

## Biopolymer (chitosan)

Protocol number: M0099192

Industry: Biology, Chemistry, Plastics / textiles

Feed Size: < 2cm

Desired Fineness: < 80µm

Quantity: 5g

Recommendation: We recommend using the Variable Speed Rotor Mill PULVERISETTE 14 for grinding your kind of sample to the desired endfineness.

## Result 1

### Variable-Speed Rotor Mill PULVERISETTE 14

speed: 20.000 rpm

impact rotor with 12 ribs, made of stainless steel  
+ sieve ring: 0.80 mm trapezoidal perforation, stainless steel

Feed quantity: 5 g

Feed Size: < 2 cm

Grinding time: 2 min

Final fineness: < 0,08 mm

Comments: Usually, we recommend a pre grinding step (e.g. with 1mm sieve rings) if big particles use to be fed. By this, durability of small sieves like the used 80µm sieve ring will be much longer.

By grinding with Variable Speed Rotor Mill PULVERISETTE 14, usually ground particles will show a d50 smaller has half of the opening diameter of the used sieve ring. For the 80µm sieve ring, particles with d50 < 40µm might be found.

After 2 minutes, all sample use to be fed. Sieve ring and rotor use to be mainly free of residues,. Therefore, a grinding of higher amounts use to be possible.



## Result 2

### Planetary Mono Mill PULVERISETTE 6 classic line

main disk speed: 600 rpm

250 ml grinding bowl made of sintered corundum (Al<sub>2</sub>O<sub>3</sub>)  
+ 15x 20 mm Ø sintered corundum grinding balls



Feed quantity: 2.5 g

Feed Size: < 2 cm

Grinding time: 5 min

Final fineness: mainly fine powder (still coarse particles can be found)

Comments: After only 5 minutes of dry grinding, sample use to start sticking to grinding bowl and balls.

This uses to happen after the majority of particles reached a fineness of < 20-30µm. Interacting forces between fine ground particles will become bigger as their own g-force. Therefore, particles will stick to each other and just become compressed by the used grinding balls. These clusters of particles also contain bigger particles which will not be ground any further too.

Within this kind of sample, even particles with 3mm and longer can be found. Therefore, a grinding in a planetary mill is not recommended for that kind of sample.

**Contact to our Applications Laboratory:** Leos Benes · Phone: 0049 67 84 70 122 · [benes@fritsch.de](mailto:benes@fritsch.de)