HOGE ENERGIE KOGELMOLEN E_{MAX}

the revolution in ultrafine grinding

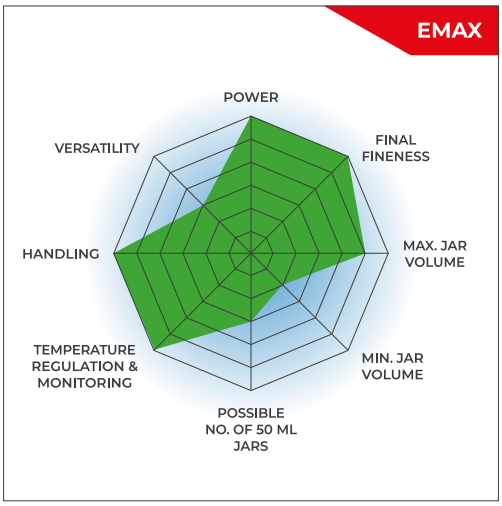
De E_{max} is een geheel nieuw type kogelmolen voor het malen met hoge energie. De unieke combinatie van hoge wrijvings- en impactkrachten resulteert in extreem fijne deeltjes in de kortst mogelijke tijd.

- sneller en fijner malen dan alle andere kogelmolens
- toerental van 2000 min^{-1} veroorzaakt ultra-snel pulveriseren van het monster
- water koeling laat continu malen toe, zonder tussentijdse onderbrekingen voor het afkoelen
- temperatuursbewaking tijdens het malen
- nauwe korrelgrootte-verdeling dankzij een speciaal maalbekerontwerp, waardoor de menggraad van het monster verbeterd wordt

Klik om video te bekijken

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.
- Aeriation 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



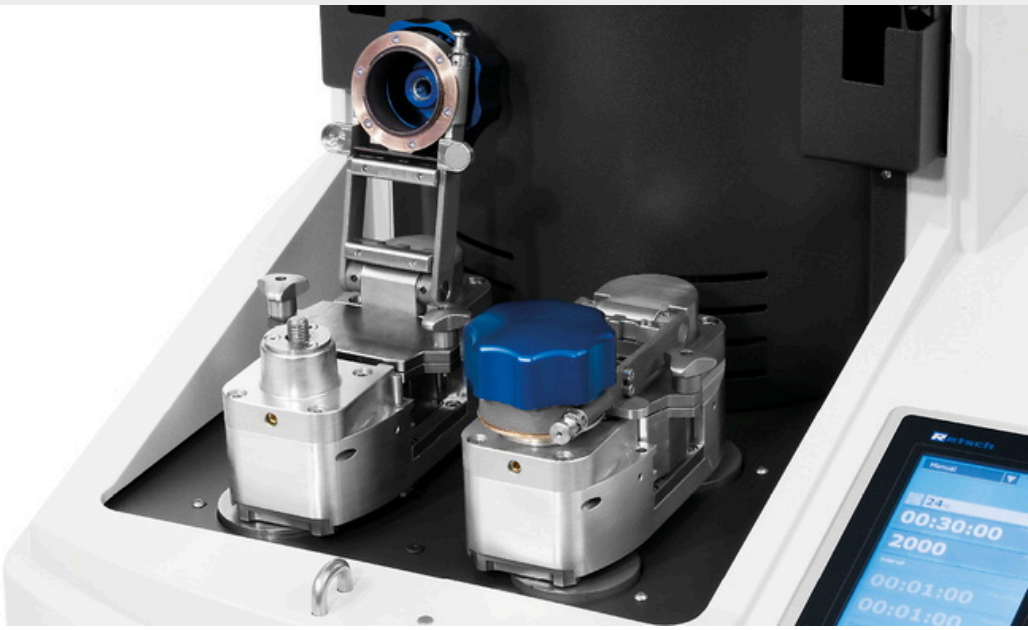
TOEPASSINGSVOORBEELDEN

legeringen, beenderen, koostofvezel, Katalysatoren, cellulose, cement klinkers, keramiek, chemische producten, kleimineralen, kolen, cokes, beton, vezels, glas, gips, ijzererts, kaolin, kalksteen, metaaloxiden, mineralen, ertsen, papier, pigmenten, plantenmaterialen, polymeren, kwarts, halfedelstenen, slib, slakken, bodems, thee, tabak, afvalmonsters, hout, ...

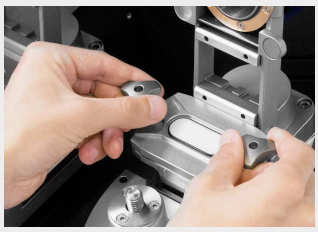
Bezoek onze toepassingsdatabase om de beste oplossing voor uw monstervoorbereiding of analyse te vinden.

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.



INTUITIVE OPERATION



INSERTING THE GRINDING JAR

CLOSING THE JAR CLAMP

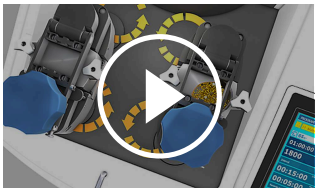
OPERATING THE TOUCHSCREEN

FUNCTIONERINGSPRINCIPE

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.

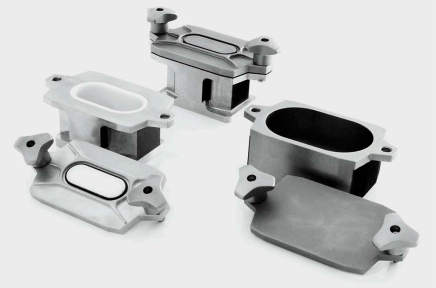
The interplay of jar geometry and movement causes strong friction between the grinding balls, sample material and jar walls as well as a rapid acceleration which lets the balls impact with great force on the sample at the rounded ends of the jars. This significantly improves the mixing of the particles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



Klik om video te bekijken

VOOR VEILIGE EN EFFICIËNTE MAALPROCESSEN

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.

