

**GERMAN
ENGINEERING
AT ITS BEST****50 YEARS OF DEFINING STANDARDS IN QUALITY CONTROL**

THE NEW ULTRA CENTRIFUGAL MILL ZM 300

Nothing matches the performance of the original! Retsch's Ultra Centrifugal Mills set standards with more than 20,000 installations world-wide. The outstanding performance, flexibility, user-friendliness and robustness of this high-speed rotor mill make it the undisputed leader in its class.

THE NEW ULTRA CENTRIFUGAL MILL ZM 300

UNPARALLELLED GRINDING PERFORMANCE

Retsch developed the first ultra centrifugal mill ZM 1 half a century ago. The latest model ZM 300 comprises the essence of German engineering expertise combined with high-quality materials and latest software technology.

The powerful Ultra Centrifugal Mill ZM 300 provides maximum grinding performance at high speed while, at the same time, ensuring operator convenience and safety.

BENEFITS

- | Variable speed from 6,000 to 23,000 rpm
- | Up to 20% finer particles than with ZM 200
- | Sample throughput increased up to 15%
- | Temperature monitoring
- | Neutral-to-analysis sample preparation
- | Very short grinding time
- | Optional volume cassette for batch sizes up to 600 ml

THE CYCLONE-SUCTION SYSTEM: IDEAL FOR LIGHT & HEAT-SENSITIVE MATERIALS

- | Efficient cooling of sample and grinding tools
- | Improved sample discharge from the grinding chamber
- | Particularly suitable for large volumes
- | Sample bottles of 0.25 / 0.5 / 3 and 5 liters
- | Extra cooling for temperature sensitive samples
- | Better sample discharge for light sample materials
- | Ideal for cryogenic grinding

INCREASED REPRODUCIBILITY THROUGH TEMPERATURE MONITORING VIA INTEGRATED TEMPERATURE SENSOR

- | Measurement of the temperature of the cassette lid near the ring sieve
- | The temperature is constantly shown in the mill's display
- | Continuous monitoring of the grinding process to detect deviations without fail
- | Improved reproducibility for temperature sensitive samples

CONVENIENT OPERATION AND EASY CLEANING

- | Touch display with rotary knob for convenient parameter setting
- | Cassette temperature and load shown during grinding
- | Prevention of overloads by feeding the sample too quickly
- | A push-fit system without screws
- | Easy insertion and removal without tools
- | Quick cleaning of rotors and ring sieves
- | Smooth surfaces of the machine for easy cleaning

CRYOGENIC GRINDING

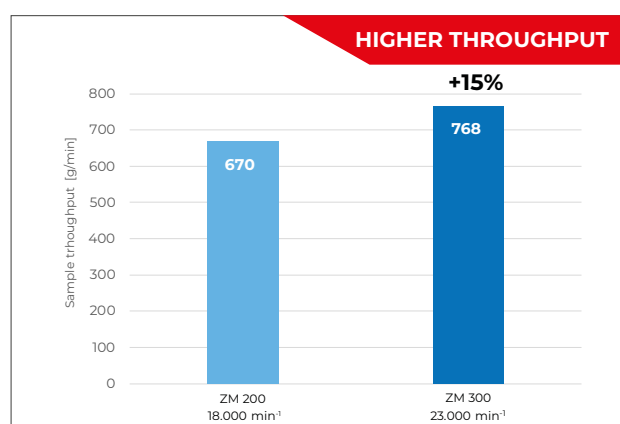
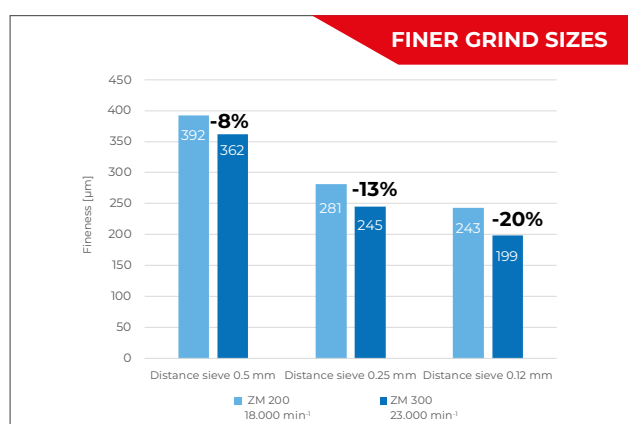
- | The ideal solution for pulverizing samples that cannot be reduced to the required fineness at room temperature
- | Liquid nitrogen or dry ice are used to embrittle the sample material
- | Volatile components are perfectly preserved
- | Cryogenic grinding is easy to perform with the ZM 300
- | Recommended for plastics or very temperature-sensitive samples



THE NEW ULTRA CENTRIFUGAL MILL ZM 300

MAXIMUM SPEED FOR HIGH FINAL FINENESS AND INCREASED THROUGHPUT

The ZM 300 achieves a maximum speed of 23,000 rpm and produces particles which are up to 20% finer in comparison to conventional rotor mills with a max. speed of 18,000 rpm, depending on the material. The throughput may be increased by up to 15%.



