

FRITSCH · JAW CRUSHERS AND DISK MILLS



IDEAL FOR

PRE-, FINE- AND ULTRA-FINE-GRINDING
OF HARD AND BRITTLE MATERIALS IN
THE AREAS

- GLASS AND CERAMICS INDUSTRY
- MINING AND METALLURGY
- GEOLOGY AND MINERALOGY
- CHEMICAL INDUSTRY
- SOIL RESEARCH

JAW CRUSHERS AND DISK MILLS



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FRITSCH is an internationally respected manufacturer of application-

oriented laboratory instruments. For more than 80 years, labora-

tories worldwide have relied on our experience, quality, service

FRITSCH. ONE STEP AHEAD.

and innovation - for fast industrial applications as well as for

especially accurate results in industry- and research laboratories.

See for yourself.

FAST COMMINUTION OF HARD AND BRITTLE MATERIALS



The compact pre-crusher

- **FRITSCH Jaw Crusher PULVERISETTE 1** 4–7
- Ideal as the classic workhorse for pre-crushing of brittle materials in the areas of mining and metallurgy, chemistry, geology and mineralogy, glass industry, ceramics industry, rocks and soils.



High final fineness for large quantities

- **FRITSCH Disk Mill PULVERISETTE 13** 8–11
- Particularly ideal for medium particle sizes in the areas of mining and metallurgy, glass industry, ceramics industry, soil research, rocks and soils.



Powerful combination – pre- and fine-crushing in a single step

- **FRITSCH Jaw Crusher PULVERISETTE 1 and Disk Mill PULVERISETTE 13** 12–13
- Ideal for fast, continuous pre- and fine-grinding of large quantities, including coarse materials, down to analytical fineness in the areas of mining and metallurgy, chemistry, geology and mineralogy, glass industry, ceramics industry, soil research, rocks and soils.



Extremely short grinding time thanks to FRITSCH technology

- **FRITSCH Vibrating Cup Mill PULVERISETTE 9** 14–17
- Ideal for fast sample preparation, such as in the areas of spectroscopy preparation, ore and geology laboratories, mining and metallurgy, ceramics industry, agriculture and environmental science, infrared and x-ray fluorescence analysis.

Instrument	Feed size	Final fineness down to
Jaw Crusher PULVERISETTE 1, model I	60 mm	1 mm
Jaw Crusher PULVERISETTE 1, model II	95 mm	1 mm
Disk Mill PULVERISETTE 13	20 mm	0.1 mm
Jaw Crusher PULVERISETTE 1, model I in combination with the Disk Mill PULVERISETTE 13	60 mm	0.1 mm
Jaw Crusher PULVERISETTE 1, model II in combination with the Disk Mill PULVERISETTE 13	95 mm	0.1 mm
Vibrating Cup Mill PULVERISETTE 9	12 mm	0.01 mm



PULVERISETTE 1

THE COMPACT PRE-CRUSHER

- Very fast, uniform comminution
- Feed size up to 95 mm, final fineness 1–15 mm
- Extremely fast and easy cleaning
- Extremely robust even for very hard materials
- Especially simple crushing jaw removal
- Safe and dust-free operation
- Adaptable crushing jaw kinematics for higher final fineness

The compact FRITSCH Jaw Crusher PULVERISETTE 1 is the ideal instrument for fast and effective pre-crushing of hard and very hard brittle materials – even ferrous alloys are no problem for this instrument! Choose according to your tasks: two different models for various feed sizes and sample quantities are available.

The powerful comminution of the sample takes place in the Jaw Crusher under high pressure between one fixed and one movable crushing jaw in an enclosed grinding chamber. The final fineness is easily set from the outside with the 10-stage adjustable gap width between the crushing jaws. The ground sample automatically falls downward – into a drawer for batchwise comminution or via a chute into a larger collection container for continuous operation or directly into a FRITSCH Disk Mill PULVERISETTE 13 for further comminution.



Saves time and energy: **The especially simple crushing jaw removal** takes only seconds and requires only two hand motions to ensure particularly simple cleaning – fast and thorough.



The especially **simple cleaning** of the FRITSCH Jaw Crusher PULVERISETTE 1 saves time and offers effective contamination protection for your samples.

The funnel of the FRITSCH Jaw Crusher PULVERISETTE 1 is particularly **accessible, quickly and easily filled** even with larger sample quantities and **easy to clean**. Its design enables the crushed material to be automatically conveyed into the crushing chamber – blockages are practically impossible.

A practical **plexiglas cover** ensures a view into the collecting vessel for easily checking the fill level.

For **simple and fast releasing** of the fixed crushing jaw. The crushing jaw can be removed for cleaning quickly and easily with just 2 hand motions.

