

FIND OUT MORE!



## CANNABIS

# SAMPLE PROCESSING, PREPARATION AND QUALITY CONTROL

RETSCH is putting to use its full product portfolio of grinders, sieve shakers and sample dividers to help process and prepare cannabis samples. The sample preparation process needs to be adjustable to the considerable complexity of the various matrices.

## SAMPLE PROCESSING, PREPARATION AND QUALITY CONTROL

# ARE YOUR CANNABIS PRODUCTS PESTICIDE FREE? DO YOU KNOW THE POTENCY?

With the growing use of cannabis in the medical sector, quality control has become a major issue. To ensure reliable and meaningful analysis results, sample homogenization prior to analysis is an important step. RETSCH offers a range of different laboratory mills for efficient, neutral-to-analysis sample preparation which are highly suitable for the task.

### TYPICAL SAMPLES

■ Cannabis flower, hemp, tablets/capsules, edible forms like cookies, gummy bears etc.

## SUITABLE LABORATORY MILLS FOR CANNABIS AND INFUSED PRODUCTS

The **Ultra Centrifugal Mill ZM 300** is ideally suited for quickly pulverizing fibrous samples like cannabis or hemp flower to grind sizes below 0.5 mm. The wide range of accessories includes distance sieves which allow for processing heat-sensitive samples. The use of a cyclone has a cooling effect on the sample and allows for grinding up to 4.5 l of sample.

For pesticide analysis of oily, sticky samples like hemp, the required homogenization should be carried out in a cryogenic mill like **RETSCH's CryoMill**. This grinder continually cools the grinding jar, and thus the sample, with liquid nitrogen and makes it break more easily. The CryoMill achieves grind sizes of <0.1 mm which facilitates the following extraction process which is frequently done with the QuEChERS method.

This method involves extraction of 10 g of hemp with 10 ml acetonitrile in the presence of a salt mixture in a 1:2 ratio to avoid ghost peaks in the chromatograms. To transfer the pesticides from the sample into the organic phase, the mixture is agitated for 1 to 3 minutes, e.g. in a laboratory mill like the **Mixer Mill MM 400**. It shakes the sample in a 50 ml Falcon

tube with a frequency of up to 30 Hz, thus ensuring thorough mixing to improve subsequent pesticide extraction. This mill can also be used to grind up to 8 x 4 g flower buds in 3 minutes for subsequent extraction of pesticides or cannabinoids.

The **GRINDOMIX Knife Mills** are suitable for pulverizing cannabis plants as well as infused products like cookies. To reliably quantify active components in cannabis, a representative sample needs to be extracted from the bulk.

The **GRINDOMIX GM 300** can homogenize up to 4 liter of plant material from which a small fraction is taken for analysis. Remnants of small twigs or resinous blossoms are no problem for this mill.

The smaller model **GRINDOMIX GM 200** quickly and efficiently homogenizes up to 700 ml sample material high in sugar or fat content, such as cannabis-infused cookies. In both **GRINDOMIX**, sticky or tough samples can be embrittled for perfect homogenization.

**Knife Mills**  
GM 200 & GM 300

NEW

**Rotor Mill**  
ZM 300

**Mixer Mill**  
MM 400 & Falcon Tube  
Adapter

CryoMill



ALL RETSCH MILLS DO NOT  
CHANGE THE CHEMICAL  
COMPOSITION OF THE SAMPLES



The hemp sample milled in the CryoMill (left) yields a higher pesticide amount after extraction than the sample milled in the ZM 300 (right).

## MILLS FOR CANNABIS PROCESSING

The high-performance **Cuttig Mill SM 300** is also available in a stainless steel 316L foodGrade version, which was designed with GMP processes in mind.

This mill ensures reproducible particle size reduction without loss of cannabinoids or terpenes, perfectly for CO<sub>2</sub> or ethanol extraction.

### BENEFITS AT A GLANCE

- Powerful and rapid size reduction of cannabis samples down to 1 mm
- Speed 100 – 3000 rpm can be adapted to sample properties
- Adjustable particle sizes
- Very little warming effects especially at low speed and with cyclone-suction combination
- Reproducible performance regardless of the user
- Resin built up prevented by cyclone-suction usage



### BASED ON GMP

High sample  
throughput up to  
40 kg / h

**Cutting Mill**  
SM 300 316L foodGrade  
Version

## HOW DO RETSCH MILLS FACILITATE YOUR BUSINESS?

- Time saving and operational cost reduction
- Perfect reproducibility
- Highest extraction yields
- Easy cleaning
- All sample processing and preparation solutions from one supplier



Cannabis Flower



Cannabis Flower



Gummy Bears



Cookies

For further information please visit  
our website [www.retsch.com/cannabis](http://www.retsch.com/cannabis)

## APPLICATION EXAMPLES

|                 | Sample                | Mill           | Feed quantity | Time                                      | Final fineness |
|-----------------|-----------------------|----------------|---------------|-------------------------------------------|----------------|
| Processing      | Cannabis flower buds  | SM 300 316L FG | 40 kg         | 60 min                                    | 2mm            |
|                 | Hemp Flowers          | SM 400         | 100 kg        | 60 min                                    | 20 mm          |
|                 | Hemp Flowers, pre-cut | ZM 300         | 20 g          | 1 min                                     | 0.5 mm         |
|                 | Hemp Flowers, pre-cut | CryoMill       | 5 g           | 3 min pre-cooling, 3 min grinding         | 0.25 mm        |
| Quality control | Tablets               | MM 400         | 2 x 9 g       | 30 sec                                    | 0.7 mm         |
|                 | Cookies               | GM 200         | 8 Pieces      | 10 sec pre-grinding, 35 sec fine-grinding | 0.5 mm         |
|                 | Hemp                  | GM 300         | 4 l           | 1 min                                     | 0.8 mm         |
|                 | Tablets               | MM 400         | 2 x 9 g       | 30 sec                                    | 0.7 mm         |
|                 | Tablets               | ZM 300         | 250 g         | 5 min                                     | 0.1 mm         |
|                 |                       |                |               |                                           |                |

## SIEVING, DIVIDING AND DRYING

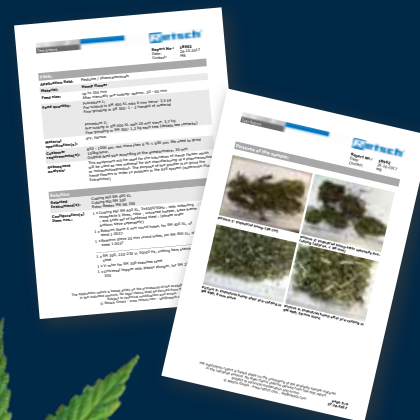
The RETSCH offering includes analytical sieve shakers for classifying the particle size distribution of bulk materials in accordance with relevant standards. A range of rotating sample dividers helps to generate representative sub-samples for further treatment. The Rapid Dryer TG 200 efficiently dries organic materials without localized overheating.



### PUT US TO THE TEST!

Are you looking for a suitable mill to meet your cannabis preparation requirements? Then send us your sample for a free-of-charge test grinding by our application specialists. You will receive a detailed test report including process parameters and recommendations for the most suitable mill and grinding tools.

For more information please visit our website  
[www.retsch.com/testgrinding](http://www.retsch.com/testgrinding)



**Retsch**<sup>®</sup>  
 MILLING SIEVING ASSISTING

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