

*Jaw Crushers and Disk Mill - premium line*



**IDEAL FOR**

**PRE- AND FINE-GRINDING OF VERY  
HARD AND BRITTLE MATERIALS IN  
THE AREAS**

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

*premium line*

**JAW CRUSHERS AND DISK MILL**

## **FRITSCH. ONE STEP AHEAD.**

For 90 years, laboratories around the world have placed their trust in FRITSCH laboratory instruments for diverse applications in sample preparation and analysis. The PULVERISETTE brand is known internationally for fast size-reduction, easy handling, reliable reproducibility, and a long service life even during continuous, heavy duty usage. We offer the benefits of a traditional family business: Accessibility, personal service, a wealth of experience, and a deep passion for innovation. Always one step ahead.



## The FRITSCH *premium* principle

**Making the best even better:** This is the principle behind the high-tech laboratory mills of the FRITSCH *premium line*. Additional power gives them an edge over comparable instruments. More practice-oriented equipment elements make working with them even easier, more convenient, faster and safer. Inspired by your daily work. For *premium* results and absolute reliability.

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



# PULVERISETTE 1

*premium line*

## Extra powerful *premium* pre-crushing

- Up to 3 kW drive power for processing higher throughput in shorter times
- Feed size up to 95 mm, final fineness 0.3 – 15 mm
- Clean Design for extra-fast cleaning
- Zero-point and grinding gap adjustment with millimetre accuracy
- Extremely robust, for even ferrous alloys
- Extra low noise and dust-free operation
- Variable crushing jaw kinematics for higher final fineness

**The most powerful FRITSCH Jaw Crusher ever: up to 3 kW drive power ensure an exceptionally high throughput during pre-crushing of hard or very hard, brittle materials. For easy cleaning, the crushing jaws can be completely swivelled out or removed. The integrated dust exhaust channels provide optimal working conditions. And with two models, you can choose the Jaw Crusher that is perfect for your feed size and your sample quantity.**

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 **gap adjustment** is defined with **millimetre accuracy** from the outside, simply by adjusting the distance 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 *premium line* for further comminution.

**Extra robust** with a solid steel frame designed for even the most demanding applications.

**Extra powerful motor** with up to 3 kW drive power. Your advantage: faster processing with significantly higher throughput in shorter times.

**Perfect dust exhaust** with integrated channels for dust-free operation – simply connect the dust exhaust system and control it directly using the start and stop button on the instrument. The button lights up in green when the dust exhaust system is ready for operation.

**Outstanding noise reduction** due to side walls insulated with foam for significantly quieter operation.

**Especially safe** as drawer and grinding chamber lid firmly lock automatically – the instrument only starts up when these are locked closed.



**Funnel folds away completely** for large sample quantities – easy to access and easy to fill.

**Visible grinding chamber** with extremely heavy-duty plexiglas cover for fast visual inspection of the grinding process.

**FRITSCH premium advantage:** Automatic short change of the direction of rotation in order to quickly free up any blockages during comminution.

**FRITSCH premium advantage:** Automatic adjustment of the correct direction of rotation for optimal results for the three-phase versions.

**FRITSCH premium advantage: Easy comminution of hardest ferrous alloys**

Due to higher grinding pressure between the jaws the PULVERISETTE 1 achieves comminution of even the hardest ferrous alloys in even shorter times.



# PULVERISETTE 1

*premium line*

## Especially easy *premium* work



Easy cleaning: remove fixed crushing jaw, swivel movable crushing jaw upwards. For a complete freely accessible grinding chamber.

As with all of the instruments in the **FRITSCH premium line**, we've put a great deal of thought into how to make your daily work even easier and time-saving. With two new **FRITSCH solutions for precise zero-point and grinding gap adjustment, unique kinematics and crushing jaws that are especially easy to exchange!**

### **FRITSCH premium advantage: Completely accessible grinding chamber**

Only the PULVERISETTE 1 *premium line* has the fixed crushing jaw mounted in a guide and can be removed with a single motion. Also the movable crushing jaw can be swivelled up and locked there. Your advantage: A completely accessible grinding chamber for fast, efficient and safe cleaning. The **Clean Design** of the grinding chamber enables due to its smooth surfaces an easy and thorough cleaning to prevent cross-contamination.

