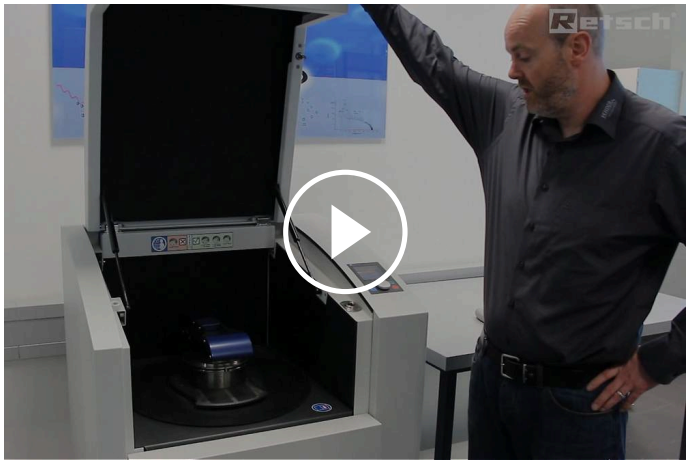
VIBRATORY DISC MILL RS 200

Fast sample homogenization for spectral analysis

No grinder can beat the speed of a Vibratory Disc Mill when it comes to preparing samples for spectral analyses. RETSCH's Vibratory Disc Mill RS 200 is ideally suited for fast and reproducible pulverization of hard, brittle and fibrous sample materials to analytical fineness.

The RS 200 runs steadily and smoothly, even with heavy grinding sets and at maximum speed thanks to its powerful Stabilized-Plane-Drive. It achieves grind sizes between 20 and 100 microns within seconds and with excellent reproducibility.

Grinding sets are available in a variety of sizes and materials. A set of sensors will recognize jars of tungsten or agate and automatically sets the maximum permissible speed, ensuring optimum results while protecting the material.



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Product Video

FAST & REPRODUCIBLE

- Very short grinding times, typically in the range of 60 to 180 seconds to achieve a fineness around 100 µm
- Ergonomic design and carry handles ensure easy handling of the grinding set
- Quick-action clamping system enables convenient and safe tightening of the grinding set
- Automatic speed reduction for agate and tungsten carbide sets
- Powerful Stabilized-Plane-Drive improves reproducibility
- Variable speed from 700 to 1500 rpm

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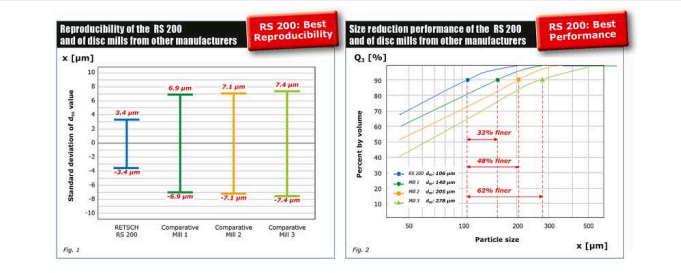
PERFORMANCE TEST: SIZE REDUCTION AND REPRODUCIBILITY

The grinding results of a vibratory disc mill are significantly influenced by the movement patterns of the free masses inside the grinding jar. The new, powerful Stabilized-Plane-Drive of the RS 200 allows for extremely rapid formation of the movement pattern which is reflected in higher fineness and ultimately leads to significantly better reproducibility.

Figure 1 shows the standard deviation after 60 sec grinding time. It only takes a few large particles to impair the reproducibility of XRF measurements. Because of that, a small standard deviation for the d90 value is crucial.

Fig. 2: A “Quarter Minute Test” (QMT) evaluates the formation and stability of the movement patterns of Vibratory Disc Mills. Figure 2 shows that with the RS 200 a d90 value of 106 µm was obtained after a grinding time of only 15 seconds. The mills from three other manufacturers showed considerably inferior results.



