BM6 pro

Item No.	Weight (Kg.)	
Planetary Ball Mill BM6 pro		
24.873.0001	80.00	BM6 pro (230V 50/60Hz with 1 grinding station
Grinding Jars		
Agate		
01.864.0005	0.70	50ml
01.864.0006	1.20	80ml
01.864.0007	2.60	125ml
01.864.0008	3.50	250ml
01.864.0009	3.40	500ml
Zircoium Oxide		
01.864.0012	1.05	50ml
01.864.0013	3.30	125ml
01.864.0014	4.60	250ml
01.864.0015	6.50	500ml
Tungsten Carbide		
01.864.0016	1.85	50ml
01.864.0017	2.30	80ml
01.864.0018	2.70	125ml
01.864.0019	5.10	250ml
Sintered Aluminium Oxide		
01.864.0020	0.85	50ml
01.864.0021	1.80	125ml
01.864.0022	3.70	250ml
01.864.0023	5.50	500ml
Silicon Nitride		
01.864.0024	1.70	125ml
01.864.0025	3.40	250ml
01.864.0026	4.70	500ml
Accessories		
01.864.0034	0.01	O-ring for grinding jars 50ml (10pcs/kit)
01.864.0035	1.00	Safety closure device for jars 500ml
01.864.0036	1.00	Safety closure device for jars 250ml
01.864.0037	0.80	Safety closure device for jars 125ml
01.864.0038	0.80	Safety closure device for jars 80ml
01.864.0039	0.80	Aeration lid for jars, 250ml Stainless Steel
01.864.0040	1.60	Aeration lid for jars, 250ml Zircoium Oxide
01.864.0041	1.60	Aeration lid for jars, 250ml Tungsten Carbide
01.864.0042	1.60	Aeration lid for jars, 500ml Stainless Steel
01.864.0043	1.60	Aeration lid for jars, 500ml Zircoium Oxide
01.864.0044	0.01	O-ring for grinding jars 125ml (10pcs/kit)
01.864.0045	0.01	O-ring for SS & TC jars, 250ml (10pcs/kit)
01.864.0046	0.01	O-ring for AG, SA & ZO jars, 250ml (10pcs/kit)
01.864.0047	0.01	O-ring for grinding jars Steel 500ml (10pcs/kit)
01.864.0048	0.01	O-ring for AG, SA & ZI jars, 500ml (14pcs/kit)

MG200

Item No.	Weight (Kg.)	
Mortar Grinder MG200		
24.861.0001	34.00	MG200 (220V 50/60Hz)
Mortar Pestle		
Hardened steel		
01.861.0001	3.50	Mortar
01.861.0002	1.45	Pestle
Stainless Steel		
01.861.0003	3.20	Mortar
01.861.0004	3.90	Pestle
Tungsten Carbide		
01.861.0005	4.80	Mortar
01.861.0006	2.20	Pestle
Agate		
01.861.0007	1.60	Mortar
01.861.0008	0.60	Pestle
Sintered Aluminium Oxide		
01.861.0009	1.80	Mortar
01.861.0010	0.80	Pestle
Zinconium oxide		
01.861.0009	1.80	Mortar
01.861.0010	0.80	Pestle
Scraper		
01.861.0015	0.02	Scraper of Beech wood
01.861.0016	0.02	Scraper of Vulkollan
01.861.0017	0.02	Scraper of PTFE

This catalogue is only for reference.
Grinder reserve all the right for the final explanation.

Grinder company provide the best profession and perfect sample preparation scheme and technical support for different sample from the customer.

Our application laboratory can recommend the most suitable instrument for your requirments and process a sample free for you.

GRINDER 格瑞德曼

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GRINDER 格瑞德曼

PRODUCT BROCHURE 2017

Power Mortar Grinder

For the modern laboratory applications the MG200 has extraordinary performance, processing capacity, comfort and safety of operation.

