pulverisette® 13

Laboratory Disk Mill

- Rapid fine grinding < 100 µm
- For brittle to very hard materials

ZERKLEINERN PARTIKELMESSEN TEILEN MILLING PARTICLE SIZING DIVIDING ZERKLEINERN PARTIKELMESSEN TEILEN MILLING PARTICLE SIZING DIVIDING ZERKLEINERN PARTIKELMESSEN TEILEN

FRITSCH

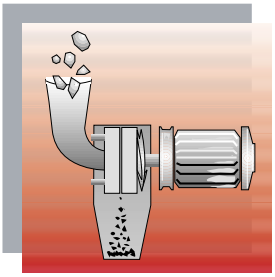
CE

TÜV CERT DIN EN ISO 9001

Made in Germany

Laboratory Disk Mill “pulverisette 13”

working principle



Application examples

Mining and steel industries:

Ores, coal, coke, slags

Ceramics:

Steatite, sintered ceramics, electrotechnical porcelain, fire-proof clay

Rocks and soils:

Bauxite, slags, quartz, clinker, gypsum, chalk

Glass:

Frits, glass types, raw materials

Soil research:

Dried soil samples, sewage sludge, hydrological sediments, drilling cores

Field of application

For batch or continuous fine grinding of brittle and very hard materials. The maximum feed particle size is approx. 20 mm edge length. The fineness attainable (d_{50}) is down to approx. 12 mm (largest gap width) or 0.1 mm (smallest gap width).

The maximum throughput of 150 kg/h depends on the gap setting and the hardness of the sample. The relatively large throughput enables it to be used in the pilot scale or in the small size production, for example: slag-disintegration for the reclamation of precious metals.

Method of operation

The material to be ground is crushed between two counteracting grinding disks with course radial toothing on the inside as a result of compressive and shearing stresses. The staged toothing means that the material is preground in the inner chamber of the grinding disks before being finely ground in the outer chamber.

The material is gravity fed through a hopper into the centre of the stationary grinding disk straight into the sealed grinding chamber. Here it is taken up by the rotating grinding disk and crushed. The slow, powerful motor combined with the special form of the grinding disks makes it possible to grind even very hard sample materials. The broken and ground material is fed into a collecting vessel (volume 18 litres).

The gap width between the two grinding disks is set from the outside - also during operation - and determines the fineness of the end product.

Design Characteristics

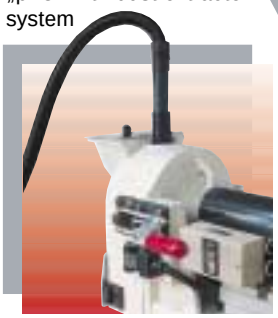
- Centrally located toggle-type fastener for grinding chamber
- Hinged grinding chamber
- Precision adjustment for setting gap
- Grinding disks easily accessed and replaced
- Standard connection for dust extractor
- Over designed bearings to ensure long life
- Heavy, robust design
- Recyclable solid grey cast iron casing

Advantages

- Reproducible grinding results through accurate gap setting (exactly 0.1 mm)
- Sight glass for checking gap width
- Good accessibility to grinding elements
- 4 different materials for grinding disks
- Simple cleaning and dust-free grinding due to dust extractor connection

Laboratory Disk Mill “pulverisette 13”

„p13“ with dust extractor system



grinding chamber „pulverisette 13“

jaw crusher ”pulverisette 1” in combination with disk mill „pulverisette 13“

- Simple operation
- Maintenance-free three-phase geared motor
- Combinable with “pulverisette 1” laboratory jaw crusher
- Can be adjusted to individual throughput requests (optional conversion)
- Life expectancy of grinding disks can be doubled by changing the rotational direction of the motor
- Safety tested by TÜV (CE mark)
- 2 year guarantee

Fine grinding from 95 mm to 0.1 mm

A mounting rack and chute in combination with the laboratory jaw crusher “pulverisette 1” make it possible to grind 95 mm feed material down to a final product fineness of 100 µm in a single process.
Continuous operation is also possible.

Accessories

Grinding disks

Fixed and movable grinding disks are available in 4 different materials to ensure that contamination of the samples through abrasion of grinding parts is avoided during processing.

Material	Density g/cm³	Abrasion resistance	Material to be crushed
Hardened steel casting 11 - 12% Cr	7.9	Good	Hard, brittle sample
Manganese steel 12 - 13% Mn	7.9-8	Good	Hard, brittle sample
Hardmetal tungsten carbide 90.3% WC + 9.5% Co	14.8	Very good	Hard, abrasive sample
Zirconium oxide 92.5% ZrO_2	5.9	Extremely good	Abrasive, medium-hard sample for iron-free grinding

Dust extraction with connector

For dust-free grinding and ease of cleaning.

Milling results of the “pulverisette 13”

Feed particle size 20 mm, feed quantity 1 kg, material graded from hard to medium hard.

The table shows that a very short grinding time and high final product fineness can be achieved with the “pulverisette 13”.

Material to be ground	Grinding time (min)	Disk gap setting (mm)	Grain size analysis (µm) 90 % <	50 % <	Through put kg/h
Basalt	2.1	1.0		600	28
	3.5	0.1	220	60	17
Clinker	1.5	1.0		800	36
	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
Coke	5.3	1.0		400	11
	9.0	0.1	400	200	5
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	26
Pumice stone	1.7	1.0	1100	450	35
	5.0	0.1	150	30	12

Technical data

Max. feed particle size	20 mm	rotational speed grinding disk	439 rpm
Throughput	150 kg/h	Weight	net 140 kg
Final fineness	0.1 - 12 mm		gross 170 kg
Electrical Details	400 V/3~, 50-60 Hz,	Dimensions W x D x H	44 x 87 x 40 cm
	1830 Watt	Packing Details	1 case 108 x 60 x 70 cm

Order information

Order no.	Description	For rapid fax quotation tick here
13.103.00	**Laboratory Disk Mill "pulverisette 13"** **without fixed and movable grinding disk** for 400 V/3~, 50-60 Hz, 1830 Watt **Please note, that the „pulverisette 13" can only be operated on a three phase supply network!** **Other voltages on request!**	
13.110.09	**Grinding disks** Fixed grinding disk, 200 mm ø, hardened steel casting	
13.111.09	Movable grinding disk, 200 mm ø, hardened steel casting	
13.112.23	Fixed grinding disk, 200 mm ø, manganese steel	
13.113.23	Movable grinding disk, 200 mm ø, manganese steel	
13.200.08	Fixed grinding disk, 200 mm ø, hardmetal tungsten carbide	
13.201.08	Movable grinding disk, 200 mm ø, hardmetal tungsten carbide	
13.210.27	Fixed grinding disk, 200 mm ø, zirconium oxide	
13.211.27	Movable grinding disk, 200 mm ø, zirconium oxide	
43.902.00	**Dust Exhaust System** Dust extractor system for 230 V/1~, 50-60 Hz, 1000 Watt	
13.139.00	Connecting piece for dust exhaust system	
43.953.00	Dust filters for extractor system (set = 3 pieces)	
43.510.00	**Accessories for continuous grinding from 95 mm to 0.1 mm** Mounting rack for continuous use of laboratory jaw crusher "pulverisette 1" with "pulverisette 13"	
	See separate brochure for ordering information on "pulverisette 1"	

Right to modify technical specifications reserved

FRITSCH GmbH · Industriestrasse 8 · D-55743 Idar-Oberstein
Tel.: (+49) 67 84 / 70-0 · Fax: (+49) 67 84 / 70-11 · E-Mail: Info@FRITSCH.de · Internet: http://www.FRITSCH.de