### **FRITSCH premium advantage: Progressive gap adjustment**

Precision gap adjustment is only available from FRITSCH: On the PULVERISETTE 1 *premium line*, the zero-point adjustment which can be calibrated, is connected with a progressive grinding gap adjustment. With a single motion, the double eccentric can be used to precisely set the grinding gap in millimetre steps – and for the finer particle range, in correspondingly smaller steps.



### **FRITSCH premium advantage: Zero-point adjustment can be calibrated**

For regularly compensating wear on the fixed and movable crushing jaws and for easy precise re-adjustment after turning or replacing the crushing jaws.



**FRITSCH premium advantage: Lateral support walls are especially easy to replace**

To remove the lateral support walls mounted in the guide of the PULVERISETTE 1 *premium line*, simply loosen the screws and pull the support walls up and out of the guide – that's it!



**FRITSCH premium advantage: Unique kinematics with fast change**

Only the FRITSCH Jaw Crusher PULVERISETTE 1 *premium line* offers easy, fast and convenient change of the kinematics without altering the gap adjustment. Simply select between the settings specified on the instrument "Eccentricity normal" provides the fastest possible comminution due to the approximately circular oscillation of the crushing jaws. Choose "Eccentricity small" to achieve a narrow particle size range through up and down shearing motions. As a result, the PULVERISETTE 1 *premium line* can be adapted to the breaking characteristics of the respective sample with one simple motion.

**FRITSCH premium advantage: Both crushing jaws are especially easy to remove**

To turn around or replace the fixed crushing jaw of the PULVERISETTE 1 *premium line*, simply pull out the retaining bolt; the jaw is held securely for simple removal. Now, take the turned around or replacement crushing jaw and slide it back into the guide as far as it will go and push-in the retaining bolt – that's it! As a result of its fastening mechanism, the movable crushing jaw can be just as quickly and safely turned around or replaced: Simply lift it, fix it horizontally, and remove it.

Your advantage: double service life due to simple turning of both of the crushing jaws – and anytime fast and simple exchange of the crushing jaws.



# PULVERISETTE 1

*premium line*



## METAL-FREE PRE-CRUSHING

For absolute protection against metal contamination, for example for crushing dental ceramics, select crushing jaws made of zirconium oxide and lateral support walls made of polyamide, zirconium oxide or aluminium and a special polyamide-coated funnel and drawer.

### Select the right material combination!

The crushing jaws and support walls of the FRITSCH Jaw Crusher PULVERISETTE 1 *premium line* are available in 6 different materials to prevent 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, hard samples
Stainless steel	Fe – Cr – Ni	Fairly good	Medium-hard, brittle samples
Chromium-free steel	Fe	Good	Medium-hard samples
Manganese steel	Fe – Mn	Good	Hard, brittle samples
Hardmetal tungsten carbide	WC	Very good	Very hard, abrasive samples
Zirconium oxide <sup>1)</sup>	ZrO <sub>2</sub>	Good	Medium-hard, brittle samples, metal-free grinding
Aluminium	Al	Fairly good	Brittle samples, metal-free grinding
Polyamide	PA	Fairly good	Metal-free grinding

\* At [www.fritsch.de](http://www.fritsch.de) you can find the corresponding element analyses with detailed information about the materials.

<sup>1)</sup> 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.

### Metal-free pre-crushing

For complete metal-free pre-crushing of medium-hard, brittle samples, for example in the ceramics industry, we can equip your PULVERISETTE 1 *premium line* with crushing jaws made of zirconium oxide, lateral support walls made of polyamide, zirconium oxide or aluminium and a special polyamide-coated funnel and drawer. (Other coatings available on request.)

