



HIGH ENERGY BALL MILL E_{MAX}

the revolution in ultrafine grinding

The E_{max} is an entirely new type of ball mill for high energy milling. The unique combination of high friction and impact results in extremely fine particles within the shortest amount of time.

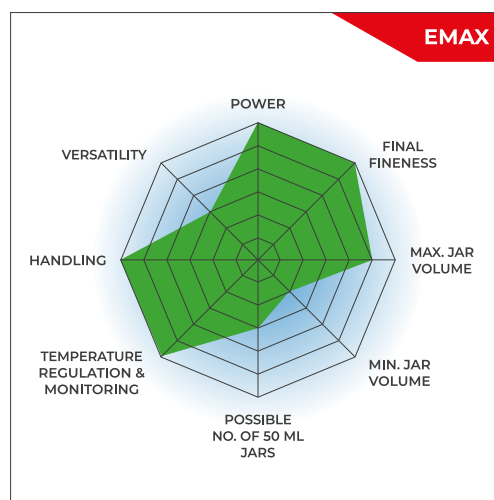
- | faster and finer grinding than any other ball mill
- | speed of 2000 min⁻¹ allow for ultra-fast pulverization of the sample
- | water cooling permits continuous operation without cool down breaks
- | temperature-controlled grinding
- | narrow particle size distribution thanks to special jar design which improves mixing of the sample



[Click to view video](#)

FASTER - FINER - COOLER - THE MOST POWERFUL BALL MILL

- | Max. speed 2000 rpm
- | Up to 5 mm feed size and 0.08 µm final fineness
- | Two grinding stations for jars of min. 50 ml and max. 125 ml
- | GrindControl to measure temperature and pressure inside the jar.
- | Aeration lids to control the atmosphere inside the jar
- | Temperature monitoring and temperature-controlled grinding, water-cooling of jars
- | Storable SOPs and cycle programs, 4 different jar materials for dry and wet grinding



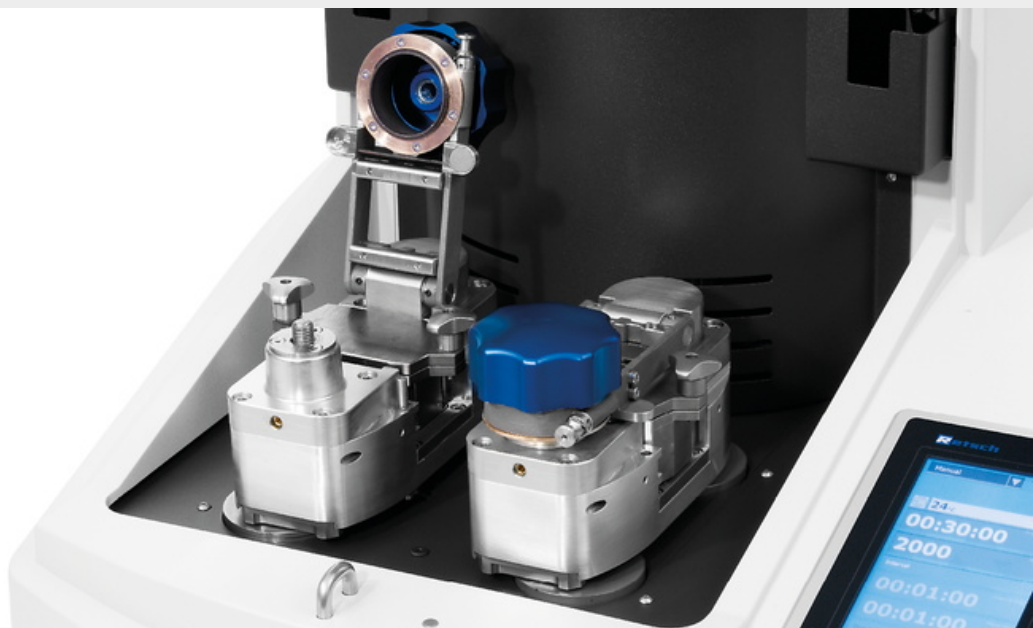
BRUKSEKSEMPLER

legeringer, bein, karbonfibre, katalysatorer, cellulose, sementklinker, keramikk, kjemiske produkter, leiremineraler, coal, koks, betong, fibre, glass, gips, jernmalm, kaolin, kalkstein, metalløksider, mineraler, malm, papir, pigmenter, plantematerialer, polymerer, kvarts, semi-precious stones, renseslam, slagg, jord, tea, tobakk, avfallsprøver, tre, ...

