

*Cutting Mills*



**IDEAL FOR**

PLASTICS AND TEXTILES  
AGRICULTURE AND FORESTRY  
ENVIRONMENT  
ROHS  
ANALYTIC  
CONSTRUCTION MATERIALS  
CHEMISTRY  
FOODSTUFFS

**CUTTING MILLS**

➤ Now available with variable rotational speed



# QUALITY MADE IN GERMANY

FRITSCH is more than just a brand: It is backed by a strong, medium-sized, family business in its fourth generation, which has been firmly embedded in the region since 1920 and globally active for decades. All FRITSCH-products are produced according to strict quality criteria, and our entire production is in-house. The innovative ideas of our development department are inspired by the close relationship with our customers and their practical work in the lab. Satisfied customers worldwide count on our quality, our experience and our service. This makes us proud and motivates us.

**FRITSCH. ONE STEP AHEAD.**



## FRITSCH Cutting Mills – fast, safe, simple

The FRITSCH Cutting Mill range has just the right solution for every application: As a standard version for the most common applications, strong and powerful for harder materials and now also with a wide range of variable rotational speeds for universal use. All versions are characterised for fast and safe comminution and their unmatched easy and fast cleaning. This is how we make your work easier.

### **FRITSCH Advantage: Durability**

Rotor knives and fixed knives are exchangeable in all FRITSCH Cutting Mills – your decision for long-lasting quality.

---

**Optimal for material type**

---

**Rotor speed**

---

**Max. feed size**

(depending on the material and funnel)

---

**Max. throughput**

(depending on the material and sieve size)

---

**Sieve cassettes/sieve inserts**

(other sieve sizes available)

---

**Rotor peripheral speed**

---

**Drive**

---

**Torque\***

\* depending on voltage and frequency






## Overview of the FRITSCH Cutting Mill range



### Universal Cutting Mill **PULVERISETTE 19**

 with variable rotational speed for optimal cutting speed adjustment to your sample material

### Cutting Mill **PULVERISETTE 15**

### Power Cutting Mill **PULVERISETTE 25**

#### Fast effective comminution

Medium-hard, soft, brittle, tough, fibrous

300–3000 rpm

70 x 80 mm

60 l/h

0.2–6 mm

1.57–15.7 m/s

Up to 5 kW three-phase motor with frequency converter and flywheel mass for stabilising the drive torque

Up to 30 Nm

#### Powerful gentle comminution

Hard, tough-elastic, temperature-sensitive

50–700 rpm

70 x 80 mm

60 l/h

0.2–6 mm

0.26–3.66 m/s

Up to 2.8 kW three-phase motor with frequency converter and flywheel mass for stabilising the drive torque

Up to 67 Nm

#### For all common applications

Medium-hard, soft, fibrous

2800/3400 rpm\*

70 x 70 mm

50 l/h

0.25–20 mm

14.92/17.9 m/s\*

Up to 2.1 kW three-phase motor or single-phase motor

Up to 5.5 Nm

#### Powerful pre-crushing even for larger samples

Medium-hard, soft, brittle, tough, fibrous

300/360 rpm\*

120 x 85 mm

85 l/h

1–10 mm

1.57/1.88 m/s\*

Up to 2.6 kW three-phase motor

Up to 67 Nm



The sample material is comminuted according to the cutting principle of scissors between the cutting edges of the rotor and the fixed knives in the grinding chamber until the desired final fineness is achieved.





## Patented ideas for better results

Our Cutting Mills come with a whole range of patented FRITSCH ideas – each one inspired by the work of our customers, developed according to our long-standing experience and optimised for practical applications. They make daily use easy and efficient and offer advantages which distinguish FRITSCH Cutting Mills from others.



### **PATENTED DESIGN**

with fully hinged grinding chamber and removable lid for fast, residue-free cleaning.

### **PATENTED DOUBLE CONE BEARING OF THE ROTOR**

ensures stable running and minimal wear on the models of PULVERISETTE 19 and PULVERISETTE 25.

### **PATENTED SIEVE CASSETTE**

ensures the optimal distance to the rotor and is especially fast and easy to insert in the models PULVERISETTE 19 and PULVERISETTE 25.

### **PATENTED COMBINATION**

of Cutting Mill and sample exhaustion with FRITSCH Cyclone Separators for the PULVERISETTE 19 models or the Cutting Mill Combination P-25/P-19.

**Especially convenient:** A single plunger for filling in long solids and bulk solids – simply select the wide or the narrow end, depending on the material.



### **FRITSCH-Advantage**

#### **Filling without pre-crushing**

The FRITSCH standard funnel can be used to feed long solids like straw, foils and similar materials without pre-crushing.

### **FRITSCH-Advantage**

#### **Optimum airflow**

A large-surface filter ensures an optimal airflow and a particularly high air throughput. Your advantage: especially fast comminution and reliable protection against clogging.

### **FRITSCH-Advantage**

#### **Safety circuit at the collecting vessel**

It ensures that the rotor stops immediately when the instrument is opened and prevents the mill from starting while the drawer is open.





## Clean Design for unmatched ease of cleaning

**Available only from FRITSCH: For residue-free cleaning all grinding parts of our Cutting Mills can be removed within seconds without tools – unbeatable fast, simple and efficient. A clear advantage especially for the comminution of fibrous or tough materials, plastics or heterogeneous mixtures of materials, as well as for sample preparation for RoHS analyses.**

While you are still tightening the screws on other mills, our FRITSCH Cutting Mill is already clean: Because the entire grinding chamber can be opened and the rotor and sieve cassette can be removed with just a few simple motions. The housing and lid can be lifted back completely, and the grinding chamber lid can be completely removed from the hinges. The result: a completely open, empty grinding chamber with minimised dead space and smooth interior walls for quick and easy cleaning and reliable protection against cross-contamination.







