

How to Choose Ball Mill or Rod Mill?

At present, the commonly used grinding equipment in the mining industry are ball mill and rod mill. These two products are similar in appearance and grinding principle, but there are also differences in structure, performance and use. This article will tell you how to choose a ball mill and a rod mill by analyzing the similarities and differences between them.



Cement Ball Mill



Rod Mill

1. Equipment structure analysis

Generally, the ratio of the barrel length to the diameter of the rod mill is maintained between 1.5-2.0, and the inner surface of the liner on the end cover is in a vertical plane state. The ratio of the cylinder length to the diameter of the ball mill is relatively small, usually equal to 1 or slightly greater than 1. In addition, the cylinder rotation speed of the rod mill is generally lower than the rotation speed of the ball mill of the same specification.

2. Grinding media

Rod mill usually uses steel rods as grinding media, while ball mill uses wear-resistant steel ball as grinding media. The contact between the steel balls is point contact, and the steel rods of the rod mill are in line contact, so the working characteristics of the two are obviously different.



**Steel Ball**

3. Drainage-mine method

Among the ball mills, commonly used are grate ball mill and overflow ball mill, while rod mills have only two types: overflow type and open type. The diameter of the rod mill hollow shaft at the discharge end is generally larger than that of the same specification ball mill.

**Ball Mill Trunnion**

4. Stability

There is no inertial impact when the ball mill is working, which ensures the normal and efficient operation of the equipment, reduces the downtime of the equipment, and improves the production efficiency.

5. Performance

The process characteristic of the rod mill is that the product is relatively coarse, but the particle size is uniform, contains less coarse particles and sludge, and is lighter in over-crushing. The processing capacity and grinding effect of the rod mill are greatly affected by the particle size of the ore. The ball mill has high production capacity and strong adaptability to materials. The fineness of the materials is high, and the discharge particle size is fine, easy to fine grind, and more energy-saving, but its over-crushing phenomenon is serious than rod mill.

6. Use analysis

In the gravity separation or magnetic separation process of tungsten tin ore and other rare metal ores, rod mills are often used to grind materials in order to prevent over-grinding and dust pollution. In the second-stage grinding



process, the rod mill is usually used as the first-stage open-circuit grinding, with larger production capacity and higher efficiency. When processing low-hardness and brittle materials, the rod mill can completely replace the cone crusher for fine crushing. The ball mill is not suitable for the gravity separation process in metal ore beneficiation because of the fine grinding materials and is prone to over-crushing. However, it is widely used in other ore beneficiation processes.

Summarize:

After understanding the difference between ball mill and rod mill, users can choose according to raw materials, finished product size and production methods. If the raw material is tungsten tin ore, the rod mill is a better choice, and if the material that needs to grind is aluminum ash, lime, slag, molybdenum ore, etc., the processing capacity of the ball mill is stronger.

In the heavy separation or magnetic separation of rare metal ores, rod mill is often used for production and processing in order to prevent the hazards caused by over-crushing in operations, while ball mill is mostly used for production and processing in cement plants.

When rough grinding, if the product size is 1-3mm, the processing capacity of the rod mill is greater than that of the same specification ball mill. When used for fine grinding and the product size is less than 0.5mm, the grinding effect of the ball mill is greater than that of the same specification rod mill. That is, the products of ball mill tend to be more refined, while the products of rod mills are rougher, but more uniform.

XinXiang Great Wall Machinery has many years of experience in the production of ball mill and rod mill. If you have any questions, please feel free to consult online at any time.

