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# JB/T 14329-2021

# Ring-roller micro powder mill

环辊式微粉磨

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# Ring-roller micro powder mill

## 1 Scope

This standard specifies the type and basic parameters, technical requirements, test methods, inspection rules, markings, packaging, transportation and storage of ring roller micro-powder mills.

This standard is applicable to the ring roller micro powder mill for grinding non-flammable and explosive mineral materials, which have Mohs hardness of not greater than grade 6 and relative humidity below 6%, such as gypsum, limestone, barite, fluorite, apatite, feldspar and calcite (hereinafter referred to as micro powder mill).

## 2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) is applicable to this standard.

GB/T 191 Packaging - Pictorial marking for handling of goods

GB/T 699-2015 Quality carbon structural steels

GB/T 1591-2018 High strength low alloy structural steels

GB/T 1804-2000 General tolerances - Tolerances for linear and angular dimensions without individual tolerance indications

GB/T 3768 Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Survey method using an enveloping measurement surface over a reflecting plane

GB/T 5226.1 Electrical safety of machinery - Electrical equipment of machines - Part 1: General requirements

GB/T 6388 Transport package shipping mark

GB/T 8923.1-2011 Preparation of steel substrates before application of paints and related products - Visual assessment of surface cleanliness - Part 1: Rust grades and preparation grades of uncoated steel surface and steel surface after complete removal of original coating

GB/T 11352-2009 Carbon steel castings for general engineering purpose

GB/T 13306 Plates

GB/T 19418 Arc-welded Joints in steel - Guidance on quality levels for imperfections

GB/T 25706 Code of designations for mining machinery products

GB/T 37400.3-2019 Heavy mechanical general technical specification - Part 3: Welding parts

GB/T 37400.10 Heavy mechanical general technical specification - Part 10: Assembling

GB/T 37400.12 Heavy mechanical general technical specification - Part 12: Painting

GB/T 37400.13 Heavy mechanical general technical specification - Part 13: Packaging

# 3 Types and basic parameters

## 3.1 Type

The main machine of the micro powder mill is mainly composed of a main shaft, a multi-layer turntable, multiple rollers, a grinding ring, and a machine body. The type is as shown in Figure 1. This Figure does not determine the special structure of the micro powder mill. The main machine of the micro powder mill and the equipped fan, powder classifier, cyclone powder collector, pulse dust collector, etc. constitute a complete powder making system.

## 4.2 Appearance quality requirements

**4.2.1** There shall be no burrs, bruises, rust on the main machined surface.

**4.2.2** The surface of the main welded parts shall be flat. There shall be no visible unevenness, when visually inspected.

**4.2.3** Before painting, the surface of steel parts shall be treated with anti-rust treatment. The treatment level shall not be lower than the requirements of St2 level in GB/T 8923.1-2011.

**4.2.4** The exterior paint requirements of the micro powder mill shall comply with the provisions of GB/T 37400.12.

**4.2.5** The font of the sign shall be clear. The fixed position shall be obvious, firm, not skewed.

## 4.3 Quality requirements for main components

### 4.3.1 Main parts

**4.3.1.1** The performance of the main shaft of the main engine and the main shaft of the powder classifier shall not be lower than the requirements of No.45 steel in GB/T 699-2015.

**4.3.1.2** The performance of the main engine body shall not be lower than the requirements of ZG 270-500 steel in GB/T 11352-2009.

**4.3.1.3** The performance of the main engine cylinder shall not be lower than the requirements of Q345B steel in GB/T 1591-2018.

**4.3.1.4** The unmarked linear dimension tolerance of the cutting process on the drawing shall comply with the level m requirements of GB/T 1804-2000.

### 4.3.2 Welded structural parts

**4.3.2.1** The tolerances of the unmarked linear and angular dimensions of the main structural parts shall comply with the provisions of Class B in GB/T 37400.3-2019. The unmarked geometric tolerances shall comply with the provisions of Class F in GB/T 37400.3-2019.

**4.3.2.2** Welded structural parts shall be cleaned of welding slag and deburred. The main welded structural parts shall be stress relieved.

## 4.4 Assembly requirements

**4.4.1** The components of the main machine of the micro-powder mill and the powder classifier shall pass the inspection of the inspection department. Outsourced parts shall

have quality certification documents or be assembled after passing the inspection of the inspection department.

**4.4.2** The assembly of the micro powder mill shall comply with the provisions of GB/T 37400.10.

### 4.5 Performance requirements of whole machine

**4.5.1** Specification parameters, such as the motor power of the micro-powder mill and the technical parameters on the nameplate, shall comply with the provisions in Table 1.