Gap width adjustment for setting the distance between the crushing jaws – and therefore **setting the final fineness**.

The **kinematics** – in other words, the movement between the movable and fixed crushing jaws – of the FRITSCH Jaw Crusher PULVERISETTE 1 can be easily adapted to the breaking characteristics of the respective sample: Select the upward and downward movement of the movable crushing jaw relative to the fixed one in order to receive a sample in a narrow particle size range. For a fast comminution, please select the nearly circular motion.

The practical **collecting vessel** for batchwise comminution is particularly easy to remove.

Especially **safe and dust-free**: The enclosed grinding chamber prevents users from reaching inside and ensures a safe and dust-free operation of all moving parts. An integrated connection makes it very simple to combine the instrument with a dust exhaust system for automatic removal of the fine dust arising during grinding. The dust exhaust system is also very useful when cleaning the grinding parts.



View of the grinding chamber with the housing removed



PULVERISETTE 1



OUR SUGGESTION

Double the service life of your crushing jaws – they can be easily turned around on the FRITSCH Jaw Crusher PULVERISETTE 1.

Select the right material combination!

The crushing jaws and lateral support walls of the FRITSCH Jaw Crusher PULVERISETTE 1 are available in various steel types, tungsten carbide and zirconium oxide. Select from a total of 6 materials to avoid undesired contamination due to abrasion of parts. By standard, the PULVERISETTE 1 is equipped with fixed and movable crushing jaws as well as lateral support walls made of tempered steel.

Normally, crushing jaws and support walls of the same material are used. Since the lateral support walls are not subjected to any major stresses, the standard lateral support walls of tempered steel can frequently be retained.

MATERIAL DATA FOR CRUSHING JAWS AND SUPPORT WALLS

Material	Main component of the material*	Abrasion resistance	Use for material to be ground
Tempered steel	Fe – Cr	Good	Brittle, very hard samples
Stainless steel	Fe – Cr – Ni	Fairly good	Medium-hard, brittle samples
Chromium-free steel	Fe	Good	Medium-hard samples
Manganese steel	Mn – Fe	Good	Hard, brittle samples
Hardmetal tungsten carbide	WC	Very good	Hard, abrasive samples
Zirconium oxide ¹⁾	ZrO ₂	Good	Medium-hard, brittle samples, iron-free grinding
Aluminium	Al	Fairly good	Medium-hard, brittle samples, iron-free grinding

* At www.fritsch.de, you can find the corresponding element analyses with detailed information about the materials.

¹⁾ Crushing jaws of zirconium oxide are only suitable for crushing ceramic materials, minerals, etc. and never for hard-tough samples, such as metals.

RoHS (Restriction of the use of certain hazardous substances)

For the comminution of RoHS samples – such as for the XRF analysis – crushing jaws and support walls made of chromium-free steel are particularly well suited.

Iron-free pre-crushing

For completely iron-free pre-crushing of medium-hard brittle samples, for example in the ceramics industry, if desired, we will equip your FRITSCH Jaw Crusher PULVERISETTE 1 with a thorough polymer coating inside. Together with crushing jaws made of zirconium oxide, lateral support walls of zirconium oxide or aluminium and a special PVC funnel, you will have absolute protection against iron contamination, such as for dental ceramics.

IRON-FREE GRINDING

For iron-free grinding, use the practical PVC funnel.



TECHNICAL DATA

Electrical details

Model I, 400 V/3~, 50-60 Hz, 1450 watt

Model I, 230 V/1~, 50-60 Hz, 1570 watt

Model I, 115 V/1~, 50-60 Hz, 1900 watt

Model II, 400 V/3~, 50-60 Hz, 2780 watt

Motor shaft power in accordance with VDE 0530, EN 60034

Model I, 1.1 kW

Model II, 2.2 kW

Weight

Model I, net 177 kg, gross 202 kg

Model II, net 205 kg, gross 230 kg

Dimensions w x d x h

Model I and model II, bench top instrument 40 x 80 x 80 cm

Packaging w x d x h

Model I and model II, wooden case 90 x 75 x 90 cm

Emissions value of workplace according to IEC 61672-1

Approx. 85 dB(A)

(depending on the material to be crushed)

Order no.	400 V/3~	230 V/1~	115 V/1~
Model I	01.5030.00	01.5020.00	01.5010.00
Model II	01.7030.00		



Powerful comminution: Coarse basalt rock crushed by the PULVERISETTE 1 (model I) at gap position 2 to the final fineness shown in the collecting vessel on the right.

