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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 32994-2016

Rotary kiln for cement industry

水泥工业用回转窑

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Foreword

GB/T 32994-2016 was issued on 29 August 2016 by the General Administration of Quality Supervision, Inspection and Quarantine and the Standardization Administration of the People's Republic of China, and has been in force since 1 March 2017.

The document is a recommended national standard: the /T in the designation marks it as recommended rather than compulsory.

1 Scope

China's national standard for cement industry rotary kilns. The rotary kiln is the largest moving machine in general industry - a steel tube up to a hundred metres long and six across, lined with refractory, inclined slightly and turning slowly while raw meal moves down it against a flame at 2000 degrees C and leaves as clinker. China makes over half the world's cement, so these machines are built and operated here in numbers found nowhere else. The engineering problems are those of scale rather than of principle: the shell is a beam of enormous span carried on a few supports and it deflects under its own weight as it rotates, so the ovality at each tyre has to be kept within limits or the refractory lining is crushed; the drive must turn it under a load that shifts; and the whole assembly grows and moves as it heats. The standard specifies the model designation, the basic parameters, the requirements, the test methods, the inspection rules, and the marking, packaging, transport and storage.

This standard specifies the model designation, the basic parameters, the requirements, the test methods, the inspection rules, and the marking, packaging, transport and storage of

rotary kilns for the cement industry, referred to below as rotary kilns.

This standard applies to rotary kilns for the cement industry.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 700-2006 Carbon structural steels

GB/T 1175-1997 Casting zinc alloys

GB/T 1176-2013 Casting copper and copper alloys

GB/T 1184-1996 Geometrical tolerancing - Tolerances of form and position - Unindicated tolerance values

GB/T 1800.2-2009 Geometrical product specifications (GPS) - Limits and fits - Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts

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

GB/T 2970-2004 Method for ultrasonic testing of thick steel plates

GB/T 3274 Hot-rolled plates and strips of carbon structural steels and high strength low alloy structural steels

GB/T 3323-2005 Radiographic examination of fusion welded joints in metals

GB/T 5117 Covered electrodes for manual metal arc welding of non-alloy and fine grain steels

GB/T 5118 Covered electrodes for manual metal arc welding of creep-resisting steels

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

GB/T 7233.1-2009 Steel castings - Ultrasonic testing - Part 1: Steel castings for general purposes

GB/T 8110 Welding wires for gas shielding arc welding of carbon and low alloy steel

GB/T 9439-2010 Grey iron castings

GB/T 9444-2007 Steel castings - Magnetic particle inspection

GB/T 10095.1-2008 Cylindrical gears - System of accuracy - Part 1

GB/T 10095.2-2008 Cylindrical gears - System of accuracy - Part 2

GB/T 11345-2013 Non-destructive testing of welds - Ultrasonic testing - Techniques, testing levels and assessment

GB/T 13306 Plates

GB/T 16746 Zinc alloy castings

GB/T 29712-2013 Non-destructive testing of welds - Ultrasonic testing - Acceptance levels

GB/T 50561 Code for construction and acceptance of building material industry equipment installation engineering

JB/T 5000.15-2007 Heavy mechanical general techniques and standards - Part 15: Forgings - Non-destructive examination

JB/T 6396-2006 Heavy alloy structural steel forgings - Specification

JB/T 6397-2006 Heavy carbon structural steel forgings - Specification

JB/T 6402-2006 Heavy low alloy steel castings - Technical specification

JC/T 401.3 Steel castings for building material machinery - Part 3: Provisions for defect treatment

JC/T 402 Technical requirements for painting and rust prevention of cement machinery

JC/T 406 Technical requirements for packing of cement machinery

JC/T 532 General technical requirements for steel weldments of building material machinery

3.1 Model designation

The designation has the form Y followed by the nominal internal diameter of the kiln shell in metres, optionally a slash and the nominal internal diameter of the enlarged section in metres where there is a change of diameter, then a multiplication sign and the nominal length of the kiln shell in metres. Y is the code for the rotary kiln.

Example 1: a rotary kiln with a shell internal diameter of 4 m and a length of 60 m is designated Rotary kiln for cement industry GB/T 32994-2016 Y 4x60.

Example 2: a rotary kiln with a shell internal diameter of 6 m, an enlarged internal diameter of 6.4 m and a length of 90 m is designated Rotary kiln for cement industry GB/T 32994-2016 Y 6/6.4x90.

3.2 Basic parameters

The basic parameters of the rotary kiln shall include the contents of Table 1.

Size, in metres: nominal internal diameter 3 to 6.4 by nominal length 40 to 110. Output 500

to 12 000 t/d. Power 37 to 1200 kW. Main drive speed not greater than 5.5 r/min. Auxiliary drive speed not greater than 15 r/h. Kiln slope 3.5 % or 4.0 %. Thrust roller type: hydraulic or mechanical.

Note: the kiln slope is the sine of the angle of inclination of the shell.

4.1 Basic requirements

4.1.1 Rotary kiln products shall comply with the provisions of this standard and shall be manufactured, installed and used according to the drawings, technical documents and technical specifications approved by the prescribed procedure. Technical requirements not specified in this standard or in the drawings, technical documents and technical specifications shall comply with the relevant provisions of the applicable national and industry standards.

4.1.2 The limit deviations for machined surfaces not given a tolerance on the drawing shall comply with grade m of GB/T 1804-2000, and those for non-machined surfaces accordingly.