Performance features of MG200

• Universal high performance mortar grinder used to process solid material, suitable for dry, wet & cryogenic grinding with high repeatability.

• Representative results due to digital time and speed setting.

• Precise and optimized results due to variable speed 50-130rpm.

• Meet all application tasks due to a wide selection of grinding tools for the mortar and the pestle.

• Meet all application tasks due to a wide selection of scraper materials (Vulkollan, PTFE & Beachwood).

• Possible to add sample material during the milling process via Cover inlet.

• Positioning and removal of Mortar and Pestle without tool.

• Precise and reproducible pestle setting due to scale adjustment.

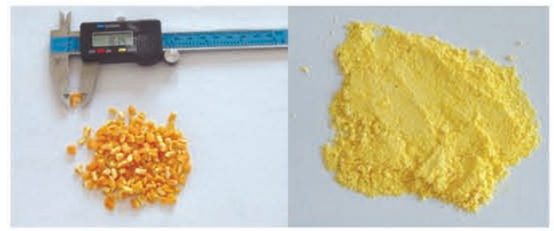
• Extremely easy cleaning.

• Option of pre-crushing for coarser materials.

Sample	Soil
Grinding set	Agate morter & pestle
Sample characteristics	Soft powder
Attention	Feed size must be less than 8mm after removal of stones and metal
Time	5min

Sample	Pharmaceutical pills
Grinding set	Stainless Steel morter & pestle
Sample characteristics	Brittle
Attention	Feed size must be less than 8mm
Time	3min

Sample	Glass
Grinding set	Stainless Steel Morter & Pestle
Sample characteristics	Hard, brittle
Attention	Feed size must be less than 8mm
Time	10min



Sample	Corn
Grinding set	Stainless Steel Morter & Pestle
Sample characteristics	Hard, oiliness
Attention	Feed size must be less than 8mm
Time	12min

Technical Information

Superior Mortar Grinder engineered to reproducibly grind and mix sample volumes from 10ml of up to 200ml.

METHOD OF OPERATION

The Mortar Grinder MG200 is used to reproducibly grind, homogenize and mix a wide range of solid materials in dry, wet or cryogenic conditions. The material to be processed falls into the pulverizing area between the Mortar and Pestle, by top feeding via the opening at the inlet cover. The material is then pulverized and mixed between the area of the Mortar inner surface and the bottom of the pestle.

In order to match the necessary breaking behavior of the sample to be prepared with the required end fineness, the MG200 is equipped with an adjustable Top Pressure Mechanism, with controlled scale, a digital variable speed setting of 50-130 rpm and a flexible scraper setting.

Only due to the combination of these 3 key adjustment features, a wide range of sample preparation tasks can be reached.

No other grinding system is easier to clean then the MG200 Mortar Grinder. When the grinding process is finished the Mortar and Pestle can be taken out by a bayonet lock method, in order to perform a quick cleaning of the grinding tools.

OPERATOR CONVENIENCE + SAFETY

Maximum grinding performance and maximum safety is important for Grinder. Due to an integrated safety switch the machine can only be started when the "Easy Lock Cover" is closed. The "Adjustment mechanism" allows simple and fast adjustment of the settings. The cover and housing of the MG200 is made from solid steel. The ergonomic design of the machine controls and the front panel ensures the user easy and simple setting of all working parameters.

GRINDING, HOMOGENIZING & TRITURATING

The Mortar Grinder is the central machine in any sample prep. laboratory of today. This system is suitable for the fine grinding of any dry substance, as well as for suspensions with different viscosities for analysis, quality control and material testing. It is perfectly suitable for the homogenization of crèmes and pastes. Typically samples with a feed size of up to 8-10mm and a total batch of up to 200 ml (volume depending on the characteristic of the samples) can be ground down to 10-20µm.

Horizontal Adjustable

Adjustsment to the Pestle position within the clearance of the mortar is by simple operation of rotating the knob.

