ml
 Type II: up to 2 x 225 ml
 Ultimate fineness: < 1 µm
 Dimensions (W x D x H): 580 x 670 x 570 mm
 Net weight: 120 kg

Type	Cat. No.	PK
pulverisette 5 type I	9.738 404	1
pulverisette 5 type II	9.738 402	1

**2 Centrifugal ball mill pulverisette 6**

With single milling station and adjustable balancing weight for compensation of unbalanced loads. Fritsch
 Supplied without grinding jar or grinding balls.
 For 100-120V, 200 to 240V 50/60 Hz 1ph., 880 W
 (voltage is factory set - please specify on your order).

Max. output particle size: 10 mm
 Max. output quantity: up to 1 x 225 ml
 Ultimate fineness: < 1 µm
 Dimensions (L x W x H): 370 x 530 x 500 mm
 Weight net: 63 kg

Type	Cat. No.	PK
pulverisette 6	9.738 300	1

Please select grinding jar and grinding balls for pulverisette 5 and pulverisette 6 from the accessories list, as these are required for the mills to function.
 FRITSCH offers also a planetary ball mill - pulverisette 4, with which number of revolutions conditions of carrier disk and meal cups are freely and independently selecting and adjustable.
 For small sample quantities the planet micro mill becomes pulverisette7 recommended. Task quantity: up to 2 x 20 ml.

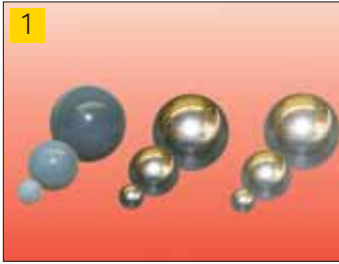
**3 Planetary ball mills "pulverisette 5" and "pulverisette 6", accessories**

Cylindrical grinding jars. Fritsch
 With cover and sealing rim.

Material	Cat. No.	PK
Agate 500 ml	9.738 531	1
Agate 250 ml, with steel frame	9.738 521	1
Agate 80 ml*	9.738 511	1
Silicon nitride 500 ml, with steel frame	9.738 539	1
Silicon nitride 250 ml, with steel frame	9.738 529	1
Silicon nitride 80 ml*	9.738 519	1
Sintered corundum (99.7% Al ₂ O ₃) 500 ml	9.738 532	1
Sintered corundum (99.7% Al ₂ O ₃) 250 ml	9.738 522	1
Sintered corundum (99.7% Al ₂ O ₃) 80 ml*	9.738 512	1
Hard metal tungsten carbide 250 ml, with steel frame	9.738 524	1
Hard metal tungsten carbide 80 ml*	9.738 514	1
Stainless steel 500 ml	9.738 536	1
Stainless steel 250 ml	9.738 526	1
Stainless steel 80 ml*	9.738 516	1
Zirconium oxide 500 ml	9.738 538	1
Zirconium oxide 250 ml	9.738 528	1
Zirconium oxide 80 ml*	9.738 518	1
Reduction adapter	9.738 315	1

* Jar holder can carry either 2 x 80 ml grinding jars or 1 each 80 ml grinding jar with reduction adapter fitted
 Grinding bowls are also available in sintered corundum-2 (85 to 90 % Al₂O₃) and tempered steel.





1 Planetary ball mills pulverisette 5 and pulverisette 6, accessories

Recommended maximum ball filling quantities per grinding jar:

Fritsch

Ball diameter	Grinding jar		
	500 ml	250 ml	80 ml
5 mm	2000	1200	250
10 mm	100	50	30
15 mm	70	45	10
20 mm	25	15	5
30 mm	10	6	-
40 mm	4	-	-

Milling balls for grinding jars:

Material	Ball dia. mm	Cat. No.	PK
Agate	10	9.738 551	1
Agate	20	9.738 561	1
Agate	30	9.738 571	1
Silicon nitride	10	9.738 559	1
Silicon nitride	20	9.738 569	1
Silicon nitride	30	9.738 579	1
Silicon nitride	40	9.738 589	1
Sintered corundum I (99.7% Al ₂ O ₃)	10	9.738 552	1
Sintered corundum I (99.7% Al ₂ O ₃)	20	9.738 562	1
Sintered corundum I (99.7% Al ₂ O ₃)	30	9.738 572	1
Sintered corundum I (99.7% Al ₂ O ₃)	40	9.738 582	1
Hard metal tungsten carbide	10	9.738 554	1
Hard metal tungsten carbide	20	9.738 564	1
Hard metal tungsten carbide	30	9.738 574	1
Hard metal tungsten carbide	40	9.738 584	1
Stainless steel	10	9.738 556	1
Stainless steel	20	9.738 566	1
Stainless steel	30	9.738 576	1
Stainless steel	40	9.738 586	1
Zirconium oxide	10	9.738 558	1
Zirconium oxide	20	9.738 568	1
Zirconium oxide	30	9.738 578	1
Zirconium oxide	40	9.738 588	1

Also available: grinding jars and balls made from hardened steel. All grinding balls are available in 5 mm and 15 mm sizes - details on request.

Also available are grinding balls in 0.5 to 4 mm sizes to achieve grain sizes in the nanometer range.



2 Mini-Mill "pulverisette 23"

For fine comminution of very small-quantities, dry laboratory samples or solids in suspension. For mixing and homogenisation of emulsions.

Fritsch

Typical fields of application:

Samples preparation, for example, for chemical analysis, chromatography, mass spectrometry or X-ray structural analysis. Preparing samples for genetic research, for homogenising of active ingredients, preparation of extracts in the forensic analysis, milling of pigments or other precious materials.

Method of operation:

Vertical oscillations of the grinding bowl with high amplitude generate a particle-size reduction through the impact of the grinding ball and friction between ball and grinding bowl wall.

Features of performance:

- rapid, reproducible grinding
- quick fastening of the grinding bowl
- adjustable and reproducible grinding time
- regulated oscillation frequency
- oscillation amplitude 9 mm
- ease of maintenance and easy cleaning of the grinding implements
- safety tested (CE mark)
- 2 year guarantee

Equipment:

delivered without grinding jar and ball. Please choose the grinding jar and balls from the list below, because otherwise operation is not possible.

Grinding jars and grinding balls are also available made of agate, zirconium oxide and tempered steel.

Specifications

Max. feed size:	6 mm
Max. sample volume:	5 ml
Ultimate fineness:	10 µm
Dimensions (W x D x H):	20 x 30 x 30 cm
Weight net:	15 kg
Supply requirements:	100-240 V 50/60 Hz, 1-ph.

Type	Cat. No.	PK
pulverisette 23 only	9.739 345	1

Alternative grinding bowls and balls are available in Agate and in Zirconium oxide, as well as grinding balls with a diameter of 5 mm

1 Accessories for mini-Mill pulverisette 23

Fritsch

Recommended maximum ball filling quantities per grinding jar:

Ball diameter	Grinding jar		
	5 ml	10 ml	15 ml
5 mm	20	30	60
10 mm	1	3	5
15 mm	-	1	2

Milling balls for grinding jars:

Type	Cat. No.	PK
Grinding jar made of PTFE, 5 ml	9.739 343	1
Grinding jar made of stainless steel, 10 ml	9.739 346	1
Grinding jar made of stainless steel, 15 ml	9.739 347	1
Grinding balls, 5 mm, stainless steel	9.738 560	1
Grinding balls, 10 mm, stainless steel	9.738 556	1
Grinding balls, 15 mm, stainless steel	9.739 165	1
Tube container for 6 x 0.5/1.5 or 2ml PCR tubes	9.739 344	1

**2 Variable speed rotor mill pulverisette 14**

Fritsch

Universal mill for grinding soft to medium-hard substances as well as temperature-sensitive materials. Difficultly mealable samples can be milled also by embrittling on analyses refinement. Dispersing and homogenizing of dry samples is also possible.

Typical uses:

Soft substances such as plants, wood, roots, leaves, needles, spices, textiles, leather, chemicals, foodstuffs, grain, woodpulp, fillers, chalk, china clay, coal, soil (rubble-free).

Medium-hard substances such as drugs, chocolate, tablets, fertilizers, pellets, animal feeds.

Suitable for temperature-sensitive samples as the rapid, effective milling process results in minimal heating of the sample.

Samples that are difficult to grind, such as styrene, polyester, plastics, foils, PVC, PP and PE may, for example, be embrittled by adding liquid nitrogen and then ground to the required fineness level for analysis.

Operational features:

The rapid grinding and universal potential applications of this mill are due to the extremely high rotor speed and the shearing action of sharp-edged teeth together with the insert sieves used.

Performance overview:

- easy operation owing to quick-action grinding chamber clamp and key pad operation
- easy cleaning - rotor, collecting vessel and sieve can be removed without tools
- fully adjustable speed from 6000 to 20000 rpm.
- simple operation by high-speed snap fastener, transparency keyboard and alternating system.
- microprocessor controller with digital display
- maintains constant speed even under full load
- for optimal sample feeding, the accessory laborette 24 vibratory feeder is recommended
- accessory conversion kit available for non-ferrous grinding or for applications in which contamination should be avoided
- TÜV tested safety (CE marked)
- 24 month warranty

Supply requirements:

For 100-120/200-240 V 50/60 Hz 1-ph. 1150 W (factory set - please advise the voltage required when ordering).

With collecting vessel. Requires, but is not supplied with, impact rotor and insert sieve ring for operation.

(Please select and order the required rotor and sieve ring from the list below, with the mill).

Max. feed size:	10 mm
Throughput:	0.05 to 5 kg/h
Sieve apertures:	0.08 to 6 mm
Ultimate fineness (d70):	40 µm
Rotor speed:	6000 to 20000 rpm.
Dimensions (L x D x H):	310 x 480 x 470 mm
Weight:	23 kg

Type	Cat. No.	PK
pulverisette 14	9.738 281	1





1 Variable speed rotor mill pulverisette 14, accessories

Accessories for variable speed rotor pulverisette 14.

Fritsch

Impact rotor, hardened stainless steel.

Ring sieve, stainless steel.

Ring sieve with 0.08 to 2.00 mm trapezoidal apertures, stainless steel, also available with reinforcing ring for large loads.

Special accessories include impact rotor and ring sieves made of pure titanium for non-ferrous grinding as well as the relevant adaptor kit for grinding large loads.

Other special accessories include Titanium- or WC-coated impact rotor and ring sieves for grinding medium-hard/tough materials.

For continuous feeding applications we recommend: the vibratory sample feeder laborette 24 with V-shaped sample chute.

Type	Cat. No.	PK
Impact rotor with 8 fins	9.738 282	1
Impact rotor with 12 fins	9.738 283	1
Impact rotor with 24 fins	9.738 284	1
Sieve rings, trapezoidal holes 0.08 mm	9.738 286	1
Sieve rings, trapezoidal holes 0.12 mm	9.738 287	1
Sieve rings, trapezoidal holes 0.20 mm	9.738 288	1
Sieve rings, trapezoidal holes 0.50 mm	9.738 289	1
Sieve rings, trapezoidal holes 0.75 mm	9.738 285	1
Sieve rings, trapezoidal holes 1.00 mm	9.738 290	1
Sieve rings, trapezoidal holes 1.50 mm	9.738 278	1
Sieve rings, trapezoidal holes 2.00 mm	9.738 279	1
Sieve rings, round holes 1.00 mm	9.738 291	1
Sieve rings, round holes 2.00 mm	9.738 292	1
Sieve rings, round holes 4.00 mm	9.738 293	1
Sieve rings, round holes 6.00 mm	9.738 294	1
Adapter set	9.738 329	1
Vibratory feeder "laborette 24"	9.738 297	1
Stand for vibratory feeder "laborette 24"	9.738 298	1



2 Cutting mill pulverisette 15/ pulverisette 19/ pulverisette 25

For coarse crushing and fine grinding of soft to medium-hard, dry goods as well as fibrous materials and plastics.

Fritsch

Procedure:

The samples to be ground are milled using four rotating knives and three stationary knives.

Performance features:

- rapid, reproducible grinding
- various rotors for adjustment of sample cutting capacity
- blade rotor and sieve holder/inserts can be removed and exchanged without tools
- adjustable exterior cutting gap
- hinged housing for easy access
- vacuum connection for dust extraction
- easy, quick and thorough cleaning of the milling area and all milling components
- safety tested - CE
- 2 year warranty.

Four different models are available with various output particle sizes and throughput quantities. Universal cutting mill pulverisette 19 and high-power cutting mill pulverisette 25 can be combined. This allows samples of up to 120mm maximum dimensions to be ground to a particle size of only 100µm within a short space of time. Ordering information for cutting mill combinations available on request.



3 Cutting mill pulverisette 15

The Cutting Mill pulverisette 15 is equipped with a 3.5 litre collecting vessel and funnel, but without sieve insert and stand. Sieve inserts are available with different trapezoidal and square holes and must be ordered as accessories.

