

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 air-flow 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.

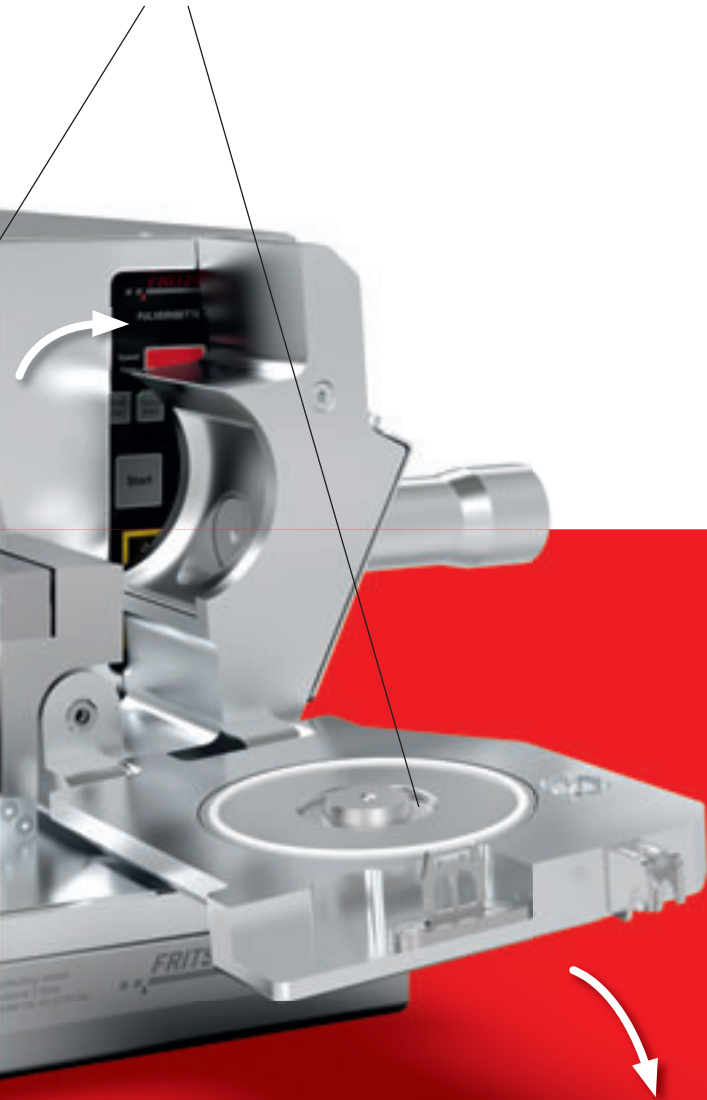
While you are still tightening the screws on other mills, our FRITSCH Cutting Mill is already clean: Because the entire grinding chamber can be opened and the rotor and sieve cassette can be removed with just a few simple motions. The housing and lid can be lifted back completely, and the grinding chamber 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

Wear-free labyrinth seals made of stainless steel on both sides of the rotor – on the shaft and in the lid

The labyrinth seals made of stainless steel are wear-free, offer effective contamination protection and no additional heat effect for your samples. They can be removed for fast, residue-free cleaning.



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 hundred 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 in increments of ten 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 hundred resp. ten with the plus/minus buttons and shown on the digital display.



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

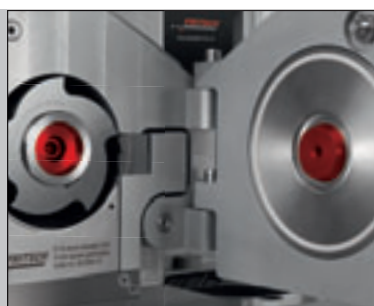
made of stainless steel
with plastic sample pusher

