FRITSCH

Jaw Crushers and Disk Mills · classic line

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

classic line

JAW CRUSHERS
DISK MILLS

FRITSCH is an internationally respected manufacturer of application-oriented laboratory instruments. For more than 80 years, laboratories worldwide have relied on our experience, quality, service and innovation - for fast industrial applications as well as for especially accurate results in control- and research laboratories.

FRITSCH. ONE STEP AHEAD.

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.

Preparation of solid and high-quality pellets

FRITSCH Pellet Press **18**

Manual hydraulic Pellet Press for the preparation of pellets with a smooth, homogeneous surface for spectral analyses such as X-ray fluorescence analysis or infrared spectroscopy for elementary 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

Pellet Press: for the preparation of pellets in a diameter of 32 or 40 mm with a pressure force of up to 250 kN

PULVERISETTE 1
classic line

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 *classic line* 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 *classic line* 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.

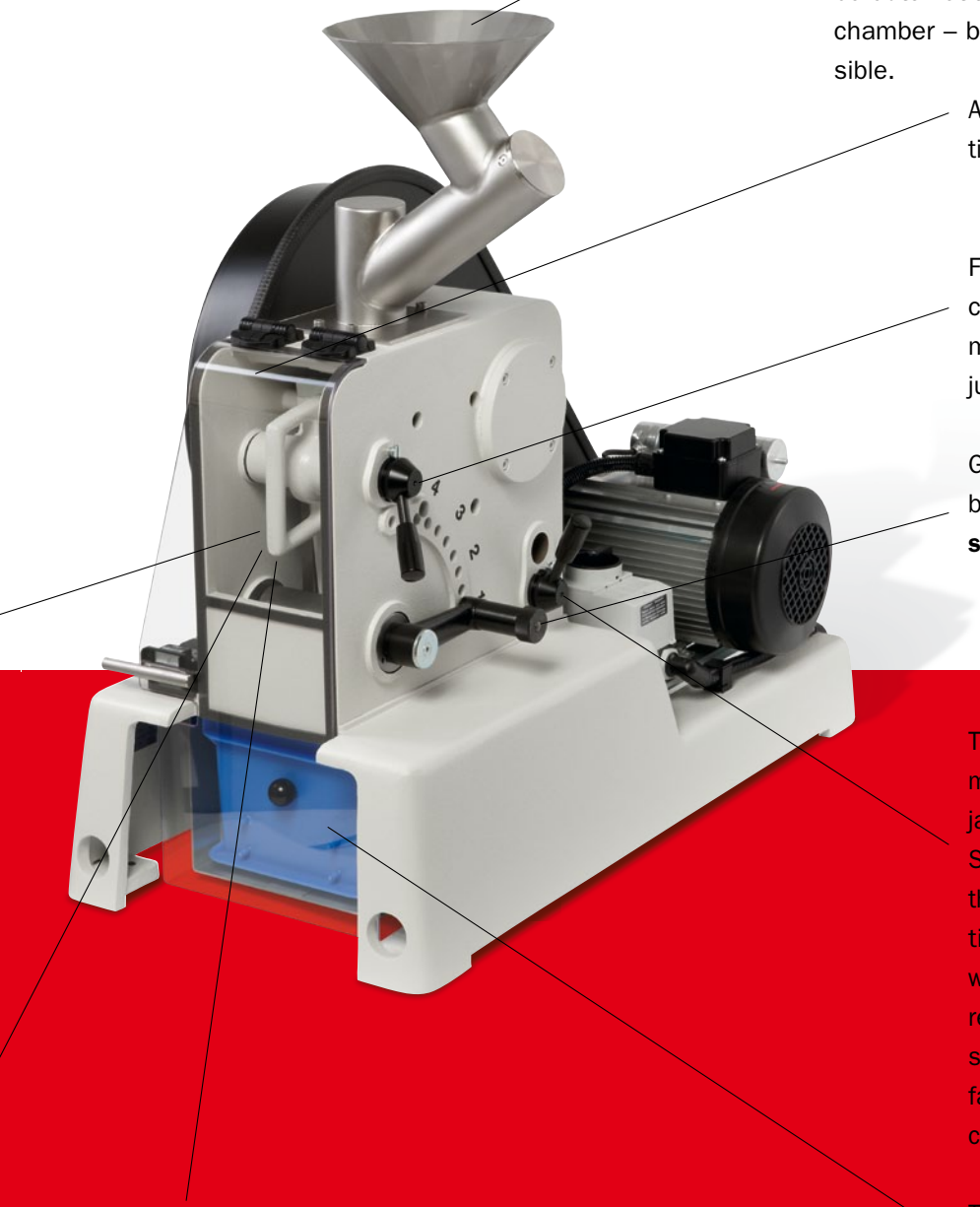
The especially **simple cleaning** of the FRITSCH Jaw Crusher PULVERISETTE 1 *classic line* saves time and offers effective contamination protection for your samples.

