

QM Series Planetary Ball Mill (gear type)

Application:

QM series planetary ball mill is the requisite equipment for mixing, fine grinding, small sample preparing, new product development and small volume high-tech material production. The product has small volume, complete function, high efficiency and low noise. It is the ideal facility to acquire research samples for research institutes, universities as well as enterprise laboratories (can acquire four samples in one experiment). If mated with vacuum ball milling tanks, it can grind samples in vacuum status. The product is extensively applied to in the fields of Geology, Mining, Metallurgy, Electronics, Construction Material, Ceramics, Chemical Engineering, Light Industry Medicine, Environmental Protection etc.

QM series planetary ball mill has four ball grinding tanks installed on one turnplate. When the turnplate rotates, the tank axis makes planetary movements and the balls in the tanks grinds and mixes samples in high speed movement. The product can smash and blend various products of different materials and granularity with dry or wet methods. Minimum granularity of grinded products can be as small as 0.1 micron (i.e.) $1.0 \times 10^{-4} \text{mm}$

If equipped with the air cooling plant, the machine can be upgraded into a low temperature planetary ball mill. For further information on the low temperature planetary ball mill, please see the brief introduction to QM-DY, QM-DK low temperature planetary ball mills.

Type:

Model	Specification	Ball Milling Tank		Remarks
		Spec (ml)	Quantity (Items/Set) (Mated with a number of milling balls)	
QM-1SP04	0.4L	50~100	4	Can be equipped with 50ml vacuum ball milling tanks
QM-1SP2	2L	50~500	4	Can be equipped with 50~250ml vacuum ball milling tanks
QM-3SP4	4L	50~100	4	Can be equipped with 50ml/100ml vacuum ball milling tanks
QM-2SP12	12L	500~3000	4	Can be equipped with 500~2000ml vacuum ball milling tanks
QM-2SP20	20L	1000~5000	4	Can be equipped with 3500ml vacuum ball milling tanks
QM-2SP100	100L	10~25L	4	Can be equipped with 10~20L vacuum ball milling tanks

Technical parameters:

Drive Mode: gear drive and belt drive

Operation Mode: two or four grinding tanks working together

Maximum Loading Capacity: 2/3 of the capacity of milling tank

Feeding Granularity: soil material $\leq 10\text{mm}$, other materials $\leq 3\text{mm}$

Output Granularity: Minimum 0.1um

Rotational speed ratio (revolution: rotation): 1:2 (0.4L, 2L, 4L); 1:1.5 (12L, 20L)

Rotation Speed: 0.4L: 0~600 rounds/min; 2L: 0~580 rounds/min 4L: 0~530 rounds/min 20L: 0~280 rounds/min

Speed Regulation Mode: variable-frequency-control-type and program-control-type stepless speed regulation; manual or automatic timed positive or negative revolving

Max. continuous operating time (full-load): 72 hours

Advantages:

1. High uniformity

2. Excellent repeatability

3. Convenient operation: belt replacement is not needed;

Gear drive mode offers an effective solutions to problems caused by belt drive mode, such as belt creep, and belt abrasion.

Criteria for evaluation:

1. Rotational speed Studies have proved that the rotational speed is the most important criterion of the planetary ball mill. In principle, the higher the rotational speed is, the better the milling performance is.

2. Maximum continuous operating time The planetary ball mill is used for making sub-micron or milli-micron materials, frequently requiring the maximum continuous operating time (at full load) being 50 hours or above, and the technical conditions such as the rotational speed not changing.

3. Uniformity A gear-driven ball mill can make materials in two or even four tanks uniform perfectly, but a belt-driven ball mill cannot.

4. Repetitiveness A gear-driven ball mill can make the same materials processed by the same technique repetitive perfectly, but a belt-driven ball mill cannot.

5. Noise The noise of belt-driven ball mill is 66dB and that of gear-driven ball mill is 68dB at no load; and the noise of the two ball mills at full load is 75dB.

6. Rational speed ratio: The rational speed ratio is very much related to the rational speed, the milling time and etc. Tests prove that the rotational speed ratios 1:2 ($\leq 4L$) and 1:1.5 ($\geq 12L$) are the best ones.

Features:

- ★ Gear-drive guarantees high uniformity and repeatability of experiments;
- ★ Fast rotational speed, high efficiency and fine granularity;
- ★ Four samples with different sizes and materials in one experiment available;
- ★ Stepless speed regulation; ideal rotary speed selection according to experimental results;
- ★ Timed powering-off, positive and negative revolving if required;
- ★ It features low center of gravity, good rigidity, compact structure, safety and reliable operation, low noise, no pollution, and small wear etc.

Standard configuration:

Main machine, power supply controller

Options:

Materials of ball milling tanks: Stainless, agate, ceramic, nylon, PU, Teflon Hard alloys

Spec. of ball milling tanks: 50ml, 100ml, 250ml, 500ml, 1000ml

Size of milling balls: $\Phi 6$, $\Phi 10$, $\Phi 20$



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