Fritsch

Max. feed size:	60 mm
Throughput:	up to 50 litres/h
Mesh sizes:	0.25 to 6 mm
Dimensions:	420 x 480 x 690 mm
Weight net:	42 kg
Supply requirements:	230-240 V 1ph., 2100 W

Type	Connection	Cat. No.	PK
"pulverisette 15"	230 to 240 V 50 Hz, 1ph., 2100 W	9.738 423	1
"pulverisette 15"	400 V 50 Hz, 3ph. / 1900 W	9.738 421	1

1 Cutting mill pulverisette 15, accessories

Fritsch

Type	Cat. No.	PK
Rotor with rotating and fixed blades	9.738 424	1
Sieve insert, trapezoidal holes 0.25 mm	9.738 432	1
Sieve insert, trapezoidal holes 0.50 mm	9.738 433	1
Sieve insert, trapezoidal holes 0.75 mm	9.738 434	1
Sieve insert, trapezoidal holes 1.00 mm	9.738 435	1
Sieve insert, trapezoidal holes 1.50 mm	9.738 436	1
Sieve insert, trapezoidal holes 2.00 mm	9.738 437	1
Sieve insert, square holes 4.00 mm	9.738 441	1
Sieve insert, square holes 6.00 mm	9.738 442	1
Stand	9.738 430	1
Receiver, 60 litres	9.738 449	1

Sieve inserts made of stainless steel.



2 Universal cutting mill pulverisette 19

Fritsch

Universal cutting mill pulverisette 19.

Requires, but is not supplied with, feed hopper, cutting rotor set, sieve cartridge insert, receiver and base frame.

For 230 V 50/60 Hz 1-ph., 2200 W.

(Please select and order the required hopper, base frame, cutting rotor set, sieve cartridge insert and receiver for the universal cutting mill pulverisette 19 from the accessories list shown).

Max. feed size:	70 x 80 mm
Max. hopper opening:	70 x 105 mm
Throughput volume:	up to 60 l/h
Mesh sizes:	0.25 to 6 mm
Dimensions (W x D x H):	450 x 550 x 630 mm
Net weight:	56 kg

Type	Connection	Cat. No.	PK
"pulverisette 19"	100 - 120 V 50/60 Hz, 1ph. 1850 W	9.739 300	1
"pulverisette 19"	230 V 50/60 Hz, 1ph. 2200 W	9.739 301	1



3 Universal cutting mill pulverisette 19, accessories

As described

Fritsch

Type	Cat. No.	PK
Standard hopper with sliding cover	9.739 310	1
Standard cutting rotor with V-shaped cutting edges and fixed knives made of tool steel	9.739 321	1
Sieve cartridge insert trapezoidal aperture 0.50 mm	9.739 331	1
Sieve cartridge insert trapezoidal aperture 1.00 mm	9.739 333	1
Sieve cartridge insert trapezoidal aperture 2.00 mm	9.739 335	1
Collecting vessel, 3 l	9.739 350	1
Large collecting vessel, 20 l	9.739 351	1
Support frame	9.739 360	1

Alternative hoppers, cutting rotors in other materials, sieve cartridge inserts in alternative meshes and receivers are available on request.



4 Power cutting mills, pulverisette 25

Fritsch

Requires, but is not supplied with, feed hopper, cutting rotor set, sieve cartridge insert, receiver and base frame.

For 400 V 50/60 Hz 3ph., 3340 W

Max. feed size:	120 x 85 mm
Max. hopper opening:	120 x 105 mm
Throughput volume:	up to 85 l/h
For sieve apertures:	1 to 10 mm
Dimensions (W x D x H):	450 x 650 x 630 mm
Net weight:	75 kg

Type	Cat. No.	PK
pulverisette 25	9.739 401	1





1 Power cutting mills, pulverisette 25 type I + II, accessories

As described.

Fritsch

Type	Cat. No.	PK
Standard hopper with sliding cover, 3 litres	9.739 410	1
Standard cutting rotor with V-shaped cutting edges and fixed knives made of tool steel	9.739 420	1
Sieve cartridge insert square aperture 4.0 mm	9.739 440	1
Sieve cartridge insert square aperture 8.0 mm	9.739 442	1
Receiver, 3 L	9.739 350	1
Receiver for large volumes, 10 L	9.739 351	1
Base frame	9.739 360	1

Alternative hoppers, cutting rotors in other materials, sieve cartridge inserts in alternative meshes and receivers are available on request.



2 Grinding mill, A 11 basic

Newly designed batch analysis mill with two grinding functions: grinding hard, brittle materials using a beater, or slicing soft, fibrous materials using a rotating cutter.
 - Speed without load: 28000 rpm.
 - Supplied with 80 ml standard grinding container and stainless steel beater.

IKA

Motor rating	
input/output:	300 W/160 W
Speed:	28000 rpm (off load)
Chamber vol.:	80 ml
Tangential speed:	53 m/sec.
Max. sample granule size:	10 mm
Dim. (W x D x H):	85 x 85 x 240 mm
Weight:	1.5 kg

Type	Cat. No.	PK
A 11 basic, 230 V 50 / 60Hz	9.737 801	1



3 Accessories for Grinding mill, A 11 basic

IKA

Type	Cat. No.	PK
Beater (up to Mohs hardness 6)	9.737 815	1
Cutter*	9.737 806	1
Beater (up to Mohs hardness 9)* chrome-carbide coated	9.737 807	1
Grinding container, 250 ml*	9.737 805	1
Grinding container, 80 ml	9.737 816	1
Double beater (up to Mohs hardness 3)*	9.737 817	1
Funnel*	9.737 818	1

*not included.



4 Universal mill M20

IKA

Chamber volume 250 ml. With double-walled chamber and tubing connections for attachment to accessory flow cooler. Suitable for grinding hard and brittle substances. Maximum output particle size 6 to 7 mm. With removable grinding chamber with handle which contains a removable cutter. Both are easy to dismantle for cleaning. The stainless steel cutter is suitable for dry grinding all types of samples. Mill output 225 W. Material such as fresh meat, fibre samples, fresh plant material, plastic granules or elastomers should be deep frozen with liquid nitrogen directly before grinding to increase their brittleness.

Specifications:

Speed:	max. 20000 rpm. off load
Throughput/Charge max:	250 ml
Material:	stainless steel (AISI 304)
Feed size:	max. 6 to 7 mm
Dimensions (W x D x H):	170 x 170 x 350 mm
Weight:	6.6 kg
Supply requirements:	230V 50/60 Hz.
Protection class DIN EN 60529:	IP 21

Type	Cat. No.	PK
M20	9.737 828	1

1 Universal mill M 20, accessories and spares

IKA



Type	Cat. No.	PK
Spare cutter for M 20	9.737 829	1
Accessory hard metal cutter (tungsten carbide)	9.737 830	1
Accessory star-shaped cutter (stainless steel)	9.737 831	1
Grinding chamber	9.737 832	1

2 Micro fine mills, Culatti

For the continuous grinding of dry and brittle substances. For example: plastic, minerals, slag, coke, coal, spices, glass, cement clinker, oilseed rape, etc. The mill operates continuously without loss of material, and operates on the hammer mill principle. With automatic quick-stop. Maximum permissible operating time: 15 mins. Supplied with 1.0/1.5/2.0 mm mesh sieves, rack with 12 receiver tubes and cleaning instruments.



Speed: 0 to 5000 rpm.
 Dimensions (W x D x H): 150 x 250 x 260 mm
 Weight: 6.5 kg
 Supply requirements: 230 V 50/60 Hz.



Type	Cat. No.	PK
Culatti	9.737 840	1

3 Micro fine mills, Culatti, accessories

Type	Cat. No.	PK
Base unit	9.737 842	1
Sieve insert 0.2 mm	9.737 843	1
Sieve insert 0.5 mm	9.737 844	1
Sieve insert 0.8 mm	9.737 845	1
Sieve insert 1.0 mm	9.737 846	1
Sieve insert 1.5 mm	9.737 847	1
Sieve insert 2.0 mm	9.737 848	1
Sieve insert 3.0 mm	9.737 849	1

Please order sieve inserts separately!



4 5 Drive unit MF10 basic, for in-line processes

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 0.25 and 3 mm) placed above the outlet. There is an NS 29 standard ground joint at the outlet for attachment of receiving flasks.

IKA

Speed range: 3000 to 6500 rpm.
 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 C
 Dimensions with grinding head (W x D x H): 320 x 300 x 380 mm
 Weight with grinding head: 9.7 kg
 Supply requirements: 230 V 50/60 Hz.
 Protection class DIN EN 60529: IP 22



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

6 Accessories for microfine grinder MF10 basic, for in-line processes

IKA



Type	Cat. No.	PK
Cutting head	9.737 781	1
Impact grinding head	9.737 782	1
Sieve MF 0.25	9.737 783	1
Sieve MF 0.50	9.737 784	1
Sieve MF 1.0	9.737 785	1
Sieve MF 2.0	9.737 787	1
Sieve MF 3.0	9.737 788	1



1 Mortars and pestles

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

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



2 Mortars and pestles

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

BRAND

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



3 Mortars only, porcelain

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

Haldenwanger

Capacity ml	Int. dia. mm	Cat. No.	PK
70	65	9.164 206	1
170	90	9.164 209	1
400	130	9.164 212	1
700	150	9.164 215	1
1000	180	9.164 218	1
2600	250	9.164 225	1
6000	330	9.164 235	1



4 Pestles only, porcelain

To DIN 12906. Porcelain. with glazed handle. Unglazed grinding surface.

Haldenwanger

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

Nominal size = mortar internal Ø
Special sizes available on request!



5 Porcelain mortars with pestles

Unglazed, with wooden handled pestle.

Ext. dia. mm	Cat. No.	PK
75	9.164 370	1
90	9.164 371	1
100	9.164 372	1
115	9.164 373	1
135	9.164 374	1
150	9.164 375	1

6 Micro pestles

Teflon®. With stainless steel shaft. For 1.5 ml microcentrifuge tubes.
Overall length 143 mm.

Type	Cat. No.	PK
Flat	9.315 000	1
Round	9.315 001	1



1 Disposable micro pestles

Autoclavable polypropylene.
Suitable for battery-operated drive motor (9.314 496).
Pestle length 7 cm.
Supplied with microcentrifuge tubes as indicated.

Description	Cat. No.	PK
Pestle for 0.5 ml with microcentrifuge tubes	9.314 490	100
Pestle for 1.5 ml with microcentrifuge tubes	9.314 491	100
0.5 ml pestle	9.314 492	100
Pestle for 0.5 ml with microcentrifuge tubes*	9.314 498	100
Pestle for 1.5 ml with microcentrifuge tubes*	9.314 499	100

*RNase, DNase and pyrogen free



2 Micro pestles

Reusable, for 500 µl and 1.5 ml microcentrifuge tubes. Autoclavable CTFE/stainless steel.
Suitable for battery-operated drive motor (9.314 496).

Capacity	Length*	Cat. No.	PK
ml	cm		
0.5	6	9.314 494	1
1.0	14	9.314 495	1

* Pestle length



3 Micro pestles, accessory drive motor

Type	Cat. No.	PK
Complete with two batteries	9.314 496	1
Spare pestle adapter	9.314 497	1





1 Sieve shakers, AS series

For reproducible sieving with high selectivity of fine and coarsegrained bulk materials. Retsch

- 3-dimensional, rotating sieve movement
- Maintenance free, electromagnetic drive
- Suitable for dry and wet sieving
- 6-leaf spring drive for up to 4 kg sieve stack and 3 kg sample loadings

AS200 basic: (without sieves, receiver or clamping device) The budget model.

AS200 digit: (without sieves, receiver or clamping device) the powerful, easy-to-use, general-purpose model with control panel, digital display and timed sieving facility.

AS200 control: (without sieves, receiver or clamping device) as AS200 digit, but with microprocessor control, selectable interval times and digital adjustment of vibration amplitude. Can be calibrated and allows a 100% reproducibility of sieve results in comparison to conventional shakers. The AS200 control has an integral interface for PC connection using the EasySieve® analysis software and offers all requirements for test monitoring in accordance with ISO 9000 ff.

AS300 control: Generally as AS 200 but developed for use with 305 mm diameter sieves and with a higher capacity (5 kg).

Please order sieves, receiver and clamping devices separately!

max. number of fractions (depending on sieve size)	9/17
movement of sample	orbital with vibration
Sieve sizes held (diam.) mm:	100/150/200/203 - all models 305/315 - AS 300 control only
height of sievetower	up to approx. 450 mm
max. charge/quantity of sample:	3 kg (AS 300 control: 5 kg)
timer:	digital (AS 200 basic: analog)

Type	Measuring range	Dimensions (W x D x H)	Weight	Cat. No.	PK
		mm	kg		
AS 200 basic	20 µm to 25 mm	400 x 350 x 230	30	9.739 223	1
AS 200 digit	20 µm to 25 mm	400 x 350 x 230	30	9.739 224	1
AS 200 control	20 µm to 25 mm	400 x 350 x 230	30	9.739 273	1
AS 300 control	36 µm to 40 mm	400 x 400 x 235	35	9.739 241	1



2 Sieve shaker, AS 400 control

For reproducible sieving with high selectivity of fine and coarse grained bulk materials. Retsch

- 3-dimensional, rotating sieve movement
- max. sieve material capacity: 5 kg
- 9 parameters stored in memory
- all parameters are digitally set, indicated and controlled
- interface for use with EasySieve® software
- noiseless and maintenance-free drive
- measuring range: 45 µm to 63 mm

The AS 400 has been specially developed for use with 400 mm diameter sieves. Can be calibrated and allows an universal 100 % reproducibility of sieve results in comparison to conventional shakers. An integral counterweight ensures stability even with a heavy sieve stack. The base plate can take very high loads due to 4 eccentric bearings.