APPLICATION EXAMPLES

Mining and metallurgy	Niobium-titanium, ferrovanadium, chrome vanadium, tungsten carbide, ores, coal, slag, coke
Chemistry	Wide variety of various raw materials
Geology and mineralogy	Granite, basalt, barite, silicates and other rocks
Glass industry	Frits, glass, raw materials
Ceramics industry	Dental ceramics, steatite, fire-clay, sintered ceramics, electrotechnical porcelain
Rocks and soils	Bauxite, clinker, quartz, concrete

FACTS AND ADVANTAGES

Model I resp. model II

Working principle	Pressure
Bearings	Needle and spherical roller bearings
Standard equipment	Instrument with fixed and movable crushing jaw and lateral support walls of tempered steel
Optimal for material type	Hard, medium-hard, brittle
Max. feed size (depending on the material)	60 mm resp. 95 mm
Min. sample quantity	20 ml
Max. continuous throughput (depending on material and gap width)	140 kg/h resp. 200 kg/h
Final fineness	1 – 15 mm
Feeding	Batchwise/continuous
Grinding parts	Fixed and movable crushing jaws
Eccentric oscillations	308 movements/min
Conformity	CE mark
Guarantee	2 years



PULVERISETTE 13

HIGH FINAL FINENESS FOR LARGE QUANTITIES

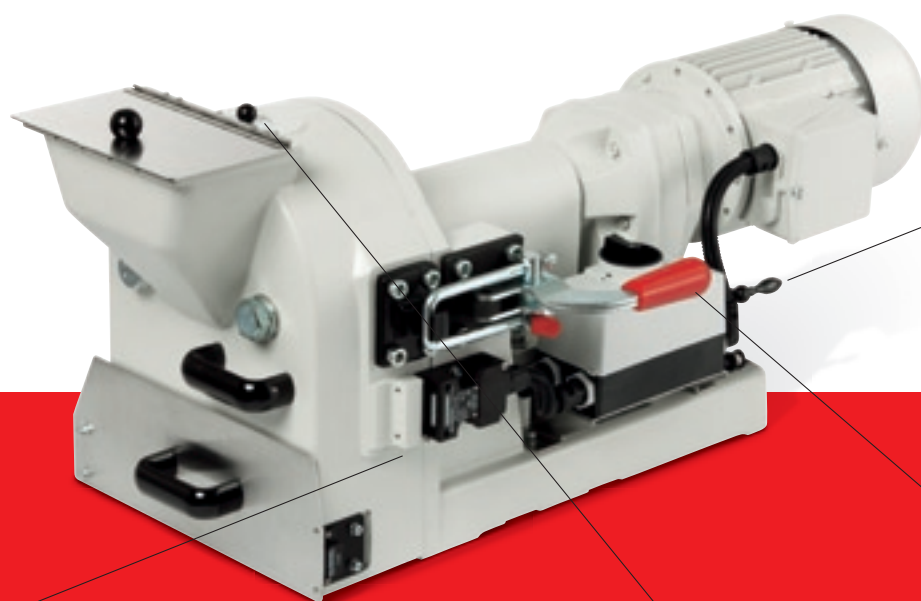
- High throughput up to 150 kg/h
- Fine grinding down to 0.1 mm
- Fast, easy cleaning
- Simple operation
- Fast grinding disk change
- Precision setting of the final fineness even during grinding
- High service life due to generously dimensioned bearings

The especially heavy and solid FRITSCH Disk Mill PULVERISETTE 13 is the ideal instrument for fine grinding of up to 150 kg per hour of hard-brittle and medium-hard solids – even in continuous operation. The maximum feed size per piece is approximately 20 mm edge length, the final fineness is freely adjustable between 12 mm and 0.1 mm.

The material to be ground is comminuted by pressure and shearing action between two counteracting grinding disks with coarse interlocking teeth. The ground material automatically falls down through an output gap into the collection drawer. The desired final fineness can be defined from the outside by changing the gap width.



Especially time saving: The grinding chamber can be completely opened which makes cleaning especially simple and the grinding disks are very easily accessible for changing.



Especially accurate: The precision sliding table of the FRITSCH Disk Mill PULVERISETTE 13 for precise gap setting with an accuracy of 0.1 mm – for rapid, precise operation and exactly reproducible grinding results.



Especially safe: The centrally located tension lock of the grinding chamber



Especially convenient: Easy gap width check from the outside (e.g. with thickness gauge)

- **Especially solid:** The thick-walled housing of the FRITSCH PULVERISETTE 13 consists of recyclable grey cast iron.
- **Especially clean:** The connecting piece (optional) for a dust exhaust system really simplifies the automatic removal of fine dust occurring during grinding and is even an optimal aid for cleaning the grinding parts.



PULVERISETTE 13



OUR SUGGESTION

Lengthen the service life of the grinding disks in your FRITSCH Disk Mill by simply changing the rotational direction of the maintenance-free three-phase geared motor.