### **FRITSCH-Advantage**

The rotor of the FRITSCH Cutting Mills is easy to remove without tools. For quick cleaning in between, the rotor can also be turned by hand while the mill is open.

### **FRITSCH-Advantage**

#### **Unique grinding chamber geometry**

The grinding chamber of FRITSCH Cutting Mills is designed with minimal dead space and a progressive cutting geometry between the rotor and the fixed knives. This ensures that the sample material is continuously moved during comminution and cannot settle anywhere. In conjunction with the special airflow, this is the basis for swift, blockage-free operation and fast cleaning without residue.





## PULVERISETTE 19

Two models with variable rotational speed

### YOUR ADVANTAGES

- Rotor speed 300–3000 rpm and 50–700 rpm, variable adjustable
- Max. feed size 70 x 80 mm, sieve cassettes 0.2–6 mm
- Collecting vessels 0.25 litres to 60 litres
- Optimised Clean Design for maximum ease of cleaning
- Practical operation directly on the front panel
- Maintenance-free 5 kW/2.8 kW three-phase motor with frequency converter
- Externally adjustable cutting gap
- Double cone bearing of the rotor for long service life
- 2-year guarantee

#### Variable 300–3000 rpm for fine comminution

The high-speed Universal Cutting Mill PULVERISETTE 19 comminutes up to 60 l/h of soft to medium-hard sample materials and fibrous materials at a torque of up to 30 Nm with reliable reproducible results. The great advantage: The variable rotational speed adjustment in increments of ten between 300 and 3000 rpm enables fine tuning of the comminution process for each sample within a very wide range of applications.

#### Variable 50–700 rpm for powerful comminution

The low-speed Universal Cutting Mill PULVERISETTE 19 with variable rotational speed adjustment between 50–700 rpm and a torque of up to 67 Nm enables due to the combination of low cutting rate and extreme cutting forces a very powerful comminution of hard, tough-elastic samples and small sample quantities. At the same time, it is the ideal solution for all cases where e.g. thermal damage, the loss of highly volatile substances, or an excessively high fine share need to be avoided.

#### FRITSCH-Advantage

##### Maintenance-free three-phase motor

The single-phase versions of the new Universal Cutting Mills PULVERISETTE 19 also have an especially maintenance-free three-phase motor with a frequency converter.

#### FRITSCH-Advantage

##### Running stabilisation due to flywheel mass

Both models of the Universal Cutting Mill PULVERISETTE 19 are equipped with a flywheel mass to stabilise the drive torque. This ensures stable operation even for extreme short-term load, as well as an optimal comminution result.

## VARIABLE ROTATIONAL SPEED

for optimal adjustment of the cutting speed to your sample material.



Universal Cutting Mill  
PULVERISETTE 19  
with protected funnel and  
10 litre collecting vessel

### FRITSCH-Advantage

#### Cold comminution – embrittlement

Due to the well-conceived instrument design and the materials used, it is no problem to comminute pre-cooled materials or samples embrittled with liquid nitrogen. The improved breaking behaviour enables efficient comminution also of sticky, tough-elastic or temperature-sensitive materials with dry ice or after previous embrittlement of the sample with liquid nitrogen.

### FRITSCH-Advantage

#### Optimised Clean Design

We further optimised the Clean Design for both models of the FRITSCH Cutting Mill PULVERISETTE 19: The instrument hood now consists completely of easy-to-clean stainless steel, and the seals of the grinding chamber were completely revised for improved protection against cross-contamination.

### FRITSCH-Advantage

#### Complete operation at the front

The well-designed control panel keeps all functions, including the on/off switch, easily accessible on the instrument's front panel. The rotational speed is set in increments of ten with the plus/minus buttons and shown on the digital display. A special clean-mode button enables the manual turning of the rotor for quick and easy cleaning in between.



# PULVERISETTE 19

The perfect match for your application



### Completely in stainless steel

Universal Cutting Mill PULVERISETTE 19 with funnel for long and bulk solids and 3 litre collecting vessel made of corrosion-resistant stainless steel 316L

### Completely in stainless steel for analytical sector, food and pharmaceutical industry

Both models of the Universal Cutting Mill PULVERISETTE 19 are also available in a corrosion-resistant stainless steel version 316L, whose materials are resistant to alkalis and acids and conform to the guidelines of the food and pharmaceutical industry. (For order data see p. 22)

### Select a suitable funnel

For your PULVERISETTE 19 you can choose between a funnel for long and bulk solids made of plastic or stainless steel 316L to feed in materials at their full length, or a protected funnel made of stainless steel with a plastic sample pusher for all other materials.



