

# MS 100 HIGH SPEED MICRO MILL



## GRINDING AND MIXING

RETSCH high speed micro mills are ideal for ultra fine grinding and mixing of small quantities of soft, medium-hard, hard, brittle, inorganic and organic materials. The grinding system with its speed differential between mortar and pestle, together with the special shape of the pestle, assure a very high degree of output fineness and intensive mixing (even of different input materials) in the shortest possible time. For this reason the MS mills have acquired a high reputation in research and development and production line laboratories, particularly for sample preparation for X-ray fluorescent and other spectral analyses (IRS, AAS, AES). Grinding media in various sizes and materials facilitate optimum adaptation to various tasks with no undesirable contamination.

## ADVANTAGES

- High degree of output fineness and homogeneity
- Short grinding and mixing time
- Versatility
- Dry and wet grinding without loss of sample material
- Digital time and speed selection, quartz watch accuracy and memory function for reproducible analysis results
- Grinding media in two sizes and 5 materials
- Safety doors
- Bayonet lock for quick access to the grinding chamber
- Speed monitoring
- Two year guarantee
- CE conformity

## PERFORMANCE FEATURES

Suitable applications	Ultra fine grinding, homogenisation, wet and dry.
Feed material	Soft, medium-hard, hard, brittle.
Feed size	< 4 mm
Final size	Down to 1µm
Sample volume	Approx. 2 - 25 ml

## MS 100 HIGH SPEED MICRO MILL



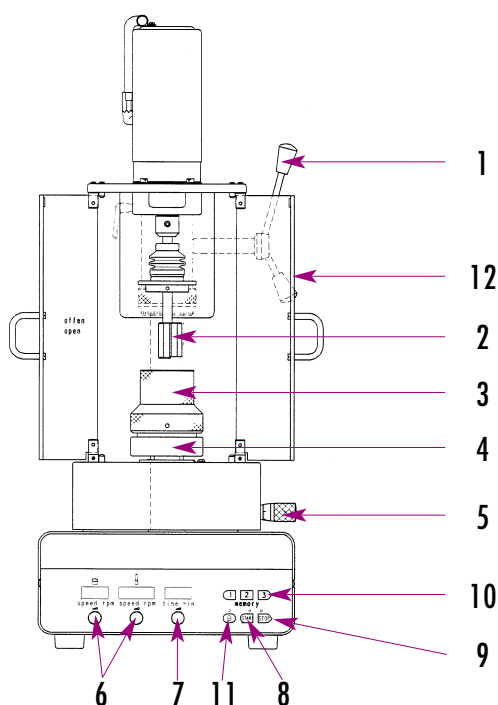
*MS 100 High Speed Micro Mill*

RETSCH high speed micro mills are special mortar mills that grind and homogenise faster and finer than most other machines of this kind. They are suitable for preparing samples of basalt; bauxite; concrete; biological products such as leaves; boron carbide; gemstones; flue ash; gypsum; glass; glass fibres; blast furnace slag; lime; kaolin; coal; coral; minerals; mother of pearl; quartz; silicon oxide; cement; cement clinker and many other substances.

Owing to its performance characteristics and versatility, the MS mill is mainly used in geological, mineralogical and ecological laboratories and for quality control, particularly on incoming and outgoing goods. Further advantages are low abrasion and loss free sample preparation, extensive range of accessories and reproducible setting of all parameters.

Mortar and pestle speeds and contact pressure are infinitely adjustable. The grinding and mixing times are very short: just one minute is often enough to achieve the requisite output fineness for analysis.

# ULTRA FINE GRINDING – FAST AND HOMOGENEOUS



## MS FEATURES

1. Pestle height adjustment
2. Pestle
3. Mortar cover
4. Mortar holder
5. Pressure setting
6. Speed control mortar/pestle
7. Digital timer
8. Start
9. Stop
10. Memory
11. Memory key
12. Safety cabinet

## CHOICE OF GRINDING MEDIA

The size of the grinding media used will depend on the quantity and maximum grain size of the envisaged feeding material. The material of the grinding media depends on the hardness of the sample and the kind of analysis envisaged.