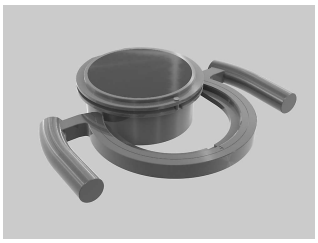
Grinding parameters

- Grinding jar: 100 ml
- Sample: cement clinker 0.85 to 3.15 mm
- Speed: Maximum (1200 rpm)
- Grinding time: 60 sec (Figure 1), 15 sec (Figure 2)

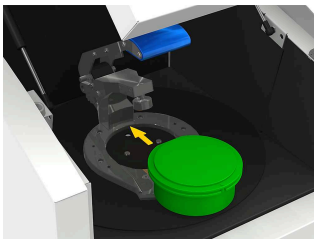
EXCEPTIONALLY SAFE AND SIMPLE HANDLING

Operation and handling of the RS 200 and its grinding sets is convenient and ergonomic. The grinding jars are equipped with carry handles which facilitate transport of the heavy jar to the mill where it is slid on a rail into its grinding station. The clamping device allows for safe fastening of the jar with less force; a sensor checks its correct position.

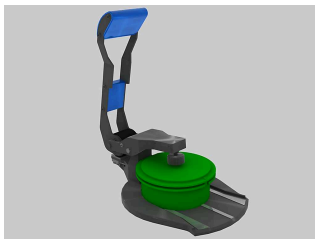
The grinding parameters are entered using a single button. The user can store up to 10 parameter combinations and choose between 13 languages for menu guidance. In addition to the current settings a colored graphics display shows service and operating information.



carry handles



rail



quick-action clamping device

graphic display

The grinding sets have been developed especially for extreme test conditions such as high sample throughput and high mechanical stress. Features include.

- safe, non-slip attachment with integral safety devices on cover and base
- gap between dish and cover edge for easy opening
- optimum sealing with O-ring
- protective jacket made from stainless steel (for agate, zirconium oxide and tungsten carbide dishes)
- grinding set identification (article number, material and volume)
- marking field (e. g. for information about sample)
- available in 3 sizes and 5 materials

POWERFUL TWIN PACK FOR XRF ANALYSIS

To ensure accurate and reproducible XRF analysis results, the sample needs to have a uniform particle size distribution and the pellet to be pressed needs to be as dense as possible. Both requirements are easily met when using our vibratory disc mills and pellet presses for sample preparation to XRF analysis.

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TYPICAL SAMPLE MATERIALS

RETSCH's Vibratory Disc Mills rapidly pulverize materials such as cement, cement clinker, ceramics, coal, coke, concrete, corundum, glass, metal oxides, minerals, ores, silicate, slag, soil, etc.

slag

electronic scrap

iridium

dolomite

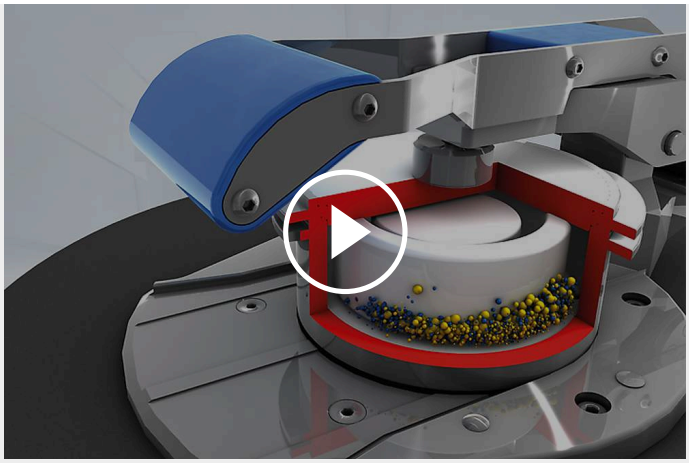
To find the best solution for your sample preparation task, visit our application database.

VIBRATORY DISC MILL RS 200

FUNCTIONAL PRINCIPLE

The Vibratory Disc Mill RS 200 comminutes by pressure and friction. The grinding set is firmly attached to the vibration plate with a quick-action lever. The plate with the grinding set is subjected to circular horizontal vibrations.

