SM 100, SM 200, SM 300 – The Perfect Cutting Mill for Every Requirement

The RETSCH cutting mills provide highly efficient primary size reduction of heterogeneous material mixes but are also suitable for grinding soft, medium-hard, elastic or fibrous samples. With the SM 100, SM 200 and SM 300 RETSCH offers three models for different requirements.

SM 100 – The Budget-Priced Basic Model

The SM 100 model is suitable for the size reduction of soft, medium-hard, elastic or fibrous products which can be comminuted without requiring extremely high forces. The mill is particularly suitable for routine applications. It is easy to operate and can be mounted on a solid table or on the optional base frame.

Cutting Mill SM 100
with optional base frame

Benefits

- Powerful size reduction – also of heterogeneous material mixes
- Selection of models to suit different requirements
- Optimum cutting effects thanks to double acting cutting bars (SM 200 & SM 300)
- SM 300 with variable speed from 700 to 3,000 min^{-1}, 3 kW drive with high torque
- Rotational Energy Storage Technology (RES) provides exceptional cutting power reserves (SM 300)
- Defined final fineness due to bottom sieves with aperture sizes from 0.25–20 mm
- Low heat build-up
- Quick and easy cleaning thanks to push-fit rotors, smooth surfaces and foldback hoppers (SM 200 and SM 300)
- Highest safety standard due to motor brake, central locking device and electronic safety check
- Wide range of accessories including various hoppers, collecting systems, rotors and sieves

Video on www.retsch.com/sm

SM 200 – The Universal Standard Model

Within the RETSCH cutting mill family, the SM 200 is the universal standard model which covers a vast range of applications with its strong 2.2 kW drive and 1,500 rpm rotor speed. It can be operated with the optional cyclone-suction-combination to improve, for example, discharge of low-density materials. The hopper can be folded back and the push-fit rotor and sieve are easily removed for cleaning without tools.

SM 300 – The High Performance Model with RES Technology

The SM 300 model is characterized by a high torque, maximum cutting effect as well as safe and convenient operation. To allow for optimum adaptation to the sample properties with regards to breaking behavior and temperature sensitivity, the SM 300 features a variable speed from 700 min^{-1} to 3,000 min^{-1}. Thus it is possible to grind a great variety of products with one mill, including tough and thermally sensitive materials. An additional flywheel mass provides exceptional cutting power reserves, thus enabling the SM 300 to grind many materials to analytical fineness in only one working run (RES technology). The grinding chamber features an optimum geometry. The wide opening of the hopper and excellent feeding properties allow for large sample volumes, resp. pieces, thus increasing the throughput. Just like the SM 200, the SM 300 can be equipped with the cyclone-suction-combination which is especially recommended for fibrous, light sample stock.

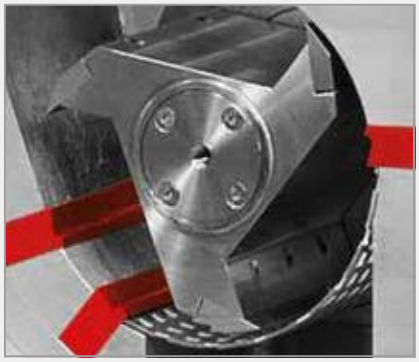
The RETSCH Cutting Mills SM 200 and SM 300 excel especially in the tough jobs where other cutting mills fail. They offer a high degree of safety and longevity of the grinding tools.

Cutting Mill SM 200

Cutting Mill SM 300

Superiority in Detail

Push fit rotors facilitate quick and easy cleaning



3 double acting cutting bars provide optimum cutting effects (SM 200 & SM 300)

Cyclone-suction-combination ensures adequate cooling of sample and cutting tools (SM 200 & SM 300)

Accessories and Options

A comprehensive range of accessories allows for quick adaptation to individual application requirements. All three models are available in a special version for heavy-metal-free grinding (mill, rotor, sieves).

