Retsch®

MILLING SIEVING ASSISTING

NEW CUTTING MILL SM 400

MAXIMIZE YOUR THROUGHPUT

Are you grinding large sample pieces and volumes in various steps and with manual pre-cutting? Then we have good news for you: With the new Cutting Mill SM 400 you can conveniently pulverize your samples in one go!

part of VERDER scientific

CUTTING MILL SM 400

LARGE SAMPLE PIECES, HIGH THROUGHPUT

With a grinding chamber volume of 7.5 L, the SM 400 accepts sample pieces measuring up to 170 mm x 220 mm. Thus, large sample volumes may be fed to the mill and completely homogenized in one working run.

Compared to smaller models like the SM 300, the throughput is substantially higher. The SM 400 achieves grind sizes down to 1 mm, depending on the sample material.

BENEFITS SM 400

- For feed sizes up to 170 mm x 220 mm
- Powerful size reduction also of heterogeneous samples
- Substantially higher throughput than with smaller models
- Quick and easy cleaning thanks to fold-back hopper and smooth surfaces
- Suitable for grinding temperaturesensitive materials

A SUITABLE CUTTING MILL FOR EVERY APPLICATION

RETSCH cutting mills are used for efficient preliminary grinding of a large variety of sample materials. The four models provide maximum safety and operating convenience. The wide selection of accessories allows for quick adaptation of the cutting mills to many different applications.

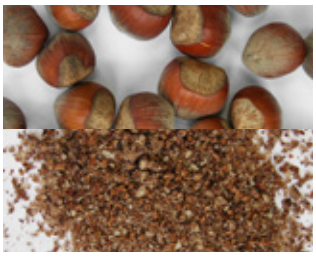
THE CUTTING MILL FAMILY AT A GLANCE

	SM 100	SM 200	SM 300	SM 400
Speed	1500 [min^{-1}]	1500 [min^{-1}]	100 – 3000 [min^{-1}]	280 [min^{-1}]
Peripheral speed	10,2 [m/s]	10,2 [m/s]	0,7 – 20,3 [m/s]	2,25 [m/s]
Max. material feed size	60 x 80 [mm]	60 x 80 [mm]	60 x 80 [mm]	170 x 220 [mm]
Sieve sizes	0,25 – 20 mm	0,25 – 20 mm	0,25 – 20 mm	1 – 20 mm
Fold-back hopper	no	yes	yes	yes
Push-fit rotors	Parallel section rotor, 6-disc rotor	Parallel section rotor, 6-disc rotor	Parallel section rotor, 6-disc rotor, V rotor	Parallel section rotor
Cyclone	no	yes	yes	yes
Drive power	1.5 kW	2.2 kW	3 kW + flywheel mass and RES technology	3 kW
Key feature	Budget-priced basic model	Universal model with more power	High-performance model with additional features and variable speed	Model for large sample pieces and volumes

