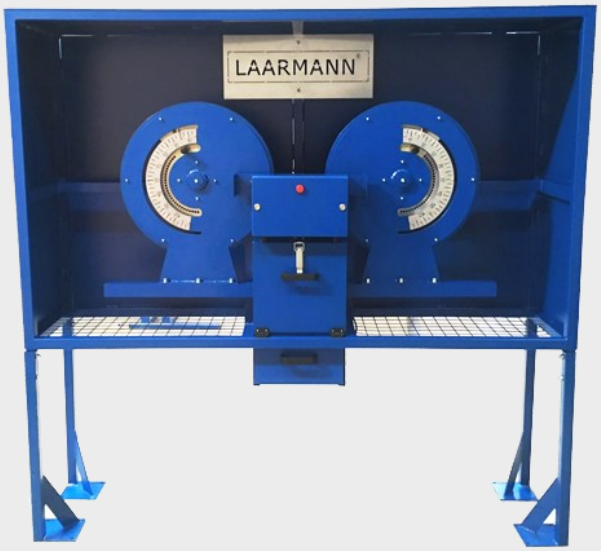
LAARMANN®

Innovators in Solids

BOND TESTING EQUIPMENT

F.C. Bond Crushing and Grinding machinery

BOND TESTING EQUIPMENT BASED ON THE BOND CRUSHING AND GRINDING CALCULATIONS



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F.C. Bond Crushing and Grinding machinery is designed for precision and reliability, providing critical data on the grindability of various materials. This equipment is an industry standard in mining, mineral processing, and material testing, helping engineers and researchers optimize crushing and grinding operations.

Applications Across Industries

Mining: Determine the grindability of ores, helping to optimize the design of comminution circuits and improve energy efficiency in mining operations.

Mineral Processing: Select the appropriate crushing and grinding machinery based on material properties, ensuring cost-effective and efficient processing.

Material Research: Conduct detailed material testing to explore new processing techniques or develop innovative materials.

Key Components of F.C. Bond Machinery

- **Bond Ball Mill**: *Precision Instrument for Measuring Grindability*
- **Bond Impact Tester**: *Precision Tool for Assessing Material Crushability*
- **Bond Rod Mill**: *Essential Equipment for Determining Material Grindability*
- **Bond Abrasion Tester**; *Essential Tool for Measuring Material Abrasiveness*

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Bond ball mill description

The F.C. Bond Ball Mill is a fundamental tool used for assessing the grindability of materials, providing essential data for designing and optimizing grinding circuits in the mining and mineral processing industries. Developed by F.C. Bond, this laboratory mill simulates the conditions encountered in industrial ball mills, enabling precise calculations of the energy required to grind materials to a specified size.

Ball and rod mill opened

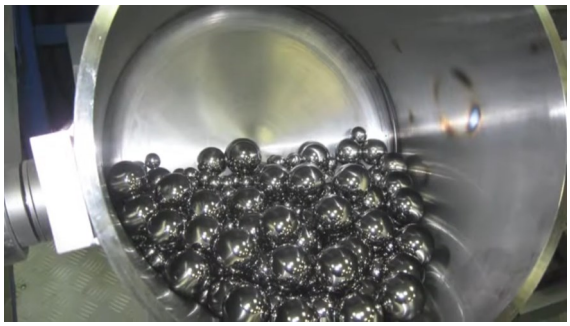
Purpose

The Bond Ball Mill is used to measure the grindability of materials. It simulates the grinding process in industrial mills, providing data to calculate the Bond Work Index.

Bond ball mill tilted for unloading

Features and benefits

- Drum produced according to bond norm
- Ergonomic sample separation set consisting of outlet funnel and screens with handle
- Removable sample collector
- Solid steel frame, easy to clean
- Solid acoustic noise reduction housing with safety detection to stop the motor when hood is opened
- Touch screen control panel
- Emergency stop button



Bond ball mill drum with grinding balls

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Applications

Ideal for testing ores, minerals, and other materials to determine energy requirements for industrial grinding.

Sieves and collector

TECHNICAL DATA	
Working principle	Grinding test according to bond norm
Product starting quantity	15kg
Feed size	< 3,35mm pre crushed
Setting adjustment method	Digital control panel
Speed setting requirement	70rpm
Drum size	304,8 x 304,8mm / 12inch x 12inch
Drum specifications	Rounded corners, smooth wall, no lifters
Quantity maximum	Usually 40% of drum volume
Quantity minimum	300 ml
Endfineness	100 micron
Noise emission	70 dB(A)
Power supply	230V/50Hz/60Hz
Rated power	0.75KW
Ambient temperature	5°C - 40°C
Atmospheric humidity	85% RH
Standard	CE
Dimensions W x D x H	741 x 1087 x 1378 mm
Weight	300kg

