Cryogenic
Planetary Ball Mill

KOREA PROCESS
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Overview

Cold-air planetary ball mill is composed of planetary ball mill and cold-air device. Cycling of cold air quickly takes away the heat generated by grinding by means of air conditioning refrigeration principle, and temperature inside the grinding space can be controlled at 2-10 □ according to temperature difference of working environment. Such a cold-air device can be also applied to assembly other models like vertical ball mill, horizontal ball mill, 360 degree ball mill and dual ball mill.

Refrigeration Design

Equipped with refreigeration device equivalent to an air conditioner.

Good Practicability

Temperature is generally controlled within 5-15℃, mainly used for somespecial materials which are required to be ground into superifine powder under low temperature process.

Air cooling system

The air cooling system has advantages of simple structure, easy operation, convenient maintenance and low energy consumption.

Working Principle

KC series planetary ball mill has four ball grinding tanks installed on one turntable. When the turntable 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 ground powder can be as small as 0.1mm.

Feature

- Suitable for the materials requiring ultra-fine grinding under low temperature.
- Simple structure.
- Easy operation.
- Convenient maintenance.
- Low energy consumption.

Application

Cryogenic planetary ball mill is mainly applied to ultrafine grinding under condition of low- temperature requested by materials. Compared with the artificial injection of liquid nitrogen cooling, cold-air planetary ball mill is much easier and more convenient to be operated, it is also cost-saved, and low-energy consumed.

Application Cases of Planetary Ball Mill

Before grinding

After grinding

Material : Active carbon
Material weight : 50g
Mill Jar & Balls : Corundum mill jars and zirconia balls
Grinding method : Dry grinding
Rotation speed : 560rpm
Applied equipment : Planetary ball mill Model No.XQM-0.4A
Total volume : 1000mlx4=4000ml
Grinding time : 2hours
Granularity : 2μm

Before grinding

After grinding

Material : Kaolin
Material weight : 500g
Mill Jar & Balls : PTFE
Grinding method : Dry grinding
Rotation speed : 450rpm
Total volume : 1Llx4=4L
Spent time : 1hour 20 minutes
Feed size : 2mm
Granularity of output : 100μm

Before grinding

After grinding

Material : Green tea (dry)
Material weight : 0.25kg
Mill Jar & Balls : Stainless steel
Grinding method : Dry grinding
Applied equipment : Planetary ball mill Model No.XQM-2
Total volume : 0.5Llx4=2L
Spent time : 1hour

Technical Parameter Table

Parameters of Cryogenic Planetary Ball Mill							
Model No	Power (KW)	Voltage	Revolution Speed (rpm)	Rotation Speed (rpm)	Total Timing (min)	Alternating Run Time of Forward & Reversal Rotation(min)	Nosie≤db
KC-2	0.75	220V-60Hz	35-335	70-670	1-9999	1-999	60db
KC-4	0.75	220V-60Hz	35-335	70-670	1-9999	1-999	60db
KC-6	0.75	220V-60Hz	35-335	70-670	1-9999	1-999	60db
KC-8	1.5	220V-60Hz	35-290	70-580	1-9999	1-999	60db
KC-10	1.5	220V-60Hz	35-290	70-580	1-9999	1-999	60db
KC-20	1.5	220V-60Hz	35-290	70-580	1-9999	1-999	60db
KC-40	4	220V-60Hz	25-215	50-430	1-9999	1-999	60db
KC-60	5.5	220V-60Hz	20-195	40-390	1-9999	1-999	60db
KC-80	7.5	220V-60Hz	27-174	40-260	1-9999	1-999	60db
KC-100	11	220V-60Hz	27-160	40-240	1-9999	1-999	60db

Measurement of Cryogenic Planetary Ball Mill				
Model No	Power(KW)	Speed Control mode	Net Weight(kg)	Dimension(mm)
KC-2	0.75	Frequency control	93	750X470X564
KC-4	0.75	Frequency control	93	750X470X564
KC-6	0.75	Frequency control	93	750X470X564
KC-8	1.5	Frequency control	150	900X600X640
KC-10	1.5	Frequency control	150	900X600X640
KC-20	1.5	Frequency control	150	900X600X640
KC-40	4	Frequency control	330	1200X750X920
KC-60	5.5	Frequency control	468	1400X850X1160
KC-80	7.5	Frequency control	900	1600X990X1250
KC-100	11	Frequency control	1250	1750X1140X1330

Available size of Mill Jars for Dual Planetary Ball Mill				
Mode	Specification	Available size of Mill Jars	Quantity	Remarks
KC-2	2L	50-500ML	4pcs	Can be matched with 50-250ml vacuum mill jar
KC-4	4L	250-1000ML	4pcs	Can be matched with 50-1000ml vacuum mill jar
KC-6	6L	1-1.5L	4pcs	Can be matched with 50-1000ml vacuum mill jar
KC-8	8L	1-2L	4pcs	Can be matched with 50-1500ml vacuum mill jar
KC-10	10L	1-2.5L	4pcs	Can be matched with 50-1500ml vacuum mill jar
KC-20	20L	1-3L	4pcs	Can be matched with 1-2L vacuum mill jar
KC-40	40L	2-5L	4pcs	Can be matched with 2-4L vacuum mill jar
KC-60	60L	5-10L	4pcs	Can be matched with 5L vacuum mill jar
KC-80	80L	10-15L	4pcs	Can be matched with 10L vacuum mill
KC-100	100L	20-25L	4pcs	Can be matched with 20L vacuum mill

Accessory

Besides the planetary ball mill machine, our factory provides all kinds of mill pots，like stainless steel mill pot, zirconia mill pot, alumina mill pot, nylon mill pot, PU mill pot, tungsten mill pot, hard metal mill pot and tempered nylon mill pot etc. Further, we also provide stainless steel mill balls, zirconia mill balls, alumina mill balls, PU mill balls, steel carbon mill balls,tungsten mill balls, etc.

Material	Volume of Mill Jar	Diameter of Mill Ball	
Stainless Steel	50ml,100ml,250ml,500ml,1L,1.5L,2L,2.5L,3L,4L	1-30mm	
Stainless Steel (for vacuum)	50ml,100ml,250ml,500ml,1L,1.5L,2L,3L,4L,5L	1-30mm	
Zirconia	50ml,100ml,250ml,500ml,1L,1.5L,2L,3L,4L	1-30mm	
Alumina	50ml,100ml,250ml,500ml,1L,1.5L,2L,3L	1-50mm	
Tungsten Carbide	50ml,100ml,250ml,500ml,1L,1.5L	3-10mm	
Agate	50ml,100ml,150ml,250ml,300ml,400ml,500ml,1L,1.5L,2L	6-35mm	
Nylon	50ml,100ml,250ml,500ml,1L,1.5L,2L,2.5L,3L,4L	\	
PU	50ml,100ml,250ml,500ml,1L,1.5L,2L,2.5L,3L,4L	\	
PTFE	50ml,100ml,250ml,500ml,1L,1.5L,2L,2.5L,3L,4L	\