



# ВИСОКОЕНЕРГИЙНА ТОПКОВА МЕЛНИЦА E<sub>MAX</sub>

the revolution in ultrafine grinding

**Мелницата E<sub>max</sub> е напълно нова концепция на топкова мелница с високоенергийно смилане. Уникалната комбинация между интензивно триене и удар позволява смилане до екстремно финни частици за много кратки времена.**

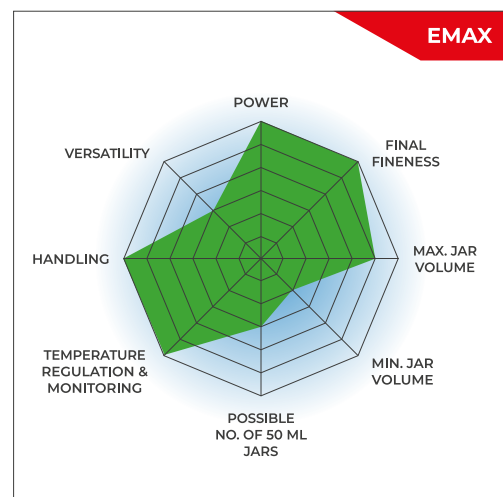
- | по-бързо и по-fino смилане от всяка друга топкова мелница
- | скоростта от 2000 об/мин позволява ултрабързо смилане на пробата
- | водното охлаждане позволява непрекъснат режим на работа без спирания за охлаждане
- | температурен контрол по време на смилане
- | тесен диапазон на големината на смлените частици благодарение специалния дизайн на смилания цилиндър, подобряващ хомогенизирането на пробата



[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



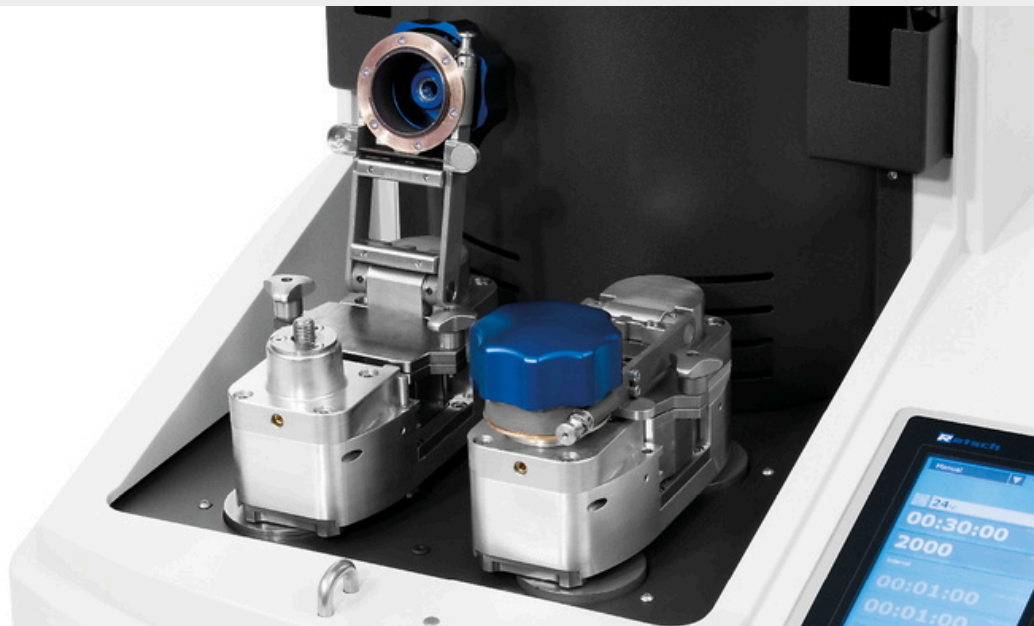
## ПРИЛОЖЕНИЕ

сплави, кости, въглеродни влакна, катализатори, целулоза, циментов клинкер, керамика, химически продукти, глинести минерали, соал, кокс, бетон, влакна, стъкло, гипс, желязна руда, каолин, варовик, метални оксиди, полезни изкопаеми, руди, хартия, пигменти, растителни материали, полимери, кварц, semi-precious stones, утайки от отпадъчни води, шлака, почви, tea, тютюн, проби от отпадъци, дърво, ...