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

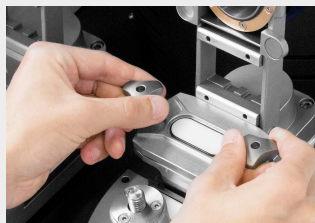
UNIQUE GRINDING JAR GEOMETRY

The High Energy Ball Mill Emax combines high-frequency impact, intensive friction, and controlled circular jar movements to a unique and highly effective size reduction mechanism.

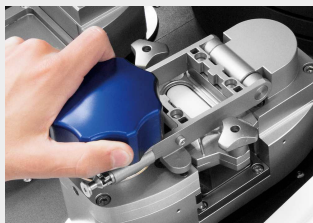


EMAX - FUNKSJON OG EGENSKAPER

INTUITIVE OPERATION



INSERTING THE GRINDING JAR



CLOSING THE JAR CLAMP



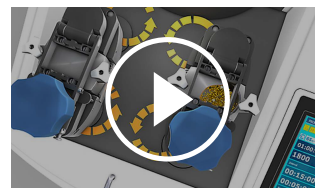
OPERATING THE TOUCHSCREEN

FUNKSJONSPRINSIPP

GRIND SIZES IN THE SUBMICRON RANGE

The High Energy Ball Mill Emax combines high-frequency impact, intensive friction, and controlled circular jar movements to a unique and highly effective size reduction mechanism. The grinding jars have an oval shape and are mounted on two discs respectively which move the jars on a circular course without changing their orientation.

The interplay of jar geometry and movement causes strong friction between the grinding balls, sample material and jar walls as well as a rapid acceleration which lets the balls impact with great force on the sample at the rounded ends of the jars. This significantly improves the mixing of the particles resulting in smaller grind sizes and a narrower particle size distribution than is possible to achieve in ball mills.



[Click to view video](#)

FOR SAFE AND EFFECTIVE GRINDING PROCESSES

ACCESSORIES FOR MAXIMUM FLEXIBILITY



GRINDING JARS IN 3 DIFFERENT MATERIALS

Available grinding jar sizes are 50 ml, 80 ml and 125 ml, materials include stainless steel, tungsten carbide and zirconium oxide, ensuring contamination-free sample preparation. Grinding balls are available in sizes from 0.1 mm to 25 mm, depending on the material.



[Click to view video](#)

AERATION LID (VIDEO)

RETSCH offers a special aeration lid for the grinding jars designed for applications where a special atmosphere is to be maintained in the ball mill jar.



GRINDCONTROL

The GrindControl measures temperature and pressure inside the jar. The system includes a sensor and transmission unit as well as an analysis software.

TECHNICAL DATA

funksjon	nano grinding, size reduction, homogenizing, mechanical alloying, colloidal milling, high energy comminution
bruksområde	biologi, byggematerialer, chemistry, geologi / metallurgi, glass / keramikk, landbruk, maskinbygging / elektroteknikk, medisin / legemidler, miljø / gjenvinning
matemateriale	middels hardt, hardt, sprøtt, fibrøs - tørr eller våt
nedmalingsprinsipp	sammenstøt, friksjon
matestørrelse*	< 5 mm
sluttfinhet*	< 80 nm
prøvevolum*	max. 2 x 45 ml
turtall ved 50 Hz (60 Hz)	300 - 2000 min ⁻¹
Cooling	controlled integrated water cooling / option: external chiller
temperaturregulering	yes (min and max temperature may be defined)
antall malestasjoner	2
type malebeger	with integrated safety closure devices
material i maleverktøyet	rustfritt stål, wolframkarbid, zirkoniumoksid
Størrelse på malebeger	50 ml / 125 ml
innstilling av maletid	00:01:00 to 99:59:59
intervalldrift	yes, with optional direction reversal
intervalltid	00:01:00 to 99:59:59
pausetid	00:01:00 to 99:59:59
SOPer som kan lagres	10
Grensesnitt	USB / LAN (RJ45)
drift	3- faset asynkron motor med frekvensomformer
drivkraft	2600 W
Elektriske tilkoblingsdata	200-240 V, 50/60 Hz
Nettilkobling	1-fase
kapslingstype	IP 30
kraftforbruk:	~ 3100W (VA)
b x h x d lukket	625 x 525 x 645 mm
nettovekt	~ 120 kg
Normer / standarder	CE
Patent / Utility patent	Inclined Grinding bowls (US 8,042,754 B2)