Longitudinal Adjustable

The large handle allows longitudinal adjustment of the pestle clearance to the mortar, for consideration of the fineness depended on the pestle pressure required.

Scraper Access/view Window

Pestle and Mortar

Adjustable Scraper

The position of the scraper between the mortar and pestle is adjustable to ensure the sample can fully mix evenly during the grinding process to improve the quality of the sample preparation.

GRINDING MEDIA

- Stainless Steel
- Hardened Steel
- Tungsten Carbide
- Agate
- Sintered Alumina
- Hard Porcelain
- Zirconium Oxide

Available in 7 different materials

GUIDE - RECOMMENDED GRINDING SET

We recommend always use the same material composition for Mortar and Pestle | Do not mix						
		Recommendations				
Material of Grinding set	Hardness	Wear behaviour	Type of sample characteristics	Dry	Wet	Cryogenic
Stainless Steel	48-52HRC	Good	Medium-hard, brittle sample	yes	yes	yes
Hardened teel	60HRC	Good	Medium-hard, brittle sample	yes	no	no
Tungsten Carbide	1180-1280HV30	Very Good	Medium-hard, brittle sample	yes	yes	yes
Agate	6.5-7.0Mohs	Good	Soft, Medium-hard	yes	yes	no
Sintered Alumina	1750HV	Normal	Soft, Medium-hard	yes	yes	no
Hard Porcelain		Normal	Medium-hard, brittle sample	yes	yes	no
Zirconium oxide	1200HV	Good	Medium-hard, brittle sample	yes	yes	no

- Cocoa Beans / Chocolate Paste etc..
- Food and Animal food
- Maize, Beans
- Creams, Emulsions,
- Soil samples
- Minerals
- Glass,
- Ceramics,
- Cement Clinker / Cement

Pharmaceutical and Homeopathic products such as Tablets, Drages, Paste, Herbs and additives.

GRINDING TECHNIQUE

- Before prepare the paste samples, first you can place the mortar and samples (cocoa) into the drying oven, heated to 40 degrees C.

- In the preperation of chemicals and pharmaceuticals, adding grinding aid can help prevent caking phenomenen.

- For some samples difficult to process such as yeast cells, adding liquid nitrogen to the sample will make it brittle and easier for grinding.

MORTAR GRINDER DATA

Technical Data	
Power supply	200-240 Volt 50/60 Hz
Motor speed	50 - 130 rpm Adjustable
Motor power	180 Watt

Transport Data	
Gross Dimensions WxDxH	app. 600 x 600 x 600 mm
Gross Weight	39 kgs
Net Dimensions WxDxH	app. 390 x 485 x 375 mm
Net Weight	34 kgs (only machine)

Features / Performance	
Working principle	Friction, pressure
Feed size maximum	8-10 mm depending on sample
Batch quantity	10-200 ml
Final fineness	10 - 20 µm
Grinding time setting	1 - 99 min. continuous. By digital display
Speed setting	50 - 130 rpm by digital display
Pressure setting	By scale adjustable
Pestle adjustment	By adjustment wheel
Scraper adjustment	By adjustment knob
Stored program	9

Planetary Ball Mill

For rapid fine crushing of soft,hard,brittle and fibrous material to end fineness <1um. It can not only perform mixing and grinding, but also meet the requirements of colloid grinding. In addition, its giant energy input can meet the technical requirements of preparing alloy with mechanical methods.

- High efficient fine grinding up to end fineness <1um.
- 50ml-500ml Grinding jars available in 6 types of material, capacity volume various from 12ml-500ml.
- Suitable for long-term trials and continuous use.
- Reproducible results due to program grinding parameters.
- Automatic direction reversal to avoid agglomerations.
- Automatic ventilation system in the Grinding chamber for cooling of grinding jar.
- Sample characteristics: soft, hard, brittle, fibrous, dry or wet sample.
- Two years warranty period.