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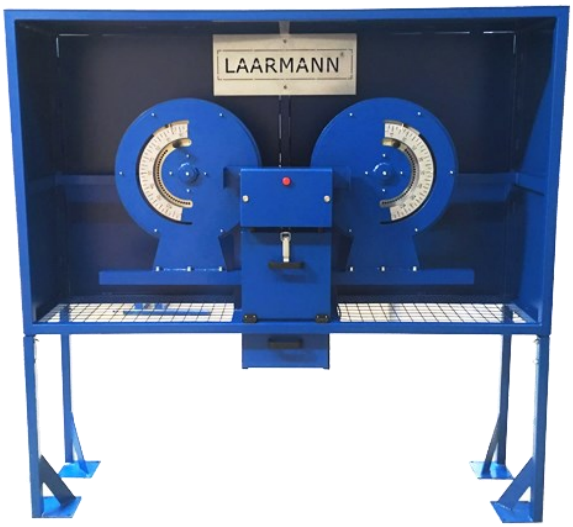
Bond Impact tester description

The Bond crushing work index (CWi) describes the competency of the ore at larger particle sizes. It is used for the calculation of the actual crusher power requirements.

The Bond impact tester consists of two pendulum mounted hammers.

- Pendulum mounted hammer with scale
- Sample to be placed on the platform for specimen
- Test: At least 10 specimens preferably 20 specimens to be tested.

Each sample has to pass a 3 inch square mesh and be retained on a 2 inch square mesh



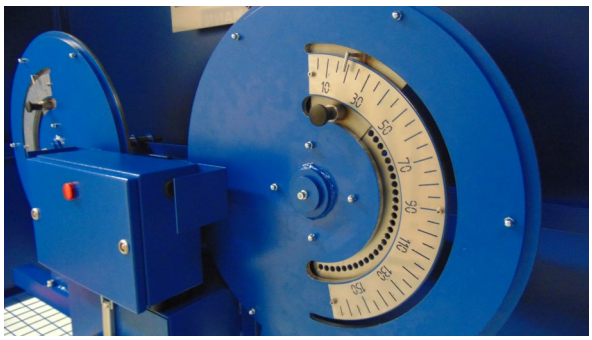
Purpose

This machinery is used to simulate the crushing process, providing valuable data on the material's resistance to crushing forces.

Starting the test by pressing and holding the two buttons

Features and benefits

- Quick, reproducible and accurate test results
- Easy to operate and maintain
- Provides precise and reliable data according to the bond norm
- Ergonomic and efficient design
- Closed of sample collector for safety



Pendules

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Applications

Used in the preliminary stages of material processing to select suitable crushing equipment and optimize circuit design.

Impact tester with sample

TECHNICAL DATA	
Working principle	Crushing by impact
Feed size	50-76mm
Feed quantity	20 x 5kg
Test repetition	at least 10, preferably 20 test runs
Setting adjustment method	2 button activation and hammer adjustment by scale
Collector size	200ml
Square mesh	2 inch / 3 inch
Power supply	230V/50Hz/60Hz
Rated power	0,55 KW
Noise emission	70 dB(A)
Ambient temperature	5°C - 40°C
Atmospheric humidity	85% RH
Standard	CE
Weight	260kg
Dimensions W x D x H	2006 x 506 x 1960 mm

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Bond rod mill description

The F.C. Bond Rod Mill is a critical laboratory instrument used to determine the grindability of materials, particularly in the context of rod milling. This mill is designed to simulate the rod milling process, providing valuable data on how materials behave under grinding conditions and aiding in the design and optimization of industrial milling circuits.

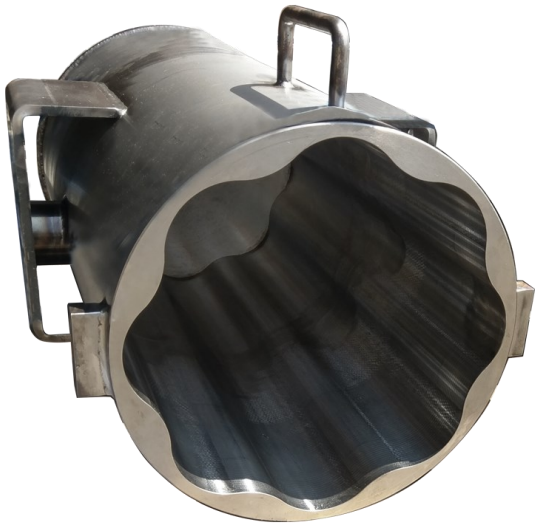
Purpose

The Bond Rod Mill is designed to measure the resistance of materials to rod milling, a method used in the grinding process.

