

### 1 Jaw Crusher, BB 51

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

Retsch

Features:

- Feed size up to 35mm (feed opening 40mm)
- Throughput/charge: single items, charges to 1000ml
- Dimensions: 360mm x 580mm x 510mm (WxDxH)
- Weight approx. 80kg
- Supply requirements: 230V, 50Hz

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



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

For rapid and gentle coarse grinding and crushing of hard, brittle and tough materials. Continuous gap adjustment with scale and zero-point adjustment for wear compensation. Excellent performance with enhanced ultimate fineness, robust construction, fitted with quick-release hopper, receiver with safety switch and casing. Standard model is supplied with manganese steel breaking jaws. Models with jaws made of stainless steel or tungsten carbide are available, details on request.

Retsch

Features:

- high throughput
- continuous gap width adjustment
- braking motor with safety switch
- ultimate fineness approx. 1 to 40mm
- easy cleaning of grinding chamber
- Supply requirements 400 V 3-ph, 50 Hz

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



### 3 Ultra Centrifugal Mill ZM 200

Extremely rapid and gentle size reduction of soft to medium-hard and fibrous materials. Ideal for grinding, e.g., chemicals, food and feeds, washing powder, plastics, fertilizers, pharmaceutical raw materials and finished products. Also suitable for cryogenic grinding.

Retsch

Features:

- Gentle on the material thanks to 2-step rotor/screen system
- New Powerdrive ensures higher performance with increased torque, even with temporary overloads
- Wide speed range, adjustable from 6000rpm to 18000rpm
- Patented cassette system for maximum sample recovery and easy cleaning
- Defined final fineness due to ring sieves sieves with aperture sizes from 0.08mm to 10mm
- For sample volumes from a few mls to 4.5L
- Comfortable safety housing with automatic cover closure
- Feed size up to 10mm
- Ultimate fineness to approx. 40µm
- Throughput/charge up to 900/4500ml (with cyclone)
- Dimensions (W x H x D) 410mm x 365mm x 515mm
- Weight: approx. 38kg
- Supply requirements 230V, 50/60Hz approx. 1300 W

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

Type	PK	Cat. No.
ZM 200	1	9.738 970





### 1 Accessories for Ultra Centrifugal Mill ZM 200

Retsch

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



### 2 Rotor Beater Mills SR 200/SR 300

Retsch

For batch and continuous coarse, fine and ultra-fine grinding, as well as for the deagglomeration of dry, soft, medium-hard, organic and inorganic materials. The SR 300 achieves a larger throughput with higher product fineness due to the higher rotor speed and drive capacity than the SR 200. Grinding and sieve inserts are easily interchangeable.

#### Specifications:

- Feed size up to 15mm
- Ultimate fineness: < 0.08mm
- Supply requirements: 400V, 50Hz 3-ph.

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

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

### Accessories for Rotor Beater Mills SR 200/SR 300

Retsch

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

## 1 Cross Beater Mill SK 100

For simple, rapid grinding of medium-hard and brittle materials, with batchwise or continuous operation. Versatile use due to large selection of accessories. Central locking device and motor brake ensure excellent operating safety.

Retsch

Specifications:

- Feed size: up to 15mm
- Ultimate fineness: approx. 0.1mm
- External dimensions (WxDxH): 560 x 700 x 1150mm (inc. base stand)
- Weight approx.: 54kg
- Supply requirements: 400V, 50Hz 3-ph.

Supplied with: cross beater mill with cross beater, impact plates, filter tubing for 5L receiver. Receiver and underframe, please order separately. Alternative power supply versions are available, details on request. Accessory base frame kit also available, details on request.

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



## Accessories for Cross Beater Mill SK 100

Retsch

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

## 2 Cutting Mill SM 100/200/300

**NEW!**

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

Retsch

Features:

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

Supplied with:

**SM 100** with 5L collecting receptacle. Please order rotor, hopper and bottom sieve and base frame (option) separately.  
**SM 200/SM 300** with 5L collecting receptacle, base frame. Please order rotor, hopper and bottom sieve separately.