Select the appropriate grinding disks

For every FRITSCH Disk Mill PULVERISETTE 13, you need at least one fixed and one movable grinding disk, which are available in various materials.

Normally, two grinding disks of the same material are selected, which must always be harder than the sample to be ground.

MATERIAL DATA FOR FIXED AND MOVABLE GRINDING DISKS

Material	Main component of the material*	Abrasion resistance	Use for material to be ground
Hardened cast steel	Cr – Fe	Good	Hard, brittle samples
Manganese steel	Mn – Fe	Good	Very hard, brittle samples
Hardmetal tungsten carbide	WC	Very good	Very hard, abrasive samples
Zirconium oxide ¹⁾	ZrO ₂	Good	Medium-hard, brittle samples, iron-free grinding

* At www.fritsch.de, you can find the corresponding element analyses with detailed information about the materials.

¹⁾ Grinding disks of zirconium oxide are only suitable for grinding ceramic materials, minerals, etc. and never for hard-tough samples, such as metals.

High final fineness in minimum time

With the FRITSCH PULVERISETTE 13, you can achieve high final finenesses in a very short grinding time. We have listed some examples here – always in reference to 1 kg feed quantity and 20 mm particle size and arranged by material types from hard to medium-hard.

Material to be ground	Grinding time (min)	Gap setting (mm)	Fineness (µm)		Throughput kg/h
			90 % < x	50 % < x	
Basalt	2.1	1.0		600	28
	3.5	0.1	220	60	17
Slate	1.4	1.0		1500	45
	2.2	0.1	300	90	27
Hard coal	3.5	1.0		800	17
	13.5	0.1	250	100	4
Limestone	2.0	1.0	1000	420	30
	6.3	0.1	210	100	10
Thomas meal (potash)	1.3	1.0	1000	350	45
	2.3	0.5	350	150	36
Glass	2.5	3.0	4000	2240	25
	3.3	2.0	2500	1600	18
	3.8	1.0	1400	800	16

The indicated results are to be considered as an orientation guide, since the chemical and physical properties (e.g. residual moisture, morphology, etc.) can vary even with the same material to be ground.

IRON-FREE GRINDING

Absolute protection against iron contamination – even with the PULVERISETTE 13. All information on page 6.

TECHNICAL DATA

Electrical details

400 V/3~, 50-60 Hz, 1830 watt

Motor shaft power in accordance with VDE 0530, EN 60034

1.5 kW

Weight

Net 140 kg

Gross 170 kg

Dimensions w x d x h

Bench top instrument 44 x 87 x 40 cm

Packaging w x d x h

Wooden case 100 x 52 x 70 cm

Emissions value of workplace according to IEC 61672-1

Approx. 89 dB(A)

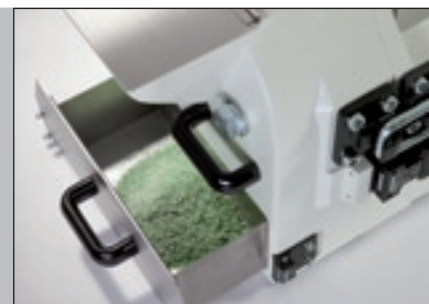
(depending on the material to be ground)

Order no.

13.1030.00



Filling of the funnel with pre-crushed glass bottles



Grinding result with a gap width of 1 mm

APPLICATION EXAMPLES

Mining and metallurgy	Ores, coal, coke, slags
Ceramics industry	Steatite, sintered ceramics, electrotechnical porcelain, fire-proof clay, dental ceramics
Rocks and soils	Bauxite, slags, quartz, clinker, gypsum, chalk
Glass industry	Frits, different glass types, raw materials
Soil research	Dried soil samples, sewage sludge, hydrological sediments, drilling cores

FACTS AND ADVANTAGES

Working principle	Shearing
Bearings	Needle and double row angular contact ball bearings
Equipment	Instrument without grinding disks
Optimal for material type	Hard-brittle, medium-hard
Max. feed size (depending on the material)	20 mm
Min. sample quantity	20 – 30 ml
Max. throughput (depending on the material)	150 kg/h
Final fineness	0.1 - 12 mm
Feeding	Batchwise/continuous
Grinding parts	Fixed and movable grinding disks
Rotating speed of the grinding disk	440 rpm
Conformity	CE mark
Guarantee	2 years



PULVERISETTE 1 / 13

POWERFUL COMBINATION – PRE- AND FINE-CRUSHING IN A SINGLE STEP

- Fast, continuous pre- and fine-grinding
- Compact in a single instrument
- Maximum particle size 95 mm
- Minimum final fineness 0.1 mm

For fast, continuous pre- and fine-grinding particularly of large quantities of coarse material, the combination of the FRITSCH Jaw Crusher PULVERISETTE 1 and the FRITSCH Disk Mill PULVERISETTE 13 is the ideal solution. Mounted together onto a rack and connected to each other by a chute, they automatically grind the material from a particle size of up to 95 mm to a final fineness of down to 100 µm – fast, easy and effective in a single step!

