

*Variable Speed Rotor Mill - premium line*



**IDEAL FOR**

ANALYTIC  
BIOLOGY  
CHEMISTRY  
AGRICULTURE AND FORESTRY  
FOODSTUFFS  
PLASTICS AND TEXTILES  
PHARMACEUTICALS  
ENVIRONMENT/ROHS

*premium line*

**VARIABLE SPEED ROTOR MILL**

⊞ Can also be used as a Cutting Mill



# 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.**





# PULVERISETTE 14

*premium line*

## Fast pre- and fine-grinding in one instrument

- Powerful with 22,000 rpm of the impact rotor for particularly fast sample throughput
- Extremely high impact speed of the impact rotor (111 m/s = 399.6 km/h)
- Max. feed size < 15 mm, sample throughput of up to 15 l/h and more
- Final fineness  $d_{50} < 40 \mu\text{m}$ , sieve rings 0.08 – 6 mm
- Multifunctional with impact or cutting rotor in one instrument
- Intelligence-Safety-Control-System for particularly safe operation
- Batchwise or continuous grinding with FRITSCH Cyclone separators
- Particularly good cooling of the grinding material
- Easiest cleaning due to Clean Design

The FRITSCH Variable Speed Rotor Mill PULVERISETTE 14 *premium line* offers impact, shearing and cutting comminution in one instrument. Its powerful motor is ideal for the particularly fast comminution of soft to medium-hard, brittle as well as fibrous materials and temperature-sensitive samples with an extremely fast sample throughput, which can be further increased by the use of the FRITSCH Cyclone separators.

### **FRITSCH premium advantage: Two Mills in one instrument**

With the cutting rotor you turn the PULVERISETTE 14 *premium line* into a Cutting Mill for fast, efficient pre- and fine comminution of soft to hard-tough, fibrous materials and plastics.

### **FRITSCH premium advantage: Quiet operation according to DIN EN**

The PULVERISETTE 14 *premium line* works much quieter than comparable instruments. Lid and insert for the funnel reduces the noise level even further.

### **FRITSCH premium advantage: Strong cooling**

The strong airflow produced by the motor, an ingenious air routing, as well as special cooling fins on the rotors further intensify cooling. Melting or sticking is greatly reduced, even with temperature-sensitive samples. The motor airflow can be further enhanced by the option to connect an exhaust system and the cooling effect of the sample can be additionally increased by using a FRITSCH Cyclone separator.



#### **Impact rotor with cooling fins**

Inside the Variable Speed Rotor Mill, the sample is comminuted by impacting against the ribs of the impact rotor, rotating at high speed and also sheared between the rotor teeth and the inserted sieve ring.



#### **Cutting rotor with cooling fins**

In the Cutting Mill comminution takes place by cutting and shearing between the cutting rotor and the fixed knives of the sieve shells holder.

### The FRITSCH *premium line* principle

The best even made better: According to this principle we develop and produce the high-tech laboratory mills of the FRITSCH *premium line*. Additional power gives them an edge over comparable instruments. And even more practice-oriented equipment elements and functions make working with them even easier, more comfortable, faster and safer. Inspired by your daily work. For *premium* results with absolute reliability.

**FRITSCH *premium line* – the high-tech standard for the modern laboratory.**

### Funnel for different grinding tasks

Each PULVERISETTE 14 *premium line* is equipped with a polyamide funnel with stainless steel insert 316L – e.g. for foodstuffs – a smaller funnel for flexible adjustment to the sample type as well as a noise-insulating funnel lid to guard against splashes.

### Display of grinding parameters

Operation is done via the ergonomically arranged touchscreen with intuitive menu structure in different languages. Here you enter the variable rotational speed and define the grinding time in minutes and seconds. A stopwatch function facilitates the time recording e.g. for new samples. The display of power consumption and system temperature ensures easy control, and a warning is shown in case of overload and overheating.



### Flexible remote control

If your PULVERISETTE 14 *premium line* is isolated for special grinding tasks – e. g. in a glove box – it can be easily remote controlled using a separate computer. All system values can be read directly as well.