### Specifications

### SM 100/200/300

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

Type	Dimensions (W x D x H) mm	Weight kg	PK	Cat. No.
SM 100	582 x 700 x 1675	73	1	9.739 069
SM 200	576 x 760 x 1675	90	1	9.739 067
SM 300	795 x 765 x 1691	160	1	9.739 083

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



### 1 Rotors and Receptacles SM 100/200/300

**NEW!**

Retsch

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

### Hoppers for Cutting Mill SM 100

**NEW!**

Retsch

Description	PK	Cat. No.
Base frame with wheels	1	7.900 426
Standard funnel for cutting mill	1	7.900 428
Long stock hopper	1	9.739 070



### 2 Hoppers for Cutting Mill SM 200/300

**NEW!**

Retsch

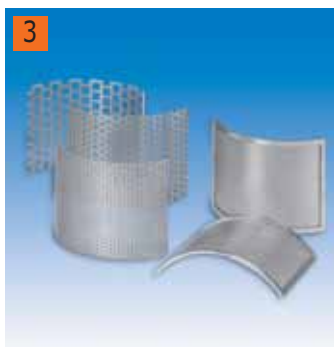
Description	PK	Cat. No.
Universal hopper with plastic plunger	1	9.739 071
Long stock hopper with wooden plunger	1	9.739 072

### Cyclone-suction-combination for cutting mill SM 200/300

**NEW!**

Retsch

Description	PK	Cat. No.
Cyclone-suction-combination incl. vacuum cleaner 230V/50Hz, 500ml sample bottle	1	9.739 602
Holder for use of sample bottles 1L / 2L / 5L	1	9.739 603
Sample bottle 1L	1	9.739 604
Sample bottle 2L	1	9.739 605
Sample bottle 5L	1	9.739 606



### 3 Bottom sieves for cutting mill SM 100/200/300

Retsch

Description	Aperture size mm	PK	Cat. No.
Conidur holes	0.25	1	9.738 854
Conidur holes	0.50	1	9.738 855
Conidur holes	0.75	1	9.738 856
Conidur holes	1.00	1	9.738 857
Conidur holes	1.50	1	9.738 858
Conidur holes	2.00	1	9.738 859
Square holes	4.00	1	9.738 815
Square holes	6.00	1	9.738 816
Square holes	8.00	1	9.738 817
Square holes	10.00	1	9.738 818
Square holes	20.00	1	9.739 055

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



Retsch

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

#### Features:

- Very fast and reproducible grinding and homogenisation of foodstuffs
- Speed-controlled industrial motor
- Autoclaveable grinding tools
- For sample volumes up to 4.5L (GM 300)
- Digital display of grinding time and speed
- Interval operation possible
- Gravity lid for automatic adjustment of grinding chamber volume
- 10 parameter combinations can be stored (GM 300)
- Electrical supply data: different voltages, Power connection: 1-phase

#### Supplied with:

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

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



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

### Accessories for Knife Mill GM 200



Retsch

Description	PK	Cat. No.
Grinding container 1 litre plastic, autoclavable	1	9.738 510
Grinding container of PP, 1L	1	9.739 213
Grinding container of glass, 1L	1	9.739 208
Grinding container of stainless steel, 1L	1	9.739 248
Standard lid of PP for grinding container of autoclavable plastic, PP, glass or steel	1	7.930 430
PP standard lid 1L for glass, steel and plastic containers	1	9.739 214
Reduction lid of PP for volume reduction to 0.5L for grinding container of autoclavable plastic or PP	1	9.739 222
Gravity lid PP for grinding container of autoclavable plastic and PP	1	9.739 210
Gravity lid of PP with overflow channels for grinding container of autoclavable plastic and PP	1	9.739 218
Gravity lid of PP for grinding container of glass or steel	1	9.739 211
Gravity lid of PP with overflow channels for grinding container of glass or steel	1	9.739 209
Scraper	1	9.739 212
Knife of stainless steel	1	9.739 215
Knife of pure titanium for heavy-metal free grinding	1	9.739 059