Rotors

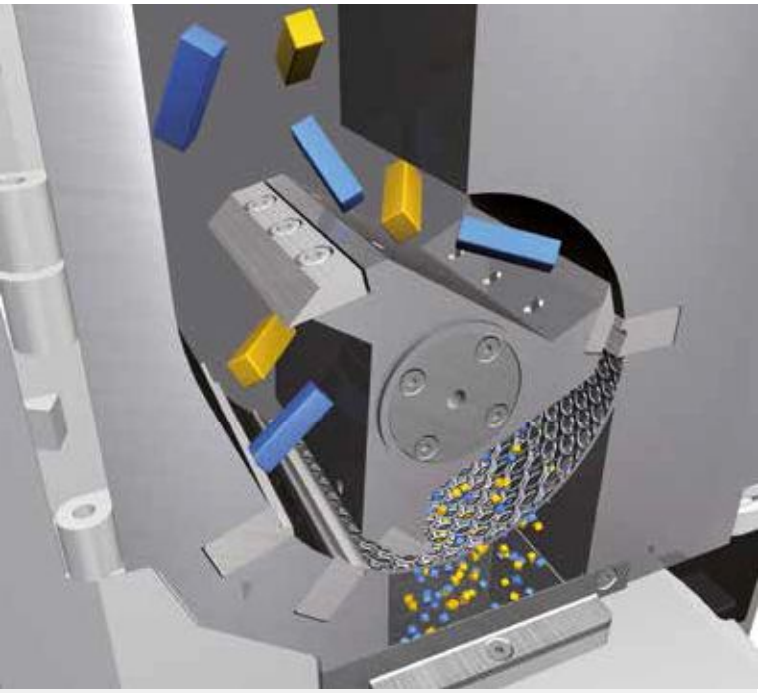
- **The parallel section rotor is equipped with 3 cutting plates and suitable for universal use.**
- **The 6-disc rotor with its 18 replaceable and reversible hard metal cutting tips is mostly used for medium-hard and brittle materials and for preliminary cutting of coarse goods.**
- **The V rotor (only SM 300) very effectively cuts through fibrous and tough materials and promotes rapid sample discharge.**

Cyclone-suction-combination (SM 200 & SM 300)

- **Efficient cooling of sample and cutting tools**
- **Improved material discharge from the grinding chamber**
- **Beneficial for low-density materials and small sample amounts**
- **The cyclone accommodates sample bottles of 0.5, 1 or 2 liters**

Other accessories

- **Universal or long stock hopper**
- **Sieves from 0.25 to 20 mm, also for heavy-metal-free grinding**
- **Collecting vessels from 0.25 l sample bottle to 30 liter plastic receptacle**
- **Stainless steel ring-type filter or textile filter hose help to remove dust**



Cutting Mill Technology:
Size reduction in cutting mills is effected by **cutting and shearing forces**. The sample passes through the hopper into the grinding chamber where it is seized by the rotor and is comminuted between the rotor blades and the stationary cutting bars inserted in the housing. The dwelling time of the sample in the chamber is short; as soon as it is small enough to pass through the openings of the bottom sieve it is discharged and collected in the receptacle.

Cutting Mills at a Glance

	Cutting Mills		
			
Model	SM 100	SM 200	SM 300
Application	size reduction by cutting		
Fields of application	agriculture, biology, chemicals / plastics, food, engineering / electronics, medicine / pharmaceuticals, environment / recycling		
Feed material	soft, medium-hard, elastic, fibrous	soft, medium-hard, tough, elastic, fibrous	

Performance data

Feed size*	max. 60 x 80 mm	max. 60 x 80 mm	max. 60 x 80 mm
Final fineness*	d_{90} < 250 µm	d_{90} < 250 µm	d_{90} < 250 µm
Rotor speed at 50 Hz	1,500 min^{-1}	1,500 min^{-1}	700–3,000 min^{-1}
Cutting bars	standard	double acting	double acting
Rotors	6-disc rotor and parallel section rotor	6-disc rotor and parallel section rotor	6-disc rotor, parallel section rotor and V rotor
Hoppers	fixed	foldback	foldback
Collecting receptacle			
Standard	5 l	5 l	5 l
Options	0.25 / 0.5 / 30 l	0.25 / 0.5 / 30 l	0.25 / 0.5 / 30 l
Cyclone (Option)	–	0.5 / 1 / 2 / 5 l	0.5 / 1 / 2 / 5 l

Technical data

Drive	3-phase-motor	3-phase-motor	frequency-controlled 3-phase-motor
Drive power	1,500 W	2,200 W	3,000 W with flywheel mass (approx. 28.5 kg)
Motor brake	✓	✓	✓
W x H x D (with base frame and universal hopper)	582 x 1,675 x 700 mm	576 x 1,675 x 760 mm	576 x 1,677 x 750 mm
Net weight	approx. 73 kg without base frame, hopper and rotor	approx. 90 kg without hopper and rotor	approx. 160 kg without hopper and rotor
More information on	**www.retsch.com/sm100**	**www.retsch.com/sm200**	**www.retsch.com/sm300**

*depending on feed material and instrument configuration

Typical Sample Materials

RETSCH cutting mills are suitable for a vast range of applications. Typical samples include lignite, non-ferrous metals, electronic scrap, drugs, foils, feedstuff, spices, rubber, wood, cables, bones, plastics, leather, organic and inorganic waste, paper, cardboard, plants, refuse derived fuels, straw, etc.

Application example: wood