The AS 400 control has an integral interface for controlling all sieving parameters via EasySieve® software. An interface cable is also supplied.

Provides all requirements for test monitoring in accordance to ISO 9000 ff.

Without sieves, receiver or clamping device.

Type	Cat. No.	PK
AS 400 control	9.739 242	1

Clamping device for sieve shakers AS Series

Retsch

For	Description	Cat. No.	PK
AS 200 + AS 300 + AS 400	Clamping device comfort for 200/203 mm dia. sieves	9.739 226	1
AS 200	Clamping device standard for 200/203 mm dia. sieves	9.739 227	1
AS 200 + AS 300 + AS 400	Clamping device economy for 100/150/200/203 mm dia. sieves	9.739 228	1
AS 300 + AS 400	Clamping device standard for 305/315 mm dia. sieves	9.739 261	1
AS 300 + AS 400	Clamping device comfort for 305/315 mm dia. sieves	9.739 260	1
AS 400	Clamping device comfort for 400 mm dia. sieves	9.739 265	1
AS 400	Clamping device standard for 400 mm dia. sieves	9.739 266	1

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

Software package EasySieve®

For grading analysis. Automatic capture, evaluation and administration of measured data (incl. data transfer to LIMS-systems - comfort version only). Automatic operation of measuring and weighing processes. Control of all Retsch "control" sieve shakers. For sieves, receiver and clamping devices - please order separately!

Retsch



Type	Cat. No.	PK
EasySieve® Standard	9.739 247	1
EasySieve® Comfort	9.739 249	1

Receivers for sieves

Stainless steel.
In accordance to DIN ISO 3310-1 C and ASTM E 11-95.

Retsch

Description	Cat. No.	PK
100 mm dia., with drain tube	9.739 237	1
200 mm dia., without drain tube	9.739 235	1
200 mm dia., with drain tube	9.739 236	1
203 mm dia., with drain tube	9.739 240	1

1 Sieving aids

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

Retsch

Type	Cat. No.	PK
Static ball, 6 mm dia., 150 g	9.739 238	1
Vulkollan cube 12 x 12 x 12 mm	9.826 132	10
Rubber ball, 20 mm dia.	9.826 133	5
Agate ball, dia. 10 mm	9.826 134	10
Sieve stand for max. 10 sieves up to 203 mm dia., 50 mm height	9.739 243	1

**Sieve shakers, AS 200-series, accessory test sieve sets**

Retsch

For	Dia. mm	Description	Cat. No.	PK
AS 200	200	Sieve set, mesh 45 µm, 63 µm, 125 µm, 250 µm, 500 µm, 1 mm, 2 mm, 4 mm, with receiver	9.739 255	1
AS 300	305	Sieve set, mesh 630 µm, 1.25 mm, 2.5 mm, 5 mm, 10 mm, 20 mm, 31.5 mm, with receiver	9.739 256	1
AS 400	400	Sieve set, mesh 500 µm, 1 mm, 2 mm, 5 mm, 10 mm, 20 mm, with receiver	9.739 257	1

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



Test sieves

With unique sieving advantages:

Retsch has developed an entirely new manufacturing process providing a level of quality and uniformity in sieve manufacturing which had not previously been attained.

Benefits:

1. Previously unattained product quality owing to fully automatic production and continuous optical inspection.
2. Innovative resistance welding technology guarantees permanently taut wire mesh.
3. High level of corrosion resistance and easy to clean owing to the use of high-alloy stainless steel (grades: 316 or 1.4435).
4. "one-piece cast" sieve frame and seamless mesh joint prevent cross contamination (no batch, no residue, etc.).
5. Maximum stability and optimum density of the sieve stack.
6. 15% lighter than traditional sieves whilst at the same time having larger sieving area.
7. Clear sieve marking and traceability by individual laser engraving on each sieve.

Retsch



1 2 Test sieves

DIN ISO 3310-1.

Dimensions (dia. x h): 200 x 50 mm and 203 x 50 mm

Retsch

Mesh size µm	200 x 50 mm		203 x 50 mm	
	Cat. No.	PK	Cat. No.	PK
20	9.226 650	1	9.226 850	1
25	9.226 651	1	9.226 851	1
32	9.226 652	1	9.226 852	1
36	9.226 653	1	9.226 853	1
38	9.226 654	1	9.226 854	1
40	9.226 655	1	9.226 855	1
45	9.226 656	1	9.226 856	1
50	9.226 657	1	9.226 857	1
53	9.226 658	1	9.226 858	1
56	9.226 659	1	9.226 859	1
63	9.226 660	1	9.226 860	1
71	9.226 661	1	9.226 861	1
75	9.226 662	1	9.226 862	1
80	9.226 663	1	9.226 863	1
90	9.226 664	1	9.226 864	1
100	9.226 665	1	9.226 865	1
106	9.226 666	1	9.226 866	1
112	9.226 667	1	9.226 867	1
125	9.226 668	1	9.226 868	1
140	9.226 669	1	9.226 869	1
150	9.226 670	1	9.226 870	1
160	9.226 671	1	9.226 871	1
180	9.226 672	1	9.226 872	1
200	9.226 673	1	9.226 873	1
212	9.226 674	1	9.226 874	1
224	9.226 675	1	9.226 875	1
250	9.226 676	1	9.226 876	1
280	9.226 677	1	9.226 877	1
300	9.226 678	1	9.226 878	1
315	9.226 679	1	9.226 879	1
355	9.226 680	1	9.226 880	1
400	9.226 681	1	9.226 881	1
425	9.226 682	1	9.226 882	1
450	9.226 683	1	9.226 883	1
500	9.226 684	1	9.226 884	1
560	9.226 685	1	9.226 885	1
600	9.226 686	1	9.226 886	1
630	9.226 687	1	9.226 887	1
710	9.226 688	1	9.226 888	1
800	9.226 689	1	9.226 889	1
850	9.226 690	1	9.226 890	1
900	9.226 691	1	9.226 891	1

1 Test sieves

DIN ISO 3310-1.

Dimensions (dia. x h): 200 x 50 mm and 203 x 50 mm

Retsch

Mesh size mm	Cat. No.		PK	Cat. No.		PK
	200 x 50 mm			203 x 50 mm		
1.00	9.226 692		1	9.226 892		1
1.12	9.226 693		1	9.226 893		1
1.18	9.226 694		1	9.226 894		1
1.25	9.226 695		1	9.226 895		1
1.40	9.226 696		1	9.226 896		1
1.60	9.226 697		1	9.226 897		1
1.70	9.226 698		1	9.226 898		1
1.80	9.226 699		1	9.226 899		1
2.00	9.226 700		1	9.226 900		1
2.24	9.226 701		1	9.226 901		1
2.36	9.226 702		1	9.226 902		1
2.50	9.226 703		1	9.226 903		1
2.80	9.226 704		1	9.226 904		1
3.15	9.226 705		1	9.226 905		1
3.35	9.226 706		1	9.226 906		1
3.55	9.226 707		1	9.226 907		1
4.00	9.226 708		1	9.226 908		1
4.50	9.226 709		1	9.226 909		1
4.75	9.226 710		1	9.226 910		1
5.00	9.226 711		1	9.226 911		1
5.60	9.226 712		1	9.226 912		1
6.30	9.226 713		1	9.226 913		1
6.70	9.226 714		1	9.226 914		1
7.10	9.226 715		1	9.226 915		1
8.00	9.226 716		1	9.226 916		1
9.00	9.226 717		1	9.226 917		1
9.50	9.226 718		1	9.226 918		1
10.00	9.226 719		1	9.226 919		1
11.20	9.226 720		1	9.226 920		1
12.50	9.226 721		1	9.226 921		1
13.20	9.226 722		1	9.226 922		1
14.00	9.226 723		1	9.226 923		1
16.00	9.226 724		1	9.226 924		1
18.00	9.226 725		1	9.226 925		1
19.00	9.226 726		1	9.226 926		1
20.00	9.226 727		1	9.226 927		1
22.40	9.226 728		1	9.226 928		1
25.00	9.226 729		1	9.226 929		1
26.50	9.226 730		1	9.226 930		1
28.00	9.226 731		1	9.226 931		1
31.50	9.226 732		1	9.226 932		1
35.50	9.226 733		1	9.226 933		1
37.50	9.226 734		1	9.226 934		1
40.00	9.226 735		1	9.226 935		1
45.00	9.226 736		1	9.226 936		1
50.00	9.226 737		1	9.226 937		1
53.00	9.226 738		1	9.226 938		1
56.00	9.226 739		1	9.226 939		1
63.00	9.226 740		1	9.226 940		1
71.00	9.226 741		1	9.226 941		1
75.00	9.226 742		1	9.226 942		1
80.00	9.226 743		1	9.226 943		1
90.00	9.226 744		1	9.226 944		1
100.00	9.226 745		1	9.226 945		1
106.00	9.226 746		1	9.226 946		1
112.00	9.226 747		1	9.226 947		1
125.00	9.226 748		1	9.226 948		1





1 Test sieves

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

Retsch

Mesh size µm	Cat. No.	PK
20	9.226 750	1
25	9.226 751	1
32	9.226 752	1
36	9.226 753	1
38	9.226 754	1
40	9.226 755	1
45	9.226 756	1
50	9.226 757	1
53	9.226 758	1
56	9.226 759	1
63	9.226 760	1
71	9.226 761	1
75	9.226 762	1
80	9.226 763	1
90	9.226 764	1
100	9.226 765	1
106	9.226 766	1
112	9.226 767	1
125	9.226 768	1
140	9.226 769	1
150	9.226 770	1
160	9.226 771	1
180	9.226 772	1
200	9.226 773	1
212	9.226 774	1
224	9.226 775	1
250	9.226 776	1
280	9.226 777	1
300	9.226 778	1
315	9.226 779	1
355	9.226 780	1
400	9.226 781	1
425	9.226 782	1
450	9.226 783	1
500	9.226 784	1
560	9.226 785	1
600	9.226 786	1
630	9.226 787	1
710	9.226 788	1
800	9.226 789	1
850	9.226 790	1
900	9.226 791	1

1 Test sieves

DIN ISO 3310-1.

Dimensions (dia. x h): 200 x 50 mm

Retsch

Mesh size mm	Cat. No.	PK
1.00	9.226 792	1
1.12	9.226 793	1
1.18	9.226 794	1
1.25	9.226 795	1
1.40	9.226 796	1
1.60	9.226 797	1
1.70	9.226 798	1
1.80	9.226 799	1
2.00	9.226 800	1
2.24	9.226 801	1
2.36	9.226 802	1
2.50	9.226 803	1
2.80	9.226 804	1
3.15	9.226 805	1
3.35	9.226 806	1
3.55	9.226 807	1
4.00	9.226 808	1
4.50	9.226 809	1
4.75	9.226 810	1
5.00	9.226 811	1
5.60	9.226 812	1
6.30	9.226 813	1
6.70	9.226 814	1
7.10	9.226 815	1
8.00	9.226 816	1
9.00	9.226 817	1
9.50	9.226 818	1
10.00	9.226 819	1
11.20	9.226 820	1
12.50	9.226 821	1
13.20	9.226 822	1
14.00	9.226 823	1
16.00	9.226 824	1
18.00	9.226 825	1
19.00	9.226 826	1
20.00	9.226 827	1
22.40	9.226 828	1
25.00	9.226 829	1
26.50	9.226 830	1
28.00	9.226 831	1
31.50	9.226 832	1
35.50	9.226 833	1
37.50	9.226 834	1
40.00	9.226 835	1
45.00	9.226 836	1
50.00	9.226 837	1
53.00	9.226 838	1
56.00	9.226 839	1
63.00	9.226 840	1
71.00	9.226 841	1
75.00	9.226 842	1
80.00	9.226 843	1
90.00	9.226 844	1
100.00	9.226 845	1
106.00	9.226 846	1
112.00	9.226 847	1
125.00	9.226 848	1





PE Mesh

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: Width 102 cm, Length 100 cm.

