



ULTRA CENTRIFUGAL MILL ZM 300

Rotor mills are used for high-speed size reduction of soft to medium-hard as well as temperature-sensitive or fibrous materials.

The powerful Ultra Centrifugal Mill ZM 300 provides maximum grinding performance combined with ease of use. The variable speed from 6,000 to 23,000 rpm allows for gentle, neutral-to-analysis sample preparation in a very short time.

Thanks to an integrated temperature monitoring system, reproducibility is guaranteed even for long grinding processes or pulverization of large sample volumes.

The wide selection of rotors, ring sieves and cassettes makes the ZM 300 a true allrounder which meets the requirements of a great variety of size reduction tasks.



비디오 시청 클릭

THE STANDARD FOR FOOD & FEED

- | Gentle high-speed pulverization due to pre- and fine grinding in one working run
- | Optimum process control and reproducibility based on monitoring of the cassette temperature
- | Patented cassette system for maximum sample recovery and easy cleaning
- | Optional cassette for sample volumes up to 600 ml
- | Wide speed range from 6,000 to 23,000 rpm
- | Defined final fineness due to ring sieves with aperture sizes from 0.08 – 10 mm
- | Collecting vessels for sample volumes from 250 ml to 4.5 l
- | Automated vibratory feeder and various cyclone systems available



SHORT PROCESSING TIMES

AVOID EXCESSIVE HEAT GENERATION AND MOTOR OVERLOAD

The speed range from 6000 to 23000 rpm allows for optimum adaptation of the grinding process to the sample requirements by keeping the grinding time as short as possible and the temperature increase as moderate as possible. Too much heat may have a negative effect on the grinding results, for example, if moisture or volatile components escape.

The ZM 300 is equipped with an integrated temperature sensor which measures the temperature of the cassette lid near the ring sieve. The measured temperature is constantly shown in the mill's display, allowing the user to optimize the grinding process and improve reproducibility.



ULTRA CENTRIFUGAL MILL ZM 300

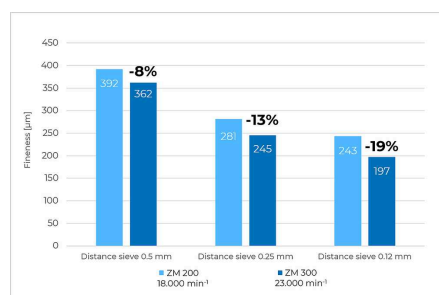
FINER END PRODUCTS AND HIGHER SAMPLE THROUGHPUT

APPLICATION EXAMPLES

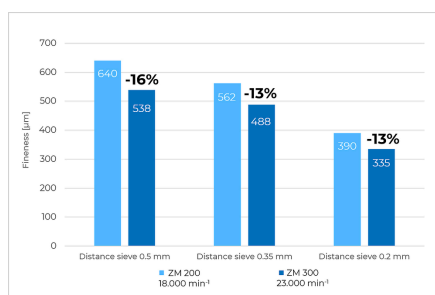
Grind sizes of plastic materials (POM or PP) after grinding with different sieves and speeds. The speed of 23,000 rpm results in a higher fineness for all sieves compared to grinding at 18,000 rpm. For example, a 19 % reduction in fineness can be achieved when POM is ground with a 0.12 mm distance sieve at 23,000 rpm.

The maximum sample throughput, e.g. when crushing chicken feed with a 0.5 mm ring sieve, could be increased by 16% when crushing at maximum speed of 23,000 min⁻¹ instead of 18,000 min⁻¹.

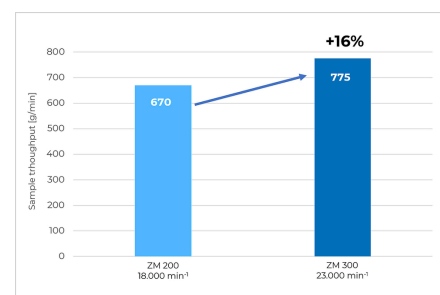
POLYMER POM



POLYMER PP



GRINDING ANIMAL FEED



CRYOGENIC GRINDING

Cryogenic or cold grinding is the ideal solution for pulverizing samples that cannot be reduced to the required fineness at room temperature. This procedure involves the use of grinding aids such as liquid nitrogen (-196 °C, embrittlement of the sample outside the mill) or dry ice (-78 °C, sample/dry ice mixture) to embrittle the sample material by cooling, and thus improve the breaking behavior.