Select the **appropriate grinding parts and the desired configuration** from the options available for the PULVERISETTE 1 and 13 on pages 6–7 and 10–11.

Pre- and fine-grinding, with quartzite stones as example

1

Size of the material filling into the **PULVERISETTE 1**
Particle size up to 95 mm



2

Intermediate results of the **PULVERISETTE 1**
Final fineness down to 1 mm



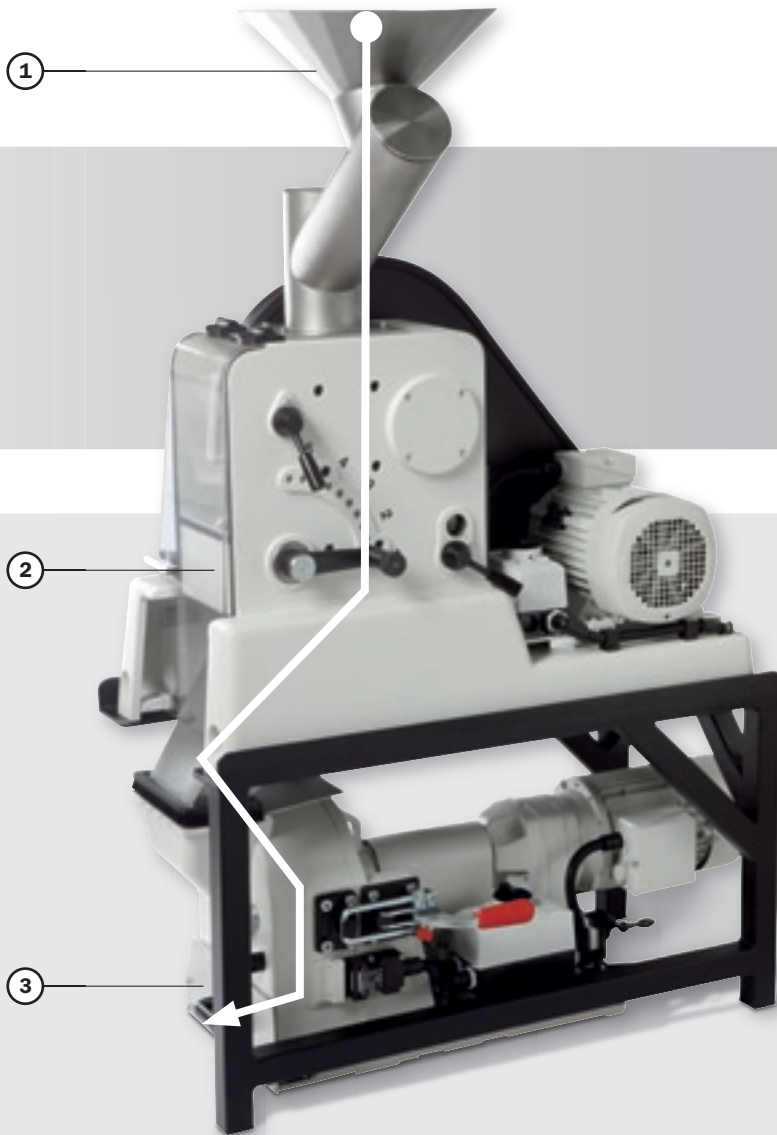
3

Final result of the **PULVERISETTE 13**
Final fineness down to 100 µm



IRON-FREE PRE- AND FINE-GRINDING

The FRITSCH-Combination is also available for completely iron-free pre- and fine-grinding. Details can be found on page 6.



APPLICATION EXAMPLES

Mining and metallurgy	Ores, coal, coke, slags, niobium-titanium, ferrovanadium, chrome vanadium, tungsten carbide
Geology and mineralogy	Granite, basalt, barite, silicates and other rocks
Glass industry	Frits, glass, raw materials
Ceramics industry	Steatite, fire-clay, sintered ceramics, electrotechnical porcelain, dental ceramics
Rocks and soils	Bauxite, clinker, quartz, concrete, slags, gypsum, chalk



PULVERISETTE 9

EXTREMELY SHORT GRINDING TIME

- Extremely fast grinding of very hard samples
- Especially powerful grinding with up to 1300 rpm and 1.1 kW motor output
- Ergonomically optimised grinding set changing
- Loss-free grinding in hermetically sealed grinding sets
- Very easy cleaning due to few, large parts
- Adjustable grinding time accurate down to one second
- For dry and wet grinding

The FRITSCH Vibrating Cup Mill PULVERISETTE 9 is indispensable for all areas in which hard, brittle and fibrous materials must be ground extremely quick down to analytical fineness. As the world's first mill of its kind, it has a frequency transformer control developed by FRITSCH. Your advantage: Perfect, loss-free grinding results in half the time!