**4.5.2** The structure and performance of the micro powder mill shall be able to run continuously for 24 hours.

**4.5.3** The standard production capacity and finished product particle size of the micro powder mill shall comply with the provisions in Table 2.

**4.5.4** The service life of the main wearing parts (rollers and rings) of the micro powder mill, when processing materials with a Mohs hardness not greater than grade 3, ensuring that the particle size of the finished product is not greater than 15 μm and the sieve rate is not lower than 97%:

a) Grinding roller: Not less than 5000 h;

b) Grinding ring: Not less than 7200 h.

**4.5.5** The service life of the main machine of the micro powder mill, before the first overhaul, shall not be less than 15000 h (subject to the replacement of the turntable).

### 4.6 Safety requirements

**4.6.1** The exposed rotating parts and transmission parts of the micro powder mill shall be equipped with safety protection devices.

**4.6.2** The joints of the micro-powder mill shall be tightly sealed; no dust shall leak.

**4.6.3** The electric control box shall be equipped with overload protection devices, for the motors of the micro-powder mill's main machine, powder classifier and fan. The electric control box shall also have an interlock control function. Other safety requirements of the electric control box shall comply with the provisions of GB/T 5226.1.

**4.6.4** The noise sound pressure level of the on-site control room shall not exceed 85 dB(A).

### 4.7 Requirements for no-load test

#### 4.7.1 Requirements for no-load test of the main machine of micro powder mill

**5.1.2** The physical and chemical tests of the main parts are subject to the material quality certificate or the physical and chemical test report.

**5.1.3** The weld quality requirements and defect classification test methods for main welded structural parts shall comply with the provisions of GB/T 19418.

## 5.2 No-load test

### 5.2.1 No-load test of the main machine of micro powder mill

**5.2.1.1** The no-load test of the main machine of the micro powder mill shall be carried out on the special test bench of the manufacturer.

**5.2.1.2** During the no-load test, the main machine of the micro-powder mill shall be manually cranked or started by jogging.

**5.2.1.3** The temperature of the bearing of the main machine of the micro powder mill is measured by a spot thermometer or a sensor near the bearing.

**5.2.1.4** The test method of the no-load noise of the micro-powder mill host shall comply with the provisions of GB/T 3768.

### 5.2.2 No-load test of powder classifier

**5.2.2.1** The no-load test of the powder classifier shall be carried out on the working platform of the manufacturer. During the test, the casing shall be fixed on the platform and the frequency converter shall be connected.

**5.2.2.2** Measure the error -- between the output shaft speed value of the frequency conversion motor of the powder classifier and the digital display value of the frequency converter.

**5.2.2.3** The temperature of the powder classifier bearing is measured near the bearing by a spot thermometer or sensor.

**5.2.2.4** The test method for the no-load noise of the classifier shall comply with the provisions of GB/T 3768.

## 5.3 Load test

**5.3.1** Determination of the production capacity of the micro powder mill: It shall be measured at the finished product packaging place for 20 minutes; then calculate the hourly weight, according to the number of packaging bags. The number of actual measurements shall not be less than three; take the average value.

**5.3.2** The particle size measurement of the finished product of the micro powder mill: It shall take about 100 g of the finished product sample, to measure the particle size of the finished product, on the laser particle size analyzer. Use standard samples for

c) When the production is restored, after suspension for more than 1 year;

d) Where there is a large difference between the exit-factory inspection result and the previous type inspection;

e) When the national quality supervision and inspection agency puts forward the requirements for type inspection.

**6.3.2** Type inspection items shall include all the requirements of this standard.

**6.3.3** The type inspection shall be carried out by randomly selecting one product that has passed the exit-factory inspection. If the inspection is unqualified, it shall double the sample for re-inspection. If the re-inspection is still unqualified, the type inspection shall be judged as unqualified.

# 7 Marking, packaging, transportation, storage

**7.1** The micro-powder mill shall be fixed with a signboard, at an appropriate and obvious place. The type and size of the signboard shall meet the requirements of GB/T 13306, which shall indicate the following contents:

a) Product name and model;

b) Main technical parameters;

c) Implemented standard number of product;

d) The name and address of the manufacturer;

e) Exit-factory number and date of manufacture.

**7.2** The micro powder mill shall provide the following accompanying documents:

a) Product quality certification documents;

b) Product instruction manual;

c) Packing list or packing catalog;

d) Foundation drawing and installation drawing;

e) Consumable parts (accessories) catalog.

**7.3** Before packaging, the micro powder mill shall be removed of oil stains and water marks. All exposed processing surfaces must be painted with anti-rust grease.

**7.4** The packaging mark of micro-powder mill shall comply with the provisions of GB/T 191 and GB/T 6388. It shall indicate the following contents:

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