### Accessories for Knife Mill GM 300



Retsch

Description	PK	Cat. No.
Cutting container of plastic, transparent, autoclavable and scratch-resistant, 5L, including knife holder	1	9.738 501
Cutting container of plastic, transparent, autoclavable and scratch-resistant, 5L, without knife holder	1	9.738 502
Cutting container of stainless steel, autoclavable, 5L, including knife holder	1	9.738 503
Cutting container of stainless steel, autoclavable, 5L, without knife holder	1	9.738 504
Standard lid of plastic, transparent, autoclavable and scratch-resistant	1	9.738 505
Gravity lid of plastic, autoclavable and scratch-resistant	1	9.738 506
Gravity lid of plastic, with overflow channels, autoclavable and scratch-resistant	1	9.738 507
Standard knife made of stainless steel, autoclavable	1	9.738 508
Scraper	1	9.738 509



### 1 Disc Mill DM 200

The DM 200 disc mills are mainly used for preliminary and fine grinding of medium-hard and hard-brittle substances in batches.

Retsch

Grinding discs are available in 4 different materials.

Specifications:

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

Supplied with: disc mill DM 200 without grinding assembly.

**Please order grinding assembly separately.**

Type	PK	Cat. No.
DM 200	1	9.739 030

### Accessories for Disc Mill DM 200

Retsch

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



### 2 Mortar Grinder RM 200

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

Retsch

**Please order mortar and pestle separately.**

Specifications

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

Type	PK	Cat. No.
RM 200	1	9.738 170

### Accessories for Mortar Grinder RM 200

Retsch

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

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



## 1 Mixer Mills MM 200/400

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

Retsch



Features:

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

Accessories for cryogenic grinding available on request.

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

**Specifications**

Feed size*	
MM 200:	up to 6mm
MM 400:	up to 8mm
Ultimate fineness*	
MM 200:	< 10µm
MM 400:	< 5µm
Charge	
MM 200:	max. 2 x 10ml
MM 400:	max. 2 x 20ml
Digital preselection of vibrational frequency	
MM 200:	3 to 25Hz (180 to 1500rpm.)
MM 400:	3 to 30Hz (180 to 1500rpm.)
Power supply:	100 - 240V 50/60Hz

\*depending on feed material

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

## 2 Mixer Mill CryoMill

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

Retsch



Features:

- fast, efficient cryogenic grinding and homogenization at -196°C
- perfect for preparation of temperature-sensitive samples and plastics
- safe and convenient thanks to an integrated cooling system with Autofill
- programmable cooling cycles, digital parameter setting
- easy to operate and clean
- 1 grinding station

**Specifications**

Feed size	up to 8mm
Ultimate fineness	< 5µm
Charge	max. 1 x 20ml
Adjustable frequency range	3 to 25Hz (180 to 1500rpm.)
Size (W x H x D)	385 x 370 x 570mm
Weight	46kg
Power supply:	100 - 240V, 50/60Hz

Type	PK	Cat. No.
CryoMill	1	9.739 280

Please order Autofill, grinding jars and grinding balls separately.



### 1 Grinding Jars for Mixer Mill MM 200

Retsch

Material	Capacity ml	PK	Cat. No.
Stainless steel	1.5ml	1	9.738 823
Stainless steel	5ml	1	9.738 829
Stainless steel	10ml	1	9.738 835
Stainless steel	25ml	1	9.738 839
Agate	5ml	1	9.738 827
Agate	10ml	1	9.738 833

Grinding jars made of hardened steel, tungsten carbide, zirconium oxide and PE-HD are available on request.



### 2 Grinding Jars for Mixer Mill MM 400

Retsch

With screw cap.

Advantages:

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

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

### Grinding Jars for CryoMill

**NEW!**

Retsch

Material	Capacity ml	PK	Cat. No.
Stainless steel (to be used with adapter)	5	1	9.739 281
Stainless steel	25	1	9.739 282
Stainless steel	35	1	9.739 283
Stainless steel	50	1	9.739 284
Hardened steel (to be used with adapter)	5	1	9.739 287
Hardened steel	25	1	9.739 288
Hardened steel	35	1	9.739 289
Hardened steel	50	1	9.739 290
PTFE	25	1	9.739 291



### 3 Accessories for Mixer Mill, CryoMill

**NEW!**

Retsch

Type	PK	Cat. No.
Autofill with LN <sub>2</sub> container, 10L	1	9.739 285
Autofill with LN <sub>2</sub> container, 50L	1	9.739 292
Adapter for use of 2/4 grinding jars, 5ml stainless steel	1	9.739 286
Adapter for use of 2/4 reaction tubes, 2.0ml	1	9.739 297
Reaction tubes, 2.0ml	1000	9.739 298