### FRITSCH *premium advantage*:

#### High-speed motor with ceramic bearings

The heavy-duty motor and especially durable ceramic bearings ensure a particularly high impact and rotor speed with extra powerful 22,000 rpm. Your advantage: finer results in shorter times. And a long-term investment, which is definitely worth it.



## Unique double use as Cutting Mill

**Only available from FRITSCH: The PULVERISETTE 14 *premium line* is the only Variable Speed Rotor Mill on the market, which is also suitable for cutting. As a Cutting Mill it is ideal for fast, efficient pre- and fine comminution of soft to hard-tough, fibrous materials and plastics with a max. feed size < 10 mm.**



**Easy conversion:** Simply insert a labyrinth disk, a collecting vessel, a cutting rotor with cooling fins, a sieve shells holder with fixed knives and sieve shells as well as the lid of the collecting vessel. The comminution then takes place by cutting and shearing. The instrument detects the inserted labyrinth disk and automatically operates optimised with up to 15,000 rpm and a rotor peripheral speed of up to 69 m/s for extremely high final finenesses.

Cutting rotors, fixed knives and sieve shells made of different materials can be used for controlling the abrasion behaviour – for each application the perfect solution. The selected sieve shells, which are offered with trapezoidal or round perforation from 0.08–4 mm, determine the desired final fineness. And the use of a FRITSCH Cyclone separator will further improve throughput and cooling and is indispensable for finer mesh sizes.

### **FRITSCH *premium advantage*: Heavy-metal- and iron-free grinding and sample preparation according to RoHS**

Only FRITSCH has it: Cutting rotors made of stainless steel TiN-coated with rotor edges and fixed knives made of pure titanium and zirconium oxide and corresponding TiN-coated sieve shells for heavy-metal- and iron-free grinding and sample preparation according to RoHS.

**Your advantage:** You can grind heavy-metal- and iron-free with the PULVERISETTE 14 *premium line* using it either as a Cutting Mill or a Variable Speed Rotor Mill.

**Especially convenient:** In contrast to conventional Cutting Mills, the entire grinding chamber of the PULVERISETTE 14 *premium line* – not only the cutting rotor and sieve insert, but also the collecting vessel with lid and fixed knives – can be removed and cleaned in the dishwasher. And for sterile comminution, all grinding parts, which come into contact with the sample and the grinding chamber itself, are autoclavable.

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Choose the correct cutting rotor and sieve shells as well as the collecting vessel with or without outlet from the offers on page 13.

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## *premium*-functionality for flexible operation

As with all FRITSCH *premium line* instruments, the Variable Speed Rotor Mill PULVERISETTE 14 *premium line* makes your work even easier, faster and safer. This is especially due to the integrated Intelligence-Safety-Control-System, which only allows the machine to start once all safety-relevant parts are correctly inserted.



Absolutely safe operation due to Intelligence Safety Control System

### **Intelligent control**

The Intelligence-Safety-Control-System automatically checks the components of the grinding set – labyrinth disk for impact or cutting rotor, collecting vessel with lid – for completeness and correct insertion. Even the FRITSCH Vibratory Feeder LABORETTE 24 is detected by the programme. The grinding starts only when all the parts are fully and correctly inserted and the instruments lid is properly locked.

### **Absolutely safe**

If the instrument lid with the practical quick-clamping lock is opened unintentionally, an integrated safety lock prevents the opening of the instrument.

**FRITSCH *premium advantage*:** The fixation against twisting of the sieve rings, sieve shells holder and collecting vessels ensure less wear and even quieter, vibration-free operation.



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## **YOUR INSTRUMENT FOR MASTER-BATCHES**

Due to its high performance, the PULVERISETTE 14 *premium line* is the ideal Variable Speed Rotor Mill for comminution at pilot plant-scale in the plastics industry.

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## Clean Design for fast cleaning

The well-conceived Clean Design of the Variable Speed Rotor Mill PULVERISETTE 14 *premium line* covers all the areas, which make the cleaning of your mill as easy as possible: All the surfaces are designed to be extremely dirt-resistant and easy to clean. Every surface which comes into contact with the samples can be sterilised. And all the parts that need regular cleaning – funnel, collecting vessel with lid, rotor, sieve ring/sieve shells holder and labyrinth disk – each can be removed with a single motion without tools and can be cleaned in the ultrasonic bath or in the dishwasher.



