

Jaw Crusher 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 CRUSHER AND DISK MILL



QUALITY MADE IN GERMANY

FRITSCH is more than just a brand: It is backed by a strong, medium-sized, family business in its fourth generation, which has been firmly embedded in the region since 1920 and globally active for decades. All FRITSCH-products are produced according to strict quality criteria, and our entire production is in-house. The innovative ideas of our development department are inspired by the close relationship with our customers and their practical work in the lab. Satisfied customers worldwide count on our quality, our experience and our service. This makes us proud and motivates us.

FRITSCH. ONE STEP AHEAD.





PULVERISETTE 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.

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.

The FRITSCH *premium line* principle

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

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



Funnel 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 PULVERISSETTE 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.

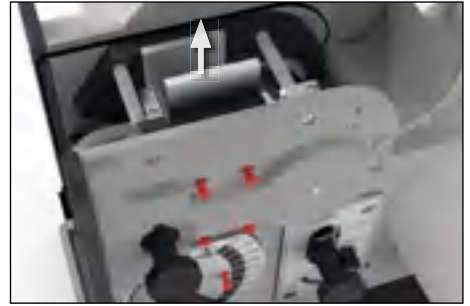
FRITSCH premium advantage: Progressive gap adjustment

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.



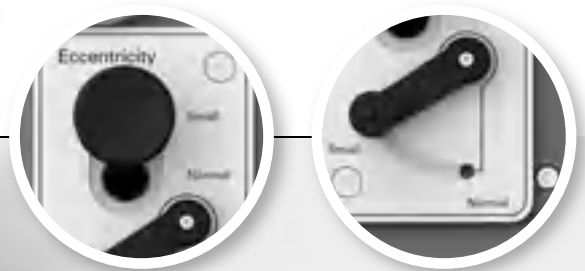
FRITSCH premium advantage: Zero-point adjustment can be calibrated

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



OUR SUGGESTION

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

Select the right material combination!

The crushing jaws and support walls of the FRITSCH Jaw Crusher PULVERISETTE 1 *premium line* are available in 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 hardened 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 hardened steel can often be retained.

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 tool 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 POM plastic or zirconium oxide and a special polyamide-coated funnel and drawer. (Other coatings available on request.)

MATERIAL DATA FOR CRUSHING JAWS AND SUPPORT WALLS

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

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

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

Steel crushing jaws with a grooved surface

If desired, we can equip your PULVERISETTE 1 *premium line* with fixed and movable crushing jaws in steel with a length-wise 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.

FRITSCH-COMPETENCE

A total of 2 patents have been granted for the FRITSCH Jaw Crusher PULVERISETTE 1 *premium line* by the German Patent Office.

TECHNICAL DATA

Electrical details

400 V/3~, 50/60 Hz, 3490 watt
200 V/3~, 50/60 Hz, 3490 watt
Other voltages on request!

Weight

Net 320 kg
Gross 355 kg

Dimensions w x d x h

Bench top instrument 55 x 90 x 106 cm

Packaging w x d x h

Wooden case 65 x 95 x 110 cm

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

L_{pA} = 83 dB

(depending on the material to be crushed)

Order no.	400 V/3~	200 V/3~
	01.2030.00	01.2040.00



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

APPLICATION EXAMPLES

Mining and metallurgy	Niobium-titanium, ferrovanadium, chrome vanadium, tungsten carbide, ores, coal, slag, coke
Chemistry	Wide variety of 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

IQ/OQ documentation available to support equipment qualification.

FACTS AND ADVANTAGES

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



PULVERISETTE 13

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.