TECHNICAL DATA

	Fast effective comminution	Powerful gentle comminution
Variable rotor speed	300–3000 rpm	50–700 rpm
Electrical details (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
Weight		
Net	79 kg	83 kg
Gross	109 kg	113 kg
Dimensions w x d x h Table-mounting or on stand	44 x 79 x 56 cm	44 x 79 x 56 cm
Packaging w x d x h Wooden case	70 x 85 x 85 cm	70 x 85 x 85 cm
Emission sound pressure level at the workplace according to DIN EN ISO 3746 (depending on material to be ground, rotor and sieve cassette used!)	L _{pAid} = 78 dB	L _{pAid} = 75 dB
Order no. (order numbers for the stainless steel version 316L – see p. 22)	380-460 V/3~ 19.3060.00 200-240 V/1~ 19.3020.00 100-120 V/1~ 19.3030.00	380-460 V/3~ 19.3040.00 200-240 V/1~ 19.3000.00 100-120 V/1~ 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

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

Connect
exhaust system



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. The FRITSCH high-performance Cyclone separator is available with both: flexible or solid piping made of stainless steel 304 and special seals. The high-performance Cyclone separator with solid piping should be used in combination with the stand with wheels. Choose according to your needs.

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 into a screwed-on collecting vessel or in a smaller sample glass, 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

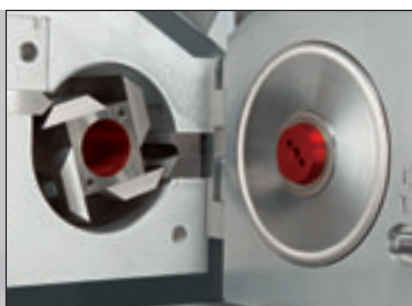
Wooden case 55 x 75 x 91 cm

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

$L_{pA} = 78$ 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

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

IQ/OQ documentation to support equipment qualification



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

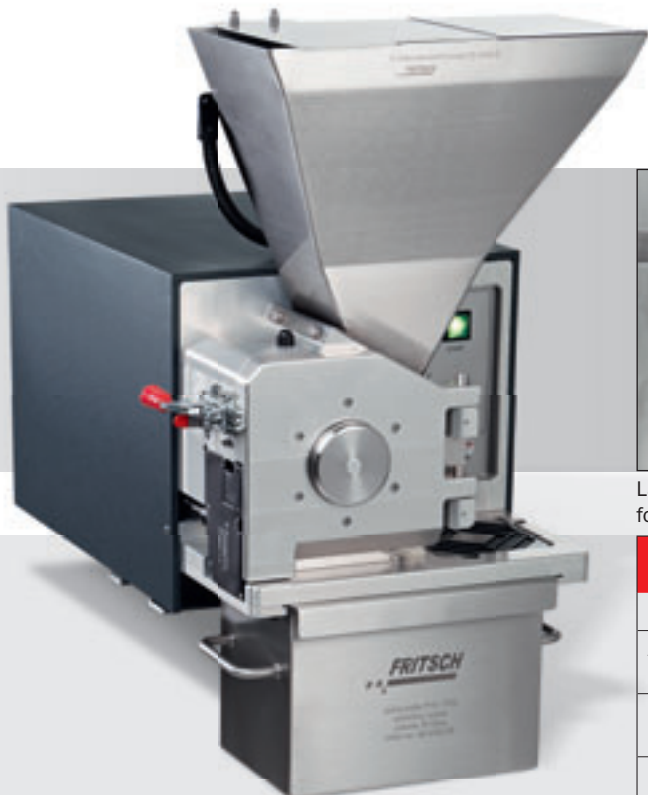
Patented power team

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
Electrical details	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.
Weight		
Net	75 kg	238 kg
Gross	105 kg	298 kg
Dimensions w x d x h	45 x 65 x 63 cm Table-mounting or on stand	100 x 65 x 145 cm on included underframe
Packaging w x d x h	1 wooden case 68 x 85 x 90 cm	2 wooden cases 85 x 85 x 170 cm, 70 x 80 x 90 cm
Emission sound pressure level at the workplace according to DIN EN ISO 3746 <small>(depending on the material to be ground, rotor and sieve cassette used!)</small>	$L_{pA} = 71$ dB	$L_{pA} = 78$ dB
Order no.	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

