Planetary Ball Mill PM 200

General Information

Planetary Ball Mills are used wherever the highest degree of fineness is required. Apart from the classical mixing and size reduction processes, the mills also meet all the technical requirements for colloidal grinding and have the energy input necessary for mechanical alloying processes. The extremely high centrifugal forces of the Planetary Ball Mills result in very high pulverization energy and therefore short grinding times.

The PM 200 is a convenient benchtop model with 2 grinding stations.

Application Examples

alloys, bentonite, bones, carbon fibres, catalysts, cellulose, cement clinker, ceramics, charcoal, chemical products, clay minerals, coal, coke, compost, concrete, electronic scrap, fibres, glass, gypsum, hair, hydroxyapatite, iron ore, kaolin, limestone, metal oxides, minerals, ores, paints and lacquers, paper, pigments, plant materials, polymers, quartz, seeds, ...

Product Advantages

- powerful and quick grinding down to nano range
- automatic grinding chamber ventilation
- 10 SOPs can be stored
- programmable starting time
- power failure backup ensures storage of remaining grinding time
- grinding with up to 37.1 x acceleration of gravity
- reproducible results due to energy and speed control
- suitable for long-term trials and continuous use
- 2 different grinding modes (dry and wet)
- measurement of energy input
- wide range of materials for contamination free grinding
- Safety Slider for safe operation
- comfortable parameter setting via display and ergonomic 1-button operation

Features

Applications	pulverizing, mixing, homogenizing, colloidal milling, mechanical alloying
Field of application	agriculture, biology, chemistry / plastics, construction materials, engineering / electronics, environment / recycling, geology / metallurgy, glass / ceramics, medicine / pharmaceuticals
Feed material	soft, hard, brittle, fibrous - dry or wet

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Size reduction principle	impact, friction
Material feed size*	< 4 mm
Final fineness*	< 1 µm, for colloidal grinding < 0.1 µm
Batch size / feed quantity*	max. 2 x 50 ml
No. of grinding stations	2
Speed ratio	1 : -2
Sun wheel speed	100 - 650 min^{-1}
Effective sun wheel diameter	157 mm
Type of grinding jars	"comfort", optional areation covers, safety closure devices
Material of grinding tools	hardened steel, stainless steel, tungsten carbide, agate, sintered aluminium oxide, zirconium oxide
Grinding jar sizes	12 ml / 25 ml / 50 ml / 80 ml / 125 ml
Setting of grinding time	digital, 00:00:01 to 99:59:59
Interval operation	yes, with direction reversal
Interval time	00:00:01 to 99:59:59
Pause time	00:00:01 to 99:59:59
Storable SOPs	10
Measurement of input energy possible	yes
Interface	RS 232 / RS 485
Drive	3-phase asynchronous motor with frequency converter
Drive power	750 W
Electrical supply data	different voltages
Power connection	1-phase
Protection code	IP 30
Power consumption	~ 1250 W (VA)
W x H x D closed	630 x 468 x 415 mm
Net weight	~ 72 kg
Documentation	Operation & Application Video
Standards	CE
Patent / Utility patent	SafetySlider (UP - DE 202008008473)

*depending on feed material and instrument configuration/settings

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Videolink

http://www.retsch.com/pm200

Function Principle

The grinding jars are arranged eccentrically on the sun wheel of the planetary ball mill. The direction of movement of the sun wheel is opposite to that of the grinding jars in the ratio 1:-2.
The grinding balls in the grinding jars are subjected to superimposed rotational movements, the so-called Coriolis forces. The difference in speeds between the balls and grinding jars produces an interaction between frictional and impact forces, which releases high dynamic energies. The interplay between these forces produces the high and very effective degree of size reduction of the planetary ball mill

Order data

Planetary Ball Mill PM 200

(please order grinding jars and balls separately)

20.640.0001	PM 200, 230 V, 50/60 Hz, with 2 grinding stations, speed ratio 1 : -2

other electrical versions available for the same price

Accessories PM 100 / PM 200 / PM 400

02.728.0048	Counter wrench
99.200.0008	IQ/OQ Documentation for PM 200

Grinding jars “comfort” PM 100 / PM 200 / PM 400

Hardened steel

01.462.0145	50 ml
01.462.0144	125 ml

Stainless steel

01.462.0239	12 ml
01.462.0240	25 ml

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01.462.0149	50 ml
01.462.0321	80 ml
01.462.0228	500 ml

Tungsten carbide

01.462.0156	50 ml
01.462.0326	80 ml
01.462.0222	250 ml

Agate

01.462.0139	50 ml
01.462.0197	80 ml
01.462.0136	125 ml

Sintered aluminum oxide

01.462.0153	50 ml
01.462.0152	125 ml

Zirconium oxide

01.462.0188	50 ml
01.462.0187	125 ml

Accessories for grinding jars “comfort”

22.107.0010	Aeration lid for grinding jar “comfort” 500 ml, zirconium oxide
22.867.0002	Safety closure device for grinding jars “comfort” 50 ml
22.867.0007	Safety closure device for grinding jars “comfort” 80 ml

O-rings for grinding jars “comfort”

05.114.0057	O-ring for grinding jars “comfort” 50 ml, 1 piece
05.114.0056	O-ring for grinding jars “comfort” 125 ml, 1 piece

Grinding balls PM 100 / PM 200 / PM 400

Hardened steel

05.368.0029	5 mm Ø
05.368.0059	10 mm Ø
05.368.0108	15 mm Ø
05.368.0033	20 mm Ø

Stainless steel

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22.455.0010	2 mm Ø, 0.5 kg (approx. 110 ml)
22.455.0011	3 mm Ø, 0.5 kg (approx. 120 ml)
22.455.0003	5 mm Ø, approx. 200 pcs. (approx. 25 ml)
05.368.0034	5 mm Ø
05.368.0063	10 mm Ø
05.368.0109	15 mm Ø
05.368.0062	20 mm Ø

Tungsten carbide

22.455.0004	5 mm Ø, approx. 200 pcs. (approx. 25 ml)
05.368.0038	5 mm Ø
05.368.0071	10 mm Ø
05.368.0110	15 mm Ø
05.368.0070	20 mm Ø

Agate

05.368.0024	5 mm Ø
05.368.0067	10 mm Ø
05.368.0111	15 mm Ø
05.368.0028	20 mm Ø

Sintered aluminum oxide

05.368.0019	5 mm Ø
05.368.0021	10 mm Ø
05.368.0112	15 mm Ø
05.368.0054	20 mm Ø

Zirconium oxide

32.368.0005	0.1 mm Ø, 0.5 kg (approx. 135 ml)
32.368.0003	0.5 mm Ø, 0.5 kg (approx. 135 ml)
32.368.0004	1 mm Ø, 0.5 kg (approx. 135 ml)
05.368.0089	2 mm Ø, 0.5 kg (approx. 135 ml)
05.368.0090	3 mm Ø, 0.5 kg (approx. 140 ml)
22.455.0009	5 mm Ø, approx. 200 pcs. (approx. 25 ml)
05.368.0094	10 mm Ø
05.368.0113	15 mm Ø