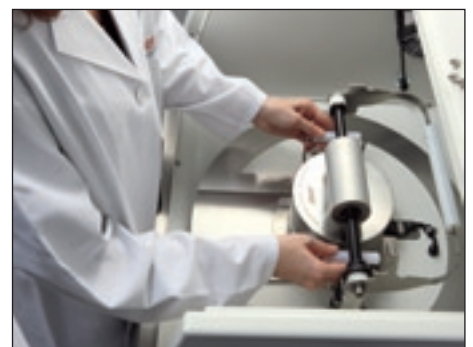
Outstanding operation

No similar mill offers a more convenient operation: The working position is ergonomically optimised, the ease of cleaning is without match, the grinding set is placed on a practical carriage, allowing it to be easily moved to the final position and rapidly fastened in seconds with a quick clamping system.

Simply clever!



Especially user-friendly: The grinding sets of 100 ml volume and larger for the FRITSCH PULVERISETTE 9 are equipped with handles.



Especially ergonomic: The grinding sets of the FRITSCH PULVERISETTE 9 with significantly reduced weight are placed on a carriage and slide into the defined final position. The operating position is adapted to body height – which is back-friendly and saves energy and time.



Especially intelligent: A special detector automatically detects when you use an agate or zirconium oxide grinding set for metal-free grinding and reduces the rotational speed independently.



Especially safe: A symmetrical eccentric developed by FRITSCH ensures fast and safe clamping of the grinding set, which is also automatically monitored. The defined final position and an integrated anti-twist protection provide additional safety.



PULVERISETTE 9



OUR SUGGESTION

Grinding sets with high density, e.g. tempered steel or tungsten carbide, shorten the grinding time.

Select the appropriate grinding set

Grinding sets in 4 different materials and 3 different sizes from 50 ml to 250 ml volume are available for the FRITSCH PULVERISETTE 9 – for each application the suitable one!

MATERIAL DATA FOR THE GRINDING SETS

Material	Main component of the material*	Density g/cm ³	Abrasion resistance	Use for material to be ground
Tempered steel	Fe – Cr	7.9	Good	Brittle, very hard samples
Hardmetal tungsten carbide	WC	14.3	Very good	Hard, abrasive samples
Agate	SiO ₂	2.65	Good	Soft to medium-hard, brittle samples
Zirconium oxide ¹⁾	ZrO ₂	5.9	Good	Medium-hard, brittle samples, iron-free grinding

* At www.fritsch.de, you can find the corresponding element analyses with detailed information about the materials.

¹⁾ Grinding sets of zirconium oxide are only suitable for grinding ceramic materials, minerals, etc. and never for hard-tough samples, such as metals.

GRINDING MEDIA AND VOLUMES

Volume	Useful capacity (sample volume)	Grinding parts
50 ml	15 – 50 ml	1 puck
100 ml	30 – 100 ml	1 puck + 1 ring
250 ml	75 – 250 ml	1 puck + 1 ring

Optimises your grinding process: the FRITSCH-motor with frequency transformer control

In the Vibrating Cup Mill, the grinding is performed by horizontal circular oscillations of the grinding set on a vibrating plate. The grinding set consisting of rings and puck comminute the grinding sample with extremely high pressure, impact forces and friction. In this form of grinding, the transmission of forces onto the grinding sample is much more important than the pure motor power. For this reason, FRITSCH developed a special motor with frequency transformer control for the PULVERISETTE 9 as the first provider worldwide. This makes it possible to adapt the motor speed to the respective load on the vibrating plate, ensuring optimal comminution. Alternatively, fixed speeds between 600 and 1100 rpm can also be selected. Naturally, the grinding parameters can also be configured for absolute reproducibility.



Pressure elements for automatic lifting of the grinding set and a safety switch which checks the firm position.

TECHNICAL DATA

Electrical details

100-120/200-240 V/1~, 50-60 Hz, 1900 watt

Motor shaft power in accordance with VDE 0530, EN 60034
1.1 kW

Weight

Net 250 kg

Gross 350 kg

Dimensions w x d x h

Floor instrument 72 x 66 x 120 cm

Packaging w x d x h

Pallet case 85 x 85 x 135 cm

Emissions value of workplace according to IEC 61672-1

Approx. 79 dB(A)

(depending on the material to be ground and grinding set)

Order no.

