

Ultra-Centrifugal Mill ZM 200

NEW!



High-speed power for excellent grinding results

With the new Ultra-Centrifugal Mill ZM 200 RETSCH is now offering a mill with unrivaled performance. The new Powerdrive ensures higher performance with increased torque. Even with temporary overloads, the machine reacts with a powerful throughput. This means that the size reduction process is particularly effective.

The extremely rapid reduction in size increases the sample throughput in the laboratory and, in combination with the 2-step rotor/screen pulverization system, is also extremely gentle on the material.

Innovative technology – convincing advantages

- New, particularly efficient Powerdrive for powerful grinding and high grind fineness
- Considerably higher throughput in comparison to other centrifugal rotor mills thanks to the optimally matched frequency converter and the 3-phase motor
- Motor compartment and electronics fully protected against dust and material penetration
- Gentle and very rapid size reduction by 2-step rotor/screen system
- Quiet and reliable, easy to clean
- Wide speed range: 6,000 – 18,000 min⁻¹
- Graphical performance data display
- Comfortable parameter setting via display and ergonomic 1-button operation
- Safety plastic housing with automatic cover closure
- Universal use thanks to comprehensive range of application-related and performance-increasing accessories
- Electronic safety and diagnosis system

Retsch[®]

Solutions in Milling & Sieving

Ultra-Centrifugal Mill ZM 200

Versatile and effective

The new RETSCH Ultra-Centrifugal Mill ZM 200 is used for the rapid reduction in size of soft to medium-hard and fibrous materials. As a result of the effective pulverization technique and the wide range of accessories the ZM 200 **ensures the gentle preparation of analytical samples in a very short time.**

The suitability of the ZM 200 for **universal use** is shown by the following examples:

- **Chemicals, drugs, spices, coal, synthetic resins, plastics, pharmaceutical raw materials and finished products, fertilizers**
- **Sample batch production of customized powder coatings**
- **Washing powder for the determination of surfactants**
- **Foods and feeds for the determination of the nitrogen and protein content**
- **Plant constituents for environmental studies**
- **Preparation of bones for implants**

The Ultra-Centrifugal Mill can be used for both quality control, R&D and small-scale production.



Controlled and uniform material feed:
ZM 200 with Vibratory Feeder DR 100

Because of its large range of accessories and the possibility of individually setting the speed, the ZM 200 can be optimally adapted to suit any size reduction task.

The feed material is introduced either manually or via an optional load-controlled vibratory feeder (DR 100). Automatic material feed guarantees particularly uniform grinding results. The ground sample is collected in a cassette, a collection tray or in a paper filter bag via a passage receptacle. The innovative cassette principle ensures easy material removal and avoids cross-contamination.



Automatic size reduction of large volumes:
ZM 200 with Vibratory Feeder DR 100 and Cyclone

For **grinding larger volumes** we recommend the use of the cyclone with a 3000 or 5000 ml collector. If either the cyclone or the paper filter bag is used, the ground sample is additionally cooled by the air stream and discharged more quickly from the grinding chamber.

The push-fit rotors can be removed, cleaned and replaced without the use of tools.

Maximum operating convenience

The ZM 200 is very simple and safe to use. The parameters are easily set via the graphics display and 1-button operation. In this way all the relevant data can be comfortably entered or recalled, e.g.:



- Speed
- Drive load
- Operating hours
- Error messages in clear text
- Service intervals

The user is guided through the menus with multi-language options. The electronic safety and diagnosis system **virtually rules out operator errors.**

Performance data	ZM 200
Applications	fine grinding
Field of application	agronomy, chemistry, biology, medicine, pharmaceuticals, plastics, foods, environmental, construction materials
Feed material	soft, medium hard, brittle, fibrous
Feed size	up to 10 mm
Grind size*	< 40 µm
Sample volume/throughput	max. 900 ml; with cyclone up to 5000 ml
Speed range	6,000 - 18,000 min ⁻¹ , freely selectable
*depending on sample	
Technical data	
Power consumption	approx. 1300 W (VA)
W x H x D	410 x 365 x 515 mm
Net weight	approx. 38 kg
Noise values (noise measuring according to DIN 45635-31-01-KL3)	
Emission value with regard to workplace	L _{pAeq} 77.5 dB(A)
Measuring conditions:	
Sample	calcinated limestone
Feed size	< 5 mm
Rotor used	12-tooth rotor
Ring sieve used	0.5 mm Conidur holes

Powerful, safe, universal

Rotors and ring sieves

The push-fit rotor and ring sieves should be selected according to the properties of the sample, both feed size and the required grind fineness, and the subsequent analysis.

The selection of the aperture size of the ring sieves depends on the required grind fineness and the sample. With most materials approx. 80% of the total sample achieves a fineness of less than half the aperture size of the ring sieve used.

Temperature-sensitive and brittle materials, such as powder coatings and resins, can be pulverized particularly well with the **distance sieves** specially designed for this purpose. Soft and elastic products, such as plastics, which normally cannot be processed at room temperature, can be fed into the mill after prior embrittlement with liquid nitrogen.

By using the new **ring sieves with slot openings**, many plastics can



Materials

Rotors and ring sieves made of the following materials are available:

- Stainless steel
- Stainless steel with hard metal coating
- Titanium
- Steel 1.4404

now be reduced in size without any prior embrittlement.