#### Standard funnel

for long and bulk solids  
made of plastic



#### Protected funnel

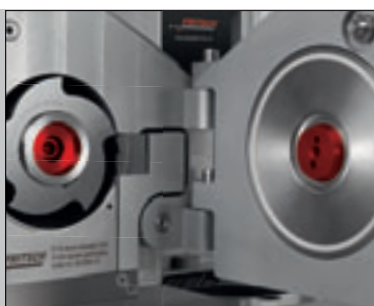
made of stainless steel  
with plastic sample pusher

**TECHNICAL DATA**

	<b>Fast effective comminution</b>	<b>Powerful gentle comminution</b>
<b>Variable rotor speed</b>	300–3000 rpm	50–700 rpm
<b>Electrical details</b> (three-phase motor with frequency converter and flywheel mass* for stabilising the drive torque)	for 380-460 V/3~, 50-60 Hz, 5000 watt*, 30 Nm for 200-240 V/1~, 50-60 Hz, 2350 watt*, 10 Nm for 100-120 V/1~, 50-60 Hz, 1725 watt*, 8 Nm	for 380-460 V/3~, 50-60 Hz, 2800 watt, 67 Nm for 200-240 V/1~, 50-60 Hz, 2350 watt*, 26 Nm for 100-120 V/1~, 50-60 Hz, 1725 watt*, 24 Nm
<b>Weight</b>		
Net	60 kg	79 kg
Gross	85 kg	104 kg
<b>Dimensions w x d x h</b> Table-mounting or on stand	44 x 79 x 56 cm	44 x 79 x 56 cm
<b>Packaging w x d x h</b> Wooden case	85 x 68 x 90 cm	85 x 68 x 90 cm
<b>Emission sound pressure level at the workplace according to DIN EN ISO 3746</b> (depending on material to be ground, rotor and sieve cassette used!)	L <sub>pAid</sub> = 78 dB	L <sub>pAid</sub> = 75 dB
<b>Order no.</b> (order numbers for the stainless steel version 316L – see p. 22)	<b>380-460 V/3~</b> 19.3060.00 <b>200-240 V/1~</b> 19.3020.00 <b>100-120 V/1~</b> 19.3030.00	<b>380-460 V/3~</b> 19.3040.00 <b>200-240 V/1~</b> 19.3000.00 <b>100-120 V/1~</b> 19.3010.00



Universal Cutting Mill  
PULVERISETTE 19  
with protected funnel  
and 10 litre collecting vessel  
on the space-saving FRITSCH  
universal support stand



Stable operation: rotor with double cone bearing on the shaft and in the lid



Different rotors for multi-functional use, e.g. disk milling cutter rotor

**IDEAL FOR COMMINUTION OF**

<b>Plastics and textiles</b>	Plastics, rubber, foils, leather, fabric, fibres
<b>Agriculture and forestry</b>	Wood, leaves, roots, animal feed, grain, corn, peat, tobacco, straw – can be fed in at full length
<b>Environment</b>	Paper, cardboard, derived fuels, metal-free waste, household waste, composites
<b>Cannabis</b>	Plant material, stalks, blossoms, sample preparation for SFE processes and cannabinoids, oil extraction
<b>RoHS</b>	Mobile phone LCD glass, mobile phone keypads, electronic chips, circuit boards (assembled and disassembled)
<b>Analytic</b>	Coal, bones, horn, dragées, tablets, cork, drugs
<b>Construction materials</b>	Derived fuels
<b>Chemistry</b>	Heterogeneous mixtures of materials
<b>Foodstuffs</b>	Maize, malt, pasta, herbs, spices, dried meat

➤ **With a feed size (depending on the material) of up to 70 x 80 mm and a throughput of up to 60 l/h**

**EQUIPMENT**

**Instruments without funnel, cutting tool set (consisting of rotor and fixed knives), sieve cassette, collecting vessel and stand**

• Required accessories

- Funnel for long and bulk solids made of plastic or stainless steel 316L or protected funnel made of stainless steel with plastic sample pusher
- Rotor with V-cutting edges and fixed knives made of hardened stainless steel, hardmetal tungsten carbide, or chromium-free tool steel, or Rotor with straight cutting edges and fixed knives made of hardened stainless steel or chromium-free tool steel, or Disk milling cutter rotor with indexable inserts and fixed knives made of hardmetal tungsten carbide
- Sieve cassettes with trapezoidal or square perforation made of stainless steel 316L or chromium-free steel DC01
- Collecting vessel 3 litres or collecting vessel for large quantities 10 litres

• Optional accessories

- Universal support stand, stand with wheels or stand made of stainless steel 316L
- Sample exhaustion with Cyclone separators
- IQ/OQ documentation to support equipment qualification



## Optimal sample exhaustion: FRITSCH Cyclone separators

FRITSCH Cyclone separators require an exhaust system which can be ordered along.



**Clean, convenient, cool: Combine your FRITSCH Universal Cutting Mills PULVERISETTE 19 with a FRITSCH Cyclone separator for sample exhaustion. Its strong airflow ensures simple feeding, increases throughput, and reduces the thermal load of the samples.**

At the same time, the powerful airflow of the FRITSCH Cyclone separators enables the use of finer sieve cassettes to achieve a higher final fineness – even for materials, which are otherwise difficult to comminute finely.

The result: especially fast and efficient comminution with minimised thermal load and significantly higher throughput – in addition to quick and easy cleaning.



**FRITSCH high-performance Cyclone separator**  
made of stainless steel 304 with a 1 litre sample glass



Simple connection  
to the PULVERISETTE 19



### **FRITSCH high-performance Cyclone separator**

The FRITSCH high-performance Cyclone separator completely made of stainless steel 304 is particularly indispensable in the analytical sector and in the food and pharmaceutical industries, and for the processing of heterogeneous mixtures of material, e.g. in the cement industry. Due to its high surface quality, it offers enhanced resistance to corrosive media such as alkalis and acids and is especially easy to clean with a wide range of possible cleaning agents, without leaving any residues. In addition, it can be completely dismantled, fully emptied, flooded and sterilised, and thus offers reliable protection against cross-contamination.

