

Mixer Mill MM 200

General Information

The mixer mill MM 200 is a compact versatile benchtop unit, which has been developed specially for dry grinding of small amounts of sample. It can mix and homogenize powders in only a few seconds. It is also perfectly suitable for the disruption of biological cells as well as for DNA/RNA extraction. With its high performance and great flexibility the mixer mill MM 200 is a unique product in the market.

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, animal feed, bones, ceramics, cereals, chemical products, coal, coke, drugs, glass, grains, hair, minerals, oil seeds, ores, paper, plant materials, plastics, sewage sludge, soils, straw, tablets, textiles, tissue, tobacco, waste samples, wood, wool, ...

Product Advantages

- reproducible, efficient grinding, mixing and homogenization in seconds
- powerful grinding by impact and friction, up to 25 Hz for up to 20 samples per run
- 9 SOPs can be stored
- wide range of accessories including various jar and ball sizes, adapter racks, grinding tool materials

Features

Applications	size reduction, mixing, homogenization, cell disruption
Field of application	agriculture, biology, chemistry / plastics, construction materials, engineering / electronics, environment / recycling, food, geology / metallurgy, glass / ceramics, medicine / pharmaceuticals
Feed material	hard, medium-hard, soft, brittle, elastic, fibrous
Size reduction principle	impact, friction
Material feed size*	≤ 6 mm
Final fineness*	~ 10 µm
Batch size / feed quantity*	max. 2 x 10ml
No. of grinding stations	2
Setting of vibrational frequency	digital, 3 - 25 Hz (180 - 1500 min ⁻¹)

Mixer Mill MM 200

Typical mean grinding time	30 s - 2 min
Dry grinding	yes
Wet grinding	-
Cryogenic grinding	-
Cell disruption with reaction vials	yes, up to 10 x 2.0 ml
Self-centering clamping device	-
Type of grinding jars	with push-fit lid
Material of grinding tools	hardened steel, stainless steel, tungsten carbide, agate, zirconium oxide, PTFE
Grinding jar sizes	1.5 ml / 5 ml / 10 ml / 25 ml
Setting of grinding time	digital, 10 s - 99 min
Storable SOPs	9
Electrical supply data	100-240 V, 50/60 Hz
Power connection	1-phase
Protection code	IP 30
Power consumption	100 W
W x H x D closed	371 x 266 x 461 mm
Net weight	~ 25 kg
Standards	CE

Please note:

*depending on feed material and instrument configuration/settings

Videolink



<http://www.retsch.com/mm200>

Function Principle

The grinding jars of the MM 200 perform radial oscillations in a horizontal position. The inertia of the grinding balls causes them to impact with high energy on the sample material at the rounded ends of the grinding jars and pulverize it. Also, the movement of the grinding jars combined with the movement of the balls result in the intensive mixing of the sample. The degree of mixing can be increased even further by using several smaller balls. If several small balls are used (e.g. glass beads) then, for example, biological cells can be disrupted. The large frictional impact

Mixer Mill MM 200

effects between the beads ensure effective cell disruption.

Order Data

Mixer Mill MM 200

(please order grinding jars and balls separately)

20.746.0001 MM 200, 100-240 V, 50/60 Hz

Grinding jars MM 200, with push-fit lid

Hardened steel

02.462.0052 25 ml

Stainless steel

02.462.0057 1.5 ml

02.462.0059 5 ml

02.462.0061 10 ml

02.462.0119 25 ml

Tungsten carbide

01.462.0115 5 ml

01.462.0009 10 ml

Agate

01.462.0113 5 ml

01.462.0008 10 ml

Zirconium oxide

01.462.0194 10 ml

01.462.0195 25 ml

PTFE

02.462.0184 10 ml

02.462.0051 25 ml

22.041.0003 Mixing beakers of polystyrene, 28 ml, 100 pieces

22.041.0004 Mixing beakers of polystyrene, 56 ml, 100 pieces

Accessories MM 200

99.200.0017 IQ/OQ Documentation for MM 200

Accessories for cell and tissue disruption

22.008.0006 Adapter for 10 reaction vials 0.2 ml, made of PTFE

22.749.0006 Safe-lock reaction vials 5.0 ml, 200 pcs.

22.749.0001 Safe-lock reaction vials 2.0 ml, 1000 pcs.

22.749.0002 Safe-lock reaction vials 1.5 ml, 1000 pcs.

Mixer Mill MM 200

Grinding balls

Hardened steel

05.368.0029	5 mm Ø
05.368.0030	7 mm Ø
05.368.0059	10 mm Ø
05.368.0032	12 mm Ø
05.368.0108	15 mm Ø

Stainless steel

22.455.0010	2 mm Ø, 500 g (approx. 110 ml)
22.455.0011	3 mm Ø, 500 g (approx. 120 ml)
22.455.0002	3 mm Ø, 200 pieces (approx. 6 ml)
22.455.0001	4 mm Ø, 200 pieces (approx. 14 ml)
22.455.0003	5 mm Ø, 200 pieces (approx. 25 ml)
05.368.0034	5 mm Ø
05.368.0035	7 mm Ø
05.368.0063	10 mm Ø
05.368.0037	12 mm Ø
05.368.0109	15 mm Ø
05.368.0062	20 mm Ø
05.368.0105	25 mm Ø

Tungsten carbide

22.455.0006	3 mm Ø, 200 pieces (approx. 6 ml)
22.455.0005	4 mm Ø, 200 pieces (approx. 14 ml)
22.455.0004	5 mm Ø, 200 pieces (approx. 25 ml)
05.368.0038	5 mm Ø
05.368.0039	7 mm Ø
05.368.0071	10 mm Ø
05.368.0041	12 mm Ø
05.368.0110	15 mm Ø

Agate

05.368.0024	5 mm Ø
05.368.0025	7 mm Ø
05.368.0067	10 mm Ø
05.368.0027	12 mm Ø

Zirconium oxide

05.368.0089	2 mm Ø, 0.5 kg (approx. 135 ml)
05.368.0090	3 mm Ø, 0.5 kg (approx. 140 ml)
22.455.0007	3 mm Ø, 200 pieces (approx. 6 ml)
22.455.0009	5 mm Ø, 200 pieces (approx. 25 ml)
05.368.0094	10 mm Ø
05.368.0096	12 mm Ø
05.368.0113	15 mm Ø

Mixer Mill MM 200

05.368.0093 20 mm Ø

05.368.0106 25 mm Ø

PTFE with steel core

05.368.0045 10 mm Ø

05.368.0046 12 mm Ø

05.368.0114 15 mm Ø

05.368.0047 20 mm Ø

Polyamide for mixing beakers

05.368.0042 5 mm Ø

05.368.0043 7 mm Ø

05.368.0044 9 mm Ø

05.368.0003 12 mm Ø

Glass beads

22.222.0001 0.10 - 0.25 mm Ø, 500 g (approx. 320 ml)

22.222.0002 0.25 - 0.50 mm Ø, 500 g (approx. 320 ml)

22.222.0003 0.50 - 0.75 mm Ø, 500 g (approx. 320 ml)

22.222.0004 0.75 - 1.00 mm Ø, 500 g (approx. 320 ml)

22.222.0005 1.00 - 1.50 mm Ø, 500 g (approx. 320 ml)