**FRITSCH premium advantage:** In the PULVERISETTE 14 *premium line*, the grinding and electrical chambers are completely separated from each other. Your advantage: The air in the grinding chamber does not come into contact with the electronics and stays cooler – and the electronics are protected from dust. A clever idea, which results in a longer service life for your mill and increased safety with no faulty circuits.

### Easy cleaning

The innovative laser welding of the sieve rings enables due to less dead spaces a significantly easier cleaning, as well as greater stability and longer service life.



## FRITSCH-COMPETENCE

A total of 2 patents have been granted for the FRITSCH Variable Speed Rotor PULVERISETTE 14 *premium line* by the German Patent Office.

### TECHNICAL DATA

#### Electrical details

200-240 V/1~, 50-60 Hz, 2500 watt  
Other voltages on request.

#### Weight

Net 43 kg

Gross 58 kg

#### Dimensions w x d x h

Bench top instrument 55 x 52 x 63 cm

#### Packaging w x d x h

Case 70 x 70 x 65 cm

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

$L_{pA}$  = 69 dB

(depending on the material to be ground, adjusted rotor-speed and instrument configuration)

Order No. **200-240 V/1~**  
14.6020.00



Very hard and fatty materials such as feed pellets can be easily comminuted with the impact rotor.



Medium-hard and fibrous materials like wood can be easily comminuted with the cutting rotor.

### APPLICATION EXAMPLES

<b>Analytic</b>	Creation of samples for the chemical analysis of soil samples, slurries or plant samples, spectroscopy
<b>Biology</b>	Plants, roots, leaves, needles, grains, drugs, peat, seeds, ash
<b>Chemistry</b>	Chemicals, fillers, waxes, paraffins, chalk, kaolin
<b>Agriculture and forestry</b>	Plants, wood, roots, leaves, needles, grains, soil (without stones), fertilisers, pellets, feed
<b>Foodstuffs</b>	Rice, spices, foodstuffs for protein and nitrogen analysis, dried fruits
<b>Plastics and textiles</b>	Textiles, leather, cellulose, compound materials, rubber, powder coatings, styrenes, polyester, synthetic resins, foils, PVC, PP and PE
<b>Pharmaceuticals</b>	Pharmaceuticals, dragées, tablets
<b>Environment/RoHS</b>	Electronic parts, plastics, glass

IQ/OQ documentation available to support equipment qualification.

### FACTS AND ADVANTAGES

- Simple, tool-free changing of labyrinth disk, collecting vessel with lid, rotor, sieve ring and sieve shells holder
- Simple cleaning
- Efficient cooling of the grinding chamber due to extremely high airflow
- Grinding chamber made of stainless steel 303 resp. 316L or PTFE-coated
- Grinding parts made of stainless steel 431 resp. 316L, pure titanium, hardmetal tungsten carbide or zirconium oxide
- Maintenance-free three-phase motor
- High speed stability even under full load
- Wear-free labyrinth seal between the grinding chamber and drive motor
- Removable dust filter for convenient cleaning
- Ergonomic operation with touchscreen
- USB interface as well as integrated regulation for the Vibratory Feeder LABORETTE 24
- 2-year guarantee



## Optimal sample exhaustion: FRITSCH Cyclone separators

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



Get the best out of your **PULVERISETTE 14 premium line** during comminution!

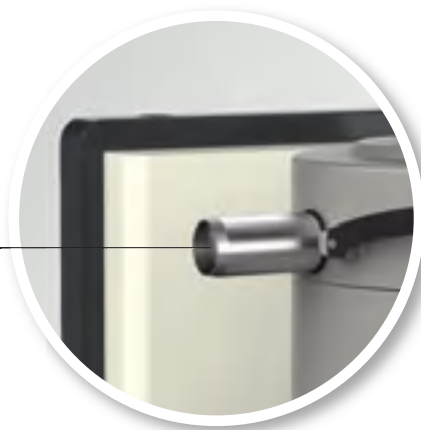
Regardless of whether you use the instrument as Variable Speed Rotor Mill or Cutting Mill: only the combination with a FRITSCH Cyclone separator and exhaust system for sample exhaustion delivers the optimum result. And opens up possibilities, which would otherwise be impossible.