### **FRITSCH small volume Cyclone separator**

Especially for exhaustion of small sample quantities, we designed the compact FRITSCH small volume Cyclone separator. It is made of plastic, can be dismantled completely and cleaned in a dishwasher for reliably preventing contaminations. The comminuted sample is collected in a screwed-on sample glass of 250 or 500 ml volume.



**Especially convenient:** The comminuted sample is drawn directly into the screwed-on sample glass or in a larger collecting vessel of up 60 litres, in which it can also be transported and stored.



# PULVERISETTE 15

For a wide range of common applications

## YOUR ADVANTAGES

- Rotor speed up to 3400 rpm
- Max. feed size 70 x 70 mm, sieve inserts 0.25–20 mm
- Collecting vessel 3.5 litres or 60 litres
- Externally adjustable cutting gap
- Stable operation due to double rotor bearing
- 2-year guarantee

The FRITSCH Cutting Mill PULVERISETTE 15 is ideal for the comminution of dry sample materials with soft to medium-hard consistency, for fibrous materials or cellulosic materials, as well as for sample preparation according to RoHS. A cutting rotor speed of up to 3400 rpm ensures a high air throughput, fast processing and reproducible results.

### FRITSCH-Advantage: Turnable rotor knives

The rotor knives of the PULVERISETTE 15 have cutting edges on both sides. When one side is worn, the knives can simply be turned to double the service life.

### Select a suitable funnel

For your PULVERISETTE 15 you optionally receive either a funnel for long and bulk solids to feed straw, foils, and similar materials at their full length, or a protected funnel made of stainless steel with plastic sample pusher for all other materials.



The FRITSCH universal support stand provides a firm, space-saving and flexible basis for your PULVERISETTE 15 even with a 60 litre collecting vessel and filter hose.



**Funnel**

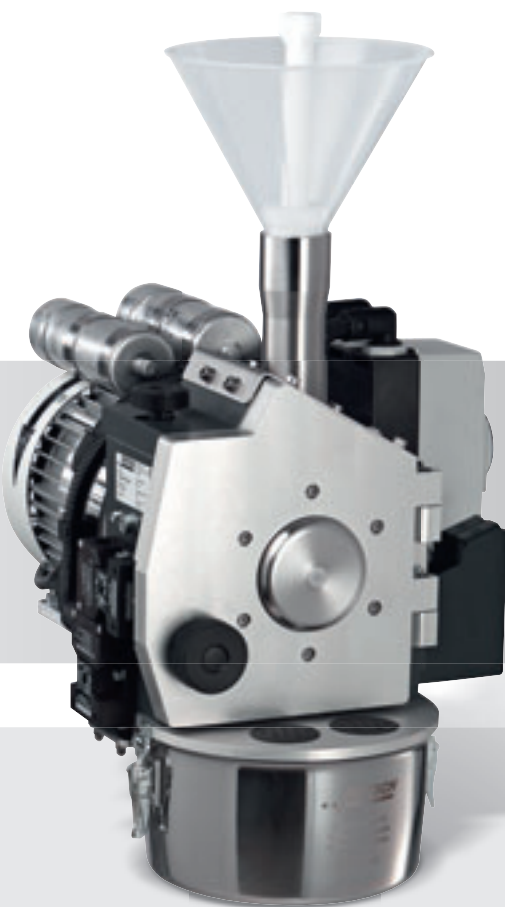
for long and bulk solids  
made of plastic



**Protected funnel**

made of stainless steel  
with plastic sample pusher





Cutting Mill PULVERISETTE 15  
with funnel for long and bulk solids  
and 3.5 litre collecting vessel

#### TECHNICAL DATA

##### Electrical details

400 V/3~, 50 Hz, 1790 watt, 5.5 Nm  
220-240 V/1~, 50 Hz, 2150 watt, 4.8 Nm  
200 V/3~, 60 Hz, 2140 watt, 5.5 Nm  
100-120 V/1~, 60 Hz, 1900 watt, 3 Nm  
Other voltages on request!

##### Weight

Net 32 kg  
Gross 62 kg

##### Dimensions w x d x h

Table-mounting or on stand 42 x 48 x 69 cm

##### Packaging w x d x h

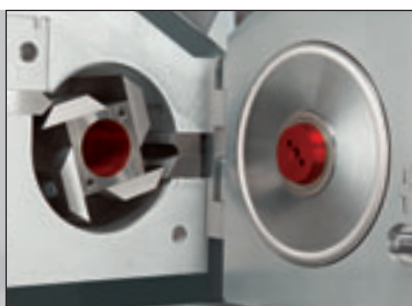
Wooden case 75 x 55 x 91 cm

##### Emission sound pressure level at the workplace according to DIN EN ISO 3746

$L_{\text{pA}} = 78 \text{ dB}$

(depending on the material to be ground, rotor and sieve insert used!)