In addition, highly volatile components are better preserved in the sample by cooling. Cryogenic grinding is easy to perform with the ZM 300 and is recommended especially for plastics or very temperature-sensitive samples. The video shows the process with the predecessor model ZM 200, which is identical in the ZM 300.



[비디오 시청 클릭](#)

This video shows dryice grinding of plastic granules with the ZM 200 which also applies to the ZM 300.

ULTRA CENTRIFUGAL MILL ZM 300

IDEAL FOR LIGHT & HEAT-SENSITIVE MATERIALS

In combination with the cyclone suction unit, the Ultra Centrifugal Mill ZM 300 mill is even suitable for grinding light and heat-sensitive materials.

- | Efficient cooling of sample and grinding tools
- | Improved sample discharge from the grinding chamber
- | Particularly suitable for large volumes
- | The cyclone accommodates sample bottles of 0.25, 3 and 5 liters
- | Ideal for cryogenic grinding



ACCESSORIES FOR ZM 300



RING SIEVES

For the ZM 300 ring sieves with reinforced rim are used which are equipped with four grooves for secure locking. Distance sieves, also secured and fixed by four grooves, have a gap between the sieve mesh and the rotor, which reduces shearing effects and thereby heat generation.



ROTORS

Rotors are available with either 6, 12 or 24 teeth. The standard rotor with 12 teeth is suitable for almost any material and requirement. For fibrous samples, such as straw, the rotor with 6 teeth is typically used, while for fine samples the rotor with 24 teeth is best suited.



HEAVY-METAL-FREE GRINDING

For neutral-to-analysis work, or for pulverizing abrasive samples, grinding tools in various materials are available: titanium (titanium-niobium coating), steel 1.4404, tungsten carbide coating.



COLLECTING VESSELS

In the standard collecting vessel with 900 ml nominal volume, up to 300 ml of sample can be ground in one working step. With the large-volume cassette, the useful volume can be doubled to 600 ml. When utilizing a cassette with cyclone, various collecting vessels up to 4,500 ml useful volume are available.



자동 시료 투입기 DR 100

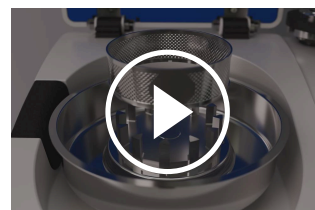
The Vibratory Feeder DR 100 is controlled via an interface and conveys material in a load-dependent manner to the hopper of the ZM 300. This procedure ensures uniform grinding with maximum sample feed. The use of a feeder is particularly advantageous for large sample quantities.

ULTRA CENTRIFUGAL MILL ZM 300

CONVENIENT OPERATION – EASY CLEANING

The large touch display with rotary knob facilitates the setting of all grinding parameters and provides current values such as cassette temperature and motor load.

Thanks to the screwless push-fit system and the patented cassette principle, grinding tools can be inserted and removed by hand. Plug-in rotors and ring sieves enable quick and easy cleaning. All components that come into contact with the product can be cleaned using running water or a dishwasher.



[비디오 시청 클릭](#)

ULTRA CENTRIFUGAL MILL ZM 300

TYPICAL SAMPLE MATERIALS

The ZM 300 is suitable for grinding a wide variety of materials:

waste, graphite, collagen, drugs, fertilizers, feed pellets, grains, spices, rubber, wood, coffee beans, bones, coal, food, corn, minerals, paper, plant parts, polymers, powder coatings, rice, seeds, straw, sweets, tobacco, textiles, chemical products, electronic components, dried fruits and vegetables, dried larvae, pharmaceutical products.



