◇ Planetary Ball Mill BM40/BM6Pro

Planetary Ball Mills are suitable for grinding(dry\wet) and mixing some soft,hard,brittle and fibrous samples ,which are used wherever the highest degree of fineness as customer required,as well as the grinding result is reproducible. Apart from the classical mixing and size reduction processes,the mills also meet all the technical requirements for colloidal grinding.

BM6Pro

BM40

Application Examples

Before grinding	After grinding	Parameter	
		Sample	glass
		Grinding balls	10mm and 3mm Zirconium Oxide grinding balls
		Sample Characteristic	hard
		Grinding time	30min
		Remarks	grinding jars should be placed symmetrically
		Sample	granite
		Grinding balls	10mm stainless steel grinding balls
		Sample Characteristic	hard
		Grinding time	15min
		Remarks	the grinding jars should be placed symmetrically
		Sample	pearl powder
		Grinding balls	3mm Zirconium Oxide grinding balls
		Sample Characteristic	brittle
		Grinding time	6h
		Remarks	adding the liquid , balls and samples properly

○ Applications

○ **Sample type:** soft,hard,brittle ,fibrous

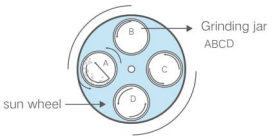
○ **Application field:** engineering / electronics, building materials, agriculture, medicine, chemical/synthetic materials, geology/metallurgy,environment/resource recovery, glass/ceramics.

○ **Typical samples:**

plant material, cement clinker, concrete, compost, coatings and paint, charcoal, hair, catalyst, chemicals, metal, carbon fiber, paper, fiber products, cellulose, seeds, clay minerals, coke, coal, glass, waste electronic products, mineral, ore, limestone, gypsum, quartz, kaoin, bones, metal oxide, iron ore, ceramics, polymers, bentonite/bentonite, pigment, and so on.

○ Working principle

When the planetary ball mill starts, the motor drives the common sun wheel to move, while the grinding jars, which are located on the sun wheel, turning around its own axis. The direction of the movement of the sun wheel is opposite to that of the grinding jars in the ration 1:-2.The grinding balls in the grinding jars are subjected to superimposed rotational movement, the so-called Coriolis forces. Under this interaction, the grinding balls release high dynamic energies. The samples are constantly impacted by the grinding balls, and rapid crushed by the friction of the grinding jar’s inner wall at the same time.



○ Speed ratio is customizable

The planetary ball mills have 1,2 and 4 grinding stations as option. The parameter can be set according to the sample property freely. Wide kinds and high quality grinding materials are available for choice. Grinding balls of different quantities and sizes can be combined flexibly to meet personalized special crushing and grinding requirements.

When the planetary ball mill is in operation, extremely high impact energy are produced between the grinding balls and the grinding jars, so it can finish the grinding of the sample in a very short time.

The working principle of the planetary ball mill is based on the relative rotation of the sun wheel and the grinding jar. The speed ratio influences the input energy and results of grinding directly. We can customize the speed ratio from 1:1 to 1:-3.5 as customer requirements.

◇ Features and advantages

- Automatic direction reversal to avoid agglomerations
- Powerful and quick grinding down to nano fineness
- Suitable for long-term and continuous operation
- Reproducible results due to program grinding parameters
- Grinding chamber automatic ventilation system for cooling the grinding jar
- With 4 grinding platforms can process 2,4,8 samples simultaneously (BM40)
- Grinding jars have 6 kinds of material ,the volume various from 12ml-500ml

○ Control panel

- The LED display shows the parameter digitally
- The running state could be observed easily
- BM40 and BM6Pro with a comfortable parameter setting and ergonomic 1-button operation

○ Comfortable operation and easy cleaning

- The intelligent security lock ensures the safety of the instrument operating.
- The planetary ball mill ergonomically designed, which integrates comfort and safety in operation.
- The humanized program design can set the grinding time, and can operate without the need of personnel monitoring.
- Efficient, maintenance-free drive is used for planetary ball mill, so as to guarantee the machine can maintain constant speed in continuous operation for a long time or under maximum overload. During the grinding, built-in high-power fans can automatically provide effective cooling for motors .

○ Filling recommendation of grinding jars

Grinding jars		BM40/6Pro	The recommendation of the sizes and quantities of grinding balls			
Rated volume	Sample quantity	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

○ Jar-opening tools

POWTEQ has special designed jar-opening tools for the grinding jars of planetary ball mill series. The user-friendly design makes the jar opening work more easy and safe.

Multi-safety design of grinding jars

- For colloid grinding,the grinding jars are equipped with safe closure device for gas-tight and dust-proof to ensure safe operating.
- Safety closure device can be sealed in colloid grinding (wet grinding) to ensure the overpressure gas not easily escape.
- Aeration lid for gas importing,exporting as well as for safety protection.
- The safe closure devices can guarantee the high-level gas tightness inside grinding jars so as to ensure that the grinding result is not affected.

Pressure and temperature measuring system PTM

During the operation of planetary ball mill, the process and reactions (such as temperature, pressure change, etc.) take place in the grinding jars could be monitored and recorded by the PTM to achieve better grinding and analysis results.

Grinding jar’s feature

- Capacity and material are marked on the grinding jars ,which is easy to distinguish from others.
- Wide kinds of materials to meet different treatment requirements.
- The O-ring guarantees dust -prevention, pressure tight.
- It’s easy to open the jars by the gap, which exist between the grinding jar and lid.
- Grinding jars of agate, sintered aluminum oxide, zirconium oxide and tungsten carbide are coated with stainless steel jacket.

○ Technical data

	BM40	BM6Pro
Feed size	< 10mm	
Final fineness	< 0.1μm (up to nanometer for colloidal grinding)	
Speed	30-400rpm	100-650rpm
Speed ratio	1:-2.2	1 : -2
Time setting	0-999min(cycle times 01-99)	
Effective sun wheel diameter	360mm	260mm
Rated power	1.5KW	750W
Power supply	220V，50/60Hz	220V，50/60Hz
Instrument size	784*589*577mm	685*510*506mm
Package size	865*979*896mm	785*900*780mm
Net weight	190kg	125kg