Order no.	400 V/3~	220-240 V/1~	200 V/3~	100-120 V/1~
	15.4030.00	15.4020.00	15.4050.00	15.4010.00



Very stable: rotor with double bearing on  
shaft and in the lid



Powerful PULVERISETTE 15 cutting  
rotor with 4 straight cutting edges

#### IDEAL FOR COMMINUTION OF

<b>Plastics and textiles</b>	Plastics, rubber, leather, fabric, fibres
<b>Agriculture and forestry</b>	Wood, leaves, roots, animal feed, grain, corn, peat, tobacco
<b>Environment</b>	Paper, cardboard, derived fuels, metal-free waste, household waste
<b>RoHS</b>	Mobile phone LCD glass, mobile phone keypads, disassembled circuit boards
<b>Analytic</b>	Coal, horn, dragées, tablets, cork, drugs
<b>Construction materials</b>	Derived fuels
<b>Chemistry</b>	Heterogeneous mixtures of materials
<b>Foodstuffs</b>	Maize, malt, pasta, herbs, spices, dried meat

➤ With a feed size (depending on the material) of up to 70 x 70 mm and a throughput of up to 50 l/h

## EQUIPMENT

### Instrument without funnel, cutting tool set (consisting of rotor and fixed knives), sieve inserts, collecting vessel and stand

- Required accessories

Funnel for long and bulk solids made of plastic or protected funnel made of stainless steel with plastic sample pusher

Rotor with straight cutting edges and fixed knives made of tool steel or chromium-free tool steel

Sieve inserts with trapezoidal or square perforation made of stainless steel 316L or chromium-free steel DC01

Collecting vessel 3.5 litres or collecting vessel for large quantities, 60 litres with filter hose

- Optional accessories

Universal support stand



# PULVERISETTE 25

Powerful pre-crushing

## YOUR ADVANTAGES

- Rotor speed up to 360 rpm
- Max. feed size: 120 x 85 mm, sieve cassettes 1–10 mm
- Collecting vessel 3 litres or 10 litres
- High-torque geared motor
- Externally adjustable cutting gap
- Double cone bearing of the rotor for long service life
- 2-year guarantee

The FRITSCH PULVERISETTE 25 is our heavy duty Power Cutting Mill for fast, reproducible pre-crushing of dry, soft to medium-hard or fibrous materials and plastics at low speeds with a high-torque geared motor.

### Select a suitable funnel

Use the 10 litre standard funnel for bulk solids for bulk solids and free-flowing materials. For all other materials, use the 3 litre protected funnel with sample pusher.



**Standard funnel  
for bulk solids**

10 litres  
made of stainless steel



**Protected funnel**

3 litres  
made of stainless steel  
with plastic sample pusher

### Patented power team

With the extra powerful, patented FRITSCH Cutting Mill Combination of PULVERISETTE 25 and PULVERISETTE 19 as well as the associated FRITSCH high-performance Cyclone separator, it is possible e. g. to process two litres of sample material with a particle size of 30 mm down to a final fineness < 500 µm quickly in only one step. It doesn't matter how heterogeneous the sample is. Let us advise you!



Equipment of the Cutting Mill Combination see page 23

TECHNICAL DATA		
	PULVERISETTE 25	PULVERISETTE 25/19
<b>Electrical details</b>	400 V/3~, 50/60 Hz, 2590 watt, 67 Nm Other voltages on request.	400 V/3~, 50/60 Hz, 8590 watt, 67 Nm Other voltages on request.
<b>Weight</b>		
Net	75 kg	219 kg
Gross	100 kg	345 kg
<b>Dimensions w x d x h</b>	45 x 65 x 63 cm Table-mounting or on stand	100 x 65 x 145 cm on included underframe
<b>Packaging w x d x h</b>	1 wooden case 85 x 68 x 90 cm	3 wooden cases 75 x 65 x 165 cm, 90 x 80 x 70 cm, 80 x 55 x 65 cm
<b>Emission sound pressure level at the workplace according to DIN EN ISO 3746</b> <small>(depending on the material to be ground, rotor and sieve cassette used!)</small>	$L_{pAd} = 71$ dB	$L_{pAd} = 78$ dB
<b>Order no.</b>	25.2030.00	19.5030.00



Power Cutting Mill PULVERISETTE 25 with 10 litre standard funnel for bulk solids and 10 litre collecting vessel for large quantities



Larger grinding chamber depth for larger material quantities



Closes particularly securely: the grinding chamber safety lock

### IDEAL FOR COMMINUTION OF

<b>Plastics and textiles</b>	Plastics, rubber, films, leather, fabric, fibres
<b>Agriculture and forestry</b>	Wood, leaves, roots, animal feed, grain, corn, peat, tobacco, straw – can be fed at full length
<b>Environment</b>	Paper, cardboard, derived fuels, metal-free waste, household waste, composites
<b>RoHS</b>	Mobile phone LCD glass, mobile phone keypads, electronic chips, circuit boards (assembled and disassembled)
<b>Analytic</b>	Coal, bones, horn, dragées, tablets, cork, drugs
<b>Construction materials</b>	Derived fuels
<b>Chemistry</b>	Heterogeneous mixtures of materials
<b>Foodstuffs</b>	Maize, malt, pasta, herbs, spices, dried meat

➤ With a feed size (depending on the material) of up to 120 x 85 mm and a throughput of up to 85 l/h

## EQUIPMENT OF POWER CUTTING MILL PULVERISETTE 25

### Instrument without funnel, cutting tool set (consisting of rotor and fixed knives), sieve cassette, collecting vessel and stand

- Required accessories

Standard funnel for bulk solids 10 litres made of stainless steel or protected funnel 3 litres made of stainless steel with plastic sample pusher

Standard rotor with V-cutting edges and fixed knives made of hardened stainless steel, hardmetal tungsten carbide or chromium-free tool steel, or Disk milling cutter rotor with indexable inserts and fixed knives made of hardmetal tungsten carbide

