BY-NMLS
Vertical Wet&Dry Dual-Purpose All-Ceramic Bead Mill

The vertical structure achieves high material circulation efficiency. Batch processing time is shortened by 30% compared to traditional horizontal bead

5 Grinding Modes Available

Dry Grinding
No liquid involved; direct grinding of dry powders is suitable for moisture-sensitive materials or those requiring dry storage.

Wet Grinding
Adding grinding media for grinding is suitable for scenarios requiring the refinement of slurries.

Pressurized Grinding
Grinding under pressurized conditions enhances grinding efficiency for ultra-fine processing of difficult-to-grind materials.

Cryogenic Grinding
Grinding in a low-temperature environment to prevent heat-sensitive materials from undergoing thermal denaturation.

Inert Gas Grinding
Fill with an inert gas (such as nitrogen) to isolate from air and prevent oxidation of sensitive materials (such as sulfide solid electrolytes).

All-ceramic Grinding Chamber

Sealed chamber design prevents dust leakage. When paired with an optional explosion-proof motor , it can also be used for flammable and explosive materials (such as nano-metal powders).

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Structural Design
High efficiency, strong shear force, excellent heat dissipation, and uniform distribution of grinding beads.

Detailed Principles
Material refinement is achieved through the collision and shear action between the high-hardness ceramic surface and grinding beads.

Flow Advantage
The vertical chamber design facilitates the circulation of materials under the combined effects of gravity and agitation.

Ceramic Stirring Shaft and Rotor System

Dynamic Balancing Design
Ceramic shafts are lightweight yet highly rigid, ensuring minimal vibration during high-speed operation for stable grinding and preventing uneven material dispersion.

Low friction loss
The smooth ceramic surface minimizes friction heat generation with grinding beads, minimizes temperature rise in heat-sensitive materials and associated quality risks.

Structural Compatibility
Open/interleaved rotor blade design paired with vertical grinding chamber, suitable for both dry and wet grinding processes. Switch between grinding modes by adjusting speed and bead filling rate.

All-ceramic Construction Eliminates Contamination and Wear Issues

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High purity and zero pollution
All parts contacting the material (grinding chamber, agitator shaft, dispersion disc, separation screen, etc.) are made of high-performance ceramics. Completely avoids the dissolution of metal ions during the grinding process, preventing material contamination.

Excellent corrosion resistance and wear resistance

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Ceramic materials are highly hard, with wear resistance far exceeding that of high-grade alloy steel equipment. Maintains precision long-term, significantly reducing downtime and maintenance costs. Ceramic materials can adapt to the grinding needs of various corrosive materials.

Cooling Temperature Control System and Drive Control System

The ceramic chamber ensures uniform heat conduction. Combined with a spiral jacket design, it enables precise temperature control within the chamber.

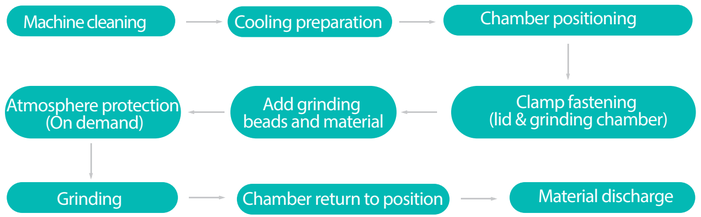
High-torque motor delivers low energy consumption during dry grinding and high-speed output stability during wet grinding.

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Process Flow

of Vertical All-Ceramic Bead Mill for Dry & Wet Grinding





Application Fields

- New Energy: Preparation of solid-state battery electrolyte powders (Sulfide Solid-State Electrolytes) and hydrogen fuel cell catalysts
- Electronic Materials: Semiconductor Wafer Grinding Fluid, MLCC Ceramic Slurry
- Pharmaceuticals and Food: Probiotic Microencapsulation, Ultra-Fine Grinding of Traditional Chinese Medicines

Technical Specifications

Category	BY-NMLS1L	BY-NMLS2L	BY-NMLS5L	BY-NMLS10L
Main drive motor (KW)	2.2	3	5.5	7.5
Effective cavity volume (L)	1	2	5	10
Spindle speed (r/min)	100-6000	100-5000	100-4000	100-3000
Feed capacity L/time	0.5	1	2.5	5
Grinding media size (mm)	0.6-3.0	0.6-3.0	0.6-3.0	0.6-3.0
Grinding media fill rate (%)	40-60	40-60	40-60	40-60
Power supply	380V/50Hz+/-10% 3相(3 phases)	380V/50Hz+/-10% 3相(3 phases)	380V/50Hz+/-10% 3相(3 phases)	380V/50Hz+/-10% 3相(3 phases)
Power supply control	220V +/-10%	220V +/-10%	220V +/-10%	220V +/-10%

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One-stop Nanomaterials Solution Provider

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Vertical Wet&Dry Dual-Purpose All-Ceramic Bead Mill

Resolving the challenge of process flexibility



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