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 Drum Mill 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 drum mill 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.

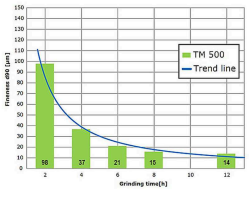
DRUM MILL TM 500

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

gravel



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

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.

DRUM MILL TM 500

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.

DRUM MILL TM 500

TECHNICAL DATA

Applications	pulverizing, mixing, dry grinding
Field of application	agriculture, biology, chemistry, 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

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.

www.retsch.com/tm500

ORDER DATA

DRUM MILL TM 500

Drum Mill TM 500 incl. drum 150 l with cover and fastening aid, base frame and feed hopper (please order ball filling and optional separation unit separately)

				Drum 150 l	Feed hopper
21.403.1001		TM 500	1/N~ 200-240 V, 50/60 Hz	steel 1.0037	steel 1.0037
21.403.1002		TM 500	1/N~ 200-240 V, 50/60 Hz	steel 1.4301	steel 1.0037
21.403.1003		TM 500	1/N~ 200-240 V, 50/60 Hz	steel 316L, foodG.	steel 1.0037
21.402.1001		TM 500	1/N~ 200-240 V, 50/60 Hz	steel 316L, foodG.	steel 316L, foodGrade

other electrical versions available for the same price

ACCESSORIES TM 500

BALL FILLINGS	
23.455.0031	Ball filling 30 mm Ø, steel 1.3505
23.455.0030	Ball filling 20 mm Ø, steel 1.3505
23.455.0029	Ball filling 10 mm Ø, steel 1.3505
23.455.0034	Ball filling 30 mm Ø, steel 1.4404, foodGrade
23.455.0033	Ball filling 20 mm Ø, steel 1.4404, foodGrade
23.455.0032	Ball filling 10 mm Ø, steel 1.4404, foodGrade

SEPARATION UNIT FOR GRINDING BALLS/SAMPLE (PLEASE ORDER 3 SEPARATION GRIDS - UPPER, MIDDLE, LOWER - SEPARATELY)	
02.407.0148	Separation unit incl. 4 collecting receptacles with carriage
03.407.0149	Upper separation grid, 22 mm for 30 mm Ø balls
03.407.0152	Upper separation grid, 14 mm for 20 mm Ø balls
03.407.0155	Upper separation grid, 6.5 mm for 10 mm Ø balls
03.407.0150	Middle separation grid, 22 mm for 30 mm Ø balls

03.407.0153	Middle separation grid, 14 mm for 20 mm Ø balls
03.407.0156	Middle separation grid, 6.5 mm for 10 mm Ø balls
03.407.0151	Lower separation grid, 22 mm for 30 mm Ø balls
03.407.0154	Lower separation grid, 14 mm for 20 mm Ø balls
03.407.0157	Lower separation grid, 6.5 mm for 10 mm Ø balls

DRUM 150 L INCL. COVER AND FASTENING AID	
23.462.0052	Drum 150 l, steel 1.0037
23.462.0053	Drum 150 l, steel 1.4301
23.462.0051	Drum 150 l, steel 316L, foodGrade

ADDITIONAL ITEMS TM 500	
01.107.0704	Cover for drum, steel 1.0037
01.107.0712	Cover for drum, steel 1.4301
01.107.0703	Cover for drum, steel 316L, foodGrade
23.785.0026	Feed hopper, steel 1.0037
23.785.0025	Feed hopper, steel 316L, foodGrade
05.045.0071	Collecting receptacle, 83.8 l for separation unit
05.045.0073	Collecting receptacle, 43.5 l for separation unit
23.906.0002	Carriage, for collecting receptacle
23.728.0001	Fastening aid for drum cover