### Steel crushing jaws with a grooved surface

If desired, we can equip your PULVERISETTE 1 *premium line* model II with fixed and movable crushing jaws in steel with a lengthwise grooved surface. These have a different effect on the particle shape and particle size distribution. The structured surface ensures that the length-to-width ratio of the ground sample is nearly the same. At the same time, the positioning of the crushing jaws makes it possible to achieve a higher share of fine particles.



## 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, 3540 watt

### Motor shaft power in accordance with VDE 0530, EN 60034

Model I, 1.1 kW  
 Model II, 3 kW

### Weight

Model I, net 305 kg, gross 340 kg  
 Model II, net 320 kg, gross 355 kg

### Dimensions w x d x h

Model I and model II, bench top instrument 55 x 90 x 106 cm

### Packaging w x d x h

Model I and model II, wooden case 60 x 105 x 100 cm

### Emissions value of workplace

according to DIN EN ISO 3746:2005

approx. 83 dB(A)

*(depending on the material to be crushed)*

Order no.	400 V/3~	230 V/1~	115 V/1~
Model I	01.1030.00	01.1020.00	01.1010.00
Model II	01.2030.00		



Comminution of ferrous alloys with the Jaw Crusher PULVERISETTE 1 premium line – 6.5 mm gap width

## APPLICATION EXAMPLES

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

## FACTS AND ADVANTAGES

### Model I resp. model II

<b>Working principle</b>	Pressure
<b>Bearings</b>	Needle and spherical roller bearings
<b>Standard equipment</b>	Instrument with fixed and movable crushing jaws and lateral support walls made of tempered steel
<b>Optimal for material type</b>	Hard, medium-hard, brittle
<b>Max. feed size</b> (depending on the material)	60 mm resp. 95 mm
<b>Min. sample quantity</b>	20 ml
<b>Max. continuous throughput</b> (depending on the material and gap width)	140 kg/h resp. 250 kg/h
<b>Final fineness</b>	0.3–15 mm
<b>Feeding</b>	Batchwise/continuous
<b>Grinding parts</b>	Fixed and movable crushing jaws
<b>Eccentric oscillations</b>	308 movements/min
<b>Conformity</b>	CE mark
<b>Guarantee</b>	2 years



# PULVERISETTE 13

*premium line*

## Efficient *premium* fine grinding

- Easy, motor-driven grinding gap adjustment with digital gap display
- Automatic locking of the grinding chamber
- Easy operation and cleaning with Clean Design
- High throughput of up to 150 kg/h with extra powerful motor
- Fine grinding down to 0.05 mm

The *premium* model of the FRITSCH Disk Mill for efficient fine grinding of hard-brittle to medium-hard solids: Even safer due to the automatic locking of the collecting vessel and grinding chamber, even easier to operate due to the convenient motor-driven grinding gap adjustment with digital gap display. A well-designed display shows all of the parameters.

In the Disk Mill, 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 the pre-set grinding gap into the collection drawer. The desired final fineness can be defined reproducibly by simply adjusting the digital setting of the gap width.



**Especially easy to operate** as the grinding gap of the PULVERISETTE 13 *premium line* can be especially easily and precisely adjusted motor-driven in 0.05 mm steps. The grinding time is entered via the well-designed display with a robust membrane keyboard. The multilingual menu navigation is self-explanatory and automatically displays the last entered grinding gap setting and grinding time.



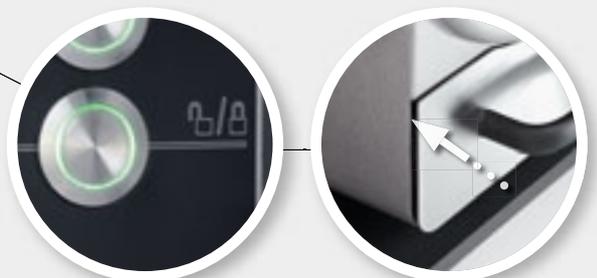


**Especially convenient** due to a large, removable plastic funnel with smooth inner surfaces and flow-optimised transition areas – for especially easy cleaning and optimal material feeding.

