planetary ball mill with frequency control and gear drive

Planetary ball mills have a high centrifugal force, which generates high pulverizing energy, so the grinding time is very short, and it is suitable for industries with high requirements for purity, speed, fineness and reproducibility of the quality control process.

Planetary Ball Mill

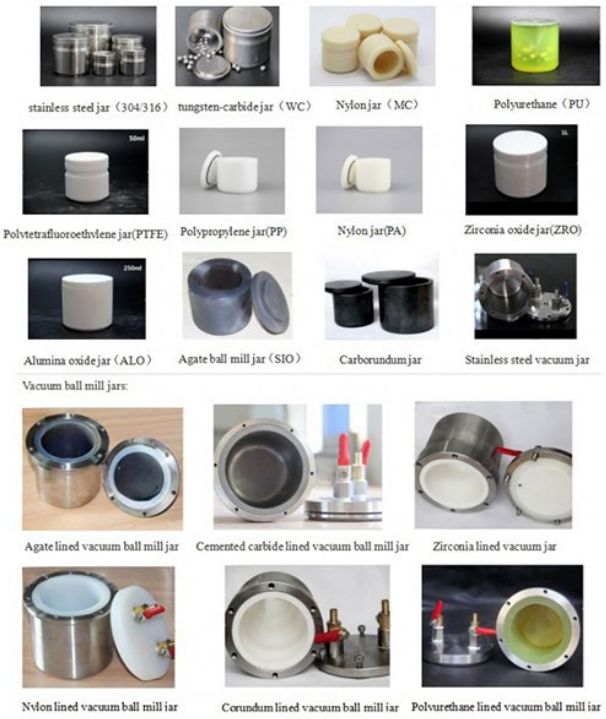
The planetary ball mill is characterized by full functionality, high efficiency and low noise. 4 grinding jars can be placed at the same time to produce 4 kinds of sample materials at one time. This series of ball mills can be equipped with vacuum tanks to grind samples under vacuum. It is very suitable for research tasks such as in research institutes, universities and corporate laboratories, from the experimental end to the production end to verify the feasibility of mass production, as well as for routine tasks such as mixing and homogenization of soft, hard, brittle or fibrous materials.

Wet milling is used to obtain particles of up to 5 micrometers, as the surface of small particles tends to become charged and agglomerate, which makes dry milling difficult. The particles can be kept separate by adding liquids or dispersants.

To produce ultrafine particles of 100 nanometers or less by wet milling, nanoscale grinding, friction rather than impact is required. This can be achieved by using a large number of small grinding balls that have large surfaces and many friction points. It is recommended that the proportion of small grinding balls should be 60% in the grinding jar.

Features

1. Oil seal mute technology: all the planetary gears and bearings are sealed in an airtight box, and a certain amount of lubricating oil is poured into it before use, and the gears are immersed in lubricating oil when the planetary ball mill is running in working condition. Reduce the noise of gear transmission, more than 50% lower than the noise of ordinary planetary ball mill, extend the service life of more than 2 times.
2. PLC frequency conversion control, can set the time, speed and forward and reverse.
3. Adopting V type card holder to fix the grinding jar, which protects the safety of the operator.
4. Precision gear transmission is adopted.
5. Can place 2 or 4 grinding jars at the same time.
6. Can be dry grinding, wet grinding, vacuum grinding and vacuum atmosphere protection grinding.
7. Universal support feet are solid, universal wheels push running, fixing and moving are convenient and labor-saving.



8. Intelligent control safety switch, the door can be opened only when the ball mill is not rotating. Thus avoiding the risk of the grinding jar being thrown out if the door is opened when the ball mill is not stopped, and protecting personal safety.
9. The grinding effect can reach 0.1 micron.
10. With CE certificate.
11. Total timing range: 1 to 9999 minutes.
12. Intermittent timing range: 1 to 9999 minutes.
13. Time that can run continuously: 72 hours.

Working Principle

The grinding jar is mounted eccentrically on the sun wheel of the planetary ball mill. The sun wheel and the grinding jar move in opposite directions in the ratio of 1:2, and the grinding balls in the grinding jar are subjected to superimposed rotational motion, the so-called Coriolis force. The speed difference between the grinding balls and the grinding jar creates an interaction between friction and impact forces, which releases high kinetic energy. The interaction between these forces results in a high and very efficient material size reduction in planetary ball mills.