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

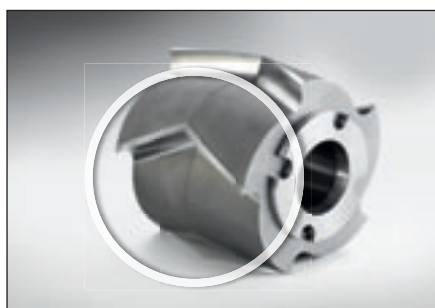
- Optional accessories

Universal support stand or 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 notched edges and fixed knives** made of **hardened stainless steel** is ideal for comminution of samples with residual moisture, such as food, feed or plants, and temperature-sensitive samples like plastics.

Due to its notched edges, the grinding chamber never closes completely, thus allowing optimum air flow in combination with the FRITSCH Cyclone separators. This significantly increases the throughput and makes the use of very fine sieves for larger quantities possible in the first place.

The rotor knives have two notched cutting edges and can be easily turned after one side is used up.

Your advantage: twice the service life.

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.

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.de directly by clicking on the accessories of each corresponding Cutting Mill.

FRITSCH-Advantage

Easy cleaning

The sieve cassettes with square perforation made of stainless steel 316L for all PULVERISETTE 19 models are laser-welded, which enables due to less dead spaces a significantly easier cleaning.



The finer the sieve openings, the finer the finished sample



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.

Practical: FRITSCH sieve cassettes

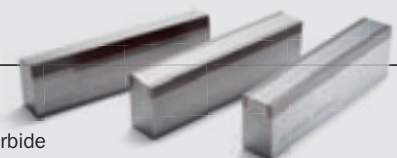
The final fineness of each sample can be determined easily and variably through the selection of the sieve used: the finer the sieve, the finer the sample. The patented FRITSCH sieve cassettes available for the models PULVERISETTE 19 and PULVERISETTE 25 simplify the work enormously, guarantee a constant 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
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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
 45.5192.00 Rotor with notched edges and fixed knives made of hardened stainless steel
 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

45.5495.10 2 mm square perforation
 45.5501.10 4 mm square perforation
 45.5513.10 6 mm square perforation
 45.5514.10 8 mm square perforation
 45.5515.10 10 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)

45.5420.09 0.5 mm trapezoidal perforation
 45.5440.09 1 mm trapezoidal perforation
 45.5460.09 2 mm trapezoidal perforation

45.5500.09 4 mm square perforation
 45.5510.09 6 mm square perforation

Sample exhaustion with Cyclone separators

High-performance Cyclone separators

19.1900.00 High-performance Cyclone separator made of stainless steel 304 with flexible tube connection, incl. sample glass 1 litre
 19.1940.00 High-performance Cyclone separator with solid piping made of stainless steel 304, incl. sample glass 1 litre

Collecting vessels for high-performance Cyclone separators

83.3250.00 Sample glass 1 litre
 83.3260.00 Sample glass 2 litres
 83.3270.00 Sample glass 5 litres
 45.8040.00 Collecting vessel, 20 litres made of stainless steel
 45.8050.00 Collecting vessel, 60 litres made of stainless steel (not suitable for 19.1940.00)

Order no.	Article
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Small volume Cyclone separator

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

Collecting vessels for small volume Cyclone separator

27.1450.00 Sample glass 250 ml
 27.1460.00 Sample glass 500 ml

Exhaust system for high-performance Cyclone separators and small volume Cyclone separator

43.9070.00 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)¹⁾
 43.9052.00 Plastic bag for exhaust system (pack = 5 pieces)¹⁾

¹⁾ 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.

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

Certification

96.0400.00 IQ/OQ documentation (questionnaire format – implementation by customer)

· 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

Stands

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 as well as 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!



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