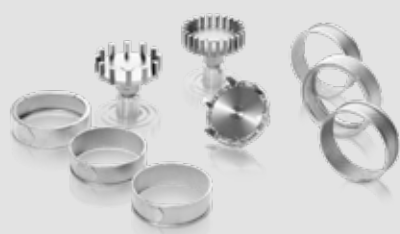
APPLICATION EXAMPLE: POLYMER POM

Grind sizes of POM. The speed of 23,000 rpm results in a higher fineness for all sieves compared to grinding at 18,000 rpm. The finer the sieve openings the higher the impact of the speed.

APPLICATION EXAMPLE: ANIMAL FEED

Sample throughput for chicken feed. With a 0.5 mm ring sieve it was increased by 15% at 23,000 rpm compared to 18,000 rpm.

THE WIDE SELECTION OF ACCESSORIES ALLOWS OPTIMUM ADAPTATION TO YOUR SIZE REDUCTION REQUIREMENTS



SIEVES AND ROTORS

- Ring sieves with reinforced rim (for standard applications) or distance sieves (for heat-sensitive materials)
- Sieves equipped with four grooves for easy insertion and secure locking
- The standard rotor with 12 teeth is suitable for almost any material
- For fibrous samples the rotor with 6 teeth is typically used
- For sample with small feed sizes the rotor with 24 teeth is best suited
- Neutral-to-analysis work: Grinding tools in various materials are available



VIBRATORY FEEDER DR 100

- Controlled via an interface
- Conveys material in a load-dependent manner to the hopper of the ZM 300
- Ensures uniform grinding with maximum sample feed
- The use of a feeder is particularly advantageous for large sample quantities
- Automatic system in combination with the cyclone unit, easy feeding and sample collection in one system



COLLECTING VESSELS

- Standard collecting vessel: 900 ml nominal volume for 300 ml sample per batch
- Large-volume cassette: The useful volume can be doubled to 600 ml
- Cassette with cyclone: Various collecting vessels up to 4,500 ml useful volume



AT A GLANCE

Application	fine grinding
Fields of application	agriculture, biology, chemistry / plastics, construction materials, engineering / electronics, environment / recycling, food & feed, geology / metallurgy, medicine / pharmaceuticals
Feed material	soft, medium-hard, brittle, fibrous
Size reduction principle	impact, shearing
PERFORMANCE DATA	
Feed size*	< 10 mm
Final fineness*	< 40 µm
Batch size / sample volume*	300 ml with standard cassette 600 ml with volume cassette 4500 ml / 2500 ml / 450 ml / 230 ml with cyclone
Speed at 50 Hz (60 Hz)	6,000 – 23,000 min ⁻¹ , freely selectable
Rotor peripheral speed	31 – 119 m/s
Rotor diameter	99 mm
Types of rotors	6-tooth rotor / 12-tooth rotor / 24-tooth rotor
Material of grinding tools	stainless steel, stainless steel with wear-resistant coating, titanium
Sieve sizes	trapezoid holes: 0.08 / 0.12 / 0.20 / 0.25 / 0.50 / 0.75 / 1.00 / 1.50 / 2.00 mm round holes: 3.00 / 4.00 / 5.00 / 6.00 / 10.00 mm
Setting of grinding time	no
Collector capacity	900 ml with standard cassette 1200 ml with volume cassette 5000 ml / 3000 ml / 500 ml / 250 ml with cyclone
TECHNICAL DATA	
Drive	3-phase asynchronous motor with frequency converter
Power connection	1-phase
Protection code	IP 20
Power consumption	1750 VA ((200..240V), 1400 VA (110..120V)
W x H x D (closed)	452 x 431 x 426 mm
Net weight	approx. 38 kg
Standards	CE
IQ/OQ documentation	available

*depending on feed material and instrument configuration/settings



TYPICAL SAMPLE MATERIALS

The versatile Ultra Centrifugal Mill ZM 300 processes materials such as bones, cereals, chemical products, coal, coffee and cocoa beans, collagen, corn, dried fruit and vegetables, dried larvae, drugs, electronic components, feed pellets, fertilizers, food, grain, graphite, minerals, paper, pharmaceutical materials, plant materials, polymers, powder coatings, rice, rubber, seeds, spices, straw, sweets, textiles, tobacco, waste, wood.





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