ZERKLEINERN

FRITSCH

pulverisette® 7

سوماتكو
SOMATCO
www.somatco.com

Planetary Micro Mill

- High speed grinding of laboratory samples down to < 1 µm
- Suitable for hard to soft grinding materials
- Also suitable for grinding in suspension

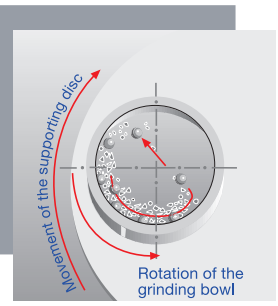
CE

TÜV CERT
DIN EN ISO 9001

Made in Germany

Planetary Micro Mill „pulverisette 7“

working principle



Field of application

For very fine comminution down to colloidal fineness of dry laboratory sample or solids in suspension. For mixing and perfect homogenisation of emulsions and pastes.

Feed particle size < 5 mm; feed quantity up to 2 x 20 ml; capable of fineness down to 1 µm

Method of operation

In the planetary micro mill „pulverisette 7“, grinding bowls rotate on their own axis while simultaneously rotating through an arc around the central axis. The grinding bowls and material are thus subjected to centrifugal forces which constantly change in direction and intensity resulting in efficient, fast grinding processes.

The geometries and speed ratios allow optimum movement of the grinding balls. The grinding balls rotate against the inside wall of the bowl until under specific conditions they break away from this. After being thrown across the grinding bowl, the grinding material and the balls are impacted against the opposite wall. The energy thus created by impact is many times higher than for traditional ball mills. This results in excellent grinding performance and considerably shorter grinding times.

Examples of application

Geology and mineralogy
stones, pebbles, sand minerals

Ceramics
porcelain, sintered ceramic, clay, fireclay

Chemistry
plant protectives, fertilisers, slats, inorganic and organic materials

Biology
plants, leaves, freeze-dried samples

Medicine, pharmacology and galenite research
eye therapeutics, jellies, cremes, extracts, drugs, pastes, dragées, tablets

Nuclear research
radioactive samples

Material technology
pigments, precious materials, new materials, alloys, mechanical activation

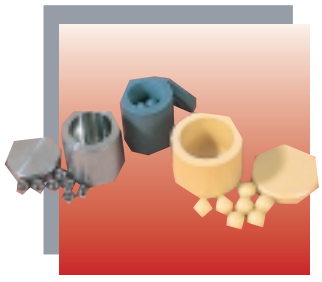
Analytic preparation
spectroscopy, X-ray fluorescence, X-ray structure analysis, chromatography

Design Characteristics

- Speeds up to 800 rpm
- Enclosed, easy-to-open working chamber
- Microprocessor control system
- Speed control with setpoint/actual value displayed
- Programme timer for grinding operation and cooling phases
- grinding cycle can be programmed to repeat up to 99 times
- Forward and reverse operation
- Power safe function
- RS232 interface for output of process data and programming of grinding cycles (validation)
- Ergonomic membrane keyboard (IP64)
- Maintenance-free drive (asynchronous motor and frequency converter)
- Built in selection of mains voltage available (100-120/200-240 V)
- Grinding bowl with sealing ring
- Simultaneous grinding of two samples
- Recyclable plastic housing

Planetary Micro Mill „pulverisette 7“

grinding bowls and balls



membrane keyboard

„pulverisette 7“

Advantages

- Very high grinding output with low space requirement
- High final fineness down to < 1 µm
- Very fast, uniform comminution
- Loss-free grinding – also for suspensions
- Reproducible grinding results
- Quick and safe bowl retention
- Easy to clean
- Cooling of the grinding chamber by an integrated fan to allow extended for grinding times
- Analytically pure grinding materials; choice of 8 different materials
- Simple cleaning of the grinding components
- Exact display of rotational speed
- Microprocessor electronic controls
- Wide speed range
- Easy to use, ergonomic design
- Safety tested and CE mark
- 2 year guarantee

Accessories

The grinding bowl and balls can be supplied in 8 different materials to avoid contamination of the sample through abrasion of the grinding elements.

Normally, the grinding bowl and balls are of the same material. In order to shorten the grinding time, however, larger balls or balls with greater density can be used to increase the grinding energy. For example: tungsten carbide balls in steel bowl or zirconium oxide balls in Silicon nitride bowl.
Grinding bowls should always be used in pairs (if applicable, empty bowl without balls).