Mesh size µm	Cat. No.	PK
1	9.068 210	1
5	9.068 211	1
6	9.068 212	1
10	9.068 213	1
15	9.068 214	1
20	9.068 215	1
30	9.068 216	1
40	9.068 217	1
50	9.068 218	1
53	9.068 219	1
60	9.068 220	1
70	9.068 221	1
80	9.068 222	1
90	9.068 223	1
100	9.068 224	1
105	9.068 225	1
150	9.068 226	1
200	9.068 227	1
250	9.068 228	1
300	9.068 229	1
400	9.068 230	1
500	9.068 231	1
600	9.068 232	1
700	9.068 233	1
800	9.068 234	1
900	9.068 235	1
1000	9.068 236	1
1600	9.068 237	1
2000	9.068 238	1
3000	9.068 239	1
4000	9.068 240	1

1 Vibratory sieve shakers, "analysette 3" series Pro and Spartan

For the quantitative particle size analysis of all kinds of solid, granular materials and suspensions by means of dry or wet sieving with woven mesh sieves or micro-precision sieves. Can also be equipped for micro milling.

Fritsch

**Typical applications:**

For quality-control monitoring in production, for integration into ISO 9001 testing regimes or for research and development.

Mode of operation:

The "analysette 3" is a classic "vibratory sieve system", whereby an electromagnetic driving mechanism puts the sieve into a vertically oscillating motion.

Performance overview:**Pro + Spartan models**

- precise digital timer
- Ergonomic IP 65 splash-proof key pad
- amplitude display
- TorqueMaster filter spanning for the automatic and reproducible spanning
- rapid retrofitting to become "pulverisette 0"
- "Autosieve for Windows™" automatic sieving control and evaluation programme
- TÜV tested safety (CE symbol)
- 24 month warranty

Additional feature of the "Pro" model

- Amplitude control "AmpControl"
- Amplitude setting
- Automatic detection of the amplitude
- Automatic amplitude control
- Digital display of the actual amplitude
- Digital display of the sieve vibration rate (per second)
- up to 9 sieving programmes can be saved and recalled
- Power save function
- RS232 interface
- Intermittent or continuous operation
- Micro- and micro-interval sieving operation if required
- for 100-240V 50/60Hz 1-ph. Without sieves, receiver or lid.

Supplied with automatic sieving control and evaluation programme "Autosieve for Windows™" standard on 180 days trial, free of charge.

Please order sieve clamps, receivers and lids from the separate list as they are required for operation .

Sieving:	dry or wet
Sieve diameters:	100 mm, 200 mm or 8"
Maximum number of sieves:	10 x 50 or 18 x 25 mm in height
Sieves:	woven mesh metal sieves, micro precision sieves
Measuring range:	Dry sieving: 32 µm to 63 mm Wet sieving: 20 µm to 100 mm Micro sieving: 5 to 100 µm
Sample quantity:	Dry sieving: to 1 kg Wet sieving: 20 to 100 g Micro sieving: 0.2 to 0.5 g
Measuring time:	Dry sieving: 3 to 20 mins Wet sieving: 5 to 10 mins Micro sieving: 30 to 60 mins
Dimensions (L x D x H):	370 x 400 x 200 mm
Weight:	21 kg

Type	Cat. No.	PK
"analysette 3" PRO	9.826 402	1
"analysette 3" Spartan	9.826 403	1



1 Vibratory sieve shakers, "analysette 3" series, accessories

Fritsch

- For dry and wet sieving
- Programme diskette "Autosieve for Windows™" Standard version for computer-supported sieving evaluation. "Autosieve for Windows™" is the software for professional, automatic evaluation of sieving analyses. It enables the determination and management of sieve tare weights, the monitoring of the sieve shaker or balances and the automatic, standard evaluation of particle size distribution from the sieve fractions. "Autosieve" provides the basis for the in-line auto validation of the "analysette 3" Pro sieve shaker thus ensuring that the most stringent quality requirements are met.
- Accessories for using the "analysette 3" Spartan and Pro as micro mills (for milling and mixing of small samples). Order data regarding milling accessories available on request.
- Accessories for using the "analysette 3" Pro as a micro precision sieve shaker. Order data for accessories available on request.
- Sieves for "analysette 3" Pro + Spartan and micro precision sieves for model Pro only are available on request.

Type	For	Cat. No.	PK
Plexiglas lid for 8" / 200 mm dia. sieves	Dry sieving	9.826 404	1
Sieve clamping lid (without window) for 200 mm dia. sieves	Dry sieving	9.826 405	1
Sieve tensioning system	Dry sieving	9.826 943	1
TorqueMaster (incl. clamping lid)			
Intermediate sieve pan made of stainless steel 200 mm dia., 50 mm height	Dry sieving	9.826 939	1
Intermediate sieve pan made of stainless steel 8" dia., 2" height	Dry sieving	9.826 940	1
Sieve pan, stainless steel 200mm dia., 50 mm high	Dry sieving	9.826 444	1
Sieve pan, stainless steel 8" dia., 2" high	Dry sieving	9.826 406	1
Sieve clamping lid, plexiglass with 3 nozzles for analysis sieve 8" / 200 mm dia.	Wet sieving	9.826 445	1
Sieve pan, stainless steel with funnel 200 mm dia., 50 mm high	Wet sieving	9.826 446	1
Intermediate sieve ring with 3 nozzles for 200 mm dia. sieves	Wet sieving	9.826 447	1
Sieve pan, stainless steel with funnel, 8" dia., 2" high	Wet sieving	9.826 449	1
Intermediate sieve ring with 3 nozzles for 8" dia. sieves	Wet sieving	9.826 450	1



2 Sample divider Pt100

Retsch

- 8 division head with snap fasteners for wide neck bottles (10 x 250 ml supplied) and DR100/40 vibratory feeder with stand.
- Feed size: to 10 mm
 - Number of samples: 8 (6 or 10 heads also available on request)
 - Throughput/charge: 5000 ml
 - Dimensions (W x D x H): 400 x 347 x 840 mm
 - Weight: approx. 30 kg
 - Supply requirements: 230V 50Hz

Type	Cat. No.	PK
PT100 comfort	9.739 107	1



3 Vibratory feeder DR 100

Retsch

- For the continuous, steady material conveyance to, and feeding of, sample dividers, mills, balances or analytical and measuring apparatus.
- Weight: approx. 10 kg
- Supply requirements: 220-240V 50 Hz.
- DR 100 supplied with: sample divider attachment, with plug-in 40 mm wide, funnel and mounting plate.

Accessories: Further hoppers, chutes and vibrating tubes made of stainless steel available on request.

Type	Cat. No.	PK
DR 100 Set "Standard"	9.739 110	1

1 Rotating tube divider PK 1000

For removal of one or several representative samples. Fixed or adjustable division setting. For use with accessory vibratory feeder DR 100/75 and lower cone with an adjustable sample funnel, glass 500 ml sample bottle and 30 litre waste material receiver. Requires, but is not supplied with, lower cone and vibratory feeder.

Retsch

- Suitable for pourable powder and granular bulk goods
- Feed size: up to 10 mm, throughput/charge: 30 L
- Number of samples: 1, 2, 3, 4 and 6 (depending on lower cone selected)
- Dimensions (W x D x H): 560 x 700 x 1150 mm
- Weight: approx. 47 kg, supply requirements: 220 - 240 V 50Hz

Type	Cat. No.	PK
Rotary divider PK 1000, incl. vibratory feeder and lower cone 1:5	9.739 115	1

2 Riffle boxes, RT series

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

Retsch

Type	Feed max. size up to mm	Throughput/Charge	Dimensions (W x D x H) mm	Weight kg	Cat. No.	PK
RT 6.5	6.3	5 L	300 x 270 x 250	3.50	9.739 200	1
RT 12.5	12.5	5 L	300 x 270 x 250	3.50	9.739 201	1
RT 25	25.0	16 L	620 x 420 x 260	21.50	9.739 202	1
RT 37.5	37.5	16 L	620 x 420 x 260	21.50	9.739 203	1
RT 50	50	16 L	620 x 420 x 260	21.50	9.739 204	1
RT 75	75	16 L	620 x 420 x 260	21.50	9.739 205	1

3 Rotary cone sample divider laborette 27

Designed for the representative sample dividing of solids and suspensions with a dividing precision of 99.9%.

Fritsch

Typical areas of use:

Rotary cone sample dividers are ideal sample preparation tools for use with highly accurate analytical instrumentation. They can be used in every research, development and quality control laboratory to prepare small but nonetheless representative samples for meaningful analysis. The "laborette 27" can also be used to divide liquid media or suspensions without modification.

Operational features:

The "laborette 27" provides the best possible means of sample dividing based on a combination of 3 dividing processes in one device. The sample is fed through a hopper onto a rotating dividing cone. On the surface of the cone, the sample material is accelerated outwards by centrifugal force and divided into individual streams through guiding channels. Due to the rotation speed and number of dividing channels on the dividing head, the number of dividing stages reaches up to 3000 per minute, which means that each sample consists of a very large number of individual samples which is a pre-requisite for good sample dividing.

Performance overview:

- a base unit that can be combined with a choice of 6 dividing head attachments
- up to 3000 dividing stages per minute
- representative sample dividing with an accuracy of 99.9%
- can divide dry samples and suspensions without modification
- choice of various dividing ratios
- rapid attachment of sample bottles
- for optimal sample feeding, the accessory laborette 24 vibratory feeder is recommended
- tested safety (CE marked)
- 24 month warranty

Supply requirements:

For 230V 50/60 Hz 1-ph.

Requires, but is not supplied with, dividing head attachment for operation.

(Please select and order the required dividing head attachment from the list below, with divider).

Dividing ratio:	1:8/1:10/1:30
Number of sub-sets:	8/10/3
Max. particle size:	10 mm/10 mm/2.5 mm
Max. feed volume:	4000 ml/2500 ml/300 ml
Sample bottle capacity:	250, 500 ml/250 ml/15, 20, 30 ml
Dimensions (W x D x H):	270 x 450 x 460 mm
Weight:	8 kg

Type	Cat. No.	PK
laborette 27	9.738 310	1





1 Rotary cone sample divider laborette 27, accessories

laborette 24 vibratory feeder.
For automatic feeding.
With V-shaped chute. For 200-240 V 50/60 Hz 1-ph.

Fritsch

Type	Cat. No.	PK
Vibratory feeder laborette 24	9.738 299	1
Stand for laborette 24	9.738 298	1



2 Rotating sample divider laborette 27, accessories

6 different Dividing heads for laborette 27 rotating sample dividers selectable:

Fritsch

Dividing ratio 1:8.
Made of POM plastic or aluminium. Includes 8 each 500 ml glass sample bottles and 10 mm dia. funnels.

Dividing ratio 1:10.
Made of POM plastic or aluminium. Includes 10 each 250 ml glass sample bottles and 10 mm dia. funnels.

Dividing ratio 1:30.
Made of POM plastic or PTFE-coated aluminium. Includes 3 each 15 ml glass sample bottles and 5 mm dia. funnels for dry or wet dividing.

Dividing ratio	Material	Cat. No.	PK
1:8	POM plastic	9.738 316	1
1:8	aluminium	9.738 313	1
1:10	POM plastic	9.738 317	1
1:10	aluminium	9.738 318	1
1:30	POM plastic	9.738 319	1
1:30	PTFE-coated aluminium	9.738 314	1



3 SilentCrusher S

Heidolph

- Superior, magnetic motor drive with no moving parts
- True, maintenance-free operation incorporating toroidal coil technology
- Extremely low noise
- Smooth operation, with no ball bearings and no mechanical couplings
- Perfect for clean room applications as there is no fan
- Simple to operate: homogenizer starts automatically as soon as the homogenizer tool is placed in the drive.
- Speed range 15000 up to 75000 rpm
- Dispersing volumes from 0.8 to 10 ml
- Viscosity capacity range from 1 to 5000 mPas
- Slit width 0.6 mm
- Choice of 3 different tools from 3 mm to 7 mm dia.

Homogenizer tools:

- Homogenizing and suspending of small samples
- High quality tools can be sterilized
- Tools are easy to attach and clean whilst changing samples
- All tools are made of V4A stainless steel (comply with AISI 316TI), tool fittings are made of PTFE to guarantee optimal chemical resistance.

Type	Cat. No.	PK
SilentCrusher S	9.570 135	1

10 replacement vessels are supplied together with tool

1 Accessories for SilentCrusher S

Homogenizer tools:

- Homogenizing and suspending of small samples
- High quality tools can be sterilized
- Tools are easy to attach and clean whilst changing samples
- All tools are made of V4A stainless steel (comply with AISI 316TI), tool fittings are made of PTFE to guarantee optimal chemical resistance.

