

GRINDING

ULTRA CENTRIFUGAL MILL ZM 100



GRINDING

RETSCH Ultra Centrifugal Mills are used for the fast ultra-fine grinding of soft to medium-hard and fibrous materials. With the rotor/screen system and the extensive range of accessories, the ZM 100 guarantees reliable analysis results and is ideally suited for both quality control work and research and development.

Ease of operation, high sample throughput with short grinding times and the careful, analytically appropriate sample preparation are key features of the ZM 100 Ultra Centrifugal Mill.

ADVANTAGES

- Careful, fast grinding with rotor/screen system
- Push-fit rotor for easy exchange and cleaning
- Cassette for simple removal of the ground material and greater sample throughput
- Hinged cover with quick-release closure
- Only one central quick-release closure
- Microprocessor-controlled safety and diagnosis system
- low-noise design
- 2-year guarantee

FEATURES

application	fine grinding
feed stock	soft, medium hard, brittle, fibrous
feed size	< 10 mm
final fineness	up to 40 µm
sample volume	max. 900 ml, with cyclone up to 5.000 ml

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With the Ultra Centrifugal Mill ZM 100 sample throughputs can be doubled. With the use of cassettes to take the ground material, cleaning of the mill can largely be dispensed with. With the use of a number of cassettes and sieves it is possible to empty and clean independently of the grinding. A further feature is the quick, simple opening and closing of the unit with the new-style hinged cover with quick-release closure. A choice of push-fit rotors and ring sieves in stainless steel, WC-coated and titanium guarantee analytically neutral sample preparation.

Whenever soft to medium-hard substances have to be ground, the ZM 100 is the answer. For example:

1. Chemicals, drugs, spices, coal, synthetic resins, plastics, leather, pharmaceutical raw and finished products, salts and cellulose
2. Powder coatings (determination of the throwing/covering power)
3. Soap powders and detergents (tensides acc. to DGF unit process sec. H, 82)
4. Animal feed and foodstuffs in connection with nitrogen and protein determination
5. Sections of plants to investigate the chlorine and sulphur levels in connection with environmental protection

The ergonomically designed front panel ensures optimum operator control.



The feed material can be introduced manually or via a feed unit controlled as a function of load (DR 100). The ground material is collected in a tray or in a paper filter bag via a passage receptacle.

For large quantities, it is advisable to connect the cyclone with its 5,000 ml collection vessel downstream. With the use of the cyclone or the paper filter bag, the material to be ground is cooled by the in drawn air stream and discharged thereby more quickly from the grinding chamber.

The new distance sieves are particularly suitable for the processing of such temperature – sensitive, tough materials as powder coatings or resins.

Temperature-sensitive and soft, elastic, difficult-to-grind materials can also be ground by prior embrittlement with liquid nitrogen.

For grinding of non-abrasive samples without heavy metal contamination, rotor and ring sieves of titanium, a receiver with titanium-niob coating as well as a cassette cover of plastic are recommended.



ZM 100 Standard



ZM 100 with DR 100



ZM 100 with DR 100 and paper bag



ZM 100 with DR 100 and Cyclone

QUICK, SIMPLE, UNIVERSAL AND SAFE



FEATURES OF THE ZM 100

1. Hinged removable cover
2. Cassette with inserted ring sieve
3. Quick-release closure for cover
4. Safety interlock for cover
5. Proximity switch (safety check)
6. Funnel with splashback protection
7. Plate for operation without cassette cover
8. Push-fit rotor
9. Ring sieve
10. Collecting pan



The ZM 100 Ultra Centrifugal Mill offers maximum user comfort, performance and safety. The unit cover can be hinged back once the single quick-release closure has been loosened. The cassette, consisting of a collecting pan and cassette cover, is inserted simply into the mill with the ring sieve. After grinding the cassette can be removed completely with the ring sieve and the ground material. Where a large number of samples are to be ground, it is recommended that a number of cassettes and sieves are obtained. Work can also proceed without the cassette cover with a

unit cover insert (see accessories). The push-fit rotor and labyrinth disc can be removed and replaced without tools.

Operator safety and operational reliability are guaranteed by the encoded cover interlock and an automatic safety check.

The ZM 100 conforms to the CE directives (DIN EN 61010).

GRINDING TOOLS AND RING SIEVES

The rotor and screens are to be selected according to the material to be ground, the degree of fineness required and the subsequent analysis.

The selection of the aperture size of the ring sieves depends on the desired final fineness and the feed material. With most materials finenesses of about 80 % smaller than half the aperture size of the sieve used are achieved.