09.4000.00

APPLICATION EXAMPLES

Mining	For processing coal, ores or minerals for physical or chemical analysis
Metallurgy	For grinding blast furnace slag or cast iron samples to determine additives needed
Ceramics industry	For grinding rock samples to produce raw powder to determine CaCO ₃ - and MgO-content or clinkers to study the constancy of the mineralogical structure
Agriculture and environment	For preparing samples for chemical analysis of soils, sludges or vegetable matters
Infrared and x-ray fluorescence analysis	For preparing samples with a short grinding time without contamination through undesired abrasion

FACTS AND ADVANTAGES

Working principle	Impact
Bearings	Ball- and cylindrical roller bearings
Equipment	Instrument without grinding set
Optimal for material type	Hard, medium-hard, brittle
Max. feed size (depending on the material)	12 mm
Min. sample quantity	10 – 20 ml
Max. sample quantity	250 ml
Final fineness	10 – 20 µm
Feeding	Batchwise
Grinding parts	Grinding puck with impact rings
Motor speed	1100 rpm, 1300 rpm at optimised speed
Useful capacity	50, 100 or 250 ml
Conformity	CE mark
Guarantee	2 years

ORDERING DATA

Order no. Article

JAW CRUSHER

PULVERISETTE 1, model I



Instrument incl. fixed and movable crushing jaw and lateral support walls made of tempered steel

- 01.5030.00 For 400 V/3~, 50-60 Hz, 1450 watt
 01.5020.00 For 230 V/1~, 50-60 Hz, 1570 watt
 01.5010.00 For 115 V/1~, 50-60 Hz, 1900 watt
 The PULVERISETTE 1 with voltage of „/3~“ can **only** be operated on a three-phase supply network.
 Other voltages on request.

Crushing jaws for model I

- 43.0010.09* Fixed crushing jaw made of tempered steel
 43.0020.09* Movable crushing jaw made of tempered steel
 43.0030.10 Fixed crushing jaw made of stainless steel
 43.0040.10 Movable crushing jaw made of stainless steel
 43.0011.09 Fixed crushing jaw made of chromium-free steel
 43.0021.09 Movable crushing jaw made of chromium-free steel
 43.0130.23 Fixed crushing jaw made of manganese steel
 43.0140.23 Movable crushing jaw made of manganese steel
 43.0050.08 Fixed crushing jaw made of hardmetal tungsten carbide
 43.0060.08 Movable crushing jaw made of hardmetal tungsten carbide
 43.0100.27 Fixed crushing jaw made of zirconium oxide
 43.0110.27 Movable crushing jaw made of zirconium oxide

Lateral support walls for model I

- 43.0070.09* 1 pair made of tempered steel
 43.0080.10 1 pair made of stainless steel
 43.0071.09 1 pair made of chromium-free steel
 43.0090.08 1 pair made of hardmetal tungsten carbide
 43.0150.13 1 pair made of aluminium
 43.0160.27 1 pair made of zirconium oxide

Accessories for iron-free pre-crushing for model I

- 01.5410.00 Funnel PVC incl. clamping strips
 (Please note: fixed and movable crushing jaws made of zirconium oxide and lateral support walls made of zirconium oxide or aluminium are additionally necessary!)

PULVERISETTE 1, model II



Instrument incl. fixed and movable crushing jaw and lateral support walls made of tempered steel

- 01.7030.00 For 400 V/3~, 50-60 Hz, 2780 watt
 The PULVERISETTE 1 with voltage of „/3~“ can **only** be operated on a three-phase supply network.
 Other voltages on request.

Crushing jaws for model II

- 43.3010.09* Fixed crushing jaw made of tempered steel
 43.3020.09* Movable crushing jaw made of tempered steel
 43.3030.10 Fixed crushing jaw made of stainless steel
 43.3040.10 Movable crushing jaw made of stainless steel
 43.3011.09 Fixed crushing jaw made of chromium-free steel
 43.3021.09 Movable crushing jaw made of chromium-free steel
 43.3130.23 Fixed crushing jaw made of manganese steel
 43.3140.23 Movable crushing jaw made of manganese steel
 43.3050.08 Fixed crushing jaw made of hardmetal tungsten carbide
 43.3060.08 Movable crushing jaw made of hardmetal tungsten carbide
 43.3100.27 Fixed crushing jaw made of zirconium oxide
 43.3110.27 Movable crushing jaw made of zirconium oxide

Lateral support walls for model II

- 43.3070.09* 1 pair made of tempered steel
 43.3080.10 1 pair made of stainless steel
 43.3071.09 1 pair made of chromium-free steel
 43.3090.08 1 pair made of hardmetal tungsten carbide
 43.3150.13 1 pair made of aluminium
 43.3160.27 1 pair made of zirconium oxide

Accessories for iron-free pre-crushing for model II

- 01.7410.00 Funnel PVC incl. clamping strips
 (Please note: fixed and movable crushing jaws made of zirconium oxide and lateral support walls made of zirconium oxide or aluminium are additionally necessary!)

