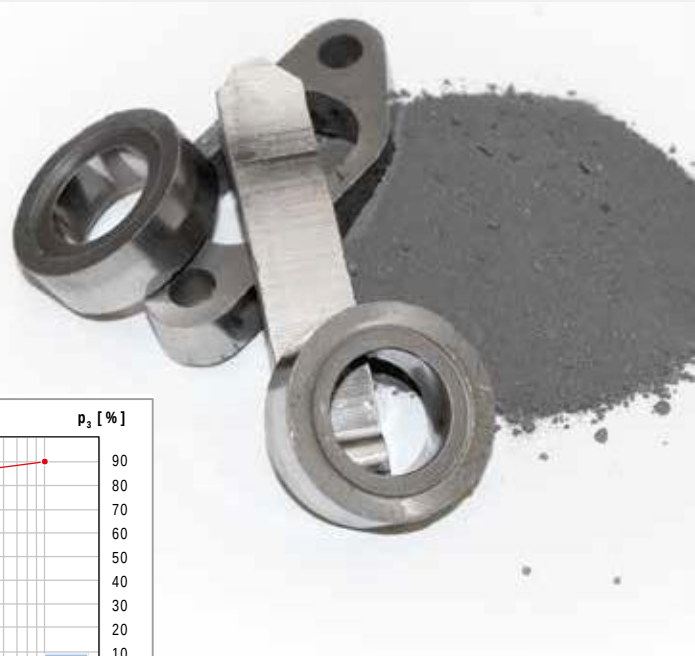
Selection Guide for Size Reduction Tools

The following selection guide provides an initial overview of the application areas of RETSCH mills and crushers. The selection of a suitable mill depends on the individual application.
Contact us to find the optimum solution for your application!

- ● suitable
- ◒ suitable to a limited extent
- \- not suitable

Jaw Crushers	Model	Feed size* approx.	Final fineness* approx	Page	Construction materials	Soil	Chemical products	Electronic waste	Glass, ceramics	Wood, bones, paper	Coal, coke	Food	Minerals, ores, rocks	Pharmaceutical products	Plants, hay, straw	Secondary fuels
Jaw Crusher	**BB 250 XL**	120x90 mm	2 mm	6	●	●	◒	-	●	-	●	-	●	-	-	-
Jaw Crusher	**BB 400 XL**	220x90 mm	2 mm	6	●	●	◒	-	●	-	●	-	●	-	-	-
Jaw Crusher	**BB 500 XL**	<110 mm	500 µm	7	●	●	◒	-	●	-	●	-	●	-	-	-
Jaw Crusher	**BB 600 XL**	350x170 mm	6 mm	8	●	●	◒	-	●	-	●	-	●	-	-	-
Vibratory Disc Mill																
Vibratory Disc Mill	**RS 300 XL**	20 mm	75 µm	10	●	●	◒	◒	●	●	●	◒	●	◒	●	◒
Drum Mills																
Ball Mill	**TM 300 XL**	20 mm	20 µm	12	●	●	●	◒	●	◒	●	◒	●	◒	●	◒
Rod Mill	**TM 300 XL**	20 mm	150 µm	12	●	●	●	◒	●	◒	●	◒	●	◒	●	◒

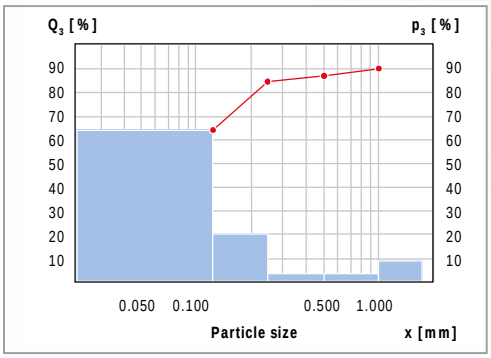
Please note:
The feed size and final fineness depend on the sample material and on instrument configurations/settings.



Application Example: Crushing of Powder Metallurgical Components

Powder metallurgical components (PM components) are characterized by high shape accuracy, a wide and differentiated variety of alloys as well as a density range from highly porous to extremely dense.

In a trial, 4 kg of pre-sintered PM components (50-100 mm feed size) were crushed in a BB 500 XL, achieving a final fineness of 84% <250 microns and 90% <500 microns. This particle size enables components to be re-used in the production process **without the need for a secondary grinding run**.



Jaw Crushers XL – Safe and Convenient Powerhouses

The Jaw Crusher models BB 250 XL and BB 400 XL are used for the **rapid, effective crushing and pre-crushing of medium-hard, hard, brittle and tough materials**. The variety of materials offered, including heavy-metal free steel, their efficiency and safety makes these jaw crushers ideal for sample preparation in laboratories and industrial plants.

For small amounts of sample these crushers are used **batch-wise**; for larger amounts they can be operated **continuously**. Control of the gap width and zero point adjustment allow for reproducible results.

Thanks to the modular concept of the housing and frame these jaw crushers are suitable for a wide range of applications.

Benefits XL Jaw Crushers

- Continuous gap width setting
- Overload protection
- Wide range of materials for contamination free grinding
- Removable no-rebound feed hopper
- Sample collector with safety switch
- Collecting receptacle with outlet for continuous operation
- Connector for dust extraction
- Optional central lubrication
- Suitable for integration in automatic installations
- Special version with automated sorting of undersize (3 fractions) and oversize (1 fraction)

www.retsch.com/bb

BB 250 XL and BB 400 XL

These models have a front door which allows direct access to the crushing chamber for cleaning. The feed hopper can be removed quickly and easily.