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

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

**Grinding balls for Mixer Mill MM 200/MM 400/CryoMill**

Retsch

Material	Dia. mm	PK	Cat. No.
Zirconium oxide	12	1	9.738 846
Zirconium oxide	15	1	9.738 405
Zirconium oxide	20	1	9.738 847
Zirconium oxide	25	1	9.738 401
Hardened steel	15	1	9.738 407
Stainless steel	5	1	9.738 870
Stainless steel	7	1	9.738 871
Stainless steel	10	1	9.738 872
Stainless steel	12	1	9.738 873
Stainless steel	15	1	9.738 408
Stainless steel	20	1	9.738 387
Stainless steel	25	1	9.738 403
Tungsten carbide	10	1	9.738 878
Tungsten carbide	12	1	9.738 879
Tungsten carbide	15	1	9.738 414
PTFE with steel core	15	1	9.738 420
PTFE with steel core	20	1	9.738 888
Agate	5	1	9.738 860
Agate	7	1	9.738 861
Agate	9	1	9.738 862
Agate	12	1	9.738 863

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

Retsch

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

**Features:**

- extremely high ultimate fineness down to submicron range
- 1, 2 or 4 grinding stations
- grinding jar volumes from 12ml to 500ml
- suitable for long-term trials and continuous use
- programmable starting time
- power failure back-up ensures storage of remaining grinding time
- reproducible results due to digital parameter setting
- 10 parameter combinations can be stored
- single button operation with graphic display
- automatic grinding chamber ventilation for cooling the grinding jars
- grinding jars in 7 sizes and 6 different materials available

Supplied with: Planetary Ball Mill only. Grinding jars and grinding balls have to be ordered separately. The PM100 CM is a Planetary Ball Mill with a speed ratio of 1:-1. Size reduction is not so much achieved by impact but by pressure and friction which is more gentle on the material.

**Specifications**

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



Type	Grinding stations	Grinding jars	Feed size up to	Maximum Throughput/ Charge	Weight	PK	Cat. No.
		ml	mm		kg		
PM 100	1	12 to 500	up to 10	up to 220 ml	80.00	1	9.739 270
PM 100 CM	1	12 to 500	up to 10	up to 220 ml	80.00	1	9.739 275
PM 200	2	12 to 125	up to 4	up to 2 x 50 ml	72.00	1	9.739 271
PM 400	4	12 to 500 ml	up to 10	up to 8 x 20 ml	285.00	1	9.739 274

Please order grinding jars and grinding balls separately.



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

Retsch

Material	Capacity ml	PK	Cat. No.
Hardened steel	50	1	9.738 320
Hardened steel	125	1	9.738 339
Hardened steell*	250	1	9.738 216
Hardened steel*	500	1	9.738 222
Stainless steel	50	1	9.738 321
Stainless steel	125	1	9.738 340
Stainless steel*	250	1	9.738 217
Stainless steel*	500	1	9.738 223
Tungsten carbide	50	1	9.738 311
Tungsten carbide	125	1	9.738 338
Tungsten carbide*	250	1	9.738 218
Agate	50	1	9.738 328
Agate	125	1	9.738 345
Agate*	250	1	9.738 219
Agate*	500	1	9.738 224
Sintered aluminium oxide	50	1	9.738 327
Sintered aluminium oxide	125	1	9.738 344
Sintered aluminium oxide*	250	1	9.738 220
Sintered aluminium oxide*	500	1	9.738 226
Zirconium oxide	50	1	9.738 325
Zirconium oxide	125	1	9.738 342
Zirconium oxide*	250	1	9.738 221
Zirconium oxide*	500	1	9.738 227

