DRUM MILL TM 500

The Drum Mill TM 500 is a laboratory ball mill designed to grind large sample volumes up to 35 l. It accepts initial feed sizes of up to 20 mm and can achieve grind sizes down to 15 µm by friction and impact. Hard, brittle or fibrous samples are pulverized in the 150 l drum filled with 80 kg grinding balls. The variable speed of 10 to 50 rpm, different grinding ball sizes and the possibility of long-term grindings of up to 100 h ensure perfect adaption to sample properties as well as reproducible results. A TM 500 foodGrade model featuring a stainless steel 316L drum and hopper is available for applications where the sample must not be contaminated in any way.

Click to view video

Product Video

DRUM MILL TM 500

INTELLIGENT SOLUTIONS

EASY OPERATION

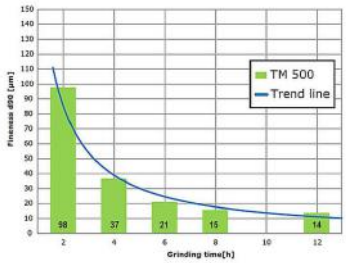
Thanks to the feed hopper and optional separating screen for grinding balls/ sample, operation of the TM 500 and handling of the required 80 kg of grinding balls are particularly ergonomic and simple. The drum is easily emptied by an electronic tilt function. Parameters like grinding time, start delay, or interval mode are selected and stored conveniently via the operating display. Thanks to programmable grinding breaks it is also possible to process heat-sensitive sample materials. Intervals with forward and reverse mode combination are useful to avoid caking effects. For additional safety, the drum mill is equipped with an emergency switch for instant turn-off.

GRINDING OF GRAVEL

40 kg (27 l) sample were filled in the drum of the Drum Mill TM 500, and 80 kg (17.6 l) of 20 mm grinding balls were added. The drum mill was operated for several hours at 50 rpm.

The fineness was measured after 2, 4, 6 and 8 h.
2h: D90 = 98 µm
4h: D90 = 37 µm
6h: D90 = 21 µm
8h: D90 = 15 µm

Sample: Gravel 10-15 mm
Feed quantity: 27 l
Grinding balls: 80 kg, 20 mm diameter



gravel

TYPICAL SAMPLE MATERIALS

RETSCH drum mills are true allrounders. They homogenize, for example: activated carbon, alloys, bentonite, bones, carbon fibers, catalysts, cellulose, cement clinker, ceramics, chemical products, clay minerals, coal, coke, compost, concrete, electronic scrap, fibers, gypsum, glass, hair, hydroxyl apatite, kaolin, lime stone, metal oxides, minerals, ores, paint and varnish, paper, pharmaceutical products, pigments, plants, polymers, quartz, seeds, semi-precious stones, sewage sludge, slag, soil, tissue, tobacco, waste, wood, etc.

GRINDING GENTIAN ROOTS

22 l sample were filled in the drum of the Drum Mill TM 500, 80 kg of 30 mm grinding balls were added. The drum mill was operated for several hours at 50 rpm. The fineness was measured after 1 h.

1h: D90 = 130 µm

The optional separation unit to separate the ground sample from the balls was used.
Used separationd grids: 22 mm for 30 mm grinding ball separation in the upper, middle and lower position.

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

OPTIONAL FEATURES

STAINLESS STEEL DRUM 316L FOODGRADE VERSION

For applications requiring heavy-metal free processing, a foodGrade version of the TM 500 is available which features a stainless steel 316L drum and feed hopper. Grinding balls made of 1.4404 steel are available in sizes 10 mm, 20 mm and 30 mm. This version is ideally suited for small scale production, for example in the food industry.

SIEVING SECTION

The optionally available sieve section facilitates the separation of the 80 kg grinding balls from the ground sample, which can contain up to 35 l. The drum is rotated so that the material falls onto the sieve section and the balls roll into a collecting vessel. The sample material is separated beforehand by the mesh inserts and is collected in separate collecting vessels. Common grinding ball sizes are 10, 20 or 30 mm, therefore three different separation grids can be used, which are also available in steel 316L.

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TECHNICAL DATA

Applications	pulverizing, mixing, dry grinding
Field of application	Chemistry, agriculture, biology, construction materials, engineering / electronics, environment / recycling, geology / metallurgy, glass / ceramics, medicine / pharmaceuticals
Feed material	soft, hard, brittle, fibrous
Size reduction principle	friction, impact
Material feed size*	< 20 mm
Final fineness*	< 15 µm
Batch size / feed quantity*	min. 1 l / max. 35 l
Rotation speed	10 - 50 min-1
No. of grinding stations	1
Material of grinding tools	hardened steel, stainless steel, steel 316L
Grinding drum sizes	150 l
Setting of grinding time	digital, 00:00:01 to 99:59:59
Drive	3-phase asynchronous motor with frequency converter
Drive power	2.2 kW
Electrical supply data	200-240 V, 50/60 Hz
Power connection	1-phase
Protection code	IP 30
Power consumption	~ 2200 W (VA)
W x H x D closed	1100 x 1604 x 936 mm
Net weight	~ 460 kg
Standards	CE

*depending on feed material and instrument configuration/settings

DRUM MILL TM 500

FUNCTIONAL PRINCIPLE

In a drum mill the sample (usually pre-crushed material) is placed inside the drum with the grinding balls and subjected to external forces.

The Ball Mill is used for fine grinding of solid matter by impact and friction in dry condition. The drum, which contains the sample and grinding balls, rotates around a horizontal axis. Whereas particles break more easily when larger grinding ball diameters are used, smaller diameters lead to a substantially higher final fineness.

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