* Included in the basic price of the instrument; when ordering a deviating specification from the standard accessories, please specify the exact article number of the replacement part.

Order no. Article

ACCESSORIES FOR JAW CRUSHER PULVERISETTE 1, MODEL I + II

Dust exhaust system

- 43.9025.00 Dust exhaust system for 230 V/1~, 50-60 Hz, 1000 watt
 43.9535.00 Set dust filters for exhauster (set = 5 pieces)

For continuous operation

- 43.5100.00 Mounting rack for combined use of the Jaw Crusher PULVERISETTE 1 with the Disk Mill PULVERISETTE 13
 Select the desired configuration from the options offered for the PULVERISETTE 13 on pages 10-11.

The PULVERISETTE 1, model I + II, is also available on request with a thorough polymer coating inside!

DISK MILL

PULVERISETTE 13

**Instrument without grinding disks**

- 13.1030.00 For 400 V/3~, 50-60 Hz, 1830 watt
 The PULVERISETTE 13 with voltage of „/3~“ can **only** be operated on a three-phase supply network.
 Other voltages on request.

Grinding disks

- 13.1100.09 Fixed grinding disk, 200 mm dia., hardened steel cast
 13.1110.09 Movable grinding disk, 200 mm dia., hardened steel cast
 13.1120.23 Fixed grinding disk, 200 mm dia., manganese steel
 13.1130.23 Movable grinding disk, 200 mm dia., manganese steel
 13.2000.08 Fixed grinding disk, 200 mm dia., hardmetal tungsten carbide
 13.2010.08 Movable grinding disk, 200 mm dia., hardmetal tungsten carbide
 13.2100.27 Fixed grinding disk, 200 mm dia., zirconium oxide
 13.2110.27 Movable grinding disk, 200 mm dia., zirconium oxide

Dust exhaust system

- 43.9025.00 Dust exhaust system for 230 V/1~, 50-60 Hz, 1000 watt
 13.1450.00 Connecting piece for dust exhaust system
 43.9535.00 Set dust filters for exhauster (set = 5 pieces)

For continuous operation

- 43.5100.00 Mounting rack for combined use of the Jaw Crusher PULVERISETTE 1 with the Disk Mill PULVERISETTE 13
 Select the desired configuration from the options offered for the PULVERISETTE 1 on pages 6-7.

The PULVERISETTE 13 is also available on request with a thorough polymer coating inside!

COMBINATION OF JAW CRUSHER AND DISK MILL
PULVERISETTE 1/13**JAW CRUSHER PULVERISETTE 1 AND DISK MILL PULVERISETTE 13 IN THE DESIRED CONFIGURATION**

To order a Combination for fast pre- and fine-grinding in a single step, order both instruments individually in the desired configuration plus the associated mounting rack that combines the instrument into a single high-performance grinding instrument.

Select the desired configuration from the options offered for the PULVERISETTE 1 and 13 on pages 6-7 and 10-11.

- 43.5100.00 Mounting rack for combined use of the Jaw Crusher PULVERISETTE 1 with the Disk Mill PULVERISETTE 13

Order no. Article

VIBRATING CUP MILL

PULVERISETTE 9



Instrument without grinding set

09.4000.00 For 100-120/200-240 V/1~, 50-60 Hz, 1900 watt
The voltage specified in the order is set.

Grinding sets

48.4125.00 Tempered steel, useful volume 250 ml
48.4110.00 Tempered steel, useful volume 100 ml
48.4105.00 Tempered steel, useful volume 50 ml
48.4225.00 Hardmetal tungsten carbide, useful volume 250 ml
48.4210.00 Hardmetal tungsten carbide, useful volume 100 ml
48.4205.00 Hardmetal tungsten carbide, useful volume 50 ml
48.4310.00 Agate, useful volume 100 ml
48.4305.00 Agate, useful volume 50 ml
48.4410.00 Zirconium oxide, useful volume 100 ml



Test our instruments in practice!

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



Alternatively, send us your samples for a free grinding trial after which we will submit a fully documented grinding report identifying the most suitable instrument and accessories to meet your requirements.

A comprehensive database of grinding reports for various materials and industries can also be found online at www.fritsch.de under the menu item Sample Preparation / Solutions.

It's worth to take a look!

Scheduling and information

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