For grinding small sample volumes, particularly in the pharmaceuticals sector, **grinding tools for small volumes** are available; these are made from corrosion-resistant steel 1.4404 (316).

For **heavy-metal-free size reduction** of non-abrasive substances we

recommend the use of rotors and ring sieves made from titanium together with cassette bases with a titanium-niobium coating and plastic cassette covers.

The wide range of accessories with rotors, ring sieves and different types of collection systems, allow the optimal adaptation of the ZM 200 to suit various special applications.

Rotor selection guide

Rotor	Application
6-tooth rotor	Coarse, bulky, fibrous materials such as animal feed pellets, hay and straw
12-tooth rotor	Medium-coarse materials such as wheat, oats, corn, tablets and powder coatings
24-tooth rotor	Fine materials such as chemicals, coal and sugar
8-tooth mini-rotor	Specially for size reduction of small sample volumes up to 25 ml
Wear-resistant coating	For harder, abrasive substances
Titanium rotor	Heavy-metal-free grinding of non-abrasive materials

ZM 200 technology

In the Ultra Centrifugal Mill, grinding takes place by impact and shearing action between the rotor and the fixed ring sieve. The feed material passes through the funnel with splash-back protection onto the rotor. The centrifugal acceleration throws it outward with great energy and it is pre-crushed on impact with the wedge-shaped rotor teeth moving with a high differential speed. It is then finely ground between the rotor and the

sieve ring. This two-stage grinding ensures particularly gentle but fast processing. The feed material only remains for a very short time in the grinding chamber. As soon as it is finer than the aperture width of the sieve used, it is collected in the collecting vessel enclosing the grinding chamber or in the downstream cyclone or paper filter bag.



Order data

Ultra-Centrifugal Mill ZM 200													Item No.	
ZM 200 with 900 ml cassette (please order push-fit rotor and ring sieves separately)														
ZM 200	for 230 V, 50/60 Hz												20.823.0001	
ZM 200	for 110 V, 50/60 Hz												20.823.0002	
ZM 200	for 120 V, 50/60 Hz												20.823.0003	
Push-fit rotors for ZM 200													Item No.	
Push-fit rotor							6 tooth	12 tooth	24 tooth					
Stainless steel							02.608.0040	02.608.0041	02.608.0042					
Stainless steel, with wear-resistant coating							02.608.0043	02.608.0044	02.608.0045					
Titanium, for heavy-metal-free grinding							-	02.608.0047	-					
Ring sieves for ZM 200													Item No.	
Aperture size (mm)	Conidur holes								Round holes					
	0.08	0.12	0.20	0.25	0.50	0.75	1.00	1.50	2.00	3.00	4.00	5.00	6.00	
Ring sieve, stainless steel														
Item No.: 03.647...	0231	0232	0233	0234	0235	0236	0237	0238	0239	0240	0241	0242	0243	
Ring sieve, stainless steel, with reinforced rim														
Item No.: 03.647...	0244	0245	0246	0247	0248	0249	0250	0251	0252	0272	0273	0274	0275	
Ring sieve, stainless steel, with reinforced rim and wear-resistant coating														
Item No.: 03.647...	-	-	0262	0263	0264	0265	0266	0267	0268	0269	-	-	-	
Distance sieve, stainless steel														
Item No.: 03.647...	0253	0254	0255	0256	0257	0258	0259	0260	-	-	0261	-	-	
Ring sieve, titanium, with reinforced rim														
Item No.: 03.647...	0270	0271	0276	0277	0278	0279	0280	0281	0282	-	0283	-	-	
Ring sieve with slot openings, steel 1.4404 (316)														
Item No.: 03.647...	-	-	-	-	-	-	-	0295	-	-	-	-	-	
Accessories for grinding small volumes													Item No.	
Labyrinth disk													02.706.0247	
8-tooth push-fit rotor, corrosion-resistant steel 1.4404 (316)													02.608.0057	
50 ml cassette for small volumes, complete (cover, base, seal), corrosion-resistant steel 1.4404 (316)													02.010.0039	
Sieve, corrosion-resistant steel 1.4404 (316), Conidur holes														
Aperture size (mm)	0.08	0.12	0.20	0.25	0.50	0.75	1.00	1.50	2.00					
Item No.: 03.647...	0287	0288	0289	0290	0285	0291	0292	0293	0294					
Accessories for grinding large volumes													Item No.	
Cyclone for ZM 200 with passage receptacle and holder, with 5 liter collector													22.935.0009	
Cyclone for ZM 200 with passage receptacle and holder, with 3 liter collector													22.935.0010	
Holder for ZM 200 with paper filter bag and passage receptacle													22.261.0002	
Accessories for automatic material feed													Item No.	
Feeder kit DR 100, complete with feed attachment with 40 mm push-fit feed chute, length 250 mm, funnel and stand														
DR 100	for 220-240 V, 50 Hz												22.936.0001	
DR 100	for 110-120 V, 60 Hz												22.936.0002	
Further accessories / Spare parts													Item No.	
Cassette cover, plastic, for heavy-metal-free grinding													22.355.0002	
Cassette base, titanium-niobium coated, for heavy-metal-free grinding													03.010.0041	
Spare cassette, stainless steel, complete (cover, base, seal)													22.355.0004	
Spare cassette cover, stainless steel, with seal													22.355.0003	

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