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 a planetary ball mill result in very high pulverization energy and therefore short grinding times.

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

You may also be interested in the High Energy Ball Mill Emax, an entirely new type of mill for high energy input. The unique combination of high friction and impact results in extremely fine particles within the shortest amount of time.

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, semi-precious stones, sewage sludge, slag, soils, tissue, tobacco, waste samples, wood, ...

Product Advantages

- powerful and quick grinding down to nano range
- grinding with up to 37.1 x acceleration of gravity
- reproducible results due to energy and speed control
- suitable for long-term trials
- 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
- automatic grinding chamber ventilation
- 10 SOPs can be stored
- programmable starting time
- power failure backup ensures storage of remaining grinding time
- jars with O-type sealing for safe operation, pressure tight

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Features

Applications	pulverizing, mixing, homogenizing, colloidal milling, mechanical alloying
Field of application	agriculture, biology, Chemistry, construction materials, engineering / electronics, environment / recycling, geology / metallurgy, glass / ceramics, medicine / pharmaceuticals
Feed material	soft, hard, brittle, fibrous - dry or wet
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
G-force	37.1 g
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, silicon nitride, 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

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Standards	CE
Patent / Utility patent	SafetySlider (DE 202008008473)

Please note:
*depending on feed material and instrument configuration/settings

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

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