Special version:
2 x BB 250 XL with automated sorting

110 mm
500 µm*

NEW

BB 500 XL – Fine Grinding in One Working Run

The BB 500 XL is a robust and powerful force-fed crusher characterized by its **excellent crushing ratio**. Thanks to the steep crushing chamber design and the highly effective crushing kinematics it is possible to process **samples with a feed size of up to 110 mm to a final fineness of 90% < 0.5 mm in one working run.**

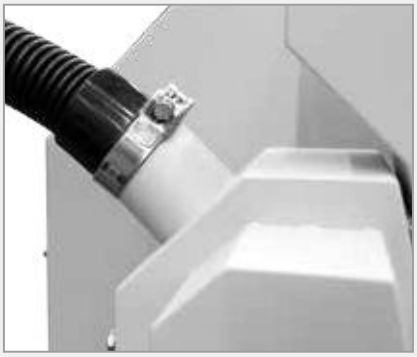
The feed material passes through the no-rebound hopper and enters the crushing chamber. Size reduction takes place in the wedge-shaped area between the fixed crushing arm and one oscillating arm with high frequency (780 min^{-1}). This motion ensures a **consistent gap width** in the stroke cycle so that the sample is crushed to the set fineness in one working step. Two massive flywheels transmit **high impulse forces** to the crushing jaws. The innovative design permits dual usage by rotation and therefore provides for an extended service life.

As soon as the sample is smaller than the discharge gap width, it falls into a removable collector. The **continuous gap width setting with scale** ensures optimum size reduction in accordance with the set gap width.

BB 500 XL

Superiority in Detail

BB 250 XL and BB 400 XL:
Removable hopper


BB 250 XL and BB 400 XL:
Connector for dust extraction


BB 500 XL:
Continuous gap width adjustment

BB 600 XL – For High Sample Throughput

The Jaw Crusher BB 600 XL is used for **rapid, effective, crushing and pre-crushing of brittle, medium-hard, hard and tough materials.**

Due to the low installation height of 1 meter the BB 600 XL is **ideally suited for continuous operation** in automatic installations and sampling stations. Thanks to the compact design of the BB 600 XL it may replace a jaw crusher in existing installations. It achieves a throughput of up to 3500 kg per hour.

Small sample volumes with large particle sizes can be crushed **batch-wise** in the Jaw Crusher BB 600 XL.

BB 600 XL

Breaking Jaws for Jaw Crushers XL

Breaking jaws are made from three different materials allowing adaptation to different sample properties (e.g. hardness) or heavy-metal-free crushing.

- **Manganese steel**
  has a structure which becomes compressed under pressure and hardens with time (cold hardening).
- **Tungsten carbide**
  is the most abrasion-resistant and pure material. It ensures a longer working life of the jaws even if materials with a hardness of up to 7-8 on Mohs' scale are regularly processed.
- **heavy-metal-free steel**
  is ideally suited for heavy-metal-free grinding of samples which are not extremely abrasive (such as construction waste, soil, road pavings).

Available breaking jaws

Model	Manganese steel	Tungsten carbide	heavy-metal-free steel	Dimensions [w x l]
BB 250 XL	3	3	3	125 x 323 mm
BB 400 XL	3	3	3	225 x 323 mm
BB 500 XL	3	–	–	250 x 355 mm
BB 600 XL	3	–	–	400 x 600 mm

Surface structure of breaking jaws	grooved	smooth	grooved

Jaw Crushers at a Glance

	Jaw Crushers			
				
Model	BB 250 XL	BB 400 XL	BB 500 XL	BB 600 XL
Applications	coarse and pre-crushing			
Fields of application	chemistry / plastics, construction materials, engineering / electronics, environment / recycling, geology / metallurgy, glass / ceramics			
Feed material	medium-hard, hard, brittle, tough			

Performance data

Material feed size*	< 120 x 90 mm	< 220 x 90 mm	< 110 mm	< 350 x 170 mm
Final fineness*	d_{90} < 2 mm	d_{90} < 2 mm	d_{90} < 0.5 mm	d_{90} < 6 mm
Collector capacity	10 liters	10 liters	9.5 liters	30 liters
Collecting funnel with outlet for continuous crushing	optional	optional	–	–
Max. throughput*	300 kg/h	400 kg/h	500 kg/h	3500 kg/h
Gap width setting	0–30 mm	0–30 mm	0–11 mm	6–60 mm
Gap width display	analog	analog	analog	–
Zero point adjustment	3	3	–	–
Removable hopper	3	3	3	3
Connection for dust extraction	3	3	3	3
Process line version available	–	–	optional	optional

Technical Data

Drive power	3,000 W	5,500 W	7,500 W	15,000 W
W x H x D	695 x 1,399 x 719 mm	695 x 1,399 x 719 mm	930 x 1,400 x 1,080 mm	925 x 1,600 x 1,370 mm
Net weight	approx. 350 kg	approx. 400 kg	approx. 1,000 kg	approx. 1,350 kg
More information on	**www.retsch.com/bb250xl**	**www.retsch.com/bb400xl**	**www.retsch.com/bb500xl**	**www.retsch.com/bb600xl**

*depending on feed material and instrument configuration

BB 250 XL with optional collecting funnel with outlet and 30 liter collector

Typical Sample Materials

RETSCH's powerful jaw crushers are ideally suited for preliminary crushing of construction materials, ores, granite, oxide ceramics, quartz, slag, silicon, coal, tungsten alloys, cement clinker etc.

before

after

Application example: Silicon