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

GB/T 308.1-2013

**Rolling bearings -- Balls -- Part 1: Steel balls
(English Translation)**

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1 Scope

This Part of GB/T 308 specifies the size, technical requirements, marking, measurements, inspection method, inspection regulation, packaging, and storage of finished steel-balls used with rolling bearings.

This Part is applicable to steel-balls supporting rolling bearings and commercial steel-balls.

2 Normative references

The articles contained in the following documents have become part of this document when they are quoted herein. For the dated documents so quoted, all the modifications (including all corrections) or revisions made thereafter shall be applicable to this document.

GB/T 3086-2008 High carbon chromium stainless bearing steels

GB/T 4199-2003 Rolling bearings - Tolerances - Definitions (ISO 1132-1:2000, Rolling bearings - Tolerances - Part 1: Terms and definitions, MOD)

GB/T 6930-2002 Rolling bearings - Vocabulary (ISO 5593:1997, IDT)

GB/T 7234-2004 Geometrical Product Specifications (GPS) - Measurement of roundness - Terms, definitions and parameters of roundness

GB/T 7235-2004 Geometrical Product Specifications(GPS) - Methods for the assessment

of departure from roundness - Measurement of variations in radius

GB/T 7811-2007 Rolling bearings - Symbols for quantities (ISO 15241:2001, IDT)

GB/T 8597-2013 Rolling bearings - Rust proof packaging

GB/T 18254-2002 High-carbon chromium bearing steel

GB/T 18579-2001 High-carbon chromium bearing steel wires

GB/T 24606-2009 Rolling bearings - Non-destructive testing - Magnetic particle testing

GB/T 24608-2009 Inspection rules for rolling bearings and commercial parts

JB/T 1255 Specification for heat-treatment of rolling bearing parts made from high carbon chromium steel

JB/T 1460-2011 Rolling bearings - Bearing parts made from high-carbon chromium stainless steel - Specifications for heat-treatment

JB/T 2850-2007 Rolling bearings - Parts made from Cr4Mo4V bearing steel elevated temperature - Specification for heat-treatment

JB/T 6641-2007 Rolling bearings - Residual magnetism and its assessment method

JB/T 7051-2006 Rolling bearing parts - Methods for the measurement and assessment of surface roughness

JB/T 7361-2007 Rolling bearings - Test method for hardness of parts

JB/T 10861-2008 Rolling bearings - Atlas and the assessment methods for surface imperfections of steel balls

YB 688-1976 High temperature bearing steel - Technical specifications

3 Terms and definitions

For the purpose of this document, terms and definitions in GB/T 4199-2003 and GB/T 6930-2002 and the following ones apply.

3.1

Nominal ball diameter

Diameter value which is used for identification of a ball size.

Note: Nominal ball diameters are the standard sizes for ball diameters of all nominal sizes (standard diameters), which can be rounded with 4 decimal places.

[GB/T 6930-2002, definitions 05.04.01]

3.2

Single ball diameter

Distance between two parallel planes tangential to actual surface of the ball.

3.3

Mean ball diameter

Ball grade

Specific combination of dimensional, shape, surface roughness and sorting tolerance for balls.

Note: Ball grade is identified by letters and numbers, such as: G20.

[GB/T 6930-2002, definitions 05.04.08]

3.10

Ball gauge

Amount by which the mean diameter of ball lot shall differ from the nominal diameter. this amount is one of an established series and the illustration of principles is shown in annex A.

Note 1: Each ball gauge is an integral multiple of ball gauge interval established for the ball grade.

Note 2: Ball gauge and ball grade as well as nominal diameter can be used as the most exact ball size specification to be used by customer for ordering purpose.

[GB/T 6930-2002, definitions 05.04.09]

3.11

Deviation of a ball lot from ball gauge

The subtraction OF mean diameter of ball lot AND the sum of nominal ball diameter and the ball gauge.

[GB/T 6930-2002, definitions 05.04.10]

3.12

Ball subgauge

Amount of a specific series which is the nearest to actual ball lot gauge deviation.

Note 1: Each ball subgauge is an integral multiple of ball subgauge interval established for the ball grade.

Note 2: Combination of ball subgauge and nominal diameter as well as ball gauge which can be used to denote the mean diameter of ball lot by manufacturers and is generally not used by users for ordering purpose.

[GB/T 6930-2002, definitions 05.04.11]

Example 3: Cr4Mo4V 45 G100 b GB/T 308-2013 [Translator : it should be GB/T 308.1-2013]

It represents high temperature bearing steel ball which complies with GB/T 308.1-2013 with nominal diameter of 45 mm, tolerance grade of 100, and which is not provided with variation of diameter and gauge.

10.1 Packaging

After being tested and proved to be qualified, finished steel balls shall be treated against rust and packaged according to specification of GB/T 8597-2013.

Balls of different size, different tolerance grade, different material and different gauge as well as subgauge shall be packaged in different containers (boxes); mixed packing is forbidden.

The following content shall be notified on the surface of containers (boxes):

- a) Ball mark (content of sub-clause 9.1);
- b) Ball numbers;
- c) Manufacturer's name or trademark;
- d) Lot number and packaging date.

10.2 Storage

After being treated against rust and packaged, the balls shall be guaranteed that they will not rust within one year after being delivered from factory under the transportation and storage conditions as specified by GB/T 8597-2013.

Annex C (Informative)

Assessment method of roundness error

Measurement of deviation from spherical form for steel ball shall be carried out by measuring roundness error on three equatorial planes which are 90°-perpendicular to each other.

Roundness error in a single equatorial plane can be assessed by using calculation result of least square sphere center as specified by GB/T 7234-2004.

The deviation from spherical form is supposed to be the maximum roundness error of any single equatorial plane.

Details for assessment method of roundness error can be found in GB/T 7235-2004.