Heidolph

Type	Stator dia.	Shaft length min.	Output particle size mm	Capacity ml	Recommendations for use	Cat. No.	PK
	mm	mm					
3 F	3.3	26	<0.4	0.8 to 1.0	Reaction tubes	9.570 136	1
5 F	5.0	38	<0.4	2.0 to 4.0	Test tubes	9.570 137	1
7 F	7.0	55	<0.4	6.0 to 10.0	Test tubes	9.570 138	1



2 Homogenizer SilentCrusher M

- Superior, magnetic motor drive with no moving parts
- True, maintenance-free operation incorporating toroidal coil technology
- Extremely low noise
- Smooth operation, with no ball bearings and no mechanical couplings
- Perfect for clean room applications as there is no fan
- Speed range from 5000 to 26000 rpm
- With integral tachometer
- Clear digital display for speed control
- Dispersing volumes from 0.8 to 2000 ml
- Range of viscosity from 1 to 5000 mPas
- Lightweight and compact design: 6 kg
- Choice of 13 different tools from 13 mm to 22 mm dia.
- A safe investment due to Heidolph's 3 year warranty

Heidolph

Homogenizer tools*:

- High quality tools can be sterilized
- Tools are easy to attach and clean whilst changing samples
- All tools are made of V4A stainless steel (comply with AISI 316TI)
- Replaceable PTFE tool fittings
- Dispersing tools are toothed for fine grinding.

Type	Cat. No.	PK
SilentCrusher M	9.570 140	1

*suitable for applications under pressure or vacuum.





1 Accessories for homogenizer SilentCrusher M

Heidolph

Homogenizer tools:

- High quality tools can be sterilized
- Tools are easy to attach and clean whilst changing samples
- All tools are made of V4A stainless steel (comply with AISI 316Ti)
- Replaceable PTFE tool fittings
- Dispersing tools are toothed for fine grinding

Type	Stator dia.	Rotor dia.	Slit width	Length	Capacity	Output particle size mm	Cat. No.	PK
	mm	mm	mm	mm	ml			
6 F	5.3	3.20	0.6	60	0.8 to 30	< 0.4	9.570 139	1
8 F	8.2	6.60	0.6	80	3 to 50	< 0.4	9.570 141	1
8 DF*	8.2	6.60	0.6	75	3 to 50	< 0.4	9.570 142	1
12 F	12.0	9.00	0.6	120	25 to 250	< 2.0	9.570 143	1
12 G	12.0	9.00	2.0	120	25 to 250	< 2.0	9.570 144	1
12 DF*	12.0	9.00	0.6	115	25 to 250	< 2.0	9.570 145	1
12 DG*	12.0	9.00	2.0	115	25 to 250	< 2.0	9.570 146	1
18 F	18.0	12.50	1.5	180	100 to 1500	< 4.0	9.570 147	1
18 G	18.0	12.50	3.0	180	100 to 1500	< 4.0	9.570 148	1
18 DF*	18.0	12.50	1.5	175	100 to 1500	< 4.0	9.570 149	1
18 DG*	18.0	12.50	3.0	175	100 to 1500	< 4.0	9.570 150	1
22 F	22.0	16.50	1.5	180	100 to 2000	< 4.0	9.570 104	1
22 G	22.0	16.50	3.0	180	100 to 2000	< 4.0	9.570 105	1

* For applications under pressure or vacuum (max. pressure 6 bar/min. vacuum 20 mbar)



2 Accessories for Homogenizer Silent Crusher M

Heidolph

Type	Cat. No.	PK
Base stand	9.570 151	1
Bosshead	9.570 152	1
Vessel clamp/holder	9.570 153	1

3 Ultra-Turrax® T 10 basic

IKA

Competitively priced dispersing instrument for volumes of 0.5 to 100 ml. A wide speed range allows you to work at high circumferential speeds.

- Immense speed stability with various media thanks to high performance 125 Watt 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 (5 mm, 8 mm and 10 mm 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 for drive, clamp, dispersing elements and spare seals and R 200 clamp



Motor rating input/output:	125/75 W
Working volume range (water):	0.5 to 100 ml
maximum viscosity:	5000 mPas
Speed range:	8000 to 30000 rpm
Speed adjustment:	stepless
Speed display:	Scale (1 to 6)
Clamping rod diameter/length:	8 mm/100 mm
Dimensions:	46 x 57 x 201 mm
Weight:	0.4 kg
Protection rating to DIN EN 60529:	IP20

Type	Cat. No.	PK
T 10 basic Ultra-Turrax®	9.570 843	1

Homogenizer Ultra Turrax® T 10 basic, accessories

IKA

Immersion depth	Working volume	Material	Cat. No.	PK
mm	ml			
50	1 to 20	PC, PSU	9.570 874	12
50	1 to 20	PC, PSU	9.570 875	25
90	1 to 40	PC, PSU	9.570 876	12
90	1 to 40	PC, PSU	9.570 877	25

1 Ultra-Turrax® T 18 basic

IKA

NEW high speed homogenizer, shredder and disperser for a wide range of free-flowing materials.
Speed range: 5000 to 30000 rpm., adjustable via scaled control dial.
Volume range 1 to 1500 ml using accessory dispersing heads.
Serially with diameter connection.

Motor rating input/output: 500/300W
Working volume range (water): 1 to 1500 ml
maximum viscosity: 5000 mPas
Speed range: 3500 to 24000 rpm
Speed adjustment: stepless
Speed display: Scale (1 to 6)
Clamping rod diameter/length: 13 mm/175 mm
Dimensions: 65 x 240 x 80 mm
Weight: 1.6 kg
Protection rating to DIN EN 60529: IP20

Type	Cat. No.	PK
T 18 basic (without dispersing head)	9.570 840	1



2 Accessories for Ultra Turrax® T 18 basic

IKA

Type	Immersion depth	Working volume	Material	Cat. No.	PK
	mm	ml			
S 18 N-10 G	70	1 to 100	PTFE, AISI 316L	9.570 841	1
S 18 N-19 G	170	10 to 1500	PTFE, AISI 316L	9.570 842	1
S 18 D-10 G-KS	85	10 to 100	PC, PEEK	9.570 854	5
S 18 D-10 G-KS	85	10 to 100	PC, PEEK	9.570 855	10
S 18 D-14 G-KS	85	10 to 500	PC, PEEK	9.570 856	5
S 18 D-14 G-KS	85	10 to 500	PC, PEEK	9.570 857	10



3 Homogenizer, Ultra-Turrax® T 25 digital

IKA

With choice of 15 easily interchangeable dispersing heads, volume range 1 to 2000 ml.
Also available are 5 additional grinding rotors, 3 seal types and several special dispersing heads.
Please order the appropriate accessory heads separately.
Applications range from the homogenization of sewage samples to use in laboratory reactions, from vacuum/pressure dispersing tasks to sample preparation in medical diagnostics.
Supplied with interface for rev counter DZM control.o.

Motor rating input/output: 500/300 W
Volume range (H₂O): 1 to 2000 l
Viscosity max.: 5000 mPas
Speed range: 3500 to 24000 rpm.
Speed control: stepless
Speed display: LED
Noise without element: 73 dB (A)
Dimensions (W x D x H): 65 x 80 x 240 mm
Supply requirements: 230 V 50/60 Hz.
Weight: 1.6 kg
Protection class DIN EN 60529: IP 20

Type	Cat. No.	PK
T 25 digital Ultra-Turrax®	9.570 845	1





1 Dispersing heads for T 25 basic Ultra-Turrax®

Ultimate fineness for emulsions: 1 to 10 µm.

IKA

Stator dia.	Rotor dia.	Tangential speed	Working volume	Ult. fineness suspensions	Material	Cat. No.	PK
mm	mm	m / sec.	ml	µm			
10.0	6.75	8.5	10 to 100	10 to 50	PC, PEEK	9.570 858	5
10.0	6.75	8.5	10 to 100	10 to 50	PC, PEEK	9.570 859	10
14.0	9.50	12	10 to 500	10 to 50	PC, PEEK	9.570 860	5
14.0	9.50	12	10 to 500	10 to 50	PC, PEEK	9.570 861	10
8.0	6.10	6.1	1 to 50	10 to 50	PTFE, AISI 316 L	9.571 098	1
18.0	12.70	15.9	1 to 1500	10 to 50	PTFE, AISI 316 L	9.571 119	1
25.0	17.00	21.4	50 to 2000	15 to 50	PTFE, AISI 316 L	9.571 200	1
10.0	7.50	9.4	1 to 100	10 to 50	PTFE, AISI 316 L	9.571 207	1

Further dispersing heads are available on request.



2 High-power homogenizer Ultra Turrax® T50 basic

For volumes from 0.25 to 30 litres. Three types of shaft bearings, 12 rotor-stator variants and a free agitation shaft (R50) which allows use as a "high speed stirrer" (please order the appropriate dispersing head separately).

IKA

With stepless speed setting, drive designed for continuous operation, 700 Watt power output and integral feedback control which guarantees constant speed even when viscosity changes.

Supplied with interface for rev counter DZM control.o.

Speed range: 4000 to 10000 rpm.
 Dimensions (W x D x H): 125 x 120 x 367 mm
 Supply requirements: 230 V 50/60 Hz.
 Protection class DIN EN 60529: IP 21

Type	Cat. No.	PK
T50 basic Ultra Turrax®	9.570 850	1



3 Dispersing heads for T50 basic

Dispersing heads stator dia. 45 mm.

IKA

Type	Rotor dia.	Min./Max. Immersion depth	Tangential speed	Volume range	Ult. fineness suspensions	Cat. No.	PK
	mm	mm	m / sec.	L	µm		
S 50 N-G45 G	36.00	70/250	18.8	0.5 to 20	40 to 100	9.570 882	1
S 50 KR-G45 G	36.00	70/260	18.8	0.5 to 20	40 to 100	9.570 883	1
S 50 N-G45 M	40.50	70/250	21.2	0.5 to 15	25 to 50	9.570 886	1
S 50 KR-G45 M	40.50	70/260	21.2	0.5 to 15	25 to 50	9.570 887	1
S 50 N-G45 F	40.50	70/250	20.9	0.25 to 10	10 to 30	9.570 896	1

Further dispersing heads are available on request.

1 Homogenizer, Ultra-Turrax® T 65 D

High-performance dispersing instrument designed for typical college laboratory quantities of 2 to 50 litres (H₂O).

IKA

- powerful three-phase motor
- three rotor/stator configurations available for diverse fields of application (not included with unit)
- plug-in dispersing elements make changes simple
- speed regulator available on request
- dispersing units for production applications available on request
- supplied without cable and plug

Motor rating
input/output: 1800/1500 W
Processing volume (H₂O): 2 to 50 litres
Suitable for viscosities up to: 5000 mPas
Speed, fixed: 7200 rpm
Audible noise (without dispersing element): 75 dB (A)
Dimensions (W x D x H): 190 x 580 x 380 mm
Weight: 28 kg
Protection class per DIN EN 60529: IP 54

Type	Cat. No.	PK
Homogenizer T 65 D Ultra-Turrax®	9.570 505	1

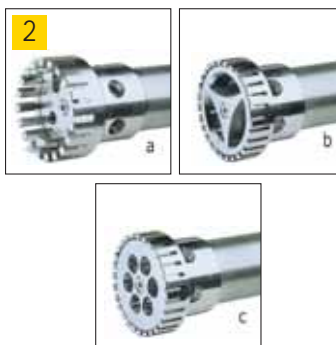


2 Dispersion tools for Ultra-Turrax® T 65 D

IKA

Stator dia.: 65 mm
Rotor dia.: 58 mm
Peripheral speed: 21.9 m/s

Type	Volume range L	Ult. fineness suspensions µm	Illus.	Cat. No.	PK
S 65 KG-HH-G 65 G	2 to 50	25 to 75	2 a	9.570 933	1
S 65 KG-HH-G 65 M	2 to 40	20 to 50	2 b	9.570 934	1
S 65 KG-HH-G 65 F	2 to 30	5 to 20	2 c	9.570 935	1



3 4 5 6 7 Disperser System Ultra-Turrax® Tube Drive

Disposable Disperser System for volumes from 2 to 15 ml with hermetically sealable, disposable sample tubes. Protection and safety from: Infectious sample materials, toxic substances, strong-smelling materials.

IKA

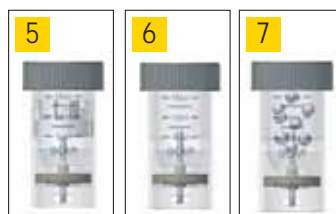
- No possibility of cross-contamination
- Disperse, stir, and grind using a single drive unit
- Covers with pierceable membranes available on request
- Suitable for individual use and use in series
- Increased safety due to low voltage (24V) power
- Chemically-resistant plastic containers

Supplied with: Workstation, consisting of 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) and power supply.

Specifications

Motor rating
input/output: 20/17 W
Volume: 2 to 15 ml
Viscosity max.: 5000 mPas
Speed range: 300 to 6000 rpm
Noise without element: 50 dB(A)
Dimensions (W x H x D): 100 x 40 x 160 mm
Weight: 0.75 kg
Protection class according to DIN EN 60529: IP 20

Description	Cat. No.	PK
ULTRA-TURRAX® Tube Drive	9.570 500	1
ULTRA-TURRAX® Tube Drive Workstation	9.570 506	1
Dispersing Tube	9.570 507	25
Stirring Tube	9.570 508	25
Ball-Mill-Tube (with glass balls)	9.570 509	25
Ball-Mill-Tube (with stainless steel balls)	9.570 510	25





1 Labor-Pilot 2000/4

New, multifunction dispersing instrument for small-scale up to production volumes. This pilot plant unit has a throughput of approximately 300 l/h .