### Your advantages with a FRITSCH Cyclone separator:

- Faster throughput
- Improved discharge of material from the grinding chamber
- Additional strong cooling of the grinding material and grinding parts
- Efficient size reduction of temperature-sensitive samples, electrostatically-charged plastics or powder coatings
- Ideal for light materials, small sample quantities and finer sieve sizes
- Highly efficient continuous comminution of large quantities

**Compact and powerful:** the FRITSCH high-performance Cyclone separator made of stainless steel

**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.



When utilising one of the FRITSCH Cyclone separators, please use a collecting vessel with outlet, lid and corresponding labyrinth disk, which are available in different materials.



### 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. 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. Your advantage: reliable protection against cross-contamination.

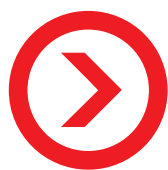
### FRITSCH small volume Cyclone separator

The compact FRITSCH small volume Cyclone separator made of plastic with sample glass 250 ml or 500 ml is particularly suitable due to its material properties for heavy-metal- and iron-free grinding and sample preparation according to RoHS with impact and cutting rotor. In addition, it offers all advantages of the FRITSCH Cyclone separators for the size-reduction of small quantities. It guarantees absolute safety against contamination and can be completely dismantled and cleaned in a dishwasher. The small volume Cyclone separator should be combined with an exhaust system, which can be ordered along. With the provided fine-dust filter 80–100 µm, the small volume Cyclone separator can also be used passive for dry, free-flowing samples in small quantities up to 200 ml, such as rice or maize kernels and when using medium sieve sizes.



### Automatic feeding

Directly controlled by and precisely matched to the mill, the FRITSCH Vibratory Feeder LABORETTE 24 always ensures the correct feed rate – ideal for the slow feeding of small or smallest material quantities or for grinding larger quantities. An IQ/OQ documentation is available to support equipment qualification.



## The right accessories for each application

As a standard, the Variable Speed Rotor Mill PULVERISETTE 14 *premium line* is equipped with a funnel made of polyamide and stainless steel 316L and funnel lid. Order according to your task the suitable collecting vessel with or without outlet and lid with the corresponding labyrinth disk. This is the basic equipment needed for utilising the Variable Speed Rotor Mill or Cutting Mill. Depending on the application, you select an impact or cutting rotor and the matching sieve rings or sieve shells.



Impact rotor with cooling fins and sieve rings with reinforced edges



Impact bar

### Accessories for use as Variable Speed Rotor Mill

#### Impact rotors and sieve rings for standard applications

For the size-reduction of medium-hard, soft, brittle, fibrous substances from lime to plants choose the suitable extremely durable, low-wear impact rotor with 6, 12 or 24 ribs with cooling fins made of stainless steel, as well as sieve rings with trapezoidal or round perforation from 0.08 mm to 6 mm with reinforced edges made of stainless steel 316L for the desired final fineness.

#### Impact rotor

**Feed size < 15 mm:** 6-ribs impact rotor

**Feed size < 10 mm:** 12-ribs impact rotor

**Feed size < 5 mm:** 24-ribs impact rotor

#### Sieve rings

**Fast comminution:** sieve ring with trapezoidal perforation for additional shearing effects

**Medium fineness with narrow grain size range:** sieve ring with round perforation

#### Grinding for the analytical sector, food and pharmaceutical industry

For sample preparation with special focus on increased resistance to corrosion, select grinding tools made of stainless steel 316L. So all grinding parts are resistant to alkalis and acids and comply with the guidelines of the food and pharmaceutical industries.

**For heavy-metal- and iron-free grinding and sample preparation according to RoHS** please select impact rotor and sieve ring made of pure titanium.

#### Difficult-to-mill or temperature-sensitive samples and plastics

The FRITSCH impact bar is the ideal solution for very gentle grinding of especially heat-sensitive materials such as powder coatings or plastics as well as for the smooth pre-crushing and fine comminution of hard-brittle to soft, fatty or samples with residual moisture. The impact bar acts as a stator on which the material is additionally beaten. The result: increased grinding performance for a particularly fast and efficient grinding that minimises the thermal load.