분말 코팅



커피콩



PET flakes



허브



[비디오 시청 클릭](#)

Parsley

샘플 준비 작업에 가장 적합한 솔루션을 찾으려면 애플리케이션 데이터베이스를 방문하십시오.

ULTRA CENTRIFUGAL MILL ZM 300

작동 원리

The grinding process is carried out by impact and shearing forces between the rotor and the fixed ring sieve. The sample material is fed into the rotor via a funnel with splash protection, accelerated outwards by centrifugal force, and pre-ground by the wedge-shaped rotor teeth. The subsequent fine grinding takes place in the narrow gap between the rotor and the sieve.

Thanks to this two-stage process, sample preparation is particularly gentle and fast. Since the ground material only remains in the grinding chamber for a short time, the characteristic properties of the sample are retained. The end product is collected in the collection vessel, cyclone, or paper filter bag that surrounds the grinding chamber.



[비디오 시청 클릭](#)

응용 분야	미(고운)분쇄
응용분야	건축자재, 기술적/전기적, 농산물, 생물학, 식품, 의학/제약, 지질학 / 금속 공학, 화학/플라스틱 공학, 환경 / 재활용
투입 시료	연질, 중-경질, 취성, 섬유질
크기 축소 원리	충격, 전단
최대 투입 크기*	< 10 mm
최종 분말 입도*	< 40 µm
시료 일괄 처리량*	300 ml with standard cassette 600 ml with volume cassette 4500 ml / 2500 ml / 450 ml / 230 ml with cyclone
50 Hz (60 Hz)에서 속도	6,000 - 23,000 min ⁻¹ , free selectable
로터 주변 속도	31 - 119 m/s
로터 직경	99 mm
로터 종류	6-tooth rotor / 12-tooth rotor / 24-tooth rotor
분쇄 도구 재질	스테인레스 스틸, 티타늄, 내마모성 코팅 스테인레스
분쇄 크기	사각 홀 0.08 / 0.12 / 0.20 / 0.25 / 0.50 / 0.75 / 1.00 / 1.50 / 2.00 mm 원형 홀 3.00 / 4.00 / 5.00 / 6.00 / 10.00 mm
분쇄 시간 설정	no
수집조 용량	900 ml with standard cassette 1200 ml with volume cassette 5000 ml / 3000 ml / 500 ml / 250 ml with cyclone
구동	주파수 변환기를 가진 3상 비동기식 모터
전원 연결	단상
안전 보호 코드	IP 30
소비 전력	1750 VA ((200..240V), 1400 VA (110..120V)
폭 x 높이 x 깊이 닫혔을 때	452 x 431 x 426 mm
중량	~ 38 kg
표준	CE

*투입 재료와 장비 환경, 설정에 따라

www.retsch.com/zm300

주문 정보

ULTRA CENTRIFUGAL MILL ZM 300

Ultra Centrifugal Mill ZM 300 with 900 ml cassette
(please order push-fit rotor and ring sieve separately)

20.824.0001		ZM 300	230 V, 50 / 60 Hz
20.824.0002		ZM 300	110-120 V, 50/60 Hz

다른 전력 버전도 동일한 가격으로 제공

ACCESSORIES ZM 300 STANDARD

스테인레스 스틸 푸쉬-핏 로터

02.608.0040		푸쉬-핏 로터	6 날
02.608.0041		푸쉬-핏 로터	12 날
02.608.0042		푸쉬-핏 로터	24 날

RING SIEVES OF STAINLESS STEEL, WITH REINFORCED RIM

03.647.0465	마름모형 공극	0.08 mm
03.647.0466	마름모형 공극	0.12 mm
03.647.0467	마름모형 공극	0.20 mm
03.647.0468	마름모형 공극	0.25 mm
03.647.0469	마름모형 공극	0.35 mm
03.647.0470	마름모형 공극	0.50 mm
03.647.0471	마름모형 공극	0.75 mm
03.647.0472	마름모형 공극	1.00 mm
03.647.0473	마름모형 공극	1.50 mm
03.647.0474	마름모형 공극	2.00 mm
03.647.0475	원형 공극	3.00 mm