\*not suitable for PM 200.  
Further grinding jars on request

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

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



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

Retsch

Material	Dia. mm	PK	Cat. No.
Agate	10	1	9.738 383
Agate	20	1	9.738 388
Agate	30	1	9.738 393
Agate	40	1	9.738 398
Sintered aluminium oxide	10	1	9.738 380
Sintered aluminium oxide	20	1	9.738 385
Sintered aluminium oxide	30	1	9.738 390
Sintered aluminium oxide	40	1	9.738 395
Hardened steel	10	1	9.738 381
Hardened steel	20	1	9.738 386
Hardened steel	30	1	9.738 391
Hardened steel	40	1	9.738 396
Stainless steel	10	1	9.738 382
Stainless steel	20	1	9.738 387
Stainless steel	30	1	9.738 392
Stainless steel	40	1	9.738 397
Stainless steel 0.5 kg	2	1	9.738 425
Stainless steel 0.5 kg	3	1	9.738 426
Zirconium oxide	10	1	9.738 419
Zirconium oxide	20	1	9.738 847
Zirconium oxide	30	1	9.738 417
Zirconium oxide	40	1	9.738 418
Zirconium oxide, 0.5 kg	2	1	9.738 427
Zirconium oxide, 0.5 kg	3	1	9.738 428
Tungsten carbide	10	1	9.738 384
Tungsten carbide	20	1	9.738 389
Tungsten carbide	30	1	9.738 394
Tungsten carbide	40	1	9.738 399

### 1 Jaw crushers PULVERISETTE 1 (2 Models)

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

Fritsch

#### Equipment Model I/II:

With crushing jaws and lateral support walls made of tempered steel.

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



	<b>Model I/Model II</b>
Max. feed size:	approx. 60mm/approx. 95mm
Throughput:	up to 140kg/h/up to 200kg/h
Gap widths (final fineness):	1 to 15mm/1 to 15mm
Supply requirements:	400V/3~, 50-60Hz/400V/3~, 50-60Hz
Dimensions (WxDxH):	400 x 800 x 800mm/400 x 800 x 800mm
Net weight:	177kg/205kg

Type	Rating W	PK	Cat. No.
Jaw Crusher PULVERISETTE 1 model I	1450	1	9.519 213
Jaw Crusher PULVERISETTE 1 model II	2780	1	9.519 223

### 2 Disk mill PULVERISETTE 13

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

Fritsch



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

Type	PK	Cat. No.
Disk mill PULVERISETTE 13	1	9.739 001

Instrument also available in other voltages.  
Fixed and movable grinding disks must be ordered additionally.

### Accessories for disk mill PULVERISETTE 13

Fritsch

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

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

We can supply this  
manufacturer's  
whole  
product range !





### 1 Mortar grinder PULVERISETTE 2

Ideal for universal fine grinding of hard-brittle to soft samples, dry or in suspension, as well as for preparing and homogenising pastes and creams on a laboratory scale. The PULVERISETTE 2 is an essential instrument in the chemical/pharmaceutical as well as in food processing laboratories. The Mortar grinder is easy to clean ensures reproducible and precise grinding results, due to precise adjustment and pestle pressure readout. Also working with liquid nitrogen for cooling/embrittlement is no problem.

Fritsch

Max. feed size:	8mm
Max. sample quantity:	30 to 150ml
Final fineness:	10 to 20µm
Supply requirements:	100-120/200-240V/1~, 50-60Hz, 250W
Dimensions (WxDxH):	310 x 460 x 410mm
Net weight:	24kg

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

Mortar and pestle must be ordered additionally.

### Accessories for mortar grinder PULVERISETTE 2

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

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



### 2 Planetary ball mills PULVERISETTE 5/6 classic line

Ideal for fast, loss-free fine grinding of hard, medium-hard, brittle and fibrous materials, dry or in suspension. Sample can be processed from a few milligrams to several kilograms at a wide range of fineness levels down to less than 1µm. They are especially easy to operate and fast and easy to clean. They are suitable for continuous, heavy duty usage and guarantee safe clamping of the grinding bowls. Matching grinding parts of 8 different materials are available to provide maximum protection against undesired contamination. In addition to size-reduction, Planetary Ball Mills can also be used for mixing and homogenising of emulsions and pastes or for mechanical alloying and activation. Example areas: geology and mineralogy, sample preparation for analysis, ceramics, chemistry, biology, pharmaceuticals, metallurgy and much more.