Features and benefits

- Drum according to bond norm
- Ergonomic sample separation set consisting of outlet funnel and screens with handle
- Removable sample collector
- High precision solid steel frame, easy to clean
- Solid acoustic noise reduction cover with safety detection to stop the motor when hood is opened
- Touch screen control panel
- Emergency stop button

Bond rod mill closed



Bond rod mill drum with wave structure

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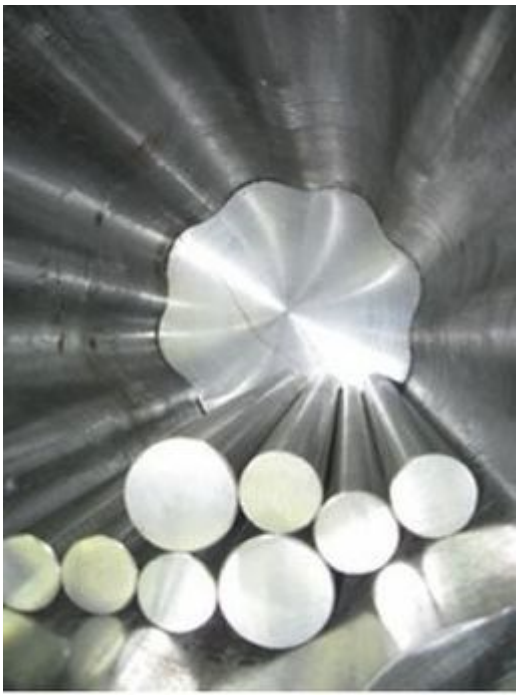
Applications

Useful for materials where rod milling is preferred over ball milling, such as in the production of fine particles.



TECHNICAL DATA	
Working principle	Grinding
Feed size	< 12,50mm pre crushed
Setting adjustment method	Digital control panel
Speed	46 rpm
Drum size	304.8 x 609.6 mm / 12 inch x 24inch
Drum specifications	Wave structure
Rod sizes	2 x 1.75 inch diameter x 21 inch length 6 x 1.25 inch diameter x 21 inch length
Quantity maximum	Usually 40% of drum volume
Quantity minimum	300 ml
Endfineness	2100 µm
Noise emission	70 dB(A)
Power supply	230V/50Hz/60Hz
Rated power	0.75KW
Ambient temperature	5°C - 40°C
Atmospheric humidity	85% RH
Standard	CE
Dimensions W x D x H	741 x 1087 x 1378 mm
Weight	300kg

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Bond Index Abrasion Tester description

The F.C. Bond Abrasion Tester is a specialized piece of laboratory equipment designed to determine the abrasiveness of various materials. This is a critical factor in industries like mining, mineral processing, and material manufacturing, where understanding material wear properties is essential for predicting the wear rates of grinding media and mill liners, optimizing maintenance schedules, and ensuring the longevity of processing equipment.

Purpose

The Bond Abrasion Tester evaluates the abrasiveness of materials, determining the wear rates of grinding media and mill liners.

Features and benefits

- Touch screen control panel
- Safety features such as door open and closing detection and an emergency stop button
- Testing according to bond norm
- Easy to operate and maintain

Abrasion tester cover open

Paddles

Abrasive

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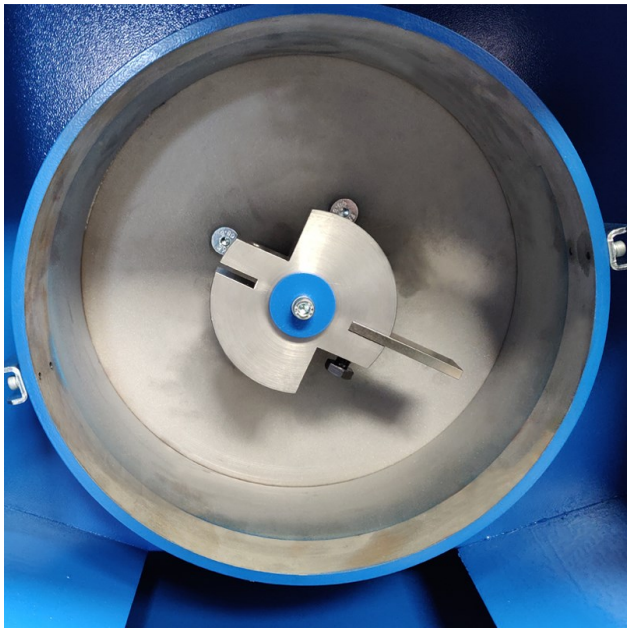
Applications

Crucial for industries dealing with abrasive materials, this tester helps in predicting equipment wear, optimizing maintenance schedules, and reducing operational costs.



Inside view of paddle placement

TECHNICAL DATA	
Working principle	Determination of wear rates
Feed quantity	4 x 400 gram according to bond norm
Max volume of grinding barrel	5000ml
Setting adjustment method	Digital control panel
Speed setting	Drum: 70rpm Paddle 632rpm
Time setting	4 x 15 minutes according to bond norm
Ambient temperature	5°C - 40°C
Atmospheric humidity	85% RH
Noise emission	70 dB(A)
Power supply	230V ± 10% - 50/60Hz
Rated power	0,55 KW
Standard	CE
Dimensions W x D x H	900 x 700 x 1000 mm
Weight	245kg

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