ACS Material Equipment Series

PlasMil™ S3 Plasma Vibratory Ball Mill

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I. Product Overview

1) Main Unit

Photo of PlasMil™ S3 Plasma Vibratory Ball Mill

II. Product Features

The PlasMil™ S3 Plasma Vibratory Ball Mill introduces cold plasma generated by field discharge into a mechanically vibrated ball milling process. Under near-atmospheric pressure, a high-energy non-equilibrium plasma is formed inside the sealed milling chamber, which synergizes with the mechanical ball milling.

In this non-thermal plasma environment, material molecules are more easily transformed into atomic and excited states, enabling recombination. This promotes microstructural refinement of powders, alloying, activation of reactivity, chemical reactions, and accelerates in-situ gas–solid reactions. As a result, the milling efficiency is greatly enhanced, contamination is significantly reduced, and unique structures can be formed to markedly improve material properties.

A complete technical solution for this equipment has been filed under PCT international patent applications in the United States, Japan, and European member states. The system has already been delivered to more than 80 universities, research institutes, and enterprises nationwide, including 8 academician-led teams and many scientific research groups.

Key Features

- Compact lab tool, fits on sturdy workbench
- Fully sealed milling jars for multi-atmosphere experiments
- Different jar volume available
- Ultra-low noise vibration

III. Product Specifications

Product Name	PlasMil™ S3 Plasma Vibratory Ball Mill
SKU	EBP000S3
Dimensions	760 (L) × 600 (W) × 565 (H) mm
Weight	180 kg
Input Voltage	220 V, 50 Hz
Rated Power	2 kW
Number of Jars	1
Jar Volume	200 ml / 500 ml
Gravity Acceleration	8-10 g
Operating Mode	Vibratory ball milling
Sample Capacity	0-50 g
Discharge Method	Dielectric barrier discharge
Plasma Discharge Frequency	8–16 kHz
Motor Speed	900–1500 rpm
Speed Control	Variable frequency speed regulation
Feed Particle Size	< 5 mm
Min. Output Particle Size (depending on the material)	100 nm

Noise Level	< 75 dB
Default Components	Main ball mill unit x 1, Ball milling jar (200ml, stainless steel) x1, Obervation plate for discharge jar (200ml) x 1, Electrode rods (200ml) x 3, Power cable x 1, User manual x 1, Certification of Conformity x 1, Tools x 1
Optional Components	Electrode rod (200 ml, PTFE), Electrode rode (500 ml, PTFE), Ball milling jar (200 ml, hard alloy), Ball milling jar (500 ml, stainless steel), Ball milling jar (500 ml, hard alloy), Observatoin plate for discharge har (200 ml), Observation plate for discharge har (500 ml), Plastic cover plate (200 ml), Plastic cover plate (500 ml), Ceramic cover plate (200 ml), Ceramic cover plate (500 ml), Hard alloy balls (6/8/10 kg), Stainless steel balls (6/8/10 kg), Vacuum pump

IV. Application

- Lithium battery materials
- Fuel cell catalysts
- Hard alloy powders
- Metal-based compounds
- Ceramic materials
- Thermoelectric materials