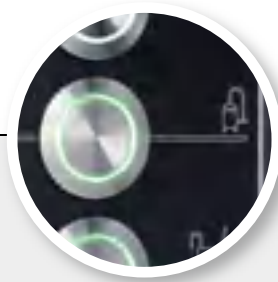
Especially easy to operate as the grinding gap of the PULVERISETTE 13 *premium line* can be especially easily and precisely adjusted motor-driven in 0.05 mm steps. The grinding time is entered via the well-designed display with a robust membrane keyboard. The multilingual menu navigation is self-explanatory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



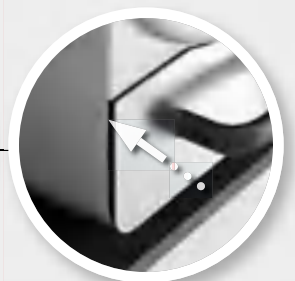
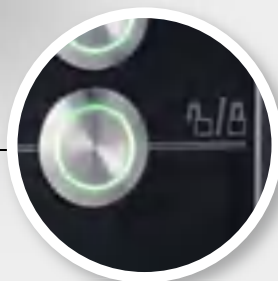


Especially convenient due to a large, removable plastic funnel with smooth inner surfaces and flow-optimised transition areas – for especially easy cleaning and optimal material feeding.

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 4 different 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 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 ¹⁾	ZrO ₂	Good	Medium-hard, brittle samples, metal-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

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 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
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.

FRITSCH-COMPETENCE

A total of 3 patents have been granted for the FRITSCH Disk Mill PULVERISETTE 13 *premium line* by the German Patent Office.

TECHNICAL DATA

Electrical details

400 V/3~, 50 Hz, 1790 watt
200 V/3~, 60 Hz, 2100 watt
Other voltages on request!

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

Pallet case 80 x 120 x 85 cm

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

L_{pA} = 70 dB

(depending on the material to be ground)

Order no.	400 V/3~	200 V/3~
	13.3040.00	13.3020.00



Comminution of ceramic with the Disk Mill PULVERISETTE 13 *premium line* – gap width 0.7 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, glass, raw materials
Soil research	Dried soil samples, sewage sludge, hydrological sediments, drilling cores

IQ/OQ documentation available to support equipment qualification.

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	0.05–12 mm
Feeding	Batchwise/continuous
Grinding parts	Fixed and movable grinding disks
Rotating speed	Grinding disk 440 rpm
Conformity	CE mark
Guarantee	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.



3

Final result of the
PULVERISETTE 13
Final fineness of
down to 50 µm

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, slags, quartz, clinker, gypsum, chalk

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 **PULVERISSETTE 1**
Feed size up to 95 mm

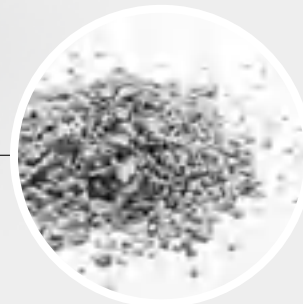


Integrated representative sample division

After the comminution in the Jaw Crusher PULVERISSETTE 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. According to the division ratio, the entire sample resp. subsample is drawn directly into the PULVERISSETTE 13 for fine grinding or into the associated collecting vessel.

2

Final result of the
PULVERISSETTE 1
Final fineness of
down to 0.3 mm



ORDERING DATA

Order no.	Article
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JAW CRUSHER *premium line*

PULVERISETTE 1
instrument incl. fixed and movable crushing jaw and lateral support walls made of hardened steel



01.2030.00	for 400 V/3~, 50/60 Hz, 3490 watt
01.2040.00	for 200 V/3~, 50/60 Hz, 3490 watt

The PULVERISETTE 1 with voltage of "/3~" can **only** be operated on a three-phase supply network.
 Other voltages on request!