The funnel of the FRITSCH Jaw Crusher PULVERISETTE 1 *classic line* 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** for optical inspection of optimum material flow.

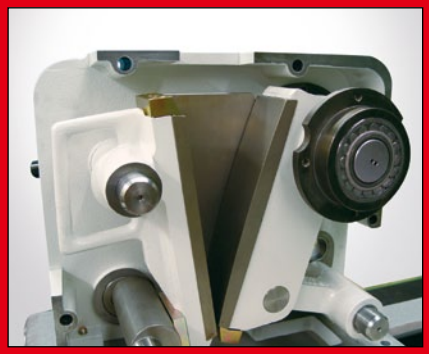
For **simple and fast releasing** of the fixed crushing jaw. The crushing jaw can be removed for cleaning quickly and easily with just 2 hand motions.

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 *classic line* 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.



View of the grinding chamber with the housing removed

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.

PULVERISETTE 1
classic line

OUR SUGGESTION

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

Select the right material combination!

The crushing jaws and lateral support walls of the FRITSCH Jaw Crusher PULVERISETTE 1 *classic line* are available in 6 different materials in order to avoid undesired contamination due to material abrasion. The standard version 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 subject to low stresses, however, the standard lateral support walls made of tempered steel can often 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, we can equip your FRITSCH Jaw Crusher PULVERISETTE 1 *classic line* with crushing jaws made of zirconium oxide, lateral support walls in zirconium oxide or aluminium, and with a special PVC funnel. So you will have absolute protection against iron contamination, such as for dental ceramics.

Steel crushing jaws with a grooved surface
If required, we can equip your PULVERISETTE 1 *classic line*, model II, with fixed and movable crushing jaws in steel with a grooved surface, which have a different influence on particle shape and particle size distribution.

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 DIN EN ISO 3746:2005
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: Coarse basalt rock crushed by the PULVERISETTE 1 *classic line* (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
classic line