IKA

Features:

- Versatile uses for mixing, dispersing or wet milling
- Modular design, the basic unit can be combined with different tools (rotor-stator units with an rotation speed up to 40 m/s)
- CIP-/SIP-capable
- All parts, that contact the product, are made of stainless steel (AISI 316 C)
- Control optimisation using product rheological data.
- The premium control unit Labor-Pilot Controller allows adaption of each process parameter and corresponding analysis.

Single stage disperser, comprising:

- three-phase-motor with on/off switch
- belt drive
- single dispersing chamber UTL
- generator 4M (medium)
- PTFE-shaft sealing ring

Upgradable to high-speed dispersing using Labor-Pilot Controller 9.720 192 or 9.720 193

Power:	1.5 kW
Speed:	7900 (3160 to 13750) rpm
Pumping rate (H ₂ O):	about 300 to 700 l/h
Rotor speed:	23.5 (9.4 to 41) m/s
Dimensions (W x D x H):	450 x 250 x 350 mm
Data in brackets if using Labor-Pilot Controller.	

Description	Cat. No.	PK
220-240 V 50/60 Hz 3-ph.	9.720 190	1
380-420 V 50/60 Hz 3-ph.	9.720 191	1
Further generators on request.		



2 Labor-Pilot Controller

Control unit for Labor-Pilot 2000/4 9.720 190 or 9.720 191. Housing complete with frequency modulator, display indicating speed, temperature, time and DN 15 adapter with Pt100 temperature probe for monitoring output.

IKA

Power:	1.5 kW
Frequency range:	20 to 87 Hz
Dimensions (W x D x H):	220 x 340 x 380 mm

Description	Cat. No.	PK
220-240 V 50/60 Hz 3-ph.	9.720 192	1
380-420 V 50/60 Hz 3-ph.	9.720 193	1



3 Ultrasonic homogenizers, Sonopuls HD 2070/HD 2200

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

Bandelin

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



4 Ultrasonic homogenizer, Sonopuls HD 2070

For volumes from 2 ml to 50 ml. 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_{eff}. Titanium probes for other volumes (1 ml to 200 ml) are available with tips from 2 mm to 13 mm diameter.

Bandelin

Type	Cat. No.	PK
Sonopuls HD 2070	9.650 180	1
HD 2070 (stand and glas not included in delivery)		

1 Ultrasonic homogenizer, Sonopuls HD 2200

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

Bandelin

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

HD 2200 (Stativ und Glas nicht im Lieferumfang)



2 Ultrasonic homogenizers, Sonopuls HD 3100/HD 3200/HD 3400

- Amplicron® control
- Setting by amplitude adjustable in % or alternatively power control in W
- Working frequency 20 kHz
- Pulsation: operation intervals from 0.1 s up to 600 secs, rest intervals from 0.2 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

Bandelin

Sonopuls ultrasonic homogenizers 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

HD 3100/HD 3200 (stand and glas not included in delivery)



3 Ultrasonic homogenizer, Sonopuls HD 3100

High-Tech for research - using small volumes.

For samples from 2 ml to 50 ml, 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.

Bandelin

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

HF-generator	GM 3100	Converter	UW 3100
Dimensions:	250 x 256 x 170 mm	Dimensions (dia. x H):	70 x 120 mm
Weight:	2.0 kg	Weight:	1.0 kg
		Titanium probes*:	2, 3, 6, 13 mm dia.

Type	Cat. No.	PK
Sonopuls HD 3100	9.650 170	1

* on request

HD 3100 (stand and glas not in delivery included)



4 Ultrasonic homogenizer, Sonopuls HD 3200

High-Tech for research - using larger volumes

For volumes from 20 ml to 900 ml, ready-to-operate standard set with generator GM 2200, ultrasonic converter UW 2200, booster horn SH 213 G and flat titanium tip TT 13 diameter 13 mm.
- Max. 200 W HF-output. - Processing frequency 20 kHz. - For 230 V 50/60 Hz or 115 V 50/60 Hz supplies
- For volumes from 2 ml to 1000 ml - 8 titanium probes available from 2 to 25 mm dia.

Bandelin

HF-generator	GM 3200	Converter	UW 3200
Dimensions:	250 x 256 x 170 mm	Dimensions (dia. x H):	70 x 120 mm
Weight:	2.7 kg	Weight:	1.0 kg
		Titanium probes *:	2, 3, 6, 13, 19, 25 mm dia.

Type	Cat. No.	PK
Sonopuls HD 3200	9.650 175	1

* on request

HD 3200 (stand and glassware not included)





1 Ultrasonic Homogeniser Sonopuls HD 3400

Bandelin

High tech for research and pilot plant stations

Ready-to-operate, basic unit for 100 ml to 2000 ml volumes consisting of generator GM 3400, booster 3400, ultrasonic converter UW 3400, stepped standard horn SH 225 G and flat tip TT 25, 25 mm dia. HF-out put max. 400 W_{eff}.

HF-generator GM 3400
 Dimensions: 324 x 230 x 131 mm
 Weight: 31 kg

Converter UW 3400
 Dimensions (dia. x H): 90 x 180 mm
 Weight: 2.2 kg
 Titanium probes*: 19, 25 mm dia.

Type	Cat. No.	PK
HD 3400	9.650 195	1

* on request

HD 3100/HD 3200 (stand and glas not included in delivery)

Ultrasonic homogenizers, Sonopuls, accessories

Booster horns, step horns (titanium alloy) for connection of interchangeable sonotrodes (probes).

Bandelin

Further booster horns are available on request.

Type	Dia. For mm	Cat. No.	PK
Booster horn SH 213 G	13 HD 2200 / HD 3200	9.650 208	1
Booster horn SH 219 G	19 HD 2200 / HD 3200 / HD 3400	9.650 218	1
Booster horn SH 225 G without TT 25	25 HD 2200 / HD 3200 / HD 3400	9.650 217	1
Step horn SH 70 G	13 HD 2070 / HD 3100	9.650 205	1



2 Ultrasonic homogenizers, Sonopuls, accessories

Bandelin

Stainless steel stands HG 5/10, with base plate.

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

Support table AT 7 suitable for KL 7 or in LS 7 and LS 10, for the safe stationing of ultrasonic irradiation vessels.

Type	Description	For	Cat. No.	PK
		step horns/booster horns		
HG 5	Stainless steel stand	HD 2070/ 3100 / 2200 / 3200	9.650 273	1
HG 10	Stainless steel stand	HD 3400	9.650 275	1
KL 7	Clamping device	HG 5 / HG 10	9.650 276	1
AT 7	Support table	KL 7 or LS 7 / LS 10	9.650 277	1



3 Ultrasonic homogenizers, Sonopuls, accessories

Bandelin

Titanium sonotrodes.

For connection to step horns/booster horns.

Type	Dia. mm	Tip	For step horns / booster horns	For flasks ml	For	Cat. No.	PK
MS 72	2	microtip	SH 70 G SH 213 G	1 to 25 2 to 30	HD 2070 / 2200 HD 3100 / 3200	9.650 244	1
MS 73	3	microtip	SH 70 G SH 213 G	2 to 50 5 to 90	HD 2070 / 2200 HD 3100 / 3200	9.650 245	1
KE 76	6	cone point	SH 70 G SH 213 G	5 to 100 10 to 350	HD 2070 / 2200 HD 3100 / 3200	9.650 246	1
TT 13	13	titanium plate	SH 70 G SH 213 G	10 to 200 20 to 900	HD 2070 / 2200 HD 3100 / 3200	9.650 250	1
TT 13 FZ	13	titanium plate with hole	FZ 5 G FZ 7 G	-	HD 2200 / 3200	9.650 247	1
TT 19	19	titanium plate	SH 219 G	25 to 900 100 to 1500	HD 2200 / 3200 HD 3400	9.650 248	1
TT 25	25	titanium plate	SH 225 G	30 to 1000 100 to 2500	HD 2200 / 3200 HD 3400	9.650 249	1
VS 70 T	13	sonotrode long	SH 70 G SH 213 G	10 to 200 20 to 900	HD 2070 / 2200 HD 3100 / 3200	9.650 239	1
VS 190 T	19	sonotrode long	SH 219 G	25 to 900 100 to 1500	HD 2200 / 3200 HD 3400	9.650 243	1
VS 200 T	25	sonotrode long	SH 225 G	30 to 1000 100 to 2500	HD 2200 / 3200 HD 3400	9.650 240	1

1 Ultrasonic homogenizers, Sonopuls, accessories

- Flow step horn FZ 5 G with external screwthread and titanium probe tip TT 13 FZ.
- Flow booster horn FZ 7 G with external screwthread and titanium probe tip TT 13 FZ.

Bandelin

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



2 Ultrasonic homogenizers, Sonopuls, accessories

Flow-through cell for continuous flow 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 homogenizers. Flow rate up to 30 L/hr.

Bandelin

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



3 4 Ultrasonic homogenizers, Sonopuls, accessories

Ultrasonic irradiation vessels. Plastic. For indirect ultrasonic irradiation. If BB 2 G is ordered, titanium 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 homogenizer HD 2200/HD 3200 and ultrasonic irradiation vessel BB 6.

Bandelin

Type	For	Picture	Cat. No.	PK
BB 2 G	HD 2070 / HD 3100	3	9.650 253	1
BB 6	HD 2200 / HD 3200	4	9.650 254	1
EH 6	BB6	-	9.650 258	1



5 Ultrasonic homogenizers, Sonopuls, accessories

- PTFE standard ground joint adapters for mounting probes into standard ground joint vessels. For use with HD 2070/2200/3100/3200/3400 homogenizers.
- NA 29 G: for vessels with standard ground joint 29/32 and for SH 70/213 G probes.
- NA 45 G: for vessels with standard ground joint 45/40 and for SH 70/213/219/225 G probes.
- GA 3 G thread adapters made of high-grade steel with external thread M 40 x 1 for SH 70/213/219/225 G

Bandelin

Type	Picture	Cat. No.	PK
NA 29 G	5 a	9.650 228	1
NA 45 G	5 b	9.650 229	1
GA 3 G	5 c	9.650 256	1



6 7 Ultrasonic homogenizer resonator cup, Sonopuls BR 30

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

- BR 30 resonator cup enables highly intensive sonication of small samples, e.g. radioactively-contaminated seeds, maceration of cells or sonication of pathogenic or toxic substances.
- EH 3 - Microtube holder for BR 30 for simultaneous sonification of up to 3 samples.

GA 3 G: Threaded adapter, stainless steel with external thread H 40 x 1 for SH 70/213 /219/225 G and HD 3100/3200/3400/2070/2200.

Bandelin

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

Type	Picture	Cat. No.	PK
BR 30	6	9.650 190	1
EH 3	7	9.877 745	1

Converter and stand are not included.





1 2 Accessories for Ultrasonic homogenizers, Sonopuls HD 2200

Sample vessels for direct ultrasonic irradiation. Glass.

Bandelin

Type	For probes up to Ø	Capacity	For	Cat. No.	PK
	mm	ml			
KG 3 cooler	13	15	HD 2070/2200/3100/3200	9.650 235	1
KG 5 cooler	25	80	HD 2200/3200/3400	9.650 223	1
DG 3 flow vessel with cooling jacket	13	15	HD 2070/2200/3100/3200	9.650 236	1
DG 5 flow vessel with cooling jacket	25	80	HD 2200/3200/3400	9.650 224	1
RZ 1 round anchor plate cell	13	25	HD 2070/2200/3100/3200	9.650 267	1
RZ 2 round anchor plate cell	13	50	HD 2070/2200/3100/3200	9.650 268	1
RZ 3 round anchor plate cell	13	120	HD 2070/2200/3100/3200/3400	9.650 261	1
RZ 5 round anchor plate cell	25	900	HD 2200/3200/3400	9.650 264	1
SZ 3 Suslick cell	13	20	HD 2070/2200/3100/3200	9.650 262	1
SZ 5 Suslick cell	25	130	HD 2200/3200/3400	9.650 265	1



3 Acoustic damper boxes LS series

Sound proof boxes.

Provide considerable noise level reduction.

Bandelin

LS 4

Made of plastic-coated chip board. 10 dB (A) dampening.

LS 7/10

Made of stainless steel, with dampening plates. 20 dB (A) dampening.

With rod, swivelling clamp and bosshead for height adjustment of sample vessels.

Type	For	Cat. No.	PK
LS 4	HD 2070 / 2200 / 3100 / 3200	9.650 271	1
LS 7	HD 2070 / 2200 / 3100 / 3200	9.650 278	1
LS 10	HD 3400	9.650 279	1

Note: Ultrasonic transducer and glassware not included



4 Accessories for acoustic damper box LS 7/LS 10

For sonification using the BR 30 cup resonator, support frame UG 6 allows acoustic irradiation cup BB 6 or BB 2G to rotate through 180° within the noise protection box LS 7 (not included with main instrument). Material: lacquered aluminium support frame with teflon coating and Teflon feet.

