INNOVATIVE TECHNOLOGIES

Planetary Ball Mill

Product Range

TORONTECH



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Planetary Ball Mill

Torontech's **Planetary Ball Mills** are versatile solutions for grinding and mixing both dry and wet materials.

These mills are **ideal for processing soft, hard, brittle, and fibrous samples,** ensuring the highest degree of fineness as required. They deliver reproducible results, making them perfect for applications demanding precision and consistency.

In addition to traditional mixing and size reduction processes, these mills meet all technical requirements for colloidal grinding, addressing advanced industrial needs.

The product range includes models such as BM6Pro, BM20, BM40, and BM20Plus, each offering specific features tailored to varying needs.

PRODUCT RANGE



BM6Pro



BM20



BM40



BM20Plus

APPLICATION

Sample Type

Soft, Hard, Brittle, and Fibrous.

Related Fields

- Engineering/ Electronics
- Building Materials
- Agriculture
- Pharmaceutical
- Chemical / Synthetic Materials
- Geology / Metallurgy
- Environment / Resource Recovery
- Glass / Ceramic Industry

Typical Sample

- **Building Materials:** Cement Clinker, Concrete, Clay Minerals, Limestone, Gypsum, and Quartz.
- **Organic Materials:** Plant Material, Compost, Charcoal, Hair, Seeds, and Bones.
- **Chemical Products:** Coatings and paint, Catalyst, Chemicals, and Pigment.
- **Industrial Materials:** Metal, Carbon Fiber, Glass, Waste Electronic Products, and Metal Oxide (including iron ore).
- **Fibrous Materials:** Paper, Fiber Products, Cellulose, and Polymers.
- **Miscellaneous:** Coke, Coal, Ceramics, and Bentonite.



APPLICATION EXAMPLE

BEFORE GRINDING	AFTER GRINDING	PARAMETER	
		Sample	Glass
		Grinding Balls	10mm and 3mm Zirconium Oxide balls
		Sample Characteristic	Hard
		Grinding Time	30 min
		Remarks	Grinding jars should be placed symmetrically

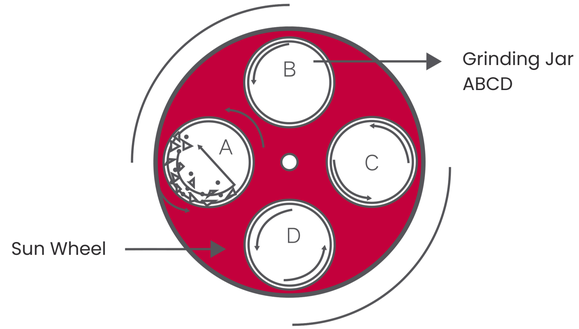
BEFORE GRINDING	AFTER GRINDING	PARAMETER	
		Sample	Granite
		Grinding Balls	10mm Stainless Steel balls
		Sample Characteristic	Hard
		Grinding Time	15 min
		Remarks	Grinding jars should be placed symmetrically

BEFORE GRINDING	AFTER GRINDING	PARAMETER	
		Sample	Pearl Powder
		Grinding Balls	3mm Zirconium Oxide balls
		Sample Characteristic	Brittle
		Grinding Time	6 hours
		Remarks	Add liquid, balls, and samples properly

WORKING PRINCIPLE

The planetary ball mill operates by utilizing a motor that drives the common sun wheel. Grinding jars attached to the sun wheel rotate around their own axes while simultaneously revolving around the central axis of the sun wheel in the opposite direction, maintaining a 1:2 ratio.

This dual movement creates powerful Coriolis forces, subjecting the grinding balls to superimposed rotational motion. As a result, the grinding balls release high dynamic energy, causing the samples to be continuously impacted and crushed against the inner walls of the grinding jars.



CUSTOMIZABLE SPEED RATIO

Torontech's planetary ball mills are available with 1, 2, or 4 grinding stations, offering the flexibility to suit various sample properties. A variety of high-quality grinding materials and ball sizes can be selected to accommodate unique grinding needs. During operation, the system generates extremely high impact energy between the grinding balls and jars, enabling rapid and efficient sample processing. The customizable speed ratio, ranging from 1:1 to 1:3.5, allows for precise control over the energy input and grinding outcomes, ensuring tailored solutions for specific applications.

FEATURES

Precision, Performance, and Efficiency

The planetary ball mill features automatic direction reversal to prevent agglomerations, ensuring consistent and precise results. It achieves powerful and quick grinding down to nano-level fineness and delivers reproducible results through programmable grinding parameters. Designed for long-term and continuous operation, it includes a maintenance-free drive system that maintains constant speed, even under maximum load.

User-Friendly Design

This mill combines ergonomic design with safety, providing a comfortable and reliable user experience. The included jar-clamping tools ensure easy and secure operation. A digital LED display enhances operational clarity, while models like BM20, BM20Plus, BM40, and BM6Pro feature a one-button ergonomic operation for added convenience.

Versatility in Grinding Options

With customizable speed ratios ranging from 1:1 to 1:3.5, the planetary ball mill accommodates a wide range of grinding needs. It includes four grinding platforms capable of processing 2, 4, or 8 samples simultaneously (BM40) and offers six types of grinding jars with volumes ranging from 12 ml to 4000 ml. The jars are available in robust materials like agate, aluminum oxide, zirconium oxide, and tungsten carbide.

Advanced Monitoring and Safety

To enhance safety and monitoring, the planetary ball mill includes a built-in pressure and temperature system that records changes during grinding for better analysis. The grinding chamber is equipped with an automatic ventilation system for jar cooling, along with high-power fans to cool the motor. Intelligent security locks and gas-tight, dust-proof closures provide additional safety during colloidal or wet grinding.

Grinding Jar Filling Guidelines

Grinding Jars		BM20/40/6Pro	Recommendation of Grinding Ball Sizes and Quantities			
Rated Volume	Sample Quantitiy	Sample Feeding Size	10mm	20mm	30mm	40mm
50ml	5-20ml	< 3mm	10pcs	2pcs	-	-
80ml	10-35ml	< 4mm	25pcs	4pcs	-	-
125ml	15-50ml	< 4mm	30pcs	6pcs	-	-
250ml	25-120ml	< 6mm	60pcs	13pcs	6pcs	-
500ml	75-225ml	< 10mm	100pcs	22pcs	9pcs	5pcs

TECHNICAL SPECIFICATION

ITEM	BM40	BM6PRO	BM20	BM20PLUS
Feed Size	<10mm			<20mm
Final Fineness	<0.1μm(up to nanometer for colloidal grinding)			
Speed	30-400rpm	100-650rpm	50-650rpm	30-300rpm
Speed Ratio	1 : -2.2	1 : - 2	1 : - 2	1 : -1.9
Time	0-99min (cycle times 01-99)			
Effective Sun Wheel Diameter	360mm	260mm	290mm	384mm
Rated Power	1.5KW	750W	750W	2.2KW
Voltage	220V, 50/60Hz (110V is also available upon request)			
Instrument Size (mm)	784 x 598 x 577	685 x 510 x 506	685 x 510 x 506	610 x 820 x 625
Package Size (mm)	900 x 1020 x 890	860 x 960 x 780	860 x 960 x 780	900 x 1020 x 890
Weight	418.88 lbs (190 kg)	275.58 lbs (125 kg)	319.67 lbs (145 kg)	429.9 lbs (195 kg)

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