## GRINDING SETS

Useful volume	Feed grain size
8 ml    2 - 8 ml	3 mm
25 ml    5 - 25 ml	4 mm

## BASIC COMPOSITION

Material	Hardness	
Steel C15	64 RC	98.7 % Fe, 0.18 % C, 0.4 % Si, 0.6 % Mn
Agate	7,0 acc. to Mohs	99.9 % SiO <sub>2</sub>
TC	90 RC	94 % WC, 6 % Co
Boron carbide	9.5 acc. to Mohs	78 % B, 22 % C
Zirconium oxide	8.5 acc. to Mohs	94.5 % Zr O <sub>2</sub> , 5.2 % Y <sub>2</sub> O <sub>3</sub>

## ORDER DATA

MS 100 HIGH-SPEED MICRO MILL*	ORDER NO.
(*not including mortar and pestle)	
MS100 for 230V and 50/60Hz	20.454.0001
MS100 for 240V and 50/60Hz	20.454.0002
MS100 for 110V and 50/60Hz	20.454.0003
MS100 for 110V and 50/60Hz (US version)	20.454.0004
MS100 for 100V and 50/60Hz (Japan version)	20.454.0005

## ACCESSORIES

Order No.	Designation	Size	Material
03.460.0092	Mortar	8 ml	Steel/C15
02.461.0015	Pestle	8 ml	Steel/C15
03.460.0093	Mortar	8 ml	Agate
02.461.0055	Pestle	8 ml	Agate
03.460.0094	Mortar	8 ml	Tungsten carbide
05.461.0022	Pestle	8 ml	Tungsten carbide
03.460.0095	Mortar	8 ml	Boron carbide
05.461.0036	Pestle	8 ml	Boron carbide
03.460.0097	Mortar	8 ml	Zirconia, Y Zr O <sub>2</sub>
02.461.0110	Pestle	8 ml	Zirconia, Y Zr O <sub>2</sub>
Order No.	Designation	Size	Material
03.460.0014	Mortar	25 ml	Steel/C15
02.461.0019	Pestle	25 ml	Steel/C15
05.460.0042	Mortar	25 ml	Agate
02.461.0053	Pestle	25 ml	Agate
05.460.0015	Mortar	25 ml	Tungsten carbide
05.461.0023	Pestle	25 ml	Tungsten carbide
05.460.0031	Mortar	25 ml	Boron carbide
05.461.0037	Pestle	25 ml	Boron carbide
03.460.0089	Mortar	25 ml	Zirconia, Y Zr O <sub>2</sub>
02.461.0100	Pestle	25 ml	Zirconia, Y Zr O <sub>2</sub>
05.742.0003	Spare rubber sleeve for pestle shaft		

## NOISE DATA (to DIN 45635-31-01-KL3)

Workplace noise emission	$L_{pA eq} = 69,6$ dB (A)
Sound power level	$L_{WA} = 60,2$ dB (A)
Sample material	Crushed gravel < 0,5 mm



## TECHNICAL DETAILS

The high speed micro mill grinds the sample material by means of pressure and friction between the mortar and pestle. The ground profile of the side of the pestle prevents the input material from caking on the grinding surfaces. The stepped end of the pestle ensures that the input material is moved constantly between the mortar and pestle and that the grinding and mixing process is fast and even. Components of the same or different consistency can be mixed rapidly. The speed of the pestle can be adjusted from 100 - 300 min<sup>-1</sup>. The machine is powered by a 55 W geared motor.

## SUPPLY SCHEDULE

Basic machine for the relevant mains supply voltage with mortar mounting and cover (bayonet lock), power cable, operating manual, and key for changing pestle.

## DIMENSIONS AND WEIGHTS

W x H x D	465 x 1000 x 625 mm
Weight	approx. 73.5 kg (not including accessories)

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