**Fast, residue-free cleaning** due to Clean Design with smooth grinding chamber inner surfaces and additional labyrinth sealing of the grinding chamber – saves time and effectively protects your sample against contamination.



**Dust-free grinding** due to the connection of a dust exhaust system which is directly controlled via the instrument and a special sealing of the drawer.



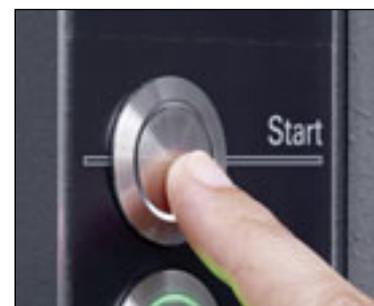
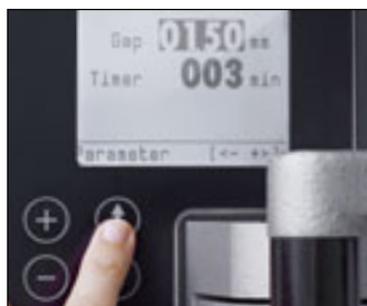
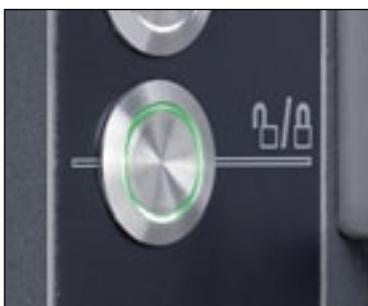
**Especially safe** due to automatic safety locks, simply push a button to automatically clamp and lock the grinding chamber and drawer.



## PULVERISETTE 13

*premium line*

**premium ideas for additional convenience and precision**

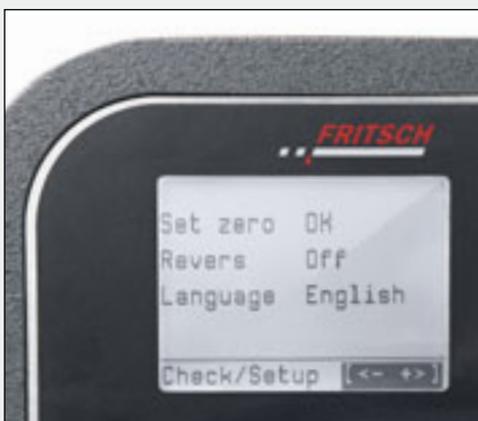


Especially easy: Lock the grinding chamber, set the grinding parameters, start the grinding process – that's it.

**This is another example of innovative technical details: An innovative motor controller provides an unique, especially easy and reproducible adjustment of the distance between the grinding disks and the zero point via display.**

**FRITSCH premium advantage: Easy operation – fast and efficient**

Simply press the button to lock the grinding chamber, use the plus/minus buttons on the digital display to set the grinding gap and grinding time with accuracy to the second, fill in the sample into the easy-to-close funnel and start the grinding process. The most recent setting is saved and can be accessed directly for the next grinding.



**FRITSCH premium advantage: Especially precise motor-driven adjustment of the distance between the grinding disks without crank**

The grinding gap can be conveniently adjusted with accuracy of 50 µm by means of the plus/minus buttons on the digital display. For reproducible results that are absolutely reliable.

**FRITSCH premium advantage: Especially convenient motor-driven zero-point adjustment**

For regularly compensating wear on the grinding disks and for easy precise re-adjustment after replacement.



**Our suggestion: Longer service life for grinding disks**

With the control display, it is easy to prolong the service life of the grinding disks: simply change the rotational direction (clockwise/anti-clockwise) of the grinding disks to optimally compensate the abrasion behaviour.