03.647.0476	원형 공극	4.00 mm
03.647.0477	원형 공극	5.00 mm
03.647.0478	원형 공극	6.00 mm

스테인레스 스틸 디스턴스 시브,
온도 민감성 및 유/지방성 시료 용

03.647.0441	마름모형 공극	0.08 mm	
03.647.0442	마름모형 공극	0.12 mm	
03.647.0443	마름모형 공극	0.20 mm	
03.647.0444	마름모형 공극	0.25 mm	
03.647.0445	마름모형 공극	0.35 mm	
03.647.0446	마름모형 공극	0.50 mm	
03.647.0447	마름모형 공극	0.75 mm	
03.647.0448	마름모형 공극	1.00 mm	
03.647.0449	마름모형 공극	1.50 mm	
03.647.0450	마름모형 공극	2.00 mm	
03.647.0451	원형 공극	3.00 mm	
03.647.0452	원형 공극	4.00 mm	
03.647.0453	원형 공극	5.00 mm	
03.647.0454	원형 공극	6.0 mm	
03.647.0455	사각형 공극	10.00 mm	선 분쇄 용

ACCESSORIES ZM 300 FOR ABRASIVE PRODUCTS

스테인레스 스틸 푸쉬-핏 로터, 마모 방지 코팅

02.608.0043		푸쉬-핏 로터	6 날
02.608.0044		푸쉬-핏 로터	12 날
02.608.0045		푸쉬-핏 로터	24 날

03.647.0456	마름모형 공극	0.20 mm
03.647.0457	마름모형 공극	0.25 mm
03.647.0458	마름모형 공극	0.35 mm
03.647.0459	마름모형 공극	0.50 mm
03.647.0460	마름모형 공극	0.75 mm
03.647.0461	마름모형 공극	1.00 mm
03.647.0462	마름모형 공극	1.50 mm
03.647.0463	마름모형 공극	2.00 mm
03.647.0464	원형 공극	3.00 mm

ACCESSORIES ZM 300 FOR GRINDING WITHOUT HEAVY-METAL CONTAMINATION

푸쉬-핏 로터와 카세트

02.608.0047  푸쉬-핏 로터, 12 날, 순수 티타늄

22.355.0012 티타늄 니오비움이 코팅된 900 ml 카세트 컴플리트 세트 (용기, 덮개 및 가스켓 포함)

순수 티타늄 링 시브, 테두리 강화형

03.647.0479	마름모형 공극, 0.08 mm
03.647.0480	마름모형 공극 0.12 mm
03.647.0481	마름모형 공극 0.20 mm
03.647.0482	마름모형 공극 0.25 mm
03.647.0483	마름모형 공극 0.35 mm
03.647.0484	마름모형 공극 0.50 mm
03.647.0485	마름모형 공극 0.75 mm
03.647.0486	마름모형 공극 1.00 mm
03.647.0487	마름모형 공극 1.50 mm
03.647.0488	원형 공극 2.00 mm

디스턴스 시브, 순수 티타늄

03.647.0493	마름모형 공극	0.08 mm	
03.647.0550	마름모형 공극	0.12 mm	
03.647.0551	마름모형 공극	0.20 mm	
03.647.0552	마름모형 공극	0.25 mm	
03.647.0553	마름모형 공극	0.35 mm	
03.647.0489	마름모형 공극	0.50 mm	
03.647.0554	마름모형 공극	0.75 mm	
03.647.0490	마름모형 공극	1.00 mm	
03.647.0555	마름모형 공극	1.50 mm	
03.647.0556	마름모형 공극	2.00 mm	
03.647.0557	원형 공극	3.00 mm	
03.647.0561	원형 공극	4.00 mm	
03.647.0558	원형 공극	5.00 mm	
03.647.0559	원형 공극	6.0 mm	
03.647.0560	사각형 공극	10.00 mm	선 분쇄 용

