

pulverisette 14



Variable Speed Rotor Mill

- Fine grinding by impact and shearing
- Suitable for medium-hard to soft samples
- High throughput with tool change system

milling sample
rotor mill preparation
for your lab

FRITSCH

Variable Speed Rotor Mill

Field of application

The pulverisette 14 is an all-purpose mill for rapid crushing of medium-hard to soft substances. It can also be used to disperse and homogenise dry samples.

Grinding temperature-sensitive materials is also possible with the variable speed rotor mill. The extremely high rotor speed enables fast and effective grinding, drastically reducing thermal stress on the grinding material.

Samples that are difficult to grind can be ground to analytical fineness by embrittlement (e.g. addition of liquid nitrogen before grinding). Under some circumstances, the high efficiency of the mill can make it possible to grind such samples even without previous embrittlement.

With a feed size of < 10 mm, a final fineness of up to 40 µm can be achieved. The throughput depends on the material and lies between 0.05 and 5 l per hour.

Examples of application

Medium-hard samples

drugs, dragées, tablets, fertilizers, pellets, fodder

Soft materials

plants, wood, roots, leaves, coniferous needles, spices, textiles, leather, chemicals, foodstuffs, grains, cellulose, fillers, chalk, kaolin, coal, soils (without stones)

Materials which are difficult to grind

styrene, polyester, synthetic resins, plastics, foils, PVC, PP and PE

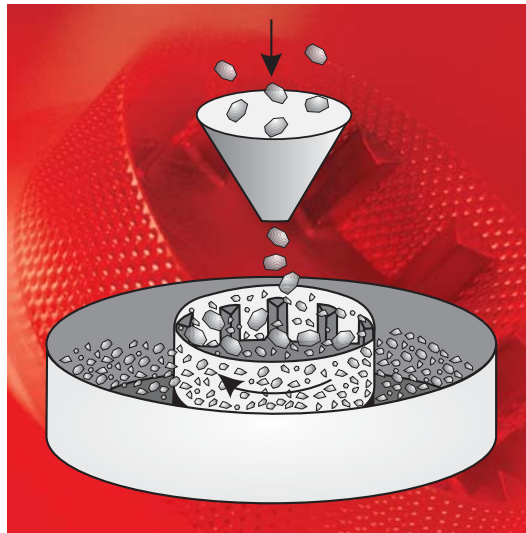
RoHS tests

electronic parts, plastics, glass



fine grinding quality control

Variable Speed Rotor Mill



working principle



pulverisette 14 with 12-ribs-rotor and sieve ring

Method of operation

A high-speed rotor with shaped ribs crushes the sample by impact force. In addition, the sharp-edged teeth and the sieve insert reduce the sample by shearing. The sample is placed under stress in the last milling stage by friction between the rotor and the sieve insert.

Ground material is collected in a stainless collection pan.

Variable Speed Rotor Mill

Advantages

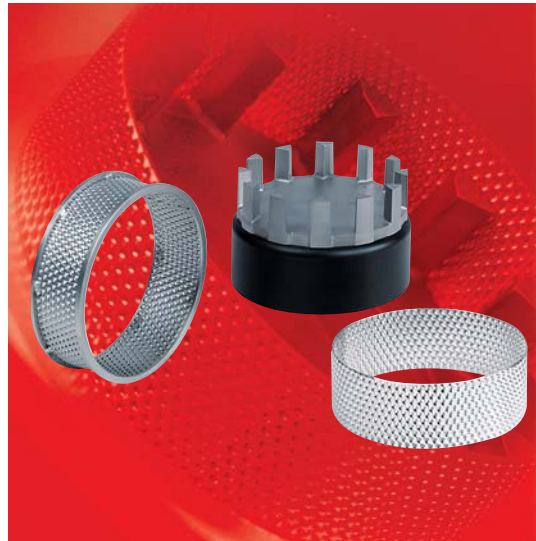
- Rapid sample throughput as a result of high-speed grinding and simple handling
- High speed stability even under full load
- Simple, contamination-free cleaning of grinding tools outside the instrument
- Simple grinding preparation with interchangeable tool system
- Extensive accessories
- Safety standard EN 61010 and CE-mark
- 2 year guarantee

