GB

ICS 73.120

D 94

GB/T 25708-2010

Ball mill and rod mill

球磨机和棒磨机

Issued on: December 23, 2010 **Implemented on: July 01, 2011**

Issued by: **General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China;**

Standardization Administration of the People's Republic of China.

Table of Contents

Foreword

Since implementation date of this Standard, previous Standard JB/T 1406-2002 *Ball-mill and rod-mill* is abolished.

This Standard was proposed by China Machinery Industry Federation.

This Standard shall be under the jurisdiction of National Technical Committee (SAC/TC 88) on Mining Machinery of Standardization Administration of China.

The responsible drafting organization of this Standard: Luoyang Mining Machinery Engineering Design & Research Institute Co., Ltd.

The participating drafting organizations of this Standard: Shenyang Heavy Machinery Group Co., Ltd, CITIC Heavy Industries Co., Ltd, Jinan Heavy Machinery Joint-stock Co., Ltd, Hengyang Heavy Machinery Co., Ltd, Sinosteel Co., Ltd., and Shendong Shankuang Machinery Co., Ltd.

The chief drafting staffs of this Standard: Zhang Xiao, Li Chunran, Wang Jisheng, Yu Xiao, Gao Junkun, Zhou Xiaoping, Zhao Heng, Yang Xianli, Liu Wanhua, Wang Jianhua, Fan Yongqing, and Wang Chunhong.

Ball mill and Rod mill

1 Scope

This Standard specifies ball-mill and rod-mill's types and basic parameters, technical requirements, test methods, inspection rules, marking and operation instructions, packaging, transportation and storage.

This Standard applies to ball-mills and rod-mills that grind ores, rocks and other suitable materials of various hardness in wet and dry processes (hereinafter referred to as mills).

2 Normative references

The articles contained in the following documents have become part of this Standard when they are quoted herein. For the dated documents so quoted, all the modifications (excluding corrections) or revisions made thereafter shall not be applicable to this Standard. For the undated documents so quoted, the latest editions shall be applicable to this Standard.

GB/T 191 Packaging - Pictorial marking for handling of goods (GB/T 191-2008, ISO 780: 1997, MOD)

GB/T 700 Carbon structural steels (GB/T 700-2006, ISO 630: 1995, NEQ)

GB/T 1174 Cast bearing metals (GB/T 1174-1992, neq ISO 4382-1: 1991)

GB/T 1348 Spheroidal graphite iron castings (GB/T 1348-2009, ISO 1083:2004, MOD)

GB/T 1804-2000 General tolerances—Tolerances for linear and angular dimensions without individual tolerance indications (eqv ISO 2768-1: 1989)

GB/T 3768 Acoustics - Determination of sound power levels of noise sources using sound pressure - Survey method using an enveloping measurement surface over a reflecting plane (GB/T 3768-1996, eqv ISO 3746: 1995)

GB/T 5226.1 Electrical safety of machinery - Electrical equipment of machines - Part 1: General requirements (GB 5226.1-2008, IEC 60204-1: 2005, IDT)

GB/T 5680 Austenitic manganese steel castings

GB/T 7233.1-2009 Steel castings - Ultrasonic examination - Part 1: Steel castings for general purposes (ISO 4992-1: 2006, MOD)

Ø7300mm series are recommended to adopt slider bearing. Mills of which the barrel diameter is less than Ø4000mm may also adopt rolling bearing.

4.2.3 Scavenge oil temperature rise of main bearing under normal operation shall not be higher than 15°C; maximum scavenge oil temperature shall not be higher than 55°C.

4.2.4 For mills of which the barrel diameter is less than or equal to Ø4000mm series and the power is less than or equal to 1600kW, pinion bearing is recommended to adopt grease for fabrication; for mills of which the barrel diameter is greater than Ø4000mm series and the power is greater than 1600kW; pinion bears are recommended to adopt thin oil for lubrication.

4.2.5 Sound pressure level of noises during mill idling running shall not exceed 90dB (A).

4.2.6 Complete set of mill shall include host machine, main motor, spray lubrication device, main bearing lubrication station, low-voltage centralized electrical control equipment, etc. Synchronous transmission shall also include clutch; asynchronous transmission includes reducer and coupling; gearless transmission shall also include brake. Mills of which the barrel diameter is grater than or equal to Ø2700mm series shall be provided with necessary auxiliary equipment (e.g. low-speed transmission device, jack-up device, etc.).