The ultrasonic transducers UW 2070/2200/3100/3200 can be securely attached using the rapid snap fastener.

Bandelin



Description	Cat. No.	PK
Support frame UG 6 for LS 7*	9.650 238	1
Spacer AH 6 for LS 7*	9.650 225	1
Spacer AH 10 for LS 10*	9.650 280	1

* Required for direct sonification using long Sonotrodes.



5 Compact ultrasonic processor UP50H

For portable use or with stand, space-saving, robust, 50 watts, frequency 30 kHz, automatic frequency scanning system, amplitude adjustable 20 to 100 %, pulse adjustable 0 to 100 %, dry running protected, versatile accessories on demand (sonotrodes, sound protection, PC-control etc.).

Type	Cat. No.	PK
Ultrasonic processor UP50H	9.106 600	1

Accessories for compact ultrasonic processor UP50H

Type	Tip	For flasks ml	Cat. No.	PK
Sonotrode MS0.5	0.5 mm dia.	0.01 - 0.5	9.106 601	1
Sonotrode MS1	1 mm dia.	0.1 - 5	9.106 602	1
Sonotrode MS2	2 mm dia.	2 - 50	9.106 603	1
Sonotrode MS7	7 mm dia.	20 - 500	9.106 604	1
clamp for stand STH-16			9.106 605	1

1 Compact ultrasonic processor UP200S

Stand mounting, compact, robust unit, 200 watts, frequency 24 kHz.
With automatic frequency scanning system, amplitude adjustable 20 to 100 %, pulse adjustable 0 to 100 % and dry-running protected.
Supplied in carrying case with mounting tools but without sonotrodes (probes).
A wide range of accessories are available on request (sonotrodes, sound protection, PC control, etc.).

Type	Cat. No.	PK
Ultrasonic processor only UP200S	9.106 606	1



Accessories for compact ultrasonic processor UP200S

Type	Tip	For flasks ml	Cat. No.	PK
Sonotrode S1	1 mm dia.	0.1 to 5 ml	9.106 607	1
Sonotrode S3	3 mm dia.	5 to 200 ml	9.106 608	1
Sonotrode S7	7 mm dia.	20 to 500 ml	9.106 609	1
Sonotrode S14	14 mm dia.	50 to 1000 ml	9.106 610	1
Sonotrode S14D with glass flow vessel GD14K		5 to 25 l/h	9.106 611	1

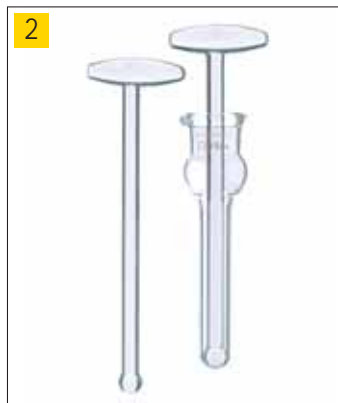


2 Dounce homogenizers

Glass. Suitable if the nuclei are to be maintained after homogenising.
Two pestles are supplied:
- Pestle "A" for pre-grinding
- Pestle "B" for fine grinding
Spare components are available and are completely interchangeable.

Capacity ml	Length* mm	Cat. No.	PK
2	60	9.651 616	1
7	125	9.651 617	1
15	157	9.651 618	1
40	215	9.651 619	1
100	232	9.651 620	1

* Mortar length (mm)



3 Duall homogenizers, with glass pestle

With conical and cylindrical area for effective tissue for grinding and also for homogenizing.
Especially suitable for cellular tissue such as muscle, heart and lungs.
The pestle is sufficiently stable to be motor driven.
The space between the pestle and mortar is between 0.1 to 0.15 mm.
Spare components are available and are completely interchangeable.

Size	Capacity ml	Pestle L x o.d. mm	Mortar L x o.d. mm	Cat. No.	PK
20	1	155 x 6	80 x 13	9.651 637	1
21	3	207 x 6	120 x 16	9.651 638	1
22	5	220 x 8	150 x 18	9.651 639	1
23	15	278 x 10	175 x 25	9.651 641	1
24	30	310 x 10	215 x 32	9.651 642	1
25	50	345 x 16	225 x 38	9.651 643	1

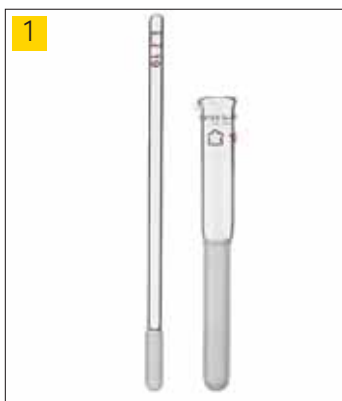


4 Duall homogenizers, with PTFE pestle

With conical and cylindrical area for effective tissue for homogenising.
The PTFE pestle is ideal for soft tissue such as brain or liver.
The pestle is suitable for motor drive.
The space between the pestle and mortar is between 0.1 to 0.15 mm.
Spare components are available and are completely interchangeable.

Size	Capacity ml	Mortar L x o.d. mm	Pestle L x o.d. mm	Cat. No.	PK
20	1	155 x 4.5	80 x 13	9.651 656	1
21	3	210 x 6	120 x 16	9.651 657	1
22	5	228 x 6	150 x 18	9.651 658	1
23	15	268 x 6	175 x 25	9.651 659	1
24	30	305 x 10	215 x 32	9.651 660	1
25	50	330 x 10	225 x 38	9.651 661	1





1 Potter-elvehjem homogenizers, with glass pestle

All-glass. Pestle is suitable for motor drive.
The space between the pestle and mortar is between 0.1 to 0.15 mm.
Spare components are available and are completely interchangeable.

Size	Capacity	Pestle L x o.d.	Mortar L x o.d.	Cat. No.	PK
	ml	mm	mm		
19	1	145 x 5	95 x 13	9.651 674	1
21	5	205 x 6	140 x 16	9.651 675	1
22	8	215 x 8	150 x 18	9.651 676	1
23	17	265 x 10	175 x 25	9.651 677	1
24	45	315 x 10	220 x 32	9.651 678	1



2 Potter-elvehjem homogenizers, with PTFE pestle

With PTFE pestle and glass mortar.
Sizes 21 and 24 have notches on the bottom edge of the pestle so that particles can be transported up to the cylindrical part of the mortar for extraction.
The space between the pestle and mortar is between 0.1 to 0.15 mm.
Spare components are available and are completely interchangeable.

Size	Capacity	Pestle L x o.d.	Mortar L x o.d.	Cat. No.	PK
	ml	mm	mm		
18	0.5	130 x 3	80 x 12	9.651 689	1
19	1	154 x 5	95 x 12	9.651 690	1
20	3	154 x 5	115 x 12	9.651 691	1
21	5	215 x 6	140 x 15	9.651 692	1
22	8	212 x 6	150 x 19	9.651 693	1
23	17	266 x 6	175 x 25	9.651 694	1
24	45	269 x 6	220 x 32	9.651 695	1



3 Homogenizer drive unit, schütt homgen^{plus}

For the gentle homogenization of biological samples or for grinding tough, rigid material which is difficult to break down. Complete with load-compensating drive unit and universal quick-action chuck, transparent Plexiglas cooling jacket and multi-purpose spanner for centring homogenizing vessels of varying sizes. Portable, but highly stable and vibration-free due to its triple-post frame construction, and easy to use. Provides high torque, even at the low speed range, ensuring extremely powerful homogenizing. Continuously adjustable speed range: 40 to 3000 rpm. Provides reproducible homogenizing by maintaining constant rotational speed, which is shown on an easy to read, 4-digit LED display. The fast-action clamping chuck with hollow shaft permits rapid and easy replacement of the pestle and allows pestles with longer shafts to be used. We highly recommend using a quick-grip chuck for glass pestles to minimize lateral movement (and therefore strain) of the glass shaft. The cooling jacket incorporates a clamping holder suitable for Eppendorf test tubes and homogenizing vessels with outside diameters from 10 to 40 mm. Sample cooling is easily achieved using ice, which can be introduced into the cooling jacket through a screw capped opening. The homogenizing vessel moves up and down in conjunction with the cooling jacket platform and is raised and lowered using a lever jack. The long lever facilitates thorough homogenizing without much effort. For 230 V 50/60 Hz, 330 W single phase supplies (optionally available for 115 V 50/60 Hz). We also offer a sterile alternative for use in a glove box and with infectious material. Details on request.

Schütt

Type	External dimensions (W x D x H) mm	Cat. No.	PK
schütt homgen ^{plus} , 230 V	320 x 300 x 880	9.651 560	1
Quick-change chuck for glass pestle	-	9.651 564	1

1 2 3 Homogenizers for PTFE pestles

Glass homogenizer mortar with conical or cylindrical PTFE pestles mounted on corrosion-resistant, stainless steel shafts. Inert. Resilient. With smooth, wax-like, moisture-repellent surface. Glass-fibre reinforced pestles are available for grinding particularly tough materials. For all common homogenizer drives or for schütt homgen^{plus}.

Schütt

- Glass mortar Type 1: With flared overflow neck and spout, conical (Fig. A)
- Glass mortar Type 2: Without flared overflow neck, cylindrical (Fig. B)
- Glass mortar Type 3: With flared overflow neck and spout, cylindrical (Fig. C)

For glass mortar type	Capacity ml	Form	Cat. No.	PK
1	2	conical	9.651 602	1
1	15	conical	9.651 615	1
1	40	conical	9.651 640	1
2	2	cylindrical	9.651 802	1
2	5	cylindrical*	9.651 805	1
2	10	cylindrical	9.651 810	1
3	15	cylindrical	9.651 815	1
2	20	cylindrical	9.651 820	1
2	30	cylindrical	9.651 825	1
3	40	cylindrical	9.651 840	1

* Can also be used as a centrifuge tube



Pestles

Schütt

For glass mortar type	Capacity ml	Form	Cat. No.	PK
1	2	conical	9.651 702	1
1	15	conical	9.651 715	1
1	40	conical	9.651 740	1
2	2	cylindrical	9.651 902	1
2, 3	5, 10, 15	cylindrical	9.651 905	1
2	20	cylindrical	9.651 920	1
2, 3	30, 40	cylindrical	9.651 940	1
2, 3	5, 10, 15	cylindrical*	9.651 944	1
2, 3	30, 40	cylindrical*	9.651 948	1

*glass-fibre reinforced

4 5 6 Homogenizers with glass pestles

Glass homogenizer mortar with glass pestle. With robust glass shaft and ground surface cylindrical or conical pestle heads. Highly efficient for use with tough tissues. For all common homogenizer drives or for schütt homgen^{plus}.

Schütt

- Glass mortar Type 4: With flared overflow neck and spout, conical (Fig. A)
- Glass mortar Type 5: Round bottom, with flared overflow neck, without spout, cylindrical (Fig. B)
- Glass mortar Type 6: Round bottom, with flared overflow neck, with spout, cylindrical (Fig. C)

For glass mortar type	Capacity ml	Form	Cat. No.	PK
4	2	conical	9.652 002	1
4	15	conical	9.652 015	1
4	40	conical	9.652 040	1
5	8	cylindrical	9.652 208	1
5	15	cylindrical	9.652 215	1
6	40	cylindrical	9.652 240	1



Pestles

Schütt

For glass mortar type	Capacity ml	Form	Cat. No.	PK
4	2	conical	9.652 102	1
4	15	conical	9.652 115	1
4	40	conical	9.652 140	1
5	8	cylindrical	9.652 308	1
5	15	cylindrical	9.652 315	1
6	40	cylindrical	9.652 340	1



1 EPPI pestle, stainless steel

Conical. For homogenizing in Eppendorf®-type 1.5 ml reaction tubes (exact fit).
 Crevice-free, no cross-contamination, easy to clean and autoclave.
 Suitable for operation with liquid nitrogen.
 For all common homogenizer drives or for schütt homgen^{plus}.

Schütt

Type	Length mm	Tube dia. mm	Cat. No.	PK
Stainless steel EPPI pestle	100	4.9	9.197 690	1



Further pestles - please see page 394



2 EPPI pestle quick-change chuck (conical)

For stainless steel EPPI pestle.
 Simple to change even when motor is running.
 Improves productivity and considerably
 reduces cross-contamination.
 For all common homogenizer drives or for schütt homgen^{plus}.

Schütt

Type	Cat. No.	PK
Polypropylene EPPI pestle, 70 mm	9.197 689	10
Quick-change chuck	9.197 691	1



3 Homogenizer, Potter S

Homogenizer for gentle maceration of samples in the fields of biology, pharmacology,
 physiology, botany and zoology

- Good reproducibility
- Efficient cooling during homogenizing
- Infinitely adjustable and electronically controlled rotational speed up to 1500 rpm.
- Non-hazardous, safe operation
- Overload monitoring
- Homogenizer mortars from 2 to 60 ml
- Glass and Teflon pestles

Compatible vessel sizes: 2, 5, 15, 30 and 60 ml
 Integral cooling vessel
 Includes clamping ring

Sartorius (Biolab)

Speed range rpm.	Supply requirements	Cat. No.	PK
150 to 1500	230V 50/60 Hz	9.651 000	1

1 Homogenizer, Potter S, accessories

A choice of mortars and accessories are offered, suitability depends on the application.