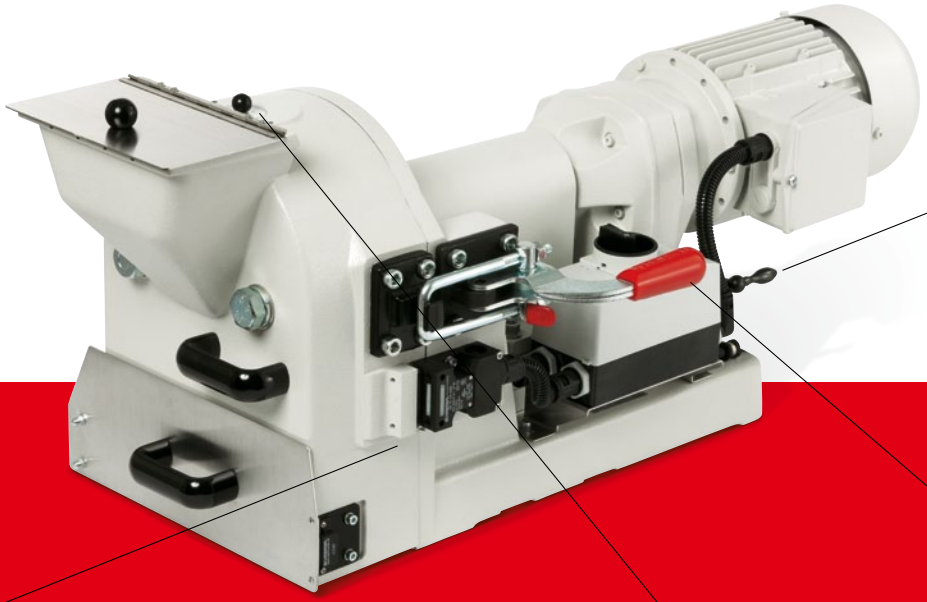
HIGH FINAL FINENESS FOR LARGE QUANTITIES

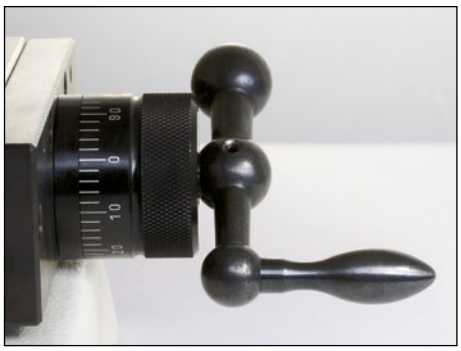
- **High throughput up to 150 kg/h**
- **Fine grinding down to 0.1 mm**
- **Fast, easy cleaning**
- **Simple operation**
- **Fast grinding disk change**
- **Precision setting of the final fineness even during grinding**
- **High service life due to generously dimensioned bearings**

The especially heavy and solid FRITSCH Disk Mill PULVERISETTE 13 *classic line* 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.





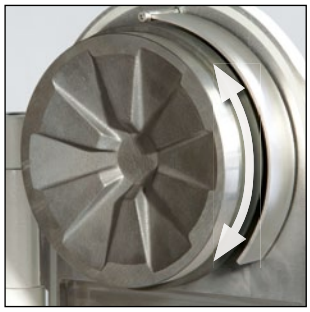
Especially accurate: The precision sliding table of the FRITSCH Disk Mill PULVERISETTE 13 *classic line* for precise gap setting with an accuracy of 0.1 mm – for rapid, precise operation and exactly reproducible grinding results.

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 *classic line* 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 occuring during grinding and is even an optimal aid for cleaning the grinding parts.

PULVERISETTE 13
classic line



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 *classic line*, 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 *classic line*, 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) 90 % < x	Fineness (µm) 50 % < x	Throughput kg/h
Basalt	2.1	1.0		600	28
	3.5	0.1	220	60	17
Clinker	2.0	0.5	900	450	30
	10.0	0.1	220	60	6
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
Pumice stone	3.5	0.5	600	250	17
	5.0	0.1	150	30	12
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

For completely iron-free grinding of hard-brittle and medium-hard solid samples, for example for dental ceramics, we can equip your FRITSCH Disk Mill PULVERISETTE 13 *classic line* with a thorough polymer interior coating – together with grinding disks made of zirconium oxide – an absolutely reliable protection against iron contamination.

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 DIN EN ISO 3746:2005
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
classic line

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 *classic line* and the FRITSCH Disk Mill PULVERISETTE 13 *classic line* 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 *classic line* on pages 6–7 and 10–11.

