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

TB 10063-2016

Code for design of fire prevention for railway engineering

铁路工程设计防火规范

(English Translation)

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Foreword

This Standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This Standard replaces TB/T 1013-1999 Technical conditions of carbon cast steel wheel.

Compared with TB/T 1013-1999, besides editorial changes, the main technical changes are as follows.

- Modified structure of standard content; merged inspection method and technical requirements into a clause;
- Added ZL-C wheel steel number and corresponding technical indicators (see Table 2 and Table 4 of this edition);
- Added requirements for microelements in chemical composition (see Table 2 of this edition);
- Added uniform heat treatment requirements (see 4.4 of this edition);

- Added requirements for microstructure, crystal granularity, and microscopic purity (see 4.5 of this edition);
- Deleted re-inspection rules (see Clause 13 of 1999 edition);
- Modified "wheel ultrasonic testing" (see 4.8, Annex A of this edition; 10.7 of 1999 edition);
- Modified "wheel magnetic particle inspection" (see 4.9, Annex B of this edition; 10.8 of 1999 edition);
- Modified "removal method of wheel unbalance" (see Annex C of this edition; 10.10 of 1999 edition);
- Modified "shot peening" (see 4.10 of this edition, Annex A of 1999 edition).

This Standard was proposed by and shall be under the jurisdiction of China Ministry of Railways Institute of Measurement Standards.

Drafting organizations of this Standard. Metal and Chemical Sciences Institute of China Academy of Railway, China Ministry of Railways Institute of Measurement Standards, Datong ABC Casting Co., Ltd..

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This Standard replaces the following previous standards.

Carbon cast steel wheel

1 Scope

This Standard specifies type size limit deviation and tolerance, technical requirements, test methods, inspection rules, marks, packaging, transport and quality certificate of carbon cast steel wheel for railway freight car.

This Standard is applicable to carbon cast steel wheel for railway freight car of which running speed is less than or equals to 120 km/h.

2 Normative references

The following referenced 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 223 Methods for chemical analysis of iron, steel and alloy

GB/T 226-1991 Test method for macrostructure and defect of steel by etching

GB/T 228-2002 Metallic Materials - Tensile Testing at Ambient Temperature

GB/T 229-2007 Metallic Materials - Charpy Pendulum Impact Test Method (eqv ISO 148-1:2006 Metallic materials - Charpy pendulum impact test - Part

1 Test method, MOD)

GB/T 231.1-2009 Metallic materials - Brinell hardness test - Part 1. Test method (ISO 6506-1:2005, MOD)

GB/T 4336-2002 Standard Test Method for Spark Discharge Atomic Emission Spectrometric Analysis of Carbon and Low-Alloy Steel (Routine Method)

GB/T 6394-2002 Metal-methods for estimating the average grain size

GB/T 9445-2008 Non-destructive testing - Qualification and certification of personnel (ISO 9712:2005, IDT)

GB/T 13298-1991 Metal - Inspection Method of Microstructure

GB/T 15822.3-2005 Non-destructive testing - Magnetic particle testing - Part 3. Equipment (ISO 9934-3:2002, IDT)

GB/T 18838.3-2008 Preparation of steel substrates before application of paints and related products-Specifications for metallic blast-cleaning abrasives - Part 3. High-carbon