Klik om video te bekijken

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.

TECHNISCHE GEGEVENS

Toepassingen	nano vermaling, deeltjesverkleining, homogenisatie, mechanisch legeren, colloïdaal malen, verkleining met hoge energie
Toepassingsdomein	biologie, bouwmaterialen, chemie, engineering / electronica, geneesmiddelen / farmaceutica, geologie / metallurgie, glas / keramiek, landbouw, milieu/ recycling
Toevoermateriaal	medium-hard, hard, breekbaar, vezelig - droog of nat
Maalprincipe	impact, wrijving
Korrelgrootte materiaal*	< 5 mm
Eindfijnheid*	< 80 nm
Batchgrootte / Toevoerhoeveelheid*	max. 2 x 45 ml
Snelheid bij 50 Hz (60 Hz)	300 - 2000 min-1
Koeling	geïntegreerde gecontroleerde water koeling optie: externe koeleenheid
Temperatuurscontrole	ja (min en max temperatuur kunnen gedefinieerd worden)
Aantal maalstations	2
Maalbekertypes	met geïntegreerde veiligheidssluiting
Materiaal van maalwerktuigen	roestvrij staal, wolfraamcarbide, zirkoniumoxide
Maalbeker maten	50 ml / 125 ml
Instelling maalduur	00:01:00 to 99:59:59
Interval werking	ja, met optionele omkering van de draairichtingreversal
Interval tijd	00:01:00 to 99:59:59
Pauzetijd	00:01:00 to 99:59:59
Memoriseerbare standaardprocedures	10
Interface	USB / LAN (RJ45)
Aandrijving	3-fasen asynchroon motor met frequentie omvormer
Aandrijfvermogen	2600 W
Gegevens electriciteit	200-240 V, 50/60 Hz
Aansluiting electriciteit	mono fase
Beschermingsklasse	IP 30
Vermogen	~ 3100W (VA)
B x H x D gesloten	625 x 525 x 645 mm
Netto gewicht	~ 120 kg
Standaarden	CE

Patent / Gebruiks-patent	Inclined Grinding bowls (US 8,042,754 B2)

*afhankelijk van toegevoerd materiaal en configuratie/instellingen van toestel

www.retsch.nl/emax

BESTELGEGEVENS

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

ROESTVRIJ STAAL		
01.462.0305		50 ml
01.462.0313		125 ml
WOLFRAMCARBIDE		
01.462.0317		50 ml
ZIRCONIUM OXIDE		
01.462.0312		50 ml
01.462.0307		125 ml

AERATION LIDS FOR GRINDING JARS EMAX

incl. o-rings and sintered filter (please order lid and grinding jar separately)

22.107.0638	Aeration lid for grinding jars Emax 50ml
22.107.0640	Aeration lid for grinding jars Emax 125ml
	Lid insert for grinding jars Emax
03.474.0258	Aeration lid insert for grinding jars Emax 50ml, rostfreier Stahl
03.107.0570	Aeration lid insert for grinding jars Emax 50ml, Zirkonoxid
03.474.0131	Aeration lid insert for grinding jars Emax 50ml, Wolframcarbid

03.474.0260		Aeration lid insert for grinding jars Emax 125ml, rostfreier Stahl
03.107.0565		Aeration lid insert for grinding jars Emax 125ml, Zirkonoxid

DRUK EN TEMPERATUUR MEETSYSTEEM GRINDCONTROL

incl. sensors and transmitter unit, case, opening aid and cleaning accessories for MM 500 control / nano / Emax (please order insert of lid and grinding jar separately)

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

GRINDCONTROL LID INSERTS

03.474.0242		GrindControl lid insert for MM 500 control/nano and Emax grinding jar 125 ml, stainless steel
03.474.0245		GrindControl lid insert for MM 500 control/nano and Emax grinding jar 125 ml, zirconium oxide

ACCESSORIES FOR GRINDING JARS EMAX

02.486.0051		Klem om maalbekers te openen
22.186.0007		Sintered filter with O-ring, set of 10 pieces
22.864.0001		Valve set M8x1 for GrindControl and aeration lids
05.114.0057		O-ring for grinding jars 50 ml, 1 piece
05.114.0122		O-ring for grinding jars 125 ml, 1 piece
03.362.0036		Cooling lubricant, 100 ml
99.200.0029		IQ/OQ Documentation for Emax

MAALKOGELS

ROESTVRIJ STAAL

22.455.0010		2 mm Ø, 500 g (ong. 110 ml)

22.455.0011		3 mm Ø, 500 g (ong. 120 ml)
22.455.0002		3 mm Ø, 200 stuks (ong. 6 ml)
22.455.0001		4 mm Ø, 200 stuks (ong. 14 ml)
22.455.0003		5 mm Ø, 200 stuks (ong. 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

WOLFRAMCARBIDE		
22.455.0006		3 mm Ø, 200 stuks (ong. 6 ml)
22.455.0005		4 mm Ø, 200 stuks (ong. 14 ml)
22.455.0004		5 mm Ø, 200 stuks (ong. 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 (ong. 135 ml)
32.368.0003		0.5 mm Ø, 0.5 kg (ong. 135 ml)
32.368.0004		1 mm Ø, 0.5 kg (ong. 135 ml)
05.368.0089		2 mm Ø, 0.5 kg (ong. 135 ml)
05.368.0090		3 mm Ø, 0.5 kg (ong. 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