

HG

**CHEMICAL INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

HG/T 3914-2006

Steam tube rotary drum dryers

蒸汽加热管式回转圆筒干燥机

(English Translation)

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1 Scope

This standard specifies the technical requirements, for the design, manufacture, inspection, marking, packaging, transportation and storage of rotary cylinder dryers with steam tube (hereinafter referred to as dryers), which has an inner diameter of 2000 mm ~ 4000 mm. When the inner diameter of the dryer exceeds the above range, it is for reference only.

The dryers, which is described in this standard, are mainly suitable for drying high-density polyethylene, polypropylene, polyvinyl chloride, terephthalic acid, corn alcohol trough and other moisture-containing materials, in petrochemical and related industries.

It is also applicable to the drying of similar non-viscous moisture-containing materials, in the form of powder, granular, flake, paste.

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. For the dated references, the subsequent amendments (excluding corrections) or revisions do not apply to this Standard; however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB 150-1998 Steel pressure vessels

GB 151-1999 Tubular heat exchangers

GB/T 1184-1996 Geometrical tolerancing - Geometrical tolerance for features without individual tolerance indications

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

individual tolerance indications

GB/T 3077-1999 Alloy structure steels

GB 3836.1-2000 Electrical apparatus for explosive gas atmospheres - Part 1: General requirements

GB/T 6404.1 Acceptance code for gear units - Part 1: Test code for airborne sound

GB/T 7233 Methods for ultrasonic testing and for specifying quality levels of steel castings

GB/T 8163-1999 Seamless steel tubes for liquid service

GB/T 9443 Methods of liquid penetrant testing and classification of indication for steel castings

GB/T 10095.1-2001 Cylindrical gears - System of accuracy - Part 1: Definitions and allowable values of deviations relevant to corresponding flanks of gear teeth

GB/T 10095.2-2001 Cylindrical gears-system of accuracy - Part 2: Definitions and allowable values of deviations relevant to radial composite deviations and runout information

GB 13296 Seamless stainless steel tubes for boiler and heat exchanger

GB/T 13306 Plates

JB 4708-2000 Welding procedure qualification for steel pressure vessels

JB/T 4709-2000 Welding specification for steel pressure vessels

JB/T 4711-2003 Coating and packing for pressure vessels transport

JB/T 4730.2-2005 Nondestructive testing of pressure equipments - Part 2: Radiographic testing

JB/T 4730.3-2005 Nondestructive testing of pressure equipment - Part 3: Ultrasonic testing

JB/T 4730.4-2005 Nondestructive testing of pressure equipments - Part 4: Magnetic particle testing

JB/T 4730.5-2005 Nondestructive testing of pressure equipments - Part 5: Penetrant testing

JB 4732-1995 Steel pressure vessel - Stress analysis design standard

JB/T 4735-1997 Steel welded atmospheric pressure vessels

JB/T 6397 Specification for the heavy carbon structural steel forgings

3.1 Classification

The dryer can be divided into 3 types, according to the discharge method: radial discharge (J), gravity center discharge (Z), forced center discharge (Q). running time of the whole machine reaches 20000 h.

4 Requirements

4.2.5

Spherical roller bearings should be used for supporting roller and retaining roller bearings; the design life shall not be less than 50000 h.

4.2.6

For the noise control of the unit (except the hammer), the noise at 1000 mm from the transmission device and the screw feeder shall be lower than 85 dB(A), meanwhile it shall comply with the provisions of GB/T 6404.

4.2.7

For the dryer, whose materials are inflammable and explosive, AND which is used in the explosion-proof area, it shall consider the explosion-proof and flame-proof measures and requirements of the motor, electrical appliances, accompanying instruments, which comply with the provisions of GB 3836.1-2000.

4.3 Materials

4.3.1

In addition to complying with the provisions of the cited standards, the materials used shall also comply with the requirements of the drawings.

4.3.2

The materials of pressure parts and transmission parts shall have quality certificate.

4.3.3

The inspection and re-inspection of materials shall not only meet the requirements of the drawings, but also meet the requirements of the order contract.

4.3.4

When the heating tube is made of stainless steel tube, the heating tube shall comply with the provisions of GB/T 13296. When the heating tube is made of carbon steel tube, it shall comply with the provisions of GB/T 8163-1999.

4.3.5

Castings of medium carbon steel or low alloy steel should be used for the large ring gear; the castings shall be normalized and tempered.

4.3.6

The large carbon structural steel forgings should be used for the rolling rings AND comply with the provisions of JB/T 6397.

4.3.7

Forgings or castings of medium carbon steel and low alloy steel should be used for supporting rollers and retaining rollers.

4.3.8

Alloy steel forgings should be used for pinion gear, supporting roller shaft, retaining roller shaft, pinion shaft; their chemical composition and mechanical properties shall comply with the provisions of GB/T 3077-1999.

4.3.9

The acceptance of purchased mechanical and electrical products shall not only meet the requirements of national and industry standards, but also meet the requirements of drawings.

4.4 Manufacturing

4.4.6.5

When the annular tube is used to discharge the non-condensable gas, the butt weld of the annular tube shall be subjected to 100% radiographic inspection, which shall be qualified, according to the level II requirement of JB/T 4730.2-2005.

4.4.14.10

During the no-load test run, it should use artificial greasing to lubricate, to ensure that there is continuous greasing, between the large gear ring and the pinion, between the roller ring and the supporting roller, between the retaining rollers.

4.4.7 Large gear ring

4.4.7.1

Before milling teeth, ultrasonic testing shall be carried out; it shall be qualified according to the level 3 requirements of GB/T 7233.

4.4.7.2

The joint surface of the two halves of the gear ring shall be more than 4/5 of the contact area.

4.4.7.3

The tooth profile processing shall meet the level 9 precision requirements of GB/T 10095.1-2001 and GB/T 10095.2-2001. There shall be no pores, cracks, slag inclusions and other defects, on the tooth profile surface; repair welding is not allowed.