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

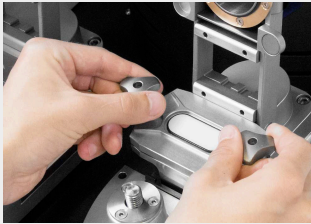
## UNIQUE GRINDING JAR GEOMETRY

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 - ПРЕДНАЗНАЧЕНИЕ & ХАРАКТЕРИСТИКИ

## INTUITIVE OPERATION



INSERTING THE GRINDING JAR



CLOSING THE JAR CLAMP



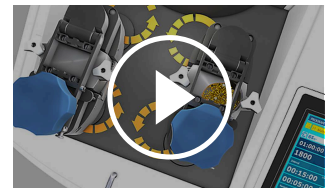
OPERATING THE TOUCHSCREEN

ПРИНЦИП НА РАБОТА

## GRIND SIZES IN THE SUBMICRON RANGE

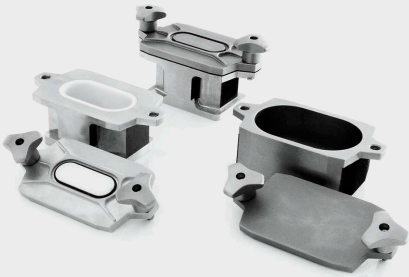
The High Energy Ball Mill Emax combines high-frequency impact, intensive friction, and controlled circular jar movements to a unique and highly effective size reduction mechanism. The grinding jars have an oval shape and are mounted on two discs respectively which move the jars on a circular course without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



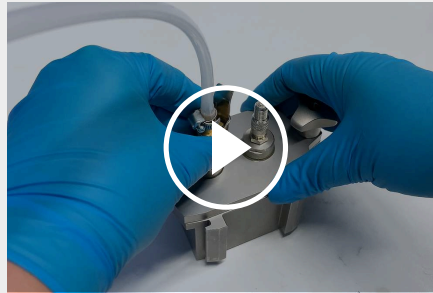
[Click to view video](#)

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

<b>Приложения</b>	наносмилане, намаляване на размера, хомогенизиране, механично легиране, колоидално смилане, високоенергийно раздробяване
<b>Област на приложение</b>	chemistry, биология, геология / металургия, инженеринг / електроника, медицина / фармация, околната среда / рециклиране, селското стопанство, строителни материали, стъкло / керамика
<b>Материали</b>	средно твърди, твърд, крехък, влакнести - сухи или мокри
<b>Принцип на смилане</b>	удар, триене
<b>Максимален размер на захранващият продукт</b>	< 5 мм
<b>Големина след смилане*</b>	< 80 нанометра
<b>Размер на партидата / количество на пробата*</b>	max. 2 x 45 мл
<b>Скорост при 50 Херца (60 Херца)</b>	300 - 2000 об/мин.
<b>Охлаждане</b>	контролирано интегрирано водно охлаждане / опция: външен охладител
<b>Контрол на температурата</b>	да (min и max дефинируема температура)
<b>Брой на смилачните станции</b>	2
<b>Видове смилачни цилиндри</b>	с интегрирани обезопасени заключващи устройства
<b>Материал на смилачните части</b>	неръждаема стомана, волфрам карбид, циркониев оксид
<b>Обем на смилачната камера</b>	50 мл / 125 мл
<b>Настройване времето за смилане</b>	00:01:00 to 99:59:59
<b>прекъсната работа</b>	да, с опция за обръщане на посоката
<b>Време на прекъсванията</b>	00:01:00 to 99:59:59
<b>Време за пауза</b>	00:01:00 to 99:59:59
<b>Запаметяване на настройки</b>	10
<b>Интерфейс</b>	USB / LAN ( RJ45)
<b>Задвижване</b>	Трифазен асинхронен мотор с честотен преобразувател
<b>Мощност на двигателя</b>	2600 W
<b>Данни за електрозахранването</b>	200-240 V, 50/60 Hz
<b>Захранване</b>	еднофазово
<b>Защита</b>	IP 30
<b>Енергийна консумация</b>	~ 3100W (VA)

<b>Размери затворена</b>	625 x 525 x 645 мм
<b>Нетно тегло</b>	~ 120 кг
<b>Стандарти</b>	CE
<b>Патенти</b>	Inclined Grinding bowls (US 8,042,754 B2)

\*в зависимост от захранващият материал и настройките на инструмента\*

[www.retsch.bg/emax](http://www.retsch.bg/emax)

## ДАННИ ПОРЪЧКА

### 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

### 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, Wolframcarbide

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

## PRESSURE AND TEMPERATURE MEASURING SYSTEM 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
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## 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	Jar wrench for grinding jars
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





## 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)
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