APPLICATION EXAMPLES

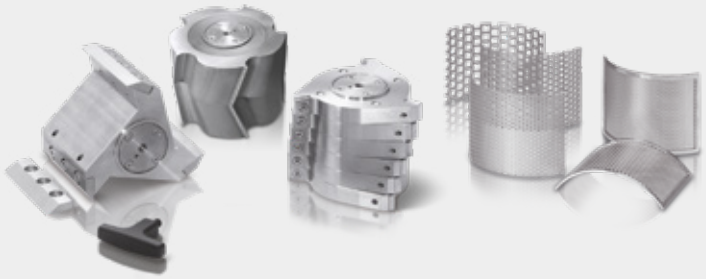
TYPICAL SAMPLES

Sample	Mill	Feed quantity	Final fineness
Cocoa beans	SM 400	1 kg	10 mm
Palm fruit	SM 400	180 g	10 mm
Wood chips	SM 400	15 kg	3 mm
Bulky waste	SM 400	600 g	5 mm
Coke	SM 400	600 g	10 mm
Paper	SM 400	750 g	10 mm
Bentonite	SM 400	5 kg	4 mm
Thermoset	SM 300	200 g	3 mm
Wood blocks	SM 300	160 g	1 mm
Corn cobs	SM 300	200 g	0,5 mm
RAM modules	SM 300	50 g	1 mm
Tobacco	SM 300	250 g	850 µm
Preforms	SM 300	50 g	6 mm
Egg cups	SM 300	2 Stück	6 mm
Feathers	SM 300	70 g	0,5 mm
Wool	SM 300	5 l	0,5 mm
Jacket	SM 300	1 kg	0,5 mm
Freeze-dried fish	SM 300	4 Stück	1 mm
Cocoa beans	SM 200	300 g	1,5 mm
Foamed material	SM 200	100 g	0,5 mm
Coal	SM 200	150 g	1 mm
Silicate fleece	SM 200	150 g	5 mm
Bones	SM 200	4 Stück	8 mm
Hare's-ear	SM 200	90 g	5 mm
Ginger	SM 200	100 g	6 mm
Roots	SM 100	1 kg	6 mm
Tea	SM 100	100 g	2 mm
Bottle cap	SM 100	300 g	8 mm
Dog food	SM 100	1 kg	2 mm
Grass	SM 100	5 l	15 mm
Leather	SM 100	100 g	2 mm
Sewage sludge	SM 100	150 g	2 mm
TCM mixture	SM 100	20 g	3 mm



ACCESSORIES AND OPTIONS

A wide selection of rotors, sieves, hoppers and collecting vessels allows for rapid adaptation to specific requirements. Soft, fluffy materials are thoroughly discharged from the grinding chamber by using the cyclone-suction combination.



For further information please visit our website **www.retsch.com**

SELECTION OF ROTORS

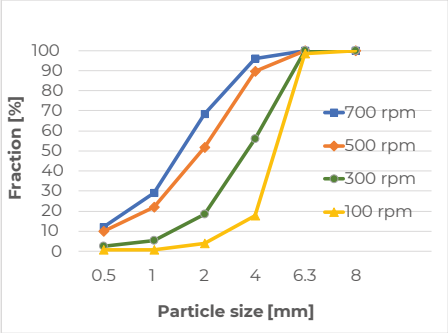
Rotor	V rotor	Parallel section rotor	6-disc rotor
Cutting similar to	Scissors	Axe	Shredder
Dead volume	Negligible	Medium	Small
Suitable for:			
Sieves > 4 mm	+	++	++
Sieves 4 – 1 mm	++	+	o
Sieves < 1 mm	++	o	–
Thermal stress	Negligible	Low	Moderate
Suitable for samples which are:			
Soft & elastic	++	++	–
Fibrous	++	++	o
Medium-hard	–	o	++
Tough	+	o	++

CUTTING MILL SM 300 – LESS FINES THANKS TO LOW SPEED

Reduction of the speed leads to a decreased fine fraction of the sample and to more particles within the desired size range. Especially for this type of application, the lowest speed of the SM 300 was reduced to 100 min^{-1}.

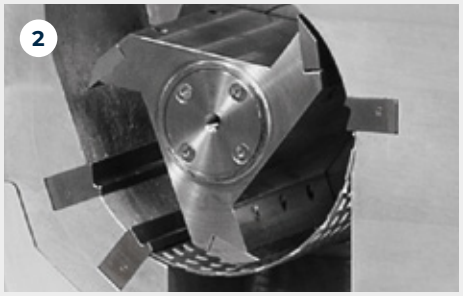
In the example below 150 g of resin pieces with a maximum size of 10 mm were milled in the SM 300 for 2 min, using the parallel section rotor and 8 mm bottom sieve. The desired particle size range lay between 2 and 6.3 mm. Starting with 700 min^{-1}, the speed was decreased to 100 min^{-1} in steps of 200 min^{-1}.

The graphic shows that the fine fraction is reduced with decreasing speed. With 700 min^{-1}, only 30 % of the sample lay within the desired range. With the lowest speed, however, 95 % were ground to the target size, only 5 % were too fine (<0.5 mm).



SUPERIORITY IN DETAIL

1. Push-Fit rotors for quick and easy cleaning (SM 100, SM 200 & SM 300)
2. 3 double-acting cutting bars provide maximum cutting effect (SM 200 & SM 300)
3. Cyclone-suction-combination ensures cooling of sample and cutting tools and improved material discharge (SM 200, SM 300 & SM 400)



Retsch®
MILLING SIEVING ASSISTING

Retsch GmbH

Retsch-Allee 1-5
42781 Haan
Germany

Phone: +49 2104 2333-100
Fax: +49 2104 2333-199

info@retsch.com www.retsch.com

part of VERDER scientific