

MM 200 – Grinding and Mixing of Dry Samples

The Mixer Mill MM 200 is a versatile and compact benchtop instrument designed for dry grinding of small sample volumes. It mixes and homogenizes powders within seconds.

For neutral-to-analysis pulverization the standard grinding jars with push-fit lid are available in 6 materials and 4 sizes. This basic model may be used for biological cell disruption and for DNA/RNA recovery, just like the MM 400. Various reaction vials and adapters are on offer for this type of application.

Benefits

- 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
- Memory for 9 Standard Operating Procedures (SOP)
- Wide range of accessories including various jar and ball sizes, adapter racks, grinding tool materials



Mixer Mill MM 200



Accessories and Options

The MM 400 can be equipped with screw-top grinding jars from 1.5 ml to 50 ml. Available materials include hardened steel, stainless steel, tungsten carbide, agate, zirconium oxide, PTFE.

RETSCH offers various adapters to accommodate 0.2 - 50 ml single-use vials for cell disruption and DNA/RNA as well as protein extraction. These are also perfectly suited for simultaneously mixing a number of samples.

Benefits of screw-top grinding jars for MM 400:

- 3 different grinding modes (dry, wet or cryogenic)
- Ultimate reproducibility by automatic centering and uniform jar design
- Ergonomic gripping flanges on jar and lid
- Stainless steel protective jacket (for agate, zirconium oxide and tungsten carbide jars)



For the MM 500 Screw-Lock grinding jars are available in 3 different sizes (50 ml, 80 ml and 125 ml) and in 4 materials (hardened steel, stainless steel, zirconium oxide and tungsten carbide).

Benefits of Screw-Lock grinding jars:

- Suitable for dry, wet and cryogenic grinding
- High-impact and high-friction mode
- Pressure-tight up to 5 bar
- Flat jar lid allows for full use of jar volume which is particularly beneficial for wet grinding and pulverization of fibrous samples



CryoKit

The CryoKit is a cost efficient solution for occasional cryogenic grinding. This set of insulated containers, tongs and safety glasses is used for pre-cooling the grinding jar in liquid nitrogen.

- The CryoKit for the MM 400 consists of 2 insulated containers (1 and 4 liter), 2 pairs of grinding jar tongs and 1 pair of safety glasses.
- The CryoKit for the MM 500 consists of 1 insulated container (4 liter), 2 grinding jar holders and 1 pair of safety glasses.



Mixer Mills at a Glance

	Mixer Mills		
			
Model	MM 200	MM 400	MM 500

Application	mechanochemistry, mechanical alloying, size reduction, mixing, homogenization, cell disruption, cryogenic grinding
Fields of application	agriculture, biology, chemistry / plastics, construction materials, engineering / electronics, environment / recycling, food, geology / metallurgy, glass / ceramics, medicine / pharmaceuticals, materials science
Feed material	hard, medium-hard, soft, brittle, elastic, fibrous

Performance data

	MM 200	MM 400	MM 500
Feed size*	< 6 mm	< 8 mm	≤ 10 mm
Final fineness*	$d_{90} < 10 \mu\text{m}$	$d_{90} < 5 \mu\text{m}$	~ 0.1 μm
Batch size/sample volume*	2 x 10 ml	2 x 20 ml	max. 2 x 45 ml
Typical grinding time	30 s – 2 min	30 s – 2 min	30 s – 2 min
Possible applications			
Dry grinding	✓	✓	✓
Wet grinding	-	✓	✓
Cryogenic grinding	-	✓	✓
Cell disruption in single-use vials	max. 10 x 2.0 ml	max. 20 x 2.0 ml or 10 x 5.0 ml or 8 x 30 ml / 50 ml	-
Mixing with conical centrifuge tubes	-	✓	-
Suitable grinding jars			
Grinding jar with push-fit lids	1.5–25 ml	-	-
Grinding jars with screw-top lids	-	1.5–50 ml	50 ml / 80ml / 125 ml
Self-centering clamping device	-	✓	✓
No. of grinding stations	2	2	2
Digital pre-selection of vibrational frequency	3–25 Hz (180–1,500 min ⁻¹)	3–30 Hz (180–1,800 min ⁻¹)	3–35 Hz (180–2,100 min ⁻¹)
Digital pre-selection of grinding time	10 s–99 min	10 s–99 min	10 s–99 h
Memory for Standard Operating Procedures (SOP)	9	9	12
Storable program cycles with up to 99 repetitions	-	-	✓
Control via optional RETSCH App	-	-	✓

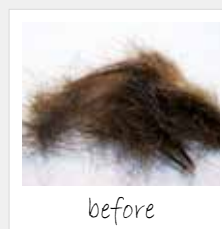
Technical data

Drive power	85 W	120 W	750 W
W x H x D	371 x 266 x 461 mm	371 x 266 x 461 mm	690 x 375 x 585 mm
Net weight	approx. 25 kg	approx. 26 kg	approx. 60 kg
More information on			

*depending on feed material and instrument configuration

Typical Sample Materials

RETSCH mixer mills are true allrounders. They homogenize, for example, waste, soil, chemical products, coated tablets, drugs, ores, grain, tissue, glass, hair, ceramics, bones, plastics, alloys, minerals, oil seeds, plants, sewage sludge, pills, textiles, wool etc.



Application example:
Hair



WolfLabs

Pricing on any accessories shown can be found by keying the part number into the search box on our website.

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