Sartorius (Biolab)

Description	Cat. No.	PK
Homogenizer mortar, glass, graduated, with ground inner surface base, 2 ml	9.124 065	1
Homogenizer mortar, glass, graduated, with ground inner surface base, 5 ml	9.124 070	1
Homogenizer mortar, glass, graduated, with ground inner surface base, 15 ml	9.124 080	1
Homogenizer mortar, glass, graduated, with ground inner surface base, 30 ml	9.124 090	1
Homogenizer mortar, glass, graduated, with ground inner surface base, 60 ml	9.124 100	1
Homogenizer mortar, glass, ungraduated, with ground inner surface base, 2 ml	9.124 185	1
Homogenizer mortar, glass, ungraduated, with ground inner surface base, 5 ml	9.124 190	1
Homogenizer mortar, glass, ungraduated, with ground inner surface base, 15 ml	9.124 200	1
Homogenizer mortar, glass, ungraduated, with ground inner surface base, 30 ml	9.124 210	1
Homogenizer mortar, glass, ungraduated, with ground inner surface base, 60 ml	9.124 220	1
Homogenizer cylinder for PTFE pestle, 2 ml	9.124 225	1
Homogenizer cylinder for PTFE pestle, 5 ml	9.124 230	1
Homogenizer cylinder for PTFE pestle, 15 ml	9.124 240	1
Homogenizer cylinder for PTFE pestle, 30 ml	9.124 250	1
Homogenizer cylinder for PTFE pestle, 60 ml	9.124 260	1
PTFE pestle, 2 ml	9.124 265	1
PTFE pestle, 5 ml	9.124 270	1
PTFE pestle, 15 ml	9.124 280	1
PTFE pestle, 30 ml	9.124 290	1
PTFE pestle, 60 ml	9.124 300	1
Storage rack for 10 homogenizer cylinders and pestles	9.124 320	1
Clamping ring for 2 ml mortars	9.651 214	1
Clamping ring for 5 ml mortars	9.651 215	1
Clamping ring for 15 ml mortars	9.651 211	1
Clamping ring for 30 ml mortars	9.651 212	1
Clamping ring for 60 ml mortars	9.651 213	1

**2 Micro-dismembrators U + S**

Micro-dismembrators are particularly suitable for:

- homogenization of brittle, frozen or rigid materials
- fine grinding of pigments
- rapid disintegration, even of delicate samples

By using various sample flasks, grinding balls and glass beads, the apparatus can be adjusted for optimum use with special applications.

The samples are rapidly broken down by the machine's high efficiency - the isolation of DNA, RNA and proteins is significantly more efficient than if using hand-held homogenizers. Digital control increases reproducibility.

Sartorius (Biolab)

**Micro-dismembrator U:**

Vibration frequency: up to 2000 rpm
Amplitude: 15 mm
Model: 230V 50/60 Hz

Micro-dismembrator S:

Vibration frequency: up to 3000 rpm
Amplitude: 15 mm
Model: 230V 50/60 Hz

Type	Cat. No.	PK
Micro-dismembrator U	9.651 100	1
Micro-dismembrator S	9.651 102	1



1 2 Accessories for micro-dismembrators U and S

Sample vessels and grinding balls or glass beads are necessary for the grinding process. Vessels with a capacity of 3, 5, 7 and 20 ml are available. Grinding balls are available in agate, steel or tungsten carbide. Glass beads can only be used for moist or liquid samples. Grinding balls are useful for frozen or rigid materials.

Sartorius (Biolab)

Description	Cat. No.	PK
Stainless steel sample vessel, 3 ml capacity, Teflon seal, two parts	9.651 441	1
Stainless steel sample vessel, 5 ml capacity, Teflon seal, two parts	9.651 442	1
Stainless steel sample vessel, 7 ml capacity, Teflon seal, two parts	9.651 443	1
Teflon sample vessel, 3 ml capacity, screw closure	9.651 444	1
Teflon sample vessel, 5 ml capacity, screw closure	9.651 445	1
Teflon sample vessel, 7 ml capacity, screw closure	9.651 446	1
Teflon sample vessel, 20 ml capacity, screw closure	9.651 447	1
Container for 3 disposable shaking flasks (2.2 ml), bore Ø 10.8 x 37 mm	9.651 448	1
Container for 4 cryotubes	9.651 449	1
Container for 4 cryotubes*	9.124 321	1
Holder for container Cat. No. 9.651 448 and 9.651 449	9.651 450	1
Platform for 2 microtitre plates	9.651 451	1
Teflon, grinding balls with steel core, 10 mm Ø, weight 2 g	9.651 453	2
Chrome steel grinding balls, 3 mm dia.	9.651 454	100
Chrome steel grinding balls, 5 mm dia.	9.651 455	100
Chrome steel grinding balls, 9 mm dia.	9.651 464	10
Chrome steel grinding balls, 10 mm dia.	9.651 456	10
Tungsten carbide grinding balls, 1 mm dia.	9.651 457	1
Tungsten carbide grinding balls, 3 mm dia.	9.651 458	1
Tungsten carbide grinding balls, 5 mm dia.	9.651 459	1
Tungsten carbide grinding balls, 7 mm dia.	9.651 460	1
Tungsten carbide grinding balls, 10 mm dia.	9.651 461	1
Glass beads, 0.10 to 0.11 mm dia., approx. 570 ml bottle	9.651 421	1
Glass beads, 0.17 to 0.18 mm dia., approx. 570 ml bottle	9.651 422	1
Glass beads, 0.25 to 0.30 mm dia., approx. 570 ml bottle	9.651 423	1
Glass beads, 0.45 to 0.50 mm dia., approx. 570 ml bottle	9.651 424	1
Glass beads, 1 mm dia., approx. 570 ml bottle	9.651 425	1
Conversion kit for use with dismembrator U containers (3, 5 and 7 ml)	9.651 462	1

* For Nalgene 5011-0012!



3 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. All units have a 3-year warranty.

interscience

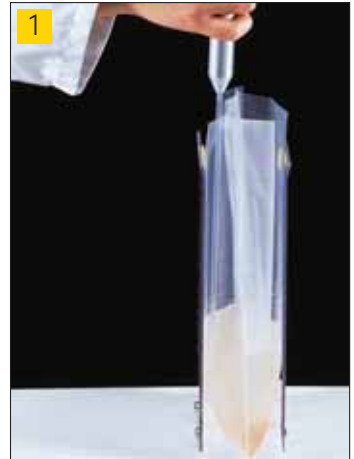
Type	Capacity ml	Width mm	Length mm	Height mm	Cat. No.	PK
MiniMix® 100 VW	5 to 100	210	350	200	9.570 072	1
BagMixer® 400 VW	50 to 400	270	390	260	9.570 073	1
JumboMix® 3500 VW	400 to 3500	540	420	500	9.570 074	1

Scan 500 colony counter available on request!

1 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. The BagPage® has a full-width membrane filter, the BagFilter® P a non-woven lateral filter. Sterile.

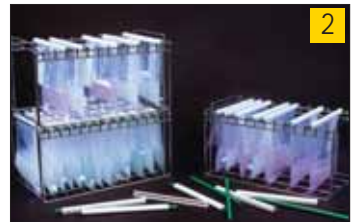
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Type	Type	Width mm	Height mm	Cat. No.	PK
BagLight® 100	plain bag, sleeve 25	110	185	9.570 075	500
BagLight® 400	plain bag, sleeve 25	190	300	9.570 097	1000
BagLight® 3500	plain bag, sleeve 25	380	510	9.570 077	500
BagFilter® 400 P	side filter bag, sleeve 25	190	300	9.570 078	500
BagFilter® 3500 P	side filter bag, sleeve 10	380	510	9.570 079	100
BagPage® 100	full-size filter bag, sleeve 25	180	95	9.570 080	500
BagPage® Plus 400	full-size filter bag, sleeve 25	190	300	9.570 081	500
BagPage® 3500	full-size filter bag, sleeve 25	380	510	9.570 082	100

2 Accessories for blender BagSystem®

interscience



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

3 Sample bag 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 markets. By whirling, the RollBag® becomes a leakproof bag. RollBag® are also thick and robust in order to handle all kinds of samples without bursting.

interscience



Technical specifications
 Size: 295 x 175 mm
 Capacity: 1300 ml
 Blended volume: 50 to 400 ml

Type	Cat. No.	PK
RollBag®	9.570 096	500



1 Gravimetric solvent diluter Gravimat®

The Gravimat® automatically dilutes a solid sample with the appropriate mass of solvent.

interscience

Stainless steel. Complete traceability, LIMS connection.

Comprises:

- Unit with 2 autoclavable dispenser tubes
- 5 litre autoclavable bottle
- BagOpen® sample bag holder

Accessories:

Barcode reader, printer, booster kit

(adds a double pump assembly and tubing to the unit, allowing liquid to be dispensed at a higher flow rate)

Specifications:

Balance:	0.05 to 2500 g
Accuracy:	99 %
Dimensions (W x D x H):	250 x 420 x 300 mm
Languages:	F, UK, D, E, IT, JAP, CHIN

Type	Cat. No.	PK
Gravimat®, single pump	9.570 094	1
Gravimat®, double pump	9.570 095	1

Accessories for Gravimat® Gravimetric sample diluters

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Type	Cat. No.	PK
Calibrated 500g weight	9.570 003	1
Printer	9.570 004	1
Booster kit*	9.570 008	1
Barcode Reader	9.570 009	1
BagOpen® kit**	9.570 010	1
Dispensing arm for use in a laminar flow cabinet	9.570 011	1

* Dual pump assembly and tubing

**Stand and base for 100 ml bags



2 Gravimetric solvent diluters, BabyGravimat®

interscience

All the Gravimat® technology in a smaller unit: only 25 cm wide.

Ideal for use in a laminar-flow cabinet.

Available with single or dual pump.

- Fast and accurate
- Compact
- RS232 output for LIMS or printer
- Very easy to use: only 2 keys to press for a dilution

Supplied with:

a dispensing arm, 1 or 2 pumps, BagOpen®400,
2 dispensing assemblies per pump,
one pack of each BagFilter®P 400,
BagPage® Plus filter bags.

Specifications

Range:	from 0.1 g to 1000 g
Precision:	98%
Dimensions (W x L x H):	250 x 350 x 160 mm
Weight:	8 kg

Type	Cat. No.	PK
BabyGravimat® single pump	9.570 000	1
BabyGravimat® double pump	9.570 001	1

Accessories for gravimetric solvent diluter BabyGravimat®

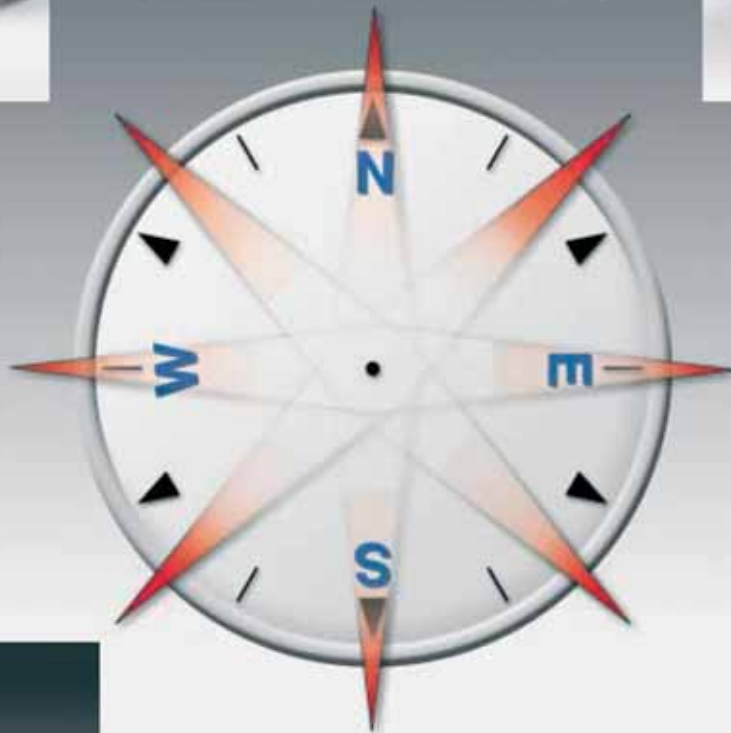
interscience

Description	Cat. No.	PK
Dispensing platform	9.570 002	1
Calibrated 500g weight	9.570 003	1
Printer	9.570 004	1
Stand for sample bags	9.570 005	1
Adjustable arm	9.570 006	1
Full dispensing assembly	9.570 007	1



Sartorius

The better way



sartorius