Fritsch

#### Features:

- Extremely high rotational speeds of the main disk for particularly high final finenesses
- Very fast, uniform and reproducible size reduction
- Loss-free grinding also in suspensions, due to a seal ring in the grinding bowl
- Reproducible grinding results due to controlled drive and programmable electronic system
- Programmable interval-, break-times and reversing unit
- RS232 interface for data transfer of process parameters (validation)
- Microprocessor control electronic system and precise digital display of all functions (also of rotational speed)

FRITSCH also offers a revolutionary Planetary Mill Generation *premium line* generation, worldwide unique in operation, performance and safety, a new reference class, please have a look at Planetary Micro Mill PULVERISETTE 7 *premium line*.

Max. feed size:	10mm
Final fineness:	< 1µm
Grinding bowl sizes:	80, 250, 500ml
Supply requirements:	100-120/200-240V/1~, 50-60Hz
Dimensions (WxDxH):	370 x 530 x 500mm PULVERISETTE 6 classic line 580 x 670 x 570mm PULVERISETTE 5 classic line

Type	Grinding stations	Rotation speed rpm	Sample volume ml	Weight kg	PK	Cat. No.
Planetary Mono Mill PULVERISETTE 6 classic line	1	100-650	225	63	1	9.738 300
Planetary Mill PULVERISETTE 5 classic line model I	4	50-400	900	120	1	9.738 404
Planetary Mill PULVERISETTE 5 classic line model II	2	50-400	450	100	1	9.738 402

Grinding bowls and grinding balls must be ordered additionally.

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



Fritsch

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

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

\*\* Grinding bowl in a steel casing.

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



## 2 Grinding balls for grinding balls PULVERISETTE 5/6 classic line



Fritsch

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

Grinding bowls are also available in agate and silicon nitride.

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



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

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



### 1 Planetary micro mill PULVERISETTE 7 premium line

**NEW!**

Fritsch

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

FASTER, SIMPLER AND SAFER THAN EVER.

#### Features:

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

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

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

Grinding bowls and grinding balls must be ordered additionally.



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

**NEW!**

Fritsch

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

\* Grinding bowl in a steel casing.

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



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

**NEW!**

Fritsch

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

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

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

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

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

**1** Mini mill PULVERISETTE 23

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

Fritsch

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



Type	PK	Cat. No.
Mini Mill PULVERISETTE 23 <small>Grinding bowls and grinding balls must be ordered additionally.</small>	1	9.739 345

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

Grinding bowl Useful capacity (sample volume) Ball diameter	5ml 0.01 - 1ml	10ml 0.2 - 1ml	15ml 0.5 - 5ml
5mm	20	30	60
10mm	1	3	5
15mm	-	1	2

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

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

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

Fritsch





### 1 Variable speed rotor mill PULVERISETTE 14

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

Fritsch

Max. feed size:	10mm
Throughput:	0.05 to 5L/h
Sieve inserts:	0.08 to 6mm
Final fineness (d <sub>50</sub> ):	40µm
Rotor speed:	6.000 to 20.000rpm
Supply requirements:	100-120/200-240V/1~, 50-60Hz, 1150W
Dimensions (WxDxH):	310 x 480 x 470mm
Net weight:	23kg

Type	PK	Cat. No.
Variable speed rotor mill PULVERISETTE 14	1	9.738 281

Impact rotor and sieve ring must be ordered additionally.



### 2 Accessories for variable speed rotor mill PULVERISETTE 14 made of stainless steel

Fritsch

Type	PK	Cat. No.
Impact rotor with 8 fins	1	9.738 282
Impact rotor with 12 fins	1	9.738 283
Impact rotor with 24 fins	1	9.738 284
Sieve rings, trapezoidal holes 0.08mm	1	9.738 286
Sieve rings, trapezoidal holes 0.12mm	1	9.738 287
Sieve rings, trapezoidal holes 0.2mm	1	9.738 288
Sieve rings, trapezoidal holes 0.5mm	1	9.738 289
Sieve rings, trapezoidal holes 0.75mm	1	9.738 285
Sieve rings, trapezoidal holes 1mm	1	9.738 290
Sieve rings, trapezoidal holes 1.5mm	1	9.738 278
Sieve rings, trapezoidal holes 2mm	1	9.738 279
Sieve rings, round holes 1mm	1	9.738 291
Sieve rings, round holes 2mm	1	9.738 292
Sieve rings, round holes 4mm	1	9.738 293
Sieve rings, round holes 6mm	1	9.738 294
Conversion kit for large quantities	1	9.738 329
Vibratory feeder LABORETTE 24 for continuous feeding	1	9.738 299
Stand for vibratory feeder LABORETTE 24	1	9.738 298

Rotors and sieve rings are also available in others designs and materials. An extensive accessory programme with impact bar, pin insert, sample exhauster with cyclone separator and much more is available for your specific application.