Application Areas

1. Agriculture: plant material, seeds, soil, tobacco, wood fiber
2. Biological: bones, hair, tissue paper ceramics and glass ceramic oxides, clay minerals, glass, hydroxyapatite, china clay, quartz sand, electronic ceramics, structural ceramics, piezoelectric ceramics, nano-materials, round ceramic capacitors, MLCC, thermistor (PTC, NTC), ZnO piezoresistor, dielectric ceramics, alumina ceramics, zirconium oxide ceramics, fluorescent powders, zinc oxide powders, cobalt oxide powders , Ni-Zn ferrite, Mn-Zn ferrite chemicals and plastics carbon fiber, catalysts, cellulose, pigments, paints, plastics, polymers.
3. Building materials: soap clay, cement slag, polymers, gypsum, sand, stone.
4. Environmental research: mixtures, electronic debris, sludge, waste.
5. Minerals and metallurgy and metal electronics: alloys, coal, coke, iron ore, metal oxides, quartz, sub-precious stones, slag, magnetic materials, lithium cobaltate, lithium manganese, catalysts, phosphor, long afterglow luminescent powders, rare-earth polishing powders, electronic glass powders, fuel cells, zinc oxide piezoelectric resistors and so on.

Grinding Jars and Grinding Balls

1. The grinding jar adopts refined mold or high-precision polishing, the inner and outer wall smoothness is very high, and the bottom adopts difficult large R angle design, which can effectively reduce the phenomenon of material sinking in the grinding process. The mouth of the grinding jar adopts a more ergonomic gripping step to prevent the hand from slipping and make it more convenient to pick up and put down the grinding jar.
2. Grinding jar material: zirconium oxide, silicon oxide, onyx, carbide, stainless steel, high chromium steel, nylon, polyurethane, polypropylene pp, polytetrafluoroethylene, alumina and so on.
3. Grinding jar volume: 0.1L, 0.25L, 0.5L, 1L, 1.5L, 2L, 2.5L, 3L, 4L, 5L, 10L, 15L, 20L, 25L and so on.
4. Grinding ball material: zirconia ball, high chrome steel ball, stainless steel ball, corundum ball, polyurethane ball, alumina ball as well as onyx ball and tungsten carbide ball.
5. Grinding generally choose the same material with the grinding jar grinding ball, can also be mixed and matched. The size of the grinding ball is generally 2mm to 50mm, generally recommended to use 3 to 4 different sizes of grinding balls in accordance with a certain proportion of mixed use.

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Model	PM0.4L	PM1L	PM2L	PM4L	PM8L	PM12L
Grinding jar capacity	50 to 100ml	50 to 250ml	50 to 500ml	50 to 1000ml	500 to 2000ml	1000 to 3000ml
Vacuum jar capacity	50ml	50 to 100ml	50 to 250ml	50 to 500ml	500 to 2000ml	1000 to 3000ml
Revolution speed	5 to 450rpm	5 to 450rpm	5 to 400rpm	5 to 400rpm	5 to 320rpm	5 to 320rpm
Rotation speed	10 to 900rpm	10 to 900rpm	10 to 800rpm	10 to 800rpm	10 to 640rpm	10 to 640rpm
Power	0.55kw	0.55kw	0.75kw	0.75kw	1.5kw	1.5kw
Power supply	220Vac, 50Hz	220Vac, 50Hz	220Vac, 50Hz	220Vac, 50Hz	220Vac, 50Hz	380Vac, 50Hz
Weight	68kg	70kg	96kg	99kg	191kg	193kg
Dimensions	600x400x500mm	600x400x500mm	780x580x680mm	780x580x680mm	800x600x750mm	990x660x870mm

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Model	PM16L	PM20L	PM40L	PM60L	PM80L	PM100L
Grinding jar capacity	1 to 4L	1 to 5L	5 to 10L	10 to 15L	10 to 20L	10 to 25L
Vacuum jar capacity	1 to 4L	1 to 5L	5 to 10L	10 to 15L	10 to 20L	10 to 25L
Revolution speed	5 to 230rpm	5 to 230rpm	5 to 220rpm	5 to 220rpm	5 to 180rpm	5 to 180rpm
Rotation speed	10 to 460rpm	10 to 460rpm	10 to 440rpm	10 to 440rpm	10 to 360rpm	10 to 360rpm
Power	3kw	3kw	7.5kw	7.5kw	11kw	11kw
Power supply	380Vac, 50Hz	380Vac, 50Hz	380Vac, 50Hz	380Vac, 50Hz	380Vac, 50Hz	380Vac, 50Hz

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Model	PM16L	PM20L	PM40L	PM60L	PM80L	PM100L
Weight	230kg	288kg	400kg	610kg	1210kg	1260kg
Dimensions	990x660x870mm	990x660x870mm	1160x940x1450mm	1160x940x1450mm	1400x1100x1060mm	1400x1100x1060mm