CYCLONES ZM 300

사이클론, 배출구와 서포트가 있는 카세트 포함

22.935.0030	필터 백 방식 사이클론, 0.25 및 0.5 리터 시료 병 포함
22.935.0028	필터 백 방식 사이클론, 3 리터 회수 용기 포함
22.935.0027	필터 백 방식 사이클론, 5 리터 회수 용기 포함
22.935.0029	진공 청소기 방식 사이클론, 0.25 및 0.5 리터 시료 병 포함
22.935.0026	진공 청소기 방식 사이클론, 3 리터 회수 용기 포함
22.935.0025	진공 청소기 방식 사이클론, 5 리터 회수 용기 포함
22.935.0042	High-performance cyclone including holder, collecting receptacle (250 ml and 500 ml sample bottle) and 1.5 m FDA certified hose with clamps. Requires 02.010.0060 cassette pan with outlet, stainless steel
22.748.0005	 분쇄기 용 산업용 진공 청소기, 230 V, 50/60 Hz (요청 시 다른 전기 버전과 추가 필터 백 제공)

ACCESSORIES FOR COLD GRINDING ZM 300

22.354.0007	Cryo kit for embrittlement of samples in liquid nitrogen or dry ice snow (incl. 2 insulated containers (1 and 4 liter), 1 spoon spatula, 1 pair of safety glasses)
-------------	---

ADDITIONAL ITEMS ZM 300

22.355.0018		카세트 컴플리트 세트, 스테인레스 스틸, 900 ml 용기, 덮개, 가스켓 포함
22.355.0021		Cassette complete, stainless steel, incl. pan 1200 ml, lid with gasket
22.355.0020		카세트 컴플리트 세트, 스테인레스 스틸, 배출구 형 용기, 덮개, 가스켓 포함
22.355.0012		티타늄 니오비움이 코팅된 900 ml 카세트 컴플리트 세트 (용기, 덮개 및 가스켓 포함)
03.010.0058		카세트 용기 900 ml, 스테인레스 스틸
03.010.0059		Cassette pan 1200 ml, stainless steel
02.010.0060		배출구 형식 카세트 용기, 스테인레스 스틸
03.010.0062		900 ml 카세트 용기, 티타늄 니오비움 코팅
22.355.0015		카세트 덮개, 스테인레스 스틸, 가스켓 포함
22.355.0011		카세트 덮개, 티타늄 니오비움 코팅, 가스켓 포함
22.936.0009		카세트 덮개 용 가스켓, 5 개
02.011.0078		사이클론 용 회수 용기, 5 리터, 스테인레스 스틸
02.011.0031		사이클론 용 회수 용기, 3 리터, 스테인레스 스틸
02.107.0634		Lid for collecting receptacle, 5 litres
02.107.0493		Lid for collecting receptacle, 3 litres
02.186.0010		필터 백, 나일론, 사이클론 용
01.706.0318		Labyrinth disc
03.114.0092		Gasket for labyrinth disc, 1 piece
03.785.0156		호퍼
03.143.0049		Hopper insert for rebound safety

22.524.0006	팬 용 보호 격자, 분진 필터 포함
22.524.0007	Dust filter for ZM 300, 10 pcs.
99.200.0033	IQ/OQ Documentation for ZM 300

VIBRATORY FEEDER DR 100 FOR ZM 300

DR 100 구동 본체 (투입 키트를 별도로 주문하시기 바랍니다.)

70.938.0001		DR 100 drive unit	220–240 V, 50 Hz
70.938.0002		DR 100 drive unit	110–120 V, 60 Hz
72.020.0018	Feeding kit DR 100-75/40 for ZM 300, incl. push-fit feed chute 75/40 mm, length 250 mm, holder for push-fit feed chute, hopper 3.5 litres and fixture for hopper, stand with data cable		

PUSH-FIT FEED CHUTE DR 100 FOR ZM 300

03.729.0054		푸쉬-핏 투입 슈트, 스테인레스 스틸, 폭 40 mm, 길이 250 mm
03.729.0056		푸쉬-핏 투입 슈트, 스테인레스 스틸, 폭 75/40 mm, 길이 250 mm
03.729.0055		푸쉬-핏 투입 슈트, 스테인레스 스틸, V 형, 폭 40 mm, 길이 250 mm