Design Characteristics

- Easy change of rotor, collection pan, sieve insert and labyrinth seal
- Grinding tools can be completely removed and inserted again without tools
- Cleaning or assembly of all grinding parts outside the instrument
- Optimum cooling in grinding chamber due to very high air throughput
- Highly resilient, wear-resistant rotor made of stainless steel, nitrogen surface hardened
- Wear-resistant labyrinth seal between grinding chamber and drive motor
- Controlled rotor torque (6,000 - 20,000 rpm)
- Grinding chamber and grinding parts made of stainless steel
- Rapid-action clamping lock
- Maintenance-free three-phase motor
- Membrane keyboard with timer
- Micro controller monitoring
- Integrated control for external feeder
- Overload protection
- Solid PUR housing



sample
rotor mill preparation
grinding



sieve rings and rotor

Accessories

Rotors

Made of stainless steel, hardened

For rapid crushing of medium-hard to soft materials.

- 8-ribs-rotor for fast fine grinding of fibrous materials
- 12-ribs-rotor for feed size < 10 mm
- 24-ribs-rotor for grinding fine samples < 5 mm with highest air throughput

Sieve rings

Made of stainless steel

For rapid crushing of medium-hard to soft materials.

- Sieve ring with trapezoidal perforations for improved size reduction through extra shearing action
- Sieve ring with round perforations for brittle material and medium fineness with smaller grain width band
- Sieve ring with reinforced edges for heavy-duty size reduction needs

Conversion kit for "iron-free" grinding

A 12-ribs rotor and sieve rings made of pure titanium (DIN 17850) are available for converting to "iron-free" grinding. Also sieve rings with reinforced edges for heavy-duty size reduction needs are also available. The entire grinding chamber is also coated in PTFE.

Rotors and sieve rings for grinding medium-hard, tough materials

- 12-ribs-rotor, TiN-coated for feed size < 10 mm
- 24-ribs-rotor, TiN-coated for feed size < 5 mm with highest air throughput
- Sieve ring TiN-coated with trapezoidal perforations for improved size reduction through extra shearing action

Conversion kit for grinding hard to medium-hard samples

By inserting an 8-ribs-rotor, impact blades and a sieve ring with wide diameter made of stainless steel, hard to medium-hard samples can be crushed easily through the increased shearing effect. To discharge and collect large quantities which need to be ground use the conversion kit for grinding large quantities.

Variable Speed Rotor Mill

Special Accessories

Grinding without sieve

The pulverisette 14 can be fitted with a pin insert in order to grind medium-hard samples and materials containing oil or grease without a sieve. To discharge and collect large quantities which need to be ground use the conversion kit for grinding large quantities.

Grinding large quantities

Larger sample quantities can be crushed using a flanged filter bag. The sample is cooled at the same time as a result of the increased ventilation.

Automatic sample feeding

The electro-magnetic vibratory feeder laborette 24 enables continuous and accurate feeding of the sample during the grinding process. The micro controller of the pulverisette 14 automatically switches the vibratory feeder off when the rate of dosage is exceeded.



pin insert and impact rotor insert



pulverisette 14 with laborette 24 for grinding large quantities

milling quality control
pulverisette 14

Technical data

working principle	impact force
max. feed size (depending on the material)	10 mm
min. sample quantity	5 - 10 ml
max. throughput (depending on the material and sieve size)	5 l/h
sieve insert	0.08 - 6 mm
final fineness	40 µm
feeding	batchwise/continuous
rotor speed	6,000 - 20,000 rpm
electrical details	100-120/200-240 V/1~, 50-60 Hz, 1150 watt
motor-shaft-power according to VDE 0530, EN 60034	550 W
weight	net: 23 kg, gross: 25 kg
dimensions w x d x h	table instrument: 31 x 48 x 47 cm
packing details	carton: 63 x 46 x 55 cm

