

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](#)

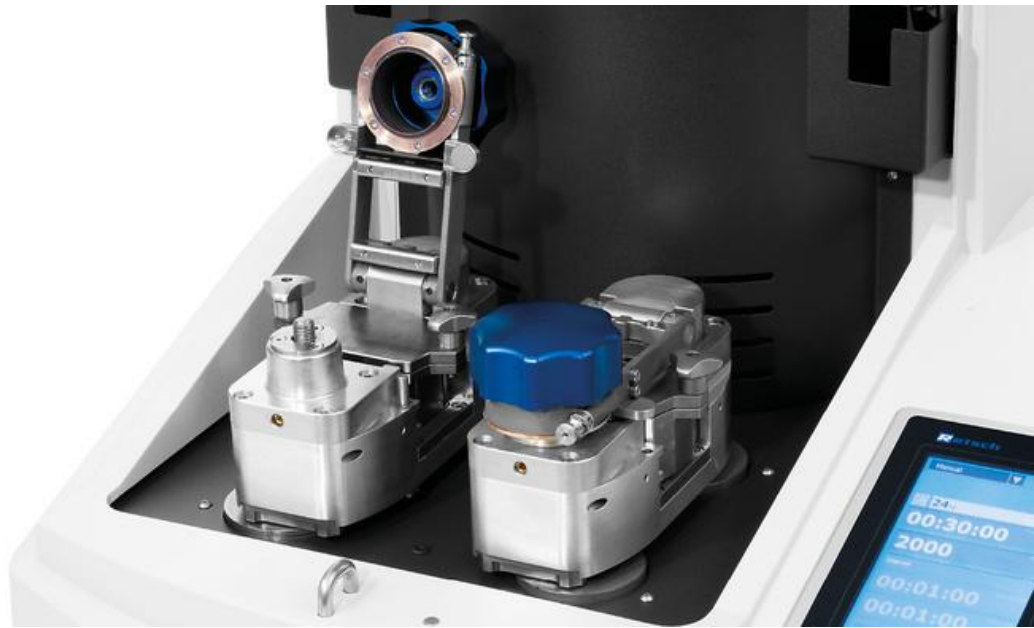
Product Video

APPLICATION EXAMPLES

alloys, bones, carbon fibres, catalysts, cellulose, cement clinker, ceramics, chemical products, clay minerals, coal, coke, concrete, fibres, glass, gypsum, iron ore, kaolin, limestone, metal oxides, minerals, ores, paper, pigments, plant materials, polymers, quartz, semi-precious stones, sewage sludge, slag, soils, tea, tobacco, waste samples, wood, ... continue to 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 - FUNCTION & FEATURES

INTUITIVE OPERATION



INSERTING THE GRINDING JAR



CLOSING THE JAR CLAMP



OPERATING THE TOUCHSCREEN

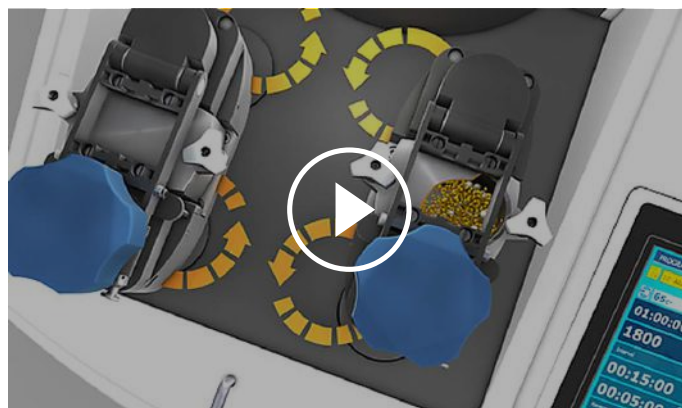
FUNCTION PRINCIPLE

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

WIDE RANGE OF ACCESSORIES



GRINDING JARS IN 3 DIFFERENT MATERIALS

Available grinding jar sizes are 50 ml and 125 ml, materials include stainless steel, tungsten carbide and zirconium oxide, ensuring contamination-free sample preparation.



AERATION COVER

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



DIFFERENT GRINDING BALL SIZES & MATERIALS

The grinding balls are available in stainless steel, tungsten carbide and zirconium oxide. Sizes range from 0.1 mm to 15 mm, depending on the material.

HIGH ENERGY BALL MILL E_{MAX}

TECHNICAL DATA

Applications	nano grinding, size reduction, homogenizing, mechanical alloying, colloidal milling, high energy comminution
Field of application	Chemistry, agriculture, biology, construction materials, engineering / electronics, environment / recycling, geology / metallurgy, glass / ceramics, medicine / pharmaceuticals
Feed material	medium-hard, hard, brittle, fibrous - dry or wet
Size reduction principle	impact, friction
Material feed size*	< 5 mm
Final fineness*	< 80 nm
Batch size / feed quantity*	max. 2 x 45 ml
Speed at 50 Hz (60 Hz)	300 - 2000 min ⁻¹
Cooling	controlled integrated water cooling / option: external chiller
Temperature control	yes (min and max temperature may be defined)
No. of grinding stations	2
Type of grinding jars	with integrated safety closure devices
Material of grinding tools	stainless steel, tungsten carbide, zirconium oxide
Grinding jar sizes	50 ml / 125 ml
Setting of grinding time	00:01:00 to 99:59:59
Interval operation	yes, with optional direction reversal
Interval time	00:01:00 to 99:59:59
Pause time	00:01:00 to 99:59:59
Storable SOPs	10
Interface	USB / LAN (RJ45)
Drive	3-phase asynchronous motor with frequency converter
Drive power	2600 W
Electrical supply data	different voltages
Power connection	1-phase
Protection code	IP 30
Power consumption	~ 3100W (VA)
W x H x D closed	625 x 525 x 645 mm
Net weight	~ 120 kg
Standards	CE

Patent / Utility patent

Inclined Grinding bowls (US 8,042,754 B2)

*depending on feed material and instrument configuration/settings

www.retsch.com/emax