**FRITSCH premium advantage: Especially easy change of the grinding disks**

In the PULVERISETTE 13 *premium line*, both the fixed and the movable grinding disks are easily accessible for fast, simple replacement. For the disk change, the disk is simply driven forward by the motor, allowing the retaining screws to be easily loosened.



# PULVERISETTE 13

*premium line*



## GUARANTEED METAL-FREE GRINDING

Ideal for medical and dental engineering: On request, we can equip your PULVERISETTE 13 premium line with a complete polymer interior coating together with grinding disks made of zirconium oxide – the perfect prerequisite for grinding without any contact of the sample with metal.

### Select the appropriate grinding disks

For every FRITSCH Disk Mill PULVERISETTE 13 *premium line*, you need at least one fixed and one movable grinding disk. These are available in 5 different materials. Normally, two grinding disks of the same material are selected which must always be harder than the sample to be ground.

### High final fineness in minimum time

The extra powerful motor of the FRITSCH PULVERISETTE 13 *premium line* enables you to achieve high final fineness in a very short grinding time. We have listed some examples here – always in reference to 1 kg feed quantity and 20 mm feed size and arranged by material type from hard to medium-hard.

#### MATERIAL DATA FOR FIXED AND MOVABLE GRINDING DISKS

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

\* At [www.fritsch.de](http://www.fritsch.de) you can find the corresponding element analyses with detailed information about the materials.

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

Material to be ground	Grinding time (min)	Gap setting (mm)	Fineness (µm)	Throughput (kg/h)
<b>90% &lt; x 50% &lt; x</b>				
Basalt	2.1	1.0	600	28
	3.5	0.1	220	60
Clinker	2.0	0.5	900	450
	10.0	0.1	220	60
Slate	1.4	1.0	1500	45
	2.2	0.1	300	90
Hard coal	3.5	1.0	800	17
	13.5	0.1	250	100
Limestone	2.0	1.0	1000	420
	6.3	0.1	210	100
Thomas meal (potash)	1.3	1.0	1000	350
	2.3	0.5	350	150
Pumice stone	3.5	0.5	600	250
	5.0	0.1	150	30
Glass	2.5	3.0	4000	2240
	3.3	2.0	2500	1600
	3.8	1.0	1400	800

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.

## 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 240 kg

Gross 275 kg

### Dimensions w x d x h

Bench top instrument 52 x 105 x 63 cm

### Packaging w x d x h

Wooden case 60 x 120 x 70 cm

### Emissions value of workplace

according to DIN EN ISO 3746:2005

approx. 70 dB(A)

(depending on the material to be ground)

### Order no.

13.3040.00



Comminution of ceramic with the Disk Mill PULVERISETTE 13 *premium line* – gap width 0.7 mm

## APPLICATION EXAMPLES

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

## FACTS AND ADVANTAGES

<b>Working principle</b>	Shearing
<b>Bearings</b>	Needle and double row angular contact ball bearings
<b>Equipment</b>	Instrument without grinding disks
<b>Optimal for material type</b>	Hard-brittle, medium-hard
<b>Max. feed size</b> (depending on the material)	20 mm
<b>Min. sample quantity</b>	20–30 ml
<b>Max. throughput</b> (depending on the material)	150 kg/h
<b>Final fineness</b>	0.05 - 12 mm
<b>Feeding</b>	Batchwise/continuous
<b>Grinding parts</b>	Fixed and movable grinding disks
<b>Rotating speed</b>	Grinding disk 440 rpm
<b>Conformity</b>	CE mark
<b>Guarantee</b>	2 years



# PULVERISETTE 1 / 13

*premium line*

## ***premium combination for integrated pre- and fine-grinding***

- Powerful continuous pre- and fine-grinding
- Compact in a single instrument with integrated Riffle Sample Splitter
- High throughput for production of small amounts
- Maximum feed size 95 mm
- Minimum final fineness 0.05 mm

For especially fast continuous *premium* pre- and fine-grinding of large quantities of coarse material, the combination of the Jaw Crusher PULVERISETTE 1 *premium line* and the Disk Mill PULVERISETTE 13 *premium line* is the ideal solution. Together, they form an efficient, heavy-duty, high-performance grinding instrument with integrated Riffle Sample Splitter. This gives you the full range of opportunities for optimal sample preparation with a feed size of up to 95 mm and final fineness of down to 0.05 mm – all in a single step.