Crushing jaws

43.3010.09*	fixed crushing jaw, hardened steel
43.3020.09*	movable crushing jaw, hardened steel
43.3030.10	fixed crushing jaw, stainless steel
43.3040.10	movable crushing jaw, stainless steel
43.3011.09	fixed crushing jaw, chromium-free tool steel
43.3021.09	movable crushing jaw, chromium-free tool steel
43.3130.23	fixed crushing jaw, manganese steel
43.3140.23	movable crushing jaw, manganese steel
43.3050.08	fixed crushing jaw, hardmetal tungsten carbide
43.3060.08	movable crushing jaw, hardmetal tungsten carbide
43.3100.27	fixed crushing jaw, zirconium oxide ¹⁾
43.3110.27	movable crushing jaw, zirconium oxide ¹⁾

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

Lateral support walls

43.4000.09*	pair made of hardened steel
43.4020.10	pair made of stainless steel
43.4010.09	pair made of chromium-free tool steel
43.4030.08	pair made of hardmetal tungsten carbide
43.4040.13	pair made of aluminium
43.4050.27	pair made of zirconium oxide ¹⁾
43.4045.16	pair made of POM plastic

Accessories for metal-free pre-crushing

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 POM plastic or zirconium oxide are additionally necessary!) Other coatings available on request!
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Certification

96.0340.00	IQ/OQ documentation (questionnaire format - implementation by customer)
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Exhaust system

43.9070.00	exhaust system, dust category "M" according to DIN EN 60335-2-69 for 230 V/1~, 50/60 Hz, 1000 watt
43.9055.00	fleece filter bag for exhaust system (pack = 5 pieces) ²⁾
43.9052.00	plastic bag for exhaust system (pack = 5 pieces) ²⁾

Accessories for continuous operation

43.6000.00	mounting rack with integrated Riffle Sample Splitter for combined use of PULVERISETTE 1 <i>premium line</i> with the Disk Mill PULVERISETTE 13 <i>premium line</i> Select the desired configuration from the options offered for the PULVERISETTE 13 on page 14–15.
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Conversion kit for continuous operation of the Jaw Crusher PULVERISETTE 1 *premium line* on request.

* 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.

Order no.	Article
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DISK MILL *premium line*

PULVERISETTE 13
instrument without grinding disks



13.3040.00	for 400 V/3~, 50 Hz, 1790 watt
13.3020.00	for 200 V/3~, 60 Hz, 2100 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 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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Certification

96.0320.00	IQ/OQ documentation (questionnaire format - implementation by customer)
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Exhaust system

43.9070.00	exhaust system, dust category "M" according to DIN EN 60335-2-69 for 230 V/1~, 50/60 Hz, 1000 watt
43.9055.00	fleece filter bag for exhaust system (pack = 5 pieces) ²⁾
43.9052.00	plastic bag for exhaust system (pack = 5 pieces) ²⁾

Accessories for continuous operation

43.6000.00	mounting rack with integrated Riffle Sample Splitter for combined use of Jaw Crusher PULVERISETTE 1 <i>premium line</i> with the PULVERISETTE 13 <i>premium line</i> Select the desired configuration from the options offered for the PULVERISETTE 1 on page 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.

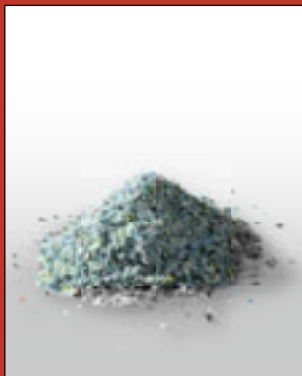
43.6000.00	mounting rack with integrated Riffle Sample Splitter for combined use of the Jaw Crusher PULVERISETTE 1 with the Disk Mill PULVERISETTE 13
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¹⁾ Grinding parts made of zirconium oxide are only suitable for grinding ceramic materials, minerals, etc. and never for hard-tough samples, such as metals

²⁾ One pack/one piece is included in the scope of delivery of the exhaust system.

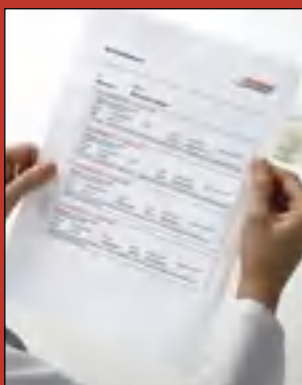


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