Sieve cassettes with trapezoidal or square perforation made of stainless steel 316L or chromium-free steel DC01

Collecting vessel 3 litres or collecting vessel for large quantities 10 litres

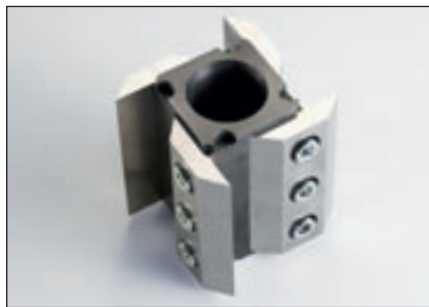
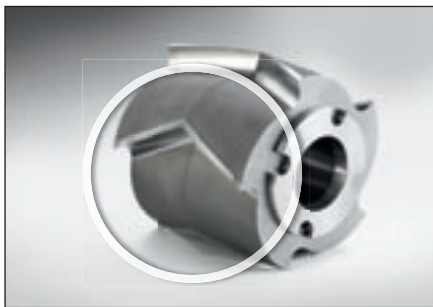
- Optional accessories

Universal support stand, stand with wheels



## Configure your Cutting Mill

When ordering, you may configure your FRITSCH Cutting Mill by selecting the rotor and the sieve cassette or sieve insert according to your application. Alternatively, you may order several rotors and sieve cassettes to be prepared for multifunctional use. As it suits you best.



The **standard rotor made of hardened stainless steel with V-cutting edges** and fixed knives is particularly suited for size-reduction of tough-elastic materials and films due to its especially acute cutting angle and the high cutting action that results.

The rotor with V-cutting edges and fixed knives made of **hardmetal tungsten carbide** is especially suitable for comminution of hard-tough materials due to the combination of impact and cutting forces.

The **rotor with straight cutting edges** which run parallel to the fixed knives is especially suitable for easily cuttable materials like hay, straw, fibrous and biological materials. The rotor knives have two cutting edges and can simply be turned when one side is used up. Your advantage: double service life.

The especially robust **disk milling cutter rotor** with indexable inserts and fixed knives made of **hardmetal tungsten carbide** can even comminute circuit board scrap with glass fibre residue and copper cable.

### **FRITSCH-Advantage Quadruple service life**

With the disk milling cutter rotor, the cutting plates can be turned four times and replaced individually. Damage or wear are no longer a reason to buy a completely new rotor.

### **100% safety**

The fixed knives of FRITSCH Cutting Mills are always made of the same material as the cutting edges of the rotor.

## FRITSCH SUGGESTION

By selecting the material of the cutting tool sets and sieve cassettes, the abrasion properties can also be individually accommodated. The element analyses of the various materials can be found under [www.fritsch-international.com/cutting-mills](http://www.fritsch-international.com/cutting-mills) directly by clicking on the accessories of each corresponding mill.



The finer the sieve openings,  
the finer the finished sample

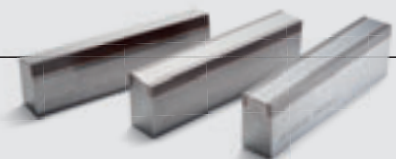
### Practical: FRITSCH sieve cassettes

The final fineness of each sample can be determined easily and variably through the selection of the sieve used: the finer the sieve, the finer the sample. The patented FRITSCH sieve cassettes available for the models PULVERISETTE 19 and PULVERISETTE 25 simplify the work enormously, guarantee a constant distance between the rotor and the sample material and ensure a reliable result. Sieve inserts are used with the Cutting Mill PULVERISETTE 15. Both can be selected in various trapezoidal and square perforation patterns in stainless steel 316L or chromium-free steel DC01.

### Genuine hardmetal – Genuine chromium-free

We keep what others promise: If you select cutting tools made of hardmetal tungsten carbide, you have the guarantee that your sample is indeed completely processed by hardmetal – because only in FRITSCH Cutting Mills, the fixed knives are also made of tungsten carbide. Anything else offers only half the reliability.

And when chromium-free size reduction is required for sample preparation according to RoHS, e.g. for verification of hexavalent chromium – or for XRF analysis, FRITSCH cutting tool sets made of chromium-free tool steel offer absolute assurance.



Fixed knives of  
hardmetal tungsten carbide

## ORDERING DATA

Order no.	Article
-----------	---------

## UNIVERSAL CUTTING MILL

## PULVERISETTE 19


**Instruments without funnel, cutting tool set, sieve cassette, collecting vessel and stand**
**300-3000 rpm - variable rotational speed adjustment**

19.3060.00 for 380-460 V/3~, 50-60 Hz, 5000 watt  
 19.3020.00 for 200-240 V/1~, 50-60 Hz, 2350 watt  
 19.3030.00 for 100-120 V/1~, 50-60 Hz, 1725 watt

> in a corrosion-resistant stainless steel version 316L

19.3160.00 for 380-460 V/3~, 50-60 Hz, 5000 watt  
 19.3120.00 for 200-240 V/1~, 50-60 Hz, 2350 watt  
 19.3130.00 for 100-120 V/1~, 50-60 Hz, 1725 watt

**50-700 rpm - variable rotational speed adjustment**

19.3040.00 for 380-460 V/3~, 50-60 Hz, 2800 watt  
 19.3000.00 for 200-240 V/1~, 50-60 Hz, 2350 watt  
 19.3010.00 for 100-120 V/1~, 50-60 Hz, 1725 watt

> in a corrosion-resistant stainless steel version 316L

19.3140.00 for 380-460 V/3~, 50-60 Hz, 2800 watt  
 19.3100.00 for 200-240 V/1~, 50-60 Hz, 2350 watt  
 19.3110.00 for 100-120 V/1~, 50-60 Hz, 1725 watt

The PULVERISETTE 19 with voltage of "/3~" can **only** be operated on a three-phase supply network.