**Our suggestion:** The corresponding element analyses for the accessories of the PULVERISETTE 14 *premium line* with detailed information about the material, is found directly by the respective accessory at [www.fritsch-international.com/p-14pl](http://www.fritsch-international.com/p-14pl).

## OUR SUGGESTION: CRYOGENIC GRINDING

Samples which are difficult to grind or extremely temperature-sensitive (e.g. plastics) can be embrittled with the addition of liquid nitrogen and subsequently ground in the PULVERISETTE 14 *premium line*.



Cutting rotor with cooling fins and sieve shells holder with fixed knives and sieve shells



Collecting vessel with and without outlet, lid and labyrinth disk

### Accessories for use as Cutting Mill

#### Cutting rotors and sieve shells for standard applications

For all standard applications of pre- and fine comminution by cutting and shearing as well as the fast, efficient size-reduction of **fibrous materials and plastics** select the cutting rotor made of **stainless steel**.

The cutting rotor made of **hardmetal tungsten carbide** comminutes especially **hard-tough materials** due to the combination of impact and cutting forces.

Please choose in both cases additionally sieve shells with trapezoidal or round perforation made of stainless steel 316L to determine the desired final fineness.

**FRITSCH premium advantage:** All rotor edges and fixed knives can be individually replaced or resharpened.

#### **FRITSCH premium advantage:**

#### Cutting rotors made of pure titanium and zirconium oxide

For heavy-metal- and iron-free grinding and sample preparation according to RoHS please select the cutting rotor with cooling fins and sieve shells holder made of stainless steel TiN-coated.

For comminution of **soft materials** choose rotor edges and fixed knives made of **pure titanium** and for **hard-tough materials**, we recommend rotor edges and fixed knives made of **zirconium oxide**.

Please choose in both cases additionally sieve shells with trapezoidal perforation made of stainless steel TiN-coated to determine the desired final fineness.

### You always need

#### Collecting vessels with lid and labyrinth disks

To use your PULVERISETTE 14 *premium line* as Variable Speed Rotor Mill or Cutting Mill, select a labyrinth disk and a collecting vessel with lid and outlet to connect with FRITSCH Cyclone separators.

For batchwise comminution of easy-to-grind materials, choose a collecting vessel without outlet with lid and labyrinth disk.

Collecting vessel with and without outlet, lid and labyrinth disk are available in different materials for a wide range of applications. Your advantage: For each task, the perfect combination.

## ORDERING DATA

Order No. Article

VARIABLE SPEED ROTOR MILL *premium line***PULVERISETTE 14****Instrument without grinding parts, incl. funnel made of polyamide and stainless steel 316L and funnel lid**

14.6020.00 For 200-240 V/1~, 50-60 Hz, 2500 Watt

Other voltages on request!

**Certification**96.0330.00 IQ/OQ documentation  
(questionnaire format – implementation by customer)**Please note:** collecting vessel with lid and labyrinth disk, impact resp. cutting rotor, as well as sieve ring resp. sieve shells are additionally necessary!**ACCESSORIES FOR USE AS VARIABLE SPEED ROTOR MILL****Accessories for standard applications with the impact rotor and sieve rings**14.6315.00 Collecting vessel with outlet and lid made of stainless steel and labyrinth disk made of aluminium for connecting to FRITSCH Cyclone separators  
14.6310.00 Collecting vessel with lid made of stainless steel and labyrinth disk made of aluminiumImpact rotors with cooling fins made of stainless steel  
14.4330.10 with 6 ribs  
14.4334.10 with 12 ribs  
14.4337.10 with 24 ribsSieve rings with reinforced edges made of stainless steel 316L  
14.4341.00 0.08 mm trapezoidal perforation  
14.4342.00 0.12 mm trapezoidal perforation  
14.4343.00 0.2 mm trapezoidal perforation  
14.4344.00 0.5 mm trapezoidal perforation  
14.4345.00 0.75 mm trapezoidal perforation  
14.4346.00 1 mm trapezoidal perforation  
14.4347.00 1.5 mm trapezoidal perforation  
14.4348.00 2 mm trapezoidal perforation14.4360.00 1 mm round perforation  
14.4361.00 2 mm round perforation  
14.4362.00 4 mm round perforation  
14.4363.00 6 mm round perforation**Accessories for grinding in the analytical sector, for food and pharmaceutical industry and for sample preparation with special focus on increased resistance to corrosion, alkalis and acids**14.6385.00 Collecting vessel with outlet and lid and labyrinth disk made of stainless steel 316L for connecting to FRITSCH Cyclone separators  
14.6380.00 Collecting vessel with lid and labyrinth disk made of stainless steel 316L