*avhengig av matemateriale og apparatkonfigurerings /apparatinnstillinger

/emax

BESTILLINGSINFO

HIGH ENERGY BALL MILL EMAX

(please order grinding jars and balls [up to 15 mm] separately)

20.510.0001



Emax, 200–240 V, 50/60 Hz, High energy ball mill with 2 grinding stations

SCREW-LOCK GRINDING JARS EMAX

STAINLESS STEEL

01.462.0305 50 ml

01.462.0313 125 ml



TUNGSTEN CARBIDE

01.462.0317 50 ml



ZIRCONIUM OXIDE

01.462.0312 50 ml

01.462.0307 125 ml



ACCESSORIES FOR GRINDING UNDER INERT ATMOSPHERE

AERATION LIDS FOR EMAX GRINDING JARS

01.107.0568 Aeration lid for Emax grinding jar 50 ml, stainless steel

01.107.0567 Aeration lid for Emax grinding jar 125 ml, stainless steel

01.107.0636 Aeration lid for Emax grinding jar 50 ml, tungsten carbide

01.107.0569 Aeration lid for Emax grinding jar 50 ml, zirconium oxide

01.107.0564 Aeration lid for Emax grinding jar 125 ml, zirconium oxide

ACCESSORIES FOR SCREW-LOCK GRINDING JARS EMAX

02.486.0051		Jar wrench for grinding jars
05.114.0057		O-ring for grinding jars 50 ml, 1 piece
05.114.0122		O-ring for grinding jars 125 ml, 1 piece

ADDITIONAL ITEMS EMAX

03.362.0036	Cooling lubricant, 100 ml
99.200.0029	IQ/OQ Documentation for Emax

PRESSURE AND TEMPERATURE MEASURING SYSTEM GRINDCONTROL

incl. lid with lid insert, sensors and transmitter, receiver, software, case, grinding jar, opening aid and cleaning accessories for Emax

22.782.0032	GrindControl for MM 500 control/nano/Emax grinding jar 125 ml
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GRINDING BALLS

STAINLESS STEEL

22.455.0010		2 mm Ø, 500 g (approx. 110 ml)
22.455.0011		3 mm Ø, 500 g (approx. 120 ml)
22.455.0002		3 mm Ø, 200 pieces (approx. 6 ml)
22.455.0001		4 mm Ø, 200 pieces (approx. 14 ml)
22.455.0003		5 mm Ø, 200 pieces (approx. 25 ml)

05.368.0034		5 mm Ø
05.368.0035		7 mm Ø
05.368.0063		10 mm Ø
05.368.0037		12 mm Ø
05.368.0109		15 mm Ø

TUNGSTEN CARBIDE

22.455.0006		3 mm Ø, 200 pieces (approx. 6 ml)
22.455.0005		4 mm Ø, 200 pieces (approx. 14 ml)
22.455.0004		5 mm Ø, 200 pieces (approx. 25 ml)
05.368.0038		5 mm Ø
05.368.0039		7 mm Ø
05.368.0071		10 mm Ø
05.368.0041		12 mm Ø
05.368.0110		15 mm Ø

ZIRCONIUM OXIDE

32.368.0005		0.1 mm Ø, 0.5 kg (approx. 135 ml)
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32.368.0003		0.5 mm Ø, 0.5 kg (approx. 135 ml)
32.368.0004		1 mm Ø, 0.5 kg (approx. 135 ml)
05.368.0089		2 mm Ø, 0.5 kg (approx. 135 ml)
05.368.0090		3 mm Ø, 0.5 kg (approx. 140 ml)
05.368.0146		7 mm Ø
05.368.0094		10 mm Ø
05.368.0096		12 mm Ø
05.368.0113		15 mm Ø