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Product Brochure



OTHER GRINDING EQUIPMENT

Laboratory rod grinder

XMB

Lab rod grinder for ore, ceramics, chemicals. Achieves fine particle & powder grinding for R&D and small-scale production. Durable, efficient.

<https://www.planetaryballmills.com/products/grinding-series/other-grinding-equipment/laboratory-rod-grinder.html>



Product Overview

Lab rod grinder for ore, ceramics, chemicals. Achieves fine particle & powder grinding for R&D and small-scale production. Durable, efficient.





Product Introduction

Laboratory rod mill is a kind of grinding equipment specially designed for laboratory research and development and small batch production. It is mainly used to grind ore, ceramics, chemical raw materials and other materials into fine particles or powder state (usually the particle size can reach below 0.074mm). Its core structure includes the mill barrel, grinding media (steel rod), driving device, feeding and discharging system, etc. It supports both dry and wet grinding modes. By rotating the cylinder to drive the steel rod to impact, rub and crush the material, the equipment can achieve efficient and uniform crushing effects and is widely used in fields such as materials science, metallurgy, chemical industry and geological exploration.

Laboratory rod mills mainly serve the following scenarios:

1. **Ore analysis** : Crush laboratory samples of metallic ores (such as copper, iron, gold ores) and non-metallic ores (such as quartz, limestone) for composition testing or process research.
2. **Materials research and development** : Preparing ceramic powder, refractory materials, cement clinker, etc. to optimize material properties.
3. **Chemical and Pharmaceutical** : Process catalysts, drug raw materials or polymer materials to improve reaction efficiency or drug absorption rate.
4. **environment and energy** : Grinding battery materials (such as lithium battery positive and negative electrode materials), graphene and other new energy-related raw materials.
5. **Teaching experiment** : Used for material crushing experimental teaching and basic research in universities or scientific research institutions.

Technical parameters

Model		unit	XMB160*200		XMB200*240			XMB240*300		
Tank size		mm	160/200		200/240			240/300		
Volume		L	4.02		7.5			13.57		
Grinding Capacity		g	300-800		500-1000			1000-5000		
Feeder size		mm	2		2			3		
Output size		mm	0.074		0.074			0.074		
Drum speed		r/min	120		110			96		
power		kw	0.25		0.55			0.55		
Grinding media Rod material	Steel rod diameter D	Mm	18	20	15	18	22	15	18	22
	Length L	Mm	185	185	225	225	225	286	286	286
	Quantity Qty	root/pcs	10	9	17	9	9	33	13	6
	Weight W	Kg	3.55	4.09	4.9	4.2	4.9	12.7	7.48	5
Dimension size		mm	1052*530*1160	1052*530*1160	1052*530*1160	1052*615*1160	1052*615*1160	1052*615*1160	1052*615*1160	1052*615*1160
Weight		kg	91	91	150	150	150	162	162	162

- **Select according to material characteristics :**

- **Hardness and humidity :** High-hardness ores need to be equipped with high-power motors (such as 0.55kW or above) and wear-resistant steel rods; For wet materials, wet grinding machines should be preferred and the drainage system should be ensured.
- **Granularity requirements :** When the target particle size is $\leq 0.074\text{mm}$, choose a model with a higher cylinder speed (such as 120r/min) and a smaller grinding media diameter.

- **Select by processing capacity :**

- **Small batch experiments :** Small equipment with a volume of 4-14L (processing capacity 300-5000g), adapted to laboratory space and low energy consumption requirements.
- **Pilot scale scale-up :** Choose a model with parameters close to those of industrial equipment (such as cylinder diameter $\geq 200\text{mm}$) to ensure that the experimental results can be reproduced.

- **Additional functionality considerations :**

- **Automation control :** Models equipped with PLC or touch screen operation interface are preferred, supporting parameter presetting and data recording.
- **Pollution prevention needs :** If handling sensitive materials (such as medicine, food), choose stainless steel cylinder or ceramic lining.

- **Maintenance and economy :**

- Compare the equipment energy consumption (kW·h/kg) and the replacement cycle of wearing parts (such as steel rods and lining plates), and choose a model with low maintenance cost and long life.

Working Principle

The cylinder is driven to rotate by the motor through the reducer and the surrounding large gear reduction transmission, or by the low-speed synchronous motor directly through the surrounding large gear reduction transmission. The cylinder is equipped with appropriate grinding media - steel rods. The grinding medium is lifted to a certain height under the action of centrifugal force and friction, and then falls down in a falling or leaking state. The ground material continuously enters the inside of the cylinder through the ore feeding port, is crushed by the moving grinding medium, and is discharged out of the machine through overflow and continuous ore feeding force for the next step of operation. Laboratory rod mills are widely used in cement, silicate products, new building materials, refractory materials, fertilizers, black and non-ferrous metal mineral processing, glass and ceramics and other production industries to dry or wet grind various ores and other grindable materials.

- **Feeding and starting** : Material enters the cylinder through the feeding port, and the motor is started to drive the cylinder to rotate.
- **grinding process** :
 - When the cylinder rotates, the steel rod is lifted to a certain height under the action of centrifugal force and friction and then dropped or released, causing impact and friction on the material, gradually crushing it to the target particle size.
- **Disposal and circulation** :
 - The crushed materials are discharged through overflow discharge or screen filtration, and the particles that do not meet the standards can be recycled and ground until they meet the requirements.
- **Temperature control and protection** : Some models are equipped with a cooling system to prevent heat-sensitive materials from degrading due to friction and heating.

Product Features

- **Efficient grinding and uniformity :**
 - Steel rods are used as grinding media to achieve selective crushing through line contact, reducing over-crushing and ensuring uniform product particle size.
 - Supports wet and dry use, wet grinding can reduce dust pollution and improve fineness control.
- **Flexible adaptability :**
 - The cylinder speed is adjustable (common range is 96-120r/min), adapting to the needs of materials with different hardness and granularity.
 - Some models support the interchangeability of steel rods and steel balls, and have the functions of both rod mills and ball mills.
- **Easy operation and low maintenance :**
 - Modular design makes it easy to disassemble, clean and replace the grinding media.
 - Equipped with frequency conversion speed regulation technology to simplify the operating process and reduce energy consumption.
- **Safety and environmental protection :**
 - The sealed structure reduces dust leakage and is suitable for clean laboratory environments.
 - The motor overload protection function ensures operational safety.

Accessories & Customization

Accessories

Grinding jars, heating elements, sample holders, control modules and other matching accessories can be selected according to the product configuration.

Customization

For voltage, capacity, chamber size, process temperature or application requirements, please contact TENCAN for a suitable configuration.