14.4335.10 Impact rotor with 12 ribs and cooling fins made of stainless steel 316L

Sieve rings with reinforced edges made of stainless steel 316L  
14.4341.00 0.08 mm trapezoidal perforation  
14.4342.00 0.12 mm trapezoidal perforation  
14.4343.00 0.2 mm trapezoidal perforation  
14.4344.00 0.5 mm trapezoidal perforation  
14.4345.00 0.75 mm trapezoidal perforation  
14.4346.00 1 mm trapezoidal perforation  
14.4347.00 1.5 mm trapezoidal perforation  
14.4348.00 2 mm trapezoidal perforation14.4360.00 1 mm round perforation  
14.4361.00 2 mm round perforation  
14.4362.00 4 mm round perforation  
14.4363.00 6 mm round perforation

Order No. Article

**Accessories for heavy-metal- and iron-free grinding and sample preparation according to RoHS**

14.6415.00 Collecting vessel with outlet PTFE-coated and lid made of pure titanium and labyrinth disk made of aluminium for connecting to small volume Cyclone separator

14.6410.00 Collecting vessel PTFE-coated with lid made of pure titanium and labyrinth disk made of aluminium

Impact rotors with cooling fins made of pure titanium  
14.4430.32 with 6 ribs  
14.4434.32 with 12 ribs  
14.4437.32 with 24 ribsSieve rings with reinforced edges made of pure titanium  
14.4441.32 0.08 mm trapezoidal perforation  
14.4442.32 0.12 mm trapezoidal perforation  
14.4443.32 0.2 mm trapezoidal perforation  
14.4444.32 0.5 mm trapezoidal perforation  
14.4445.32 0.75 mm trapezoidal perforation  
14.4446.32 1 mm trapezoidal perforation  
14.4447.32 1.5 mm trapezoidal perforation  
14.4448.32 2 mm trapezoidal perforation**Accessories for difficult-to-mill or temperature-sensitive samples**

14.6315.00 Collecting vessel with outlet and lid made of stainless steel and labyrinth disk made of aluminium for connecting to FRITSCH Cyclone separators

14.6310.00 Collecting vessel with lid made of stainless steel and labyrinth disk made of aluminium

14.4470.00 Impact bar

Impact rotors with cooling fins made of stainless steel  
14.4330.10 with 6 ribs  
14.4334.10 with 12 ribs  
14.4337.10 with 24 ribsSieve rings for impact bar made of stainless steel 316L  
14.4481.10 0.08 mm trapezoidal perforation  
14.4482.10 0.12 mm trapezoidal perforation  
14.4483.10 0.2 mm trapezoidal perforation  
14.4484.10 0.5 mm trapezoidal perforation  
14.4485.10 0.75 mm trapezoidal perforation  
14.4486.10 1 mm trapezoidal perforation  
14.4487.10 1.5 mm trapezoidal perforation  
14.4488.10 2 mm trapezoidal perforation14.4490.10 1 mm round perforation  
14.4491.10 2 mm round perforation  
14.4492.10 4 mm round perforation  
14.4493.10 6 mm round perforation

Sieve rings are also available in further perforations.