Sample	Glass
Grinding ball	10mm and 3mm grinding ball ZrO2
Sample characteristics	Brittle and hard
Attention	Feed size must be less than 8mm after removal of stones and metal.
Time	30min.


Sample	Granite
Grinding ball	10mm ball stainless steel
Sample characteristics	Hard
Attention	Sample no more than 1/4 of total grinding jar
Time	15min


Sample	Pearl powder
Grinding ball	3mm ball ZrO2
Sample characteristics	Brittle
Attention	Add suitable liquid, ball & sample. Liquid no more than 3/4 of grinding jar.
Time	6h


Sample	Sludge
Grinding ball	10mm ball stainless steel
Sample characteristics	Hard
Attention	Sample must be dry
Time	35min

EFFICIENT, SAFE & EASY OPERATION

Efficient, maintenance-free drive is used for planetary grinders so as to guarantee the machine can maintain constant speed in continuous operation for a long time or under maximum load. During the milling, built-in high-power fans can automatically provide effective cooling for motors .Ergonomics design and it is quite comfortable and safe to operator . The intelligent safety lock not only provides various applications but also guarantee operator security. The user-friendly programming facilitates the setting of grinding start time; therefore, tests can be operated automatically without the monitoring of operators.

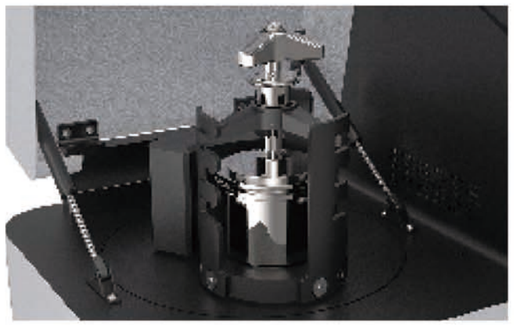
Application field:

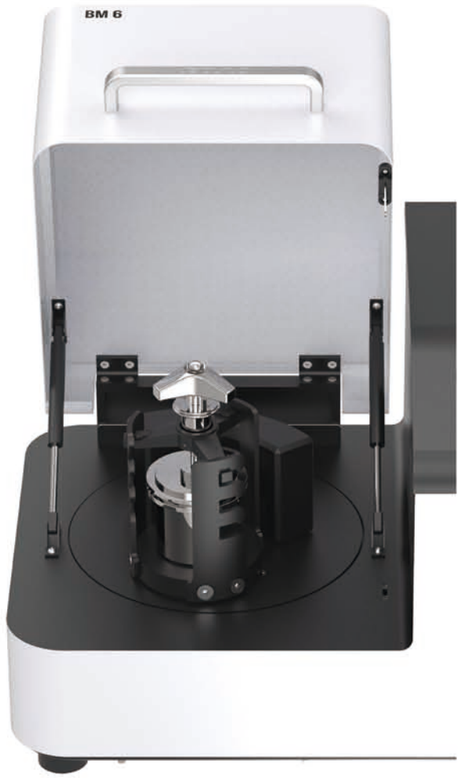
- engineering,
- electronics,
- building materials,
- agriculture,
- pharmaceuticals,
- chemical synthetic materials,
- geological,
- metallurgy,
- environment,
- resources recycling,
- glass,
- ceramics,
- biological

WORKING PRINCIPLE

Grinder Planetary Ball Mill have two superimposed movement move the grinding jars, like in a planetary system the grinding jar rotates on an orbit around the center, This rotational movements is the self-rotation of the grinding container superimposed. The result centrifugal and acting acceleration forces lead to strong grinding effects. Furthermore there are forces working according to the coriolis acceleration. The result is an intensive grinding effect between the grinding balls and the sample.

There are different rotational ratios, with a rotation ratio of 1:2 the grinding jar rotates twice during a sun wheel turn. The minus of this case indicate the opposite rotation direction.