Despite the frequency converter, the three-phase version "/3~" is definitely preferable instead of a single-phase version "/1~", because the three-phase version achieves a higher torque mass and pulling power.

**Funnels**

19.1550.00 Standard funnel for long and bulk solids  
 19.1850.00 Protected funnel with sample pusher  
 19.1559.00 Funnel for long and bulk solids made of stainless steel 316L

**Collecting vessels made of stainless steel 316L**

45.5730.00 Collecting vessel, 3 litres  
 45.5700.00 Collecting vessel for large quantities, 10 litres

**Cutting tool sets**

45.5100.00 Standard rotor with V-cutting edges and fixed knives made of hardened stainless steel  
 45.5370.00 Rotor with V-cutting edges and fixed knives made of hardmetal tungsten carbide  
 45.5185.00 Rotor with straight cutting edges and fixed knives made of hardened stainless steel  
 45.5200.00 Disk milling cutter rotor with indexable inserts and fixed knives made of hardmetal tungsten carbide

**Sieve cassettes made of stainless steel 316L**

45.5405.10 0.2 mm trapezoidal perforation  
 45.5410.10 0.25 mm trapezoidal perforation  
 45.5420.10 0.5 mm trapezoidal perforation  
 45.5430.10 0.75 mm trapezoidal perforation  
 45.5440.10 1 mm trapezoidal perforation  
 45.5450.10 1.5 mm trapezoidal perforation  
 45.5460.10 2 mm trapezoidal perforation

45.5500.10 4 mm square perforation  
 45.5510.10 6 mm square perforation

**Accessories for chromium-free comminution**
**Cutting tool sets made of chromium-free tool steel**

45.5112.00 Rotor with V-cutting edges and fixed knives  
 45.5012.00 Rotor with straight cutting edges and fixed knives

**Sieve cassettes made of chromium-free steel DC01 (not rust-proof)**

45.5410.09 0.25 mm trapezoidal perforation  
 45.5420.09 0.5 mm trapezoidal perforation  
 45.5430.09 0.75 mm trapezoidal perforation  
 45.5440.09 1 mm trapezoidal perforation  
 45.5450.09 1.5 mm trapezoidal perforation  
 45.5460.09 2 mm trapezoidal perforation

45.5500.09 4 mm square perforation  
 45.5510.09 6 mm square perforation  
 45.5511.09 8 mm square perforation

**Sample exhaustion with Cyclone separators**
**High-performance Cyclone separator**

19.1900.00 High-performance Cyclone separator made of stainless steel 304, incl. sample glass 1 litre

**Collecting vessels for high-performance Cyclone separator**

45.8050.00 Collecting vessel, 60 litres made of stainless steel  
 45.8040.00 Collecting vessel, 20 litres made of stainless steel  
 83.3250.00 Sample glass 1 litre  
 83.3260.00 Sample glass 2 litres  
 83.3270.00 Sample glass 5 litres

19.1930.00 **Small volume Cyclone separator**  
 Small volume Cyclone separator made of plastic, incl. 500 ml sample glass

27.1450.00 **Collecting vessels for small volume Cyclone separator**  
 Sample glass 250 ml  
 27.1460.00 Sample glass 500 ml

43.9070.00 **Exhaust system for high-performance and small volume Cyclone separator**  
 Exhaust system, dust category "M" according to DIN EN 60335-2-69 for 230 V/1~, 50/60 Hz, 1000 watt

43.9055.00 Fleece filter bag for exhaust system (pack = 5 pieces)<sup>1)</sup>  
 43.9052.00 Plastic bag for exhaust system (pack = 5 pieces)<sup>1)</sup>

<sup>1)</sup> Remark: One pack/one piece is included in the scope of delivery of the exhaust system.

**Stands**

45.5820.00 Universal support stand  
 45.5829.00 Stand cpl. welded, electrochemically polished made of stainless steel 316L  
 45.5800.00 Stand with wheels

**Certification**

96.0250.00 IQ/OQ documentation  
 (questionnaire format - implementation by customer)

- Collecting vessels are also available in further sizes.  
 - Cutting tool sets are also available in further materials.  
 - Sieve cassettes are also available in further perforations.

Order no.	Article
-----------	---------

## CUTTING MILL

## PULVERISETTE 15


**Instrument without funnel, cutting tool set, sieve insert, collecting vessel and stand**

15.4030.00 for 400 V/3~, 50 Hz, 1790 watt  
 15.4020.00 for 220-240 V/1~, 50 Hz, 2150 watt  
 15.4050.00 for 200 V/3~, 60 Hz, 2140 watt  
 15.4010.00 for 100-120 V/1~, 60 Hz, 1900 watt

The PULVERISETTE 15 with voltage of "/3~" can **only** be operated on a three-phase supply network.

The three-phase version "/3~" is definitely preferable instead of a single-phase version "/1~", because the three-phase version obtains more power, better effectiveness and greater energy efficiency.

Other voltages on request!