Select the appropriate grinding parts and the desired configuration from the options available for the PULVERISETTE 1 and 13 *premium line* on pages 4–9 and 10–15.

### **Integrated representative sample division**

After the comminution in the Jaw Crusher PULVERISETTE 1 *premium line*, the ground material falls directly into the Riffle Sample Splitter integrated in the collecting vessel and is automatically divided into representative samples. The division ratio can be set as desired, from 1:1 to 1:6.

## METAL-FREE PRE- AND FINE-GRINDING

The combined FRITSCH *premium* high-performance grinding instrument can also be configured for completely metal-free pre- and fine-grinding (see pages 8 and 14).



### Pre- and fine-grinding, with granite as an example

- ① Size of the material filled into the **PULVERISETTE 1**  
Feed size up to 95 mm
- ② Intermediate result of the **PULVERISETTE 1**  
Final fineness of down to 1 mm
- ③ Final result of the **PULVERISETTE 13**  
Final fineness of down to 50 µm



## APPLICATION EXAMPLES

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

**ORDERING DATA**

Order no.	Article
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**JAW CRUSHERS premium line**

**PULVERISETTE 1, model I**  
**Instrument incl. fixed and movable crushing jaw and lateral support walls made of tempered steel**



01.1030.00	For 400 V/3~, 50-60 Hz, 1450 watt
01.1020.00	For 230 V/1~, 50-60 Hz, 1570 watt
01.1010.00	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.<sup>1)</sup>  
 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 <sup>2)</sup>
43.0110.27	Movable crushing jaw made of zirconium oxide <sup>2)</sup>

**Accessories for metal-free pre-crushing for model I**

01.1090.00	Conversion kit for metal-free pre-crushing (Consisting of funnel and drawer, both polyamide-coated) (Please note: fixed and movable crushing jaws made of zirconium oxide and lateral support walls made of polyamide, zirconium oxide or aluminium are additionally necessary!) Other coatings available on request.
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**PULVERISETTE 1, model II**  
**Instrument incl. fixed and movable crushing jaw and lateral support walls made of tempered steel**



01.2030.00	For 400 V/3~, 50-60 Hz, 3540 watt
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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 <sup>2)</sup>
43.3110.27	Movable crushing jaw made of zirconium oxide <sup>2)</sup>

Fixed and movable crushing jaws made of steel with grooved surface on request.

**Accessories for metal-free pre-crushing for model II**

01.2090.00	Conversion kit for metal-free pre-crushing (Consisting of funnel and drawer, both polyamide-coated) (Please note: fixed and movable crushing jaws made of zirconium oxide and lateral support walls made of polyamide, zirconium oxide or aluminium are additionally necessary!) Other coatings available on request.
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**Lateral support walls for models I and II**

43.4000.09*	1 pair made of tempered steel
43.4020.10	1 pair made of stainless steel
43.4010.09	1 pair made of chromium-free steel
43.4030.08	1 pair made of hardmetal tungsten carbide
43.4040.13	1 pair made of aluminium
43.4050.27	1 pair made of zirconium oxide <sup>2)</sup>
43.4045.16	1 pair made of polyamide

Conversion kit for continuous operation of the Jaw Crushers PULVERISETTE 1 premium line, models I + II on request.