**ACCESSORIES FOR USE AS CUTTING MILL****Accessories for standard applications with the cutting rotor and sieve shells**14.6515.00 Collecting vessel with outlet and lid made of stainless steel and labyrinth disk made of aluminium for connecting to FRITSCH Cyclone separators  
14.6510.00 Collecting vessel with lid made of stainless steel and labyrinth disk made of aluminium

14.6590.00 Cutting rotor made of stainless steel consisting of cutting rotor with cooling fins and sieve shells holder made of stainless steel and rotor edges and fixed knives made of hardened stainless steel

14.6595.00 Cutting rotor made of hardmetal tungsten carbide consisting of cutting rotor with cooling fins and sieve shells holder made of stainless steel and rotor edges and fixed knives made of hardmetal tungsten carbide

Sieve shells made of stainless steel 316L  
14.4541.00 0.08 mm trapezoidal perforation  
14.4542.00 0.12 mm trapezoidal perforation  
14.4543.00 0.2 mm trapezoidal perforation  
14.4544.00 0.5 mm trapezoidal perforation  
14.4545.00 0.75 mm trapezoidal perforation  
14.4546.00 1 mm trapezoidal perforation  
14.4547.00 1.5 mm trapezoidal perforation  
14.4548.00 2 mm trapezoidal perforation14.4560.00 1 mm round perforation  
14.4561.00 1.5 mm round perforation  
14.4562.00 2 mm round perforation  
14.4563.00 3 mm round perforation  
14.4564.00 4 mm round perforation

Order No.	Article
	<b>Accessories for heavy-metal- and iron-free grinding and sample preparation according to RoHS</b>
14.4615.00	Collecting vessel with outlet PTFE-coated and lid made of pure titanium and labyrinth disk made of aluminium for connecting to small volume Cyclone separator
14.4610.00	Collecting vessel PTFE-coated with lid made of pure titanium and labyrinth disk made of aluminium
14.4690.00	Cutting rotor made of pure titanium consisting of cutting rotor with cooling fins and sieve shells holder made of stainless steel TiN-coated and rotor edges and fixed knives made of pure titanium
14.4695.00	Cutting rotor made of zirconium oxide consisting of cutting rotor with cooling fins and sieve shells holder made of stainless steel TiN-coated and rotor edges and fixed knives made of zirconium oxide
	Sieve shells, TiN-coated
14.4644.00	0.5 mm trapezoidal perforation
14.4646.00	1 mm trapezoidal perforation
14.4648.00	2 mm trapezoidal perforation

Sieve shells are also available in further perforations.



**SAMPLE EXHAUSTION WITH CYCLONE SEPARATORS AND FOR GRINDING LARGE QUANTITIES**

	<b>High-performance Cyclone separator</b>
14.4800.00	High-performance Cyclone separator made of stainless steel 304, incl. sample glass 1 litre
	<b>Collecting vessels for high-performance Cyclone separator</b>
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
	<b>Small volume Cyclone separator</b>
14.4810.00	Small volume Cyclone separator made of plastic, incl. sample glass 500 ml
45.8218.16	Replacement fine-dust filter 80-100 µm for small volume Cyclone separator for passive utilisation
	<b>Collecting vessels for small volume Cyclone separator</b>
27.1450.00	Sample glass 250 ml
27.1460.00	Sample glass 500 ml
	<b>Exhaust system for high-performance and small volume Cyclone separator and for cooling the PULVERISETTE 14 premium line</b>
43.9070.00	Exhaust system, dust category "M" according to DIN EN 60335-2-69 for 230 V/1~, 50/60 Hz, 1000 Watt
14.4214.00	connecting piece for exhaust system (for additional cooling of the PULVERISETTE 14 premium line)
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 exhaust system.



**ACCESSORIES FOR AUTOMATIC SAMPLE FEEDING**

	<b>Accessories for automatic sample feeding</b>
24.4200.00	Vibratory Feeder LABORETTE 24 with V-shaped channel and stand, incl. connection cable for automatic control via the Variable Speed Rotor Mill PULVERISETTE 14 premium line
	<b>Certification Vibratory Feeder LABORETTE 24</b>
96.0370.00	IQ/OQ documentation (questionnaire format – implementation by customer)



## 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!

## Practical on-site demonstration

If you would like to be convinced of the performance and ease of use of the FRITSCH laboratory instruments, we would be happy to visit you with the FRITSCH mobile laboratory and provide you on-site practical demonstrations.

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

The logo for FRITSCH, featuring the word "FRITSCH" in a bold, red, italicized sans-serif font. To the left of the text is a graphic element consisting of two short, parallel grey horizontal bars, followed by a red triangle pointing upwards and to the right, which is positioned above the start of the word.

***FRITSCH***