**Funnels**

15.1550.00 Funnel for long and bulk solids  
 15.4300.00 Protected funnel with sample pusher

**Collecting vessels**

15.4400.00 Collecting vessel, 3.5 litres  
 15.4560.00 Collecting vessel for large quantities, 60 litres with filter hose

**Cutting tool set made of tool steel**

15.4603.00 Rotor with straight cutting edges and fixed knives

**Sieve inserts made of stainless steel 316L**

45.1200.10 0.25 mm trapezoidal perforation  
 45.1210.10 0.5 mm trapezoidal perforation  
 45.1220.10 0.75 mm trapezoidal perforation  
 45.1230.10 1 mm trapezoidal perforation  
 45.1240.10 1.5 mm trapezoidal perforation  
 45.1250.10 2 mm trapezoidal perforation

45.2190.10 2 mm square perforation  
 45.2200.10 4 mm square perforation  
 45.2210.10 6 mm square perforation  
 45.2220.10 8 mm square perforation  
 45.2230.10 10 mm square perforation  
 45.2300.10 20 mm square perforation

**Accessories for chromium-free comminution**
**Cutting tool set made of chromium-free tool steel**

15.4602.00 Rotor with straight cutting edges and fixed knives

**Sieve inserts made of chromium-free steel DC01 (non-rust-proof)**

45.1211.09 0.5 mm trapezoidal perforation  
 45.1230.09 1 mm trapezoidal perforation

45.2200.09 4 mm square perforation

**Stand**

45.5820.00 Universal support stand

- Sieve inserts are also available in further perforations.

Order no. Article

## POWER CUTTING MILL

### PULVERISETTE 25



**Instrument without funnel, cutting tool set, sieve cassette, collecting vessel and stand**

25.2030.00 for 400 V/3~, 50/60 Hz, 2590 watt

The PULVERISETTE 25 with voltage of "/3~" can **only** be operated on a three-phase supply network.

Other voltages on request!

#### **Funnels**

25.2700.00 Standard funnel for bulk solids, 10 litres

25.2850.00 Protected funnel with sample pusher, 3 litres

#### **Collecting vessels**

45.5730.00 Collecting vessel, 3 litres

45.5700.00 Collecting vessel for large quantities, 10 litres

#### **Cutting tool sets**

45.7000.00 Standard rotor with V-cutting edges and fixed knives made of hardened stainless steel

45.7370.00 Rotor with V-cutting edges and fixed knives made of hardmetal tungsten carbide

45.7200.00 Disk milling cutter rotor with indexable inserts and fixed knives made of hardmetal tungsten carbide

#### **Sieve cassettes made of stainless steel 316L**

45.7440.10 1 mm trapezoidal perforation

45.7460.10 2 mm trapezoidal perforation

45.7500.10 4 mm square perforation

45.7510.10 6 mm square perforation

45.7520.10 8 mm square perforation

45.7530.10 10 mm square perforation

#### **Accessories for chromium-free comminution**

##### **Cutting tool set made of chromium-free tool steel**

45.7112.00 Rotor with V-cutting edges and fixed knives

#### **Sieve cassettes made chromium-free steel DC01 (not rust-proof)**

45.7440.09 1 mm trapezoidal perforation

45.7460.09 2 mm trapezoidal perforation

45.7500.09 4 mm square perforation

45.7510.09 6 mm square perforation

45.7520.09 8 mm square perforation

45.7530.09 10 mm square perforation

#### **Stand**

45.5820.00 Universal support stand

45.5800.00 Stand with wheels

- Sieve cassettes are also available in further perforations.

Order no. Article

## CUTTING MILL COMBINATION

### PULVERISETTE 25/PULVERISETTE 19



19.5030.00 for 400 V/3~, 50/60 Hz, 8590 watt consisting of: Power Cutting Mill PULVERISETTE 25, Universal Cutting Mill PULVERISETTE 19 with variable rotational speed 300 to 3000 rpm, interposed sample divider, protected funnel with sample pusher, underframe, sample exhaustion with high-performance Cyclone separator and collecting vessel 60 litres, exhaust system; inclusive hardmetal tungsten carbide cutting tool sets and sieve cassettes made of stainless steel

The PULVERISETTE 25/PULVERISETTE 19 with voltage of "/3~" can **only** be operated on a three-phase supply network.

Other configurations and voltages on request!



# Worldwide at your service in 116 countries

## Always nearby

Wherever you use your FRITSCH instruments: we are nearby. With direct contact persons for application consultation and technical service – and in Europe with the FRITSCH mobile laboratory for practical demonstrations on-site.

## Grinding reports online

An extensive database of grinding reports for various materials and industries is available online at [www.fritsch-international.com/grinding-reports](http://www.fritsch-international.com/grinding-reports).

It's worth taking a look!

## Showing you how it's done!

Our applications laboratory will be more than glad to help you find the right Mill for your specific task. If desired, within the scope of a product recommendation, we will conduct a comminution of your material. Simply request at [www.fritsch-international.com/service/sample-analysis](http://www.fritsch-international.com/service/sample-analysis). The result will convince you.

**Or simply give us a call –  
our experts will be happy  
to assist you.**

**+49 67 84 70 150  
service@fritsch.de  
www.fritsch.de**



Fritsch GmbH  
Milling and Sizing  
Industriestrasse 8  
55743 Idar-Oberstein  
Germany  
Phone +49 67 84 70 0  
Fax +49 67 84 70 11  
info@fritsch.de  
www.fritsch.de