4.2.7 Lubrication device of mill shall operate reliably. If there is lubrication station, oil pump motor and main motor shall have electrical interlock; it shall generates the signal when lubrication system breaks down and cannot work properly, so as to ensure automatic stopping of main motor. There shall be alarm signaling device for oil temperature, oil pressure, oil mass and differential pressure. Lubrication system shall include safety valve, pressure gauge, thermometer and other safety devices.

4.2.8 Inclination of oil return line is recommended to be 1:20 to 1:6.

4.3 Safety requirements

4.3.1 Rotating part of transmission gear shall be fitted with a protective cover; user shall set up the protective railings around rotating parts.

4.3.2 Requirements of protective grounding, insulation resistance, pressure test, etc. shall comply with relevant provisions of GB5226.1.

4.4 Requirements for main components and parts

4.4.1 Main bearing bush and slider bearing bush material shall not be lower than the specifications on mechanical properties in table 5. Main bearing liner of which the barrel diameter is less than Φ5500mm series is recommended to adopt tin-based cast bearing alloy; alloy material shall not be lower than the specification on ZSnSb11Cu6 in GB/T1174; alloy shall be fitted securely and have no shelling phenomenon. Main bearing liner of mills of which the barrel diameter is greater than or equal to Φ5500mm series is recommended to adopt molded copper tile structure; material is recommended to be copper-based cast

5 Test method

5.1 Appearance inspection is conducted visually; there shall be no significant defect.

5.2 During complete machine idling, noises shall be determined by the method specified in GB/T3768.

5.3 Mill shall be conducted for idling test and meets the following requirements:

a) Continuous idling time is not less than 4h;

b) Main bearing scavenge oil temperature rise and the maximum scavenge oil temperature shall comply with the provisions in 4.2.3;

c) Lubrication at all lubrication points shall be normal and there is no oil leakage phenomenon;

d) Noises shall comply with the provisions in 4.2.5;

e) Current of main motor has no significant change.

5.4 Load running test is conducted after empty load becomes qualified. Before running, load mill barrel with steel ball (bar) and material that account 20% ~ 30% of maximum load capacity. After running, add 10% every 30min, until full load. Operate for 24h continuously and it shall achieve that:

a) Mills shall work smoothly without abnormality;

b) Screw holes, man-holes and flange junction surface of barrel shall have no leakage phenomenon.

c) Main bearing scavenge oil and maximum scavenge oil temperature shall comply with the provisions of 4.2.3.

6 Inspection rules

6.1 Inspection classification

Inspection is divided into exit-factory inspection and type inspection.

6.2 Exit-factory inspection

6.2.1 Each mill shall pass the inspection by quality inspection department of manufacturer before exit-factory; there shall be attached with document that proves product quality during exit-factory.

7.3 Packing mark of mill shall comply with the provisions of GB/T 191.

8 Packaging, transportation and storage

8.1 Packages of mill shall comply with the provisions of JB/T5000.13.

8.2 Mill packing is divided into enclosed packing, nude packing, bundled packing, etc. Components and parts shall be fixed firmly in cases during packing.

8.3 Exposed machining surface of mill shall receive preservative treatment and bound up with oil paper or plastic film; anticorrosion period shall not be less than 1 year.

8.4 Outer wall of enclosed packing case shall be indicated with obvious wording mark and comply with the provisions of 7.3; the contents of which include:

a) Name of consignment location and consignee;

b) Name of delivery location and delivery organization;

c) Contract number, product name and model;

d) Gross weight, net weight, carton number and dimensions;

e) Lifting operation, storage and transportation graphs and marks.

8.5 During nude packing, there shall be apparent wording marks at apparent positions, which shall comply with the provisions of 7.3.

8.6 Following technical documents shall be attached:

a) Product quality document;

b) Product operation instructions;

c) Packing list and list of complete sets delivered;

d) General assembly drawing for installation, installation foundation drawing and drawing of installed parts;

e) Contents of wearing parts.

8.7 Mill shall have safety measures of preventing deformation and damage during transportation.

8.8 Packages of mills shall comply with land or sea transportation requirements.

8.9 Mill storage shall meet the following requirements:

a) Mill shall be stored at a temperature of not lower than -5°C; direct sunlight and lubricant contamination are not allowed;

b) Storehouse or shed shall be ventilated and avoid rain, snow and direct sunlight;

c) Parts with nude packing and in bundle shall be placed separately; stacking is not allowed.

8.10 Mills shall be maintained once a year during storage.

_____ END _____

This is an excerpt of the PDF (Some pages are marked off intentionally)

------ The End ------