Order no.	Article
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**ACCESSORIES FOR JAW CRUSHERS PULVERISETTE 1, MODELS 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) <sup>3)</sup>
43.9052.00	Plastic bag for exhaust system (pack = 5 pieces) <sup>3)</sup>
43.9051.00	Filter set polyester for exhaust system <sup>3)</sup>

**Accessories for continuous operation**

43.6000.00	Mounting rack with integrated Riffle Sample Splitter for combined use of PULVERISETTE 1 with the Disk Mill PULVERISETTE 13 Select the desired configuration from the options offered for the PULVERISETTE 13 on pages 14–15.
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**DISK MILL premium line**

**PULVERISETTE 13**  
**Instrument without grinding disks**



13.3040.00	For 400 V/3~, 50-60 Hz, 1830 watt
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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 diameter, hardened steel cast
13.1110.09	Movable grinding disk, 200 mm diameter, hardened steel cast
13.1120.23	Fixed grinding disk, 200 mm diameter, manganese steel
13.1130.23	Movable grinding disk, 200 mm diameter, manganese steel
13.2000.08	Fixed grinding disk, 200 mm diameter, hardmetal tungsten carbide
13.2010.08	Movable grinding disk, 200 mm diameter, hardmetal tungsten carbide
13.2100.27	Fixed grinding disk, 200 mm diameter, zirconium oxide <sup>2)</sup>
13.2110.27	Movable grinding disk, 200 mm diameter, zirconium oxide <sup>2)</sup>

**Accessories for metal-free grinding**

13.3090.16	Complete polymer coating of the inside of the grinding chamber (Please note: fixed and movable grinding disks made of zirconium oxide are additionally necessary!)
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**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
13.3250.00	Connecting piece for dust exhaust system
43.9055.00	Paper filter bag for exhaust system (pack = 5 pieces) <sup>3)</sup>
43.9052.00	Plastic bag for exhaust system (pack = 5 pieces) <sup>3)</sup>
43.9051.00	Filter set polyester for exhaust system <sup>3)</sup>

**Accessories for continuous operation**

43.6000.00	Mounting rack with integrated Riffle Sample Splitter for combined use of the Jaw Crusher PULVERISETTE 1 with the PULVERISETTE 13 Select the desired configuration from the options offered for the PULVERISETTE 1 on pages 8–9.
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Conversion kit for continuous operation of the Disk Mill PULVERISETTE 13 premium line on request.

**COMBINATION JAW CRUSHER AND DISK MILL premium line**

**PULVERISETTE 1/13 premium 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 corresponding mounting rack with integrated Riffle Sample Splitter which combines the two instruments to a single high-performance grinding instrument.

Select the desired configuration from the options offered for the PULVERISETTE 1 and 13 on pages 8–9 and 14–15.

43.6000.00	Mounting rack with integrated Riffle Sample Splitter for combined use of the Jaw Crusher PULVERISETTE 1 with the Disk Mill PULVERISETTE 13
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\* 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 part to be replaced.

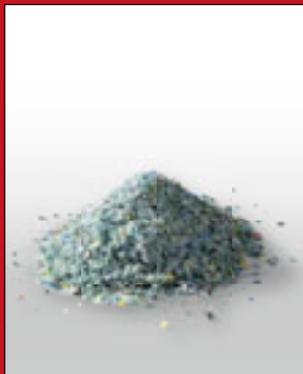
<sup>1)</sup> The three-phase version „/3~“ is definitely preferable instead of a single phase version „/1~“, because the three-phase version obtains more power, better effectiveness and greater energy efficiency.

<sup>2)</sup> Grinding parts made of zirconium oxide are only suitable for grinding ceramic materials, minerals, etc. and never for hard-tough samples, such as metals.

<sup>3)</sup> One pack/one piece is included in the order of the exhaust system.



## Test our instruments in practice!



### Free-of-charge sample grinding

**Our offer:** Send us your sample for a free-of-charge sample grinding. We will send you the grinding report with detailed documentation of the results of grinding with the PULVERISETTE 1 and/or 13.



### Grinding reports online

An extensive collection of grinding reports for various materials and industries is also available directly online at [www.fritsch.de/solution](http://www.fritsch.de/solution). It's worth to take a look!

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