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

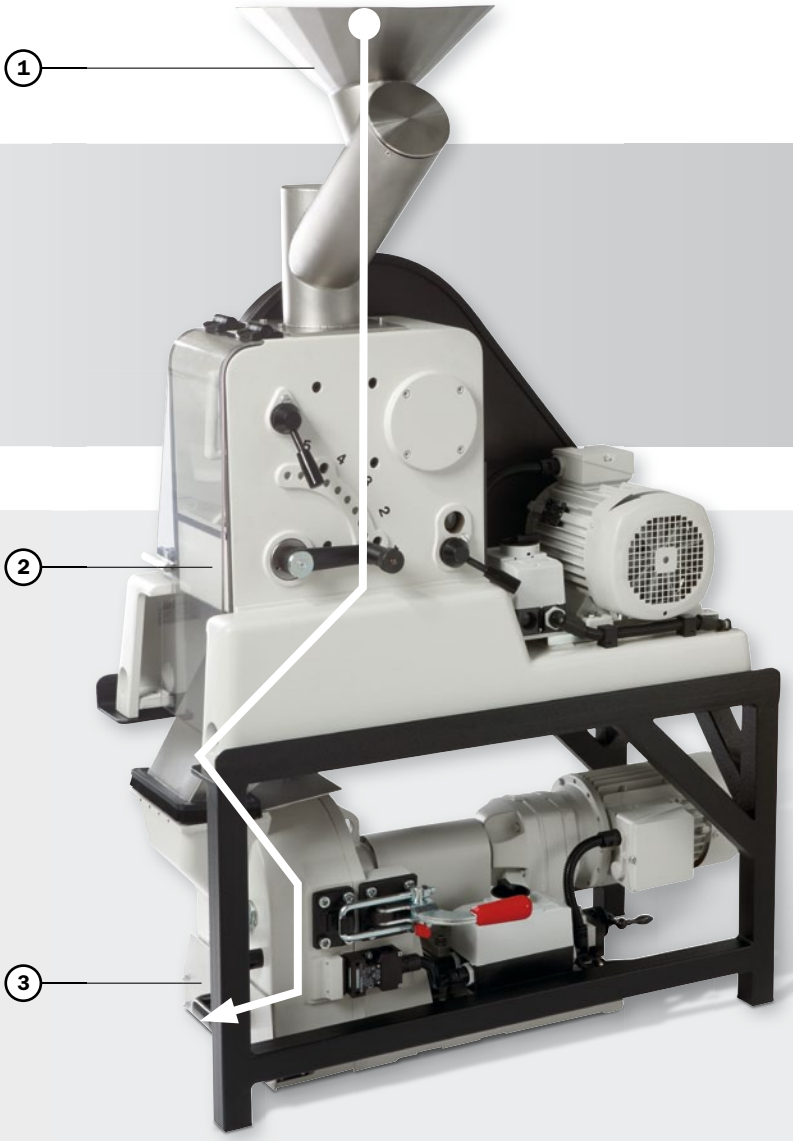
1. Size of the material filling into the **PULVERISETTE 1**
   Particle size up to 95 mm

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.



A connection chute automatically conveys the pre-crushed material onward for fine grinding.

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
classic line

STRONGER, FASTER, BETTER

- **More power with new drive concept**
- **Extra-fast grinding with up to 1500 rpm**
- **Precise adjustment of rotational speed, grinding time and pause periods**
- **Programming and storage of grinding cycles**
- **Self-explanatory multilingual menu navigation**
- **Optimised tensioning of grinding set with anti-rotation lock**
- **Especially safe hood locking**
- **Complete soundproof lining**

The new, completely modified FRITSCH Vibrating Cup Mill PULVERISETTE 9 offers many practical advantages in all areas in which hard, brittle and fibrous material must be ground extremely quick down to analytical fineness. Now with increased grinding power and a completely new drive concept, even safer and easier to tension the grinding set, especially quiet, simple to operate and quick to clean.

Easy working
No similar mill offers a more convenient operation: The working position is ergonomically optimised; the ease of cleaning is without match. The grinding sets are especially light, and do not have to be placed directly on the vibrating plate in the centre of the mill. The grinding set is simply placed on the guide rail and easily moved to the final position. This protects your back and saves energy and time. The grinding set is tensioned in seconds using a well-thought out one-hand lever.
Simply clever!