The centrifugal force acting on the grinding rings in the dish results in extreme pressure and frictional forces acting on the sample, producing analytical fineness in 1-3 minutes. The circular vibrations are produced by a frequency controlled 1.5 kW 3-phase motor. A sensor recognizes the presence of agate grinding sets and automatically limits the speed to 700 min-1 to avoid damaging the agate. The cover of the noiseinsulated grinding chamber has a safety interlock and can only be opened when the mill is at a standstill.



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VIBRATORY DISC MILL RS 200

TECHNICAL DATA

Applications	size reduction, mixing, triturating
Field of application	construction materials, environment / recycling, geology / metallurgy, glass / ceramics
Feed material	medium-hard, hard, brittle, fibrous
Size reduction principle	pressure, friction
Material feed size*	< 15 mm
Final fineness*	< 20 µm
Batch size / feed quantity*	15- 250 ml depending on size of grinding set
Speed at 50 Hz (60 Hz)	700 - 1,500 min-1, continuously adjustable
Material of grinding tools	hardened steel, tungsten carbide, agate, zirconium oxide, steel 1.1740 (for heavy-metal free grinding)
Grinding jar sizes	50 ml / 100 ml / 250 ml
Setting of grinding time	digital, 00:01 to 99:59
Storable SOPs	10
Drive	3-phase asynchronous motor with frequency converter
Drive power	1.5 kW

Electrical supply data	different voltages
Power connection	1-phase
Protection code	IP 20
W x H x D closed	836 x 1220 x 780 mm
Net weight	~ 225 kg (without grinding set)
Standards	CE

*depending on feed material and instrument configuration/settings

ORDER DATA

VIBRATORY DISC MILL RS 200

Vibratory Disc Mill RS 200 with carry handle for grinding sets, on wheels (please order grinding set and carry handle insert (if necessary) separately)

20.730.0001		RS 200	220–230 V, 50/60 Hz

other electrical versions available for the same price

GRINDING SETS RS 200

HARDENED STEEL

01.462.0170		50 ml
01.462.0171		100 ml
01.462.0263		250 ml

TUNGSTEN CARBIDE

01.462.0353		50 ml (for up to 1200 min-1)
01.462.0354		100 ml (for up to 1200 min-1)
01.462.0355		250 ml (for up to 1200 min-1)

AGATE

01.462.0178		50 ml (only for 700 min-1)
01.462.0179		100 ml (only for 700 min-1)

ZIRCONIUM OXIDE		
01.462.0193		50 ml
01.462.0192		100 ml

STEEL 1.1740 FOR GRINDING WITHOUT HEAVY-METAL CONTAMINATION		
01.462.0002		50 ml
01.462.0266		250 ml

ACCESSORIES RS 200

CARRY HANDLE AND ACCESSORIES FOR RS 200 GRINDING SETS

03.225.0086		Carry handle for all 250 ml grinding sets, for 100 ml grinding set hardened steel, agate, zirconium oxide, steel 1.1740 and for use with carry handle inserts
02.225.0087		Carry handle insert for 50 ml grinding set hardened steel, tungsten carbide, Steel 1.1740
02.225.0088		Carry handle insert for 50 ml grinding set agate
02.225.0089		Carry handle insert for 50 ml grinding set zirconium oxide
02.225.0090		Carry handle insert for 100 ml grinding set tungsten carbide

ADDITIONAL ITEMS RS 200

05.114.0075		O-ring for grinding set 50 ml steel
05.114.0069		O-ring for grinding set 50 ml agate and zirconium oxide

05.114.0068		O-ring for grinding set 50 ml tungsten carbide
05.114.0067		O-ring for grinding set 100 ml steel and zirconium oxide, 250 ml tungsten carbide
05.114.0070		O-ring for grinding set 100 ml agate and tungsten carbide
05.114.0076		O-ring for grinding set 250 ml steel
99.200.0035		IQ/OQ Documentation for RS 200