TECHNICAL HIGHLIGHTS

The planetary ball mill can reach high fineness of grind. It can not only perform mixing and grinding, but also meet the requirements of colloid grinding. In addition, its giant energy input can meet the technical requirements of preparing alloy with mechanical methods.

The grinding parameters can be set depending on the characters of samples. The grinding jars are made of high-quality materials, and the materials options are various. With various filling combinations, the number and size of grinding balls can be set to make planetary ball mill perform personalized settings and adjustments. For specific smashing and grinding requirements we can realize repeatability for your grinding results.

When the planetary ball mill is running, very high smashing and impacting energy is generateded between the balls and the grinding jars with the effect of an extreme centrifugal force. Therefore, it can complete the grinding of samples within a short time frame.

The working principle of planetary ball mills is based on the relative rotational motion of a sun wheel and the grinding jar. Speed ratios have direct impacts on the size of energy inputs and grinding effects. We can perform customized design and production from 1:1 to 1:-3.5 depend on the requirements of our customers.

GRINDING JARS PERFORMANCE

The planetary ball mill series applies to dry grinding, and wet grinding such as colloid grinding. The grinding jars are equipped with safe closure device for gas-tight handling inside and outside the glove boxes.

Ventilation lids are mainly used for protecting the inert gases generated inside grinding jars; the airtight devices guarantee the high-level gas preassure inside the grinding jars so as to ensure that the grinding result is not affected.

Temperature and pressure measuring system

In order for better grinding and analyze of the conditions inside the grinding jars (e.g. chemical reactions, phase changes, etc.), it is necessary to acquire and record two major thermodynamic parameters: temperature and pressure.

- Safe and easy operation.
- The grinding jars are available in various kinds of materials to meet different requirements.
- The base have safe centre positioning system to ensure the grinding jar doesn't slide during the milling process.
- The O-ring can guarantee the dust -prevention
- There are easy to distinguish marks on the grinding jar with the material and the rated capacity for your convenience.
- Agate, Sintered Aluminum Oxide, Zirconium Oxide, Tungsten Carbide grinding jars have a Stainless Steel jacket.

Example Applications:

- Plant material
- Cement clinker,
- Concrete,
- Compost,
- Coatings and paint,
- Charcoal,
- Hair,
- Catalyst,
- Chemicals,
- Metal,
- Carbon fiber,
- Paper,
- Fiber products,
- Cellulose,
- Seeds
- Clay minerals,
- Coke,
- Coal,
- Glass
- Waste electronic products,
- Mineral
- Ore
- Limestone,
- Gypsum,
- Quartz
- Bones,
- Metal oxide
- Iron ore,
- Ceramics,
- Polymers,
- Bentonite,
- Pigment

GRINDING JARS GUIDE

Technical Data			Recommended grinding ball & qty.			
The Volume	Sample quantitiy	Feed size	10mm	20mm	30mm	40mm
50ml	5 - 20ml	<3mm	10pcs	2pcs	-	-
80ml	10 - 35ml	<4mm	25pcs	4pcs	-	-
125ml	15 - 50ml	<4mm	30pcs	6pcs	-	-
250ml	25 - 120ml	<6mm	60pcs	13pcs	6pcs	-
500ml	75 - 225ml	<10mm	100pcs	22pcs	9pcs	5pcs

BALL MILL DATA

Technical Data	
Power supply	220 Volt 50-60 Hz
Motor power	750Watt
Transport Data	
Gross Dimensions WxDxH	app. 900 x 800 x 700 mm
Gross Weight	120 kgs
Net Dimensions WxDxH	app. 650 x 470 x 435 mm
Net Weight	75 kgs (only machine)
Features / Performance	
Working principle	Impact, friction
Feed size maximum	Less than 10mm
Final fineness	10 - 20 µm
Grinding time setting	Hour: 0-99, Minute: 0-59
Speed ratio	1:2
Sun wheel speed	100-650rpm