Especially light: The grinding sets of the new PULVERISETTE 9 are now considerably lighter and are equipped with heat-insulated handles.

Especially ergonomic: The PULVERISETTE 9 grinding sets, which have been considerably reduced in weight, are placed at an optimised working height on a practical guide rail and then easily moved to the final position.

Especially well-arranged: The self-explanatory, multilingual menu navigation on the LCD display for setting the grinding time precisely to the second, the pause periods and the rotational speed as well as the programming and storage of grinding cycles.

Especially intelligent: A special detector automatically detects when you use an agate grinding set for grinding and reduces the rotational speed independently.

Especially safe: Tensioned in seconds with one hand and one grip, the completely new rapid and anti-twist tensioning for the grinding set.

PULVERISETTE 9
classic line

OUR SUGGESTION

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

Select the appropriate grinding set

Grinding sets in 5 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/cm³	Abrasion resistance	Use for material to be ground
Tempered steel	Fe – Cr	7.9	Good	Brittle, hard samples
Chromium-free steel	Fe – Cr	7.8	Fairly good	Brittle, hard samples
Hardmetal tungsten carbide	WC	14.3	Very good	Very hard, abrasive samples
Agate	SiO_2	2.65	Good	Soft to medium-hard, brittle, fibrous samples
Zirconium oxide[1)]	ZrO_2	5.9	Good	Medium-hard, brittle, fibrous 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 metal.

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 torque-optimised frequency converter

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 ring 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 as the first provider worldwide, developed for the PULVERISETTE 9 a special motor and now equipped it with an especially interference-resistant, torque-optimised frequency converter which fulfils all the relevant safety standards worldwide. It ensures that the motor output is precisely matched to the grinding material and grinding set - which optimises the energy consumption.

TECHNICAL DATA

Electrical Details
230-240 V/1~, 50-60 Hz, 1200 watt
100-120 V/1~, 50-60 Hz, 1200 watt

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

Weight
Net 267 kg
Gross 330 kg

Dimensions w x d x h
Floor instrument 77 x 76 x 116 cm

Packaging w x d x h
Pallet box 82 x 88 x 147 cm

Emissions value of workplace according to DIN EN ISO 3746:2005
Approx. 74 dB(A)
(depending on the material to be ground and grinding set)

Order no.	**230-240 V/1~**	**100-120 V/1~**
	09.5000.00	09.5001.00

How to go mobile with the Vibrating Cup Mill: On request, we can supply the PULVERISETTE 9 on heavy duty wheels with arresting brake.

Pressure elements automatically lift the grinding set, the anti-rotation lock tensions them absolutely safe and the safety switch checks the firm position.

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
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 samples
Infrared and X-ray fluorescence analysis	For preparing samples in a short grinding time without contamination due to 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, fibrous
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 set with grinding puck and impact ring
Motor speed	600 – 1500 rpm
Useful capacity	50, 100 or 250 ml
Conformity	CE mark
Guarantee	2 years

PELLET PRESS

Ideal for high-quality pellets

- Pressing tools: 40 mm diameter included, 32 mm diameter optional
- Variable pressure force up to 250 kN
- Clearly designed pressure force display in 10 kN steps
- Simple operation via hand lever
- Easy cleaning
- Single-stage piston stroke of max. 25 mm
- Automatic pressure relief in case of overstress
- Solid and compact with impact-resistant cladding

Stable and impact-resistant: The transparent polycarbonate cladding with all-round observation window.

Simple: By pressing the hand lever down, you create a solid, highly permeable pellet for further analysis.

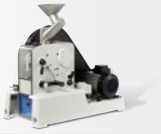
The manually-operated hydraulic FRITSCH Pellet Press is ideal for fast and easy preparation of both: solid and highly permeable pellets of solid samples for X-ray fluorescence analysis or infrared spectroscopy.