Special Accessories

Order no.	Description
14.2600.00	Accessories for grinding without a sieve pin insert (consisting of pin rotor and grinding chamber lid with pin insert)
14.3510.00	Accessories for grinding large quantities conversion kit for grinding large quantities (comprising pan with outlet and flanged-on nylon (outer) support sack for the (inner) consumable filter bag)
83.0010.00	set paper filter bags for the conversion kit (set = 20 pieces)
	Accessories for automatic sample feeding
	Vibratory feeder laborette 24 with V-shaped channel and control unit
24.0030.00	for 200-240 V/1~, 50-60 Hz
24.0040.00	for 100-120 V/1~, 50-60 Hz
24.9100.00	stand for feeder

pulverisette 14

Ordering data

Order no.	Description
14.3000.00	Variable Speed Rotor Mill pulverisette 14 without rotor and sieve ring, incl. collecting pan for 100-120/200-240 V/1~, 50-60 Hz, 1150 watt The voltage specified on the order form will be set by the factory
44.4080.10	Rotor made of stainless steel, hardened with 8 ribs
44.4120.10	with 12 ribs
44.4240.10	with 24 ribs
44.1000.10	Sieve rings made of stainless steel 0.08 mm trapezoidal perforation
44.1010.10	0.12 mm trapezoidal perforation
44.1020.10	0.2 mm trapezoidal perforation
44.1050.10	0.5 mm trapezoidal perforation
44.1080.10	0.75 mm trapezoidal perforation
44.1100.10	1 mm trapezoidal perforation
44.1150.10	1.5 mm trapezoidal perforation
44.1200.10	2 mm trapezoidal perforation
44.2100.10	1 mm round perforation
44.2200.10	2 mm round perforation
44.2400.10	4 mm round perforation
44.2600.10	6 mm round perforation
44.3000.10	Sieve rings for heavy duty loads made of stainless steel with reinforced edges 0.08 mm trapezoidal perforation
44.3010.10	0.12 mm trapezoidal perforation
44.3020.10	0.2 mm trapezoidal perforation
44.3050.10	0.5 mm trapezoidal perforation
44.3080.10	0.75 mm trapezoidal perforation
44.3100.10	1 mm trapezoidal perforation
44.3150.10	1.5 mm trapezoidal perforation
44.3200.10	2 mm trapezoidal perforation
14.3700.00	Accessories for "iron-free" grinding conversion kit for "iron-free" grinding (rotor of pure titanium with 12 ribs, sieve ring pure titanium 0.5 mm trapezoidal perforation, cover and collecting pan PTFE-coated)
44.4120.32	rotor with 12 ribs, pure titanium
44.1020.32	sieve ring 0.2 mm trapezoidal perforation, pure titanium
44.1050.32	sieve ring 0.5 mm trapezoidal perforation, pure titanium
44.1100.32	sieve ring 1 mm trapezoidal perforation, pure titanium
44.3021.32	sieve ring 0.2 mm trapezoidal perforation, pure titanium with reinforced edges
44.3051.32	sieve ring 0.5 mm trapezoidal perforation, pure titanium with reinforced edges
44.3101.32	sieve ring 1 mm trapezoidal perforation, pure titanium with reinforced edges
44.4120.00	Accessories for grinding medium-hard, tough materials rotor with 12 ribs, TiN-coated
44.4240.00	rotor with 24 ribs, TiN-coated
44.1020.00	sieve ring 0.2 mm trapezoidal perforation, TiN-coated
44.1050.00	sieve ring 0.5 mm trapezoidal perforation, TiN-coated
44.1100.00	sieve ring 1 mm trapezoidal perforation, TiN-coated
14.3850.00	Accessories for grinding hard to medium-hard samples conversion kit (consisting of rotor with 8 ribs, impact blades, sieve ring 1 mm trapezoidal perforation with wide diameter made of stainless steel)
14.1300.10	Further sieve rings made of stainless steel for conversion kit sieve ring 0.08 mm trapezoidal perforation
14.1310.10	sieve ring 0.12 mm trapezoidal perforation
44.1320.10	sieve ring 0.2 mm trapezoidal perforation
44.1350.10	sieve ring 0.5 mm trapezoidal perforation
44.1380.10	sieve ring 0.75 mm trapezoidal perforation
44.1400.10	sieve ring 1 mm trapezoidal perforation
44.1450.10	sieve ring 1.5 mm trapezoidal perforation
44.1500.10	sieve ring 2 mm trapezoidal perforation
44.1710.10	sieve ring 1 mm round perforation
44.1720.10	sieve ring 2 mm round perforation
44.1740.10	sieve ring 4 mm round perforation
44.1760.10	sieve ring 6 mm round perforation