Material	Density g/cm³	Abrasion resistance	Material to be ground
Agate 99.9 % SiO_2	2.65	Good	Soft to medium-hard sample
Silicon nitride 90 % Si_3N_4	3.1	Extremely good	Abrasive sample iron-free grinding
Sintered corundum 99.7 % Al_2O_3	> 3.8	Fairly good	medium-hard, fibrous sample
Zirconium oxide 94.8 % ZrO_2	5.7	Very good	Fibrous, abrasive sample
Stainless steel bowls: 17-19 % Cr + 8-10 % Ni balls: 12.5-14.5 % Cr + 1 % Ni	7.8	Fairly good	Medium-hard, brittle sample
Tempered steel bowls: 11-12 % Cr balls: 1.0-1.65 % Cr	7.9	Good	Medium-hard, brittle sample
Hard metal tungsten carbide bowls: 93.5 % WC + 6 % Co balls: 93.2 % WC + 6 % Co	14.89 14.7	Very good	Hard, abrasive sample
bowls: Polypropylene	0.9	Adequate	Soft, brittle

Recommended number of balls per grinding bowl:

Grinding bowl/ useful capacity		45 ml 3-20 ml	12 ml 0.5-5 ml
Balls Ø	5 mm	180-200	50
or Ø	10 mm	18-20	6-8
or Ø	15 mm	7	

Technical data

Maximum feed particle size	5 mm	Motor-shaft-power according	
Feed quantity	up to 2 x 20 ml	to VDE 0530, EN 60034	0.37 kW
Final fineness	< 1 µm	Weight	Net 35 kg, gross 50 kg
Electrical Details	100-120/200-240 V/1~, 50-60 Hz, 880 Watt	Dimensions W x D x H	37 x 53 x 50 cm
		Packing Details	Carton 82 x 52 x 71 cm

Ordering data

Order no.	Description	For rapid fax quotation tick here
07.4000.00	**Planetary Micro Mill „pulverisette 7“** **without grinding bowl and balls** for 100-120/200-240 V/1~, 50-60 Hz, 880 Watt The voltage specified on the order form will be set by the factory	
	Grinding bowl and grinding balls **Grinding bowl with lid and sealing ring**	
50.7050.00	Agate, volume 45 ml	
50.5050.00	Agate, volume 12 ml	
50.7310.00	Silicon nitride, volume 45 ml	
50.5310.00	Silicon nitride, volume 12 ml	
50.7060.00	Sintered corundum, volume 45 ml	
50.5060.00	Sintered corundum, volume 12 ml	
50.7110.00	Zirconium oxide, volume 45 ml	
50.5110.00	Zirconium oxide, volume 12 ml	
50.7080.00	Hard metal tungsten carbide, volume 45 ml	
50.5080.00	Hard metal tungsten carbide, volume 12 ml	
50.7090.00	Tempered steel, volume 45 ml	
50.5090.00	Tempered steel, volume 12 ml	
50.7100.00	Stainless steel, volume 45 ml	
50.5100.00	Stainless steel, volume 12 ml	
50.7200.00	Polypropylene (disposable bowl), volume 45 ml	
07.3280.13	Bowl adapter for disposable bowl	
	Replacement PTFE seal	
50.7250.20	50/40 mm Ø = for all grinding bowls of volume 45 ml	
50.5250.20	37/26 mm Ø = for all grinding bowls of volume 12 ml	
	Grinding balls	
55.0050.05	Agate, 5 mm Ø, polished (100 pieces weigh approx. 17 g and 500 pieces approx. 85 g)	
55.0100.05	Agate, 10 mm Ø, polished	
55.0150.05	Agate, 15 mm Ø, polished	
55.0100.31	Silicon nitride, 10 mm Ø	
55.0150.31	Silicon nitride, 15 mm Ø	
55.0100.06	Sintered corundum, 10 mm Ø	
55.0150.06	Sintered corundum, 15 mm Ø	
55.0050.27	Zirconium oxide, 5 mm Ø (100 pieces weigh approx. 37.7 g and 500 pieces approx. 188.2 g)	
55.0100.27	Zirconium oxide, 10 mm Ø	
55.0150.27	Zirconium oxide, 15 mm Ø	
55.0050.08	Hard metal tungsten carbide, 5 mm Ø (100 pieces weigh approx. 96.6 g and 500 pieces approx. 482.7 g)	
55.0100.08	Hard metal tungsten carbide, 10 mm Ø	
55.0150.08	Hard metal tungsten carbide, 15 mm Ø	
55.0050.09	Tempered steel, 5 mm Ø (100 pieces weigh approx. 51.8 g and 500 pieces approx. 258.6 g)	
55.0100.09	Tempered steel, 10 mm Ø	
55.0150.09	Tempered steel, 15 mm Ø	
55.0050.10	Stainless steel, 5 mm Ø (100 pieces weigh approx. 51.4 g and 500 pieces approx. 257 g)	
55.0100.10	Stainless steel, 10 mm Ø	
55.0150.10	Stainless steel, 15 mm Ø	