The pressure force is variable up to max. 250 kN and is automatically relieved in case of overstress. The pressing tool for pellets with 40 mm diameter is included in delivery, a 32 mm diameter pressing tool is optional.

It's as easy as this: Fill in the sample, close the magnetically-held door and build-up the desired pressure using the hand lever - that's it.

If your pellets require binding agents for stabilisation, please contact us and we will be happy to assist.

ORDERING DATA

Order no.	Article
JAW CRUSHERS *classic line*	
	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 [1)]
43.0110.27	Movable crushing jaw made of zirconium oxide [1)]
	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 [1)]
	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 [1)]
43.3110.27	Movable crushing jaw made of zirconium oxide [1)]
	Fixed and movable crushing jaws made of steel with grooved surface on request.
	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 [1)]
	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

43.9050.00 Dust exhaust system, dust category "M"
according to DIN EN 60335-2-69
for 230 V/1~, 50-60 Hz, 1000 watt
43.9055.00 Paper filter bag for exhaust system (pack = 5 pieces)[2)]
43.9052.00 Plastic bag for exhaust system (pack = 5 pieces)[2)]
43.9051.00 Filter set polyester for exhaust system[2)]

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.

DISK MILL *classic line*

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[1)]
13.2110.27 Movable grinding disk, 200 mm dia., zirconium oxide[1)]

Accessories for iron-free grinding

13.1090.16 Thorough polymer coating inside of grinding chamber
(Please note: fixed and movable grinding disks made of zirconium oxide are additionally necessary!)

Dust exhaust system

43.9050.00 Dust exhaust system, dust category "M"
according to DIN EN 60335-2-69
for 230 V/1~, 50-60 Hz, 1000 watt
13.1450.00 Connecting piece for dust exhaust system
43.9055.00 Paper filter bag for exhaust system (pack = 5 pieces)[2)]
43.9052.00 Plastic bag for exhaust system (pack = 5 pieces)[2)]
43.9051.00 Filter set polyester for exhaust system[2)]

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.

[1)] Grinding disks of zirconium oxide are only suitable for grinding ceramic materials, minerals, etc. and never for hard-tough samples, such as metals.
[2)] One pack/one piece is included in the order of the exhaust system.

Order no.	Article

COMBINATION OF JAW CRUSHER AND DISK MILL PULVERISETTE 1/13 *classic line*

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

VIBRATING CUP MILL

PULVERISETTE 9

Instrument without grinding set

09.5000.00 For 230-240 V/1~, 50-60 Hz, 1200 watt
09.5001.00 For 100-120 V/1~, 50-60 Hz, 1200 watt

Grinding sets

48.5125.00 Tempered steel, useful volume 250 ml
48.5110.00 Tempered steel, useful volume 100 ml
48.5105.00 Tempered steel, useful volume 50 ml
48.5525.00 Chromium-free steel, useful volume 250 ml
48.5510.00 Chromium-free steel, useful volume 100 ml
48.5505.00 Chromium-free steel, useful volume 50 ml
48.5225.00 Hardmetal tungsten carbide, useful volume 250 ml
48.5210.00 Hardmetal tungsten carbide, useful volume 100 ml
48.5205.00 Hardmetal tungsten carbide, useful volume 50 ml
48.5310.00 Agate, useful volume 100 ml
48.5305.00 Agate, useful volume 50 ml
48.5410.00 Zirconium oxide[1)], useful volume 100 ml
48.5405.00 Zirconium oxide[1)], useful volume 50 ml

93.4365.00 Wheels for Vibrating Cup Mill
(1 set = 4 heavy-duty wheels, 2 with arresting brake)

PELLET PRESS

Instrument incl. pressing tools

09.9500.00 Pellet Press, hydraulic, manual
complete with pressing tool for pellets with 40 mm diameter, pressure force 250 kN
09.9600.00 pressing tool for pellets with 32 mm diameter

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