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

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

Fritsch

Max. feed size: up to 70 x 80mm\*  
 Throughput: up to 60L/h  
 Sieve inserts: 0.25 to 6mm  
 Supply requirements: 400V/3~, 50-60Hz  
 Dimensions (WxDxH): 420 x 480 x 690mm resp. 440 x 550 x 630mm\*  
 \* depending on the instrument type



9.738 421



9.739 300

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

Instruments also available in other voltages.  
 Funnels, rotors, sieve inserts/sieve cassettes and collecting vessels must be ordered separately.

## 3 Accessories for cutting mill PULVERISETTE 15

**NEW!**

Fritsch

Type	PK	Cat. No.
Funnel for long and bulk solids	1	7.900 140
Cutting rotor made of tool steel	1	9.738 424
Sieve insert, trapezoidal holes 0.25mm	1	9.738 432
Sieve insert, trapezoidal holes 0.5mm	1	9.738 433
Sieve insert, trapezoidal holes 1mm	1	9.738 435
Sieve insert, trapezoidal holes 2mm	1	9.738 437
Sieve insert, square holes 4mm	1	9.738 441
Sieve insert, square holes 6mm	1	9.738 442
Collecting vessel, 3.5L	1	6.231 269
Collecting vessel, 60L with filter hose	1	9.738 449
Stand	1	9.738 429

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



## 4 Accessories for universal cutting mill PULVERISETTE 19

Fritsch

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

Alternative funnels, cutting rotors in other materials and designs, sieve cassettes in alternative meshes and sample exhauster with cyclone separator are available on request.





### 1 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: 15mins. Supplied with 1.0mm/1.5mm/2.0mm mesh sieves, rack with 12 receiver tubes and cleaning instruments.

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

Type	PK	Cat. No.
Culatti	1	9.737 840



### 2 Analytical mill A 10 basic

**NEW!**

IKA

Suitable for low-loss dry grinding of soft, hard and brittle substances

- With a built-in cooling chamber
- Removable, easy-to-clean, high-grade steel chamber
- 3 interchangeable cutters available
- Electronic overload protection

#### Specifications

Motor rating input/output: 180/80W  
 Speed: 20000rpm  
 Chamber vol.: 50ml  
 Power-on time ON/OFF: 5/10min  
 Auto power off: yes  
 Tangential speed: 57m/sec.  
 Max. sample granule size: 6mm  
 Dimensions (WxDxH): 120 x 105 x 225mm  
 Weight: 2.2kg  
 Protection class DIN EN 60529: IP 21  
 Supply requirements: 230V 50/60Hz  
 Tested to DIN EN IEC 61010-1.

Type	PK	Cat. No.
A 10 basic	1	9.737 800



### 3 Accessories for Grinding mill, A10 basic

**NEW!**

IKA

#### A 14 Beater, stainless steel

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

#### A 15 Beater, hard metal

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

#### A 17 Cutter, stainless steel

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

#### A 18 Grinding chamber reduction

For small grinding volumes.

Type	Description	PK	Cat. No.
A14	Beater, stainless steel*	1	9.737 811
A15	Beater, hard metal	1	9.737 812
A17	Cutter, stainless steel	1	9.737 814
A 18	Grinding chamber reduction*	1	7.017 783

\*included in delivery

**1 Grinding mill, A11 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: 28000rpm.
- supplied with 80ml standard grinding container and stainless steel beater.

IKA

1

**Specifications**

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

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

Optional accessories: A 11.4 Grinding chamber (250ml), A 11.1 Spare beater, A 11.2 Cutting blade, A 11.6 Double beater, A 11.5 Spare grinding chamber, A 11.7 Funnel, A 11.3 Beater

**2 Accessories for Grinding mill, A11 basic****A 11.1 Spare beater**

For pulverising substances with a Mohs hardness up to 6.

**A 11.2 Cutter**

For pulverising soft, fibrous grinding materials.

**A 11.3 Beater, hard metal**

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

**A 11.4 Grinding container, 250ml**

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

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

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

**A 11.6 Double beater**

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

**A 11.7 Funnel**

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

IKA

2



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

\*included in delivery



### 1 Universal mill M20

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

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

**Specifications:**

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

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

Optional accessories: M 21 Spare cutter, stainless steel, M 20.1 Grinding chamber, M 23 Star-shaped cutter, M 22 Hard metal cutter



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

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

\*included in delivery



### 3 Micro fine mills, Culatti, accessories

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

Please order sieve inserts separately.

We can supply this  
**manufacturer's**  
 whole  
**product range !**



## 2 | 3 Drive unit MF 10 basic

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

### Specifications

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

Type	Description	PK	Cat. No.
MF 10 basic	Drive unit without head	1	9.737 780
Optional accessories: MF 10.1 Cutting-grinding head, MF 10.2 Impact grinding head, MF Sieves			



## 4 | 5 Accessories for microfine grinder MF10 basic, for in-line processes

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



**1**


### 1 Laboratory blender GT 95

**NEW!**

Chemical-resistant design.

**Consisting of:**

chromium plated, zinc die cast motor unit, 2000ml polycarbonate container with handle, safety lid made of polyurethan.

**Applications:**

- for emulsifying; homogenising; grinding; blending; chopping; suspending
- for mixing viscous products and pastes
- for blending and grinding pigment cakes; biological organs, etc.

All parts can be easily removed and can be autoclaved (individually or fitted ready for use) at 120°C for 20 mins. The mixer is therefore always ready for use and requires little space.

**Safety features:**

- The motor only runs when the lid is properly fitted
- The motor stops automatically when the lid is removed
- Conforms to CE, complies with the latest EU machinery safety guidelines

**Technical data:**

High grade, chromium-plated zinc die cast motor housing, is easy to clean, robust and does not age. The drive motor has high temperature stability and stepless control between 500rpm and 17000rpm. The motor is controlled electronically with an integral switching circuit. It operates separately from the stepless speed control of the soft-start motor and enables speed stabilisation at full power, i.e. the motor can work at full power over the entire speed range.

Motor output: 800W  
 Weight (without container): 5.5kg  
 Power: 230V 50/60Hz

Type	PK	Cat. No.
GT 95 incl. 2000ml polycarbonate container	1	9.571 300

**2**


### 2 Laboratory blender GT 95, accessories

**NEW!**

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

**Attention:** The glass containers are only to use with protective lid. Please order separately.

Description	PK	Cat. No.
2l stainless steel container HighPower, with lid and knife kit	1	7.631 205
2l polycarbonate container HighPower, with lid and knife kit	1	9.571 308
125ml glass container without baffles, without lid	1	9.571 301
250ml glass container without baffles, without lid	1	9.571 302
500ml glass container without baffles, without lid	1	9.571 303
1000ml glass container without baffles, without lid	1	9.571 304
1000ml glass container with baffles, without lid	1	9.571 305
Plexiglas protective lid incl. hold down weight for 125-1000ml containers	1	9.571 310

**3**


### 3 LLG-Mortars only, porcelain, inside rough

**NEW!**

DIN 12906

Capacity	Height	Ext. diam.	PK	Cat. No.
ml	mm	mm		
50	42	81	1	6.227 149
110	50	100	1	6.232 577
25	32	60	1	9.164 410
75	46	91	1	9.164 411
220	64	125	1	9.164 412
325	71	144	1	9.164 413

### 1 LLG- Pestle only, porcelain, rough



Head dia. mm	Length mm	PK	Cat. No.
15	52	1	6.227 150
26	103	1	6.232 574
23	84	1	9.164 420
37	132	1	9.164 421
44	158	1	9.164 422



### 2 Mortars only, porcelain

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

Haldenwanger

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



### 3 Pestles only, porcelain

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

Haldenwanger

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

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



### 4 Mortar with pestle, Porcelain

Unglazed, with wooden handled pestle.

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



### 5 Mortars and pestles, MF

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

BRAND

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



### 6 Mortars and pestles, Agate

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

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