The wide range of accessories with rotors, ring sieves and collecting systems in various forms makes the ZM 100 a truly universal grinding mill.

SELECTION AID - ROTORS

Rotor	Area of use
6-tooth rotor	coarse, bulky, fibrous material such as animal feed pellets, hay and straw
12-tooth rotor	medium-coarse material such as wheat, oats, maize and tablets
24-tooth rotor	fine materials such as chemicals, coal and sugar
wear resistant coated	hard materials such as minerals with hardnesses up to 4 acc. to Mohs
Titanium rotor	Heavy-metal-free grinding of non-abrasive materials
Pin insert	fine grinding and homogenisation of oily and greasy products

MATERIAL ANALYSES FOR ROTORS AND RING SIEVES

Material	Composition approx.
stainless steel	77.3% Fe, 18.0% Cr, 2.5% Ni
WC coating (rotor)	50.0% WC, 17.0% Cr, 20.5% Ni
WC coating (sieve)	88.0% WC, 12.0% Cr
Titanium	99.4% Ti



REFERENCES

ULTRA CENTRIFUGAL MILL ZM 100	Article-No.
Type ZM 100, 220 - 240 V, 50/60 Hz	20.822.0001
Type ZM 100, 110 - 115 V, 50/60 Hz	20.822.0002

Push-fit rotors	Article-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	–	02.608.0047	–

Ring sieves	Article-No.												
	Conidur holes						Round holes						
Aperture size (mm)	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
stainless steel													
Article-No.: 02.647...	0026	0027	0028	0029	0030	0031	0032	0033	0034	0035	0036	0037	0038
stainless steel, with strengthened rim													
Article-No.: 03.647...	0193	0194	0195	0196	0197	0176	0177	0178	0198	0189	0190	0191	0192
stainless steel, with wear resistant coating													
Article-No.: 03.647...	–	–	0054	0055	0056	0057	0058	0059	0060	0061	–	–	–
stainless steel, with strengthened rim, with wear resistant coating													
Article-No.: 03.647...	–	–	0199	0200	0201	0202	0203	0204	0205	0206	–	–	–
Distance sieves of stainless steel													
Article-No.: 03.647...	0182	0183	0207	0184	0185	0186	0188	0187	–	–	–	–	–
Titanium, with strengthened rim													
Article-No.: 01.647...	0212	0103	0104	0105	0106	0107	0108	–	–	–	0123	–	–

Special accessories	Article-No.
Cyclone with passage receptacle and holder	22.935.0003
Holder for paper filter bags with passage receptacle and paper filter bags	22.261.0002
Configuration kit for pin mill	22.786.0014
Insert for cover for use without Cassette cover	22.150.0001
Cassette cover, plastic	03.107.0305
Cassette receiver, coated with titanium-niob	03.010.0035
Vibratory feeder Type DR 100/40 for 220 - 240 V, 50 Hz	70.937.0032
Vibratory feeder Type DR 100/40 for 110 - 115 V, 60 Hz	70.937.0035
Stand for Type DR 100/40 on ZM 100	22.742.0010

Replacement parts	Article-No.
Cassette, complete (cover, bottom, seal)	22.355.0001
Cassette bottom	03.010.0031

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Retsch[®]



ZM 100 MECHANICS

Grinding takes place in the Ultra Centrifugal Mill by the impact and shearing action between the rotor and the fixed ring sieve. The feed material passes through the funnel onto the rotor. With the centrifugal acceleration it is hurled outwards with great energy and is precrushed on the wedge-shaped rotor teeth before being finely ground between the rotor and the screen. The two-stage grinding ensures careful but fast treatment. The feed material only remains for a very short time in the grinding chamber. As soon as it is finer than the hole width of the sieve used, it is collected in the collecting vessel enclosing the grinding chamber or in the downstream cyclone or bag.

The rotor is driven by a powerful and robust 600-watt motor, the speed range to be selected with 14,000 or 18,000 rpm. The high speed in combination with the large rotor diameter result in a circumferential speed of up to 93 m/sec, ensuring a particularly careful, fast grinding process.

An electronic brake will stop the motor within seconds after disconnection of the unit.

WEIGHTS AND MEASURES

W x H x D	400 x 460 x 450 mm
Weight	appr. 25 kg

RETSCH offers a comprehensive programme of equipment for sample preparation of solids. Please ask for information on our crushers, mills, sample dividers, sieving machines, optical particle sizers, feeders, mixers, cleaning and drying devices. All documents are sent free of charge and without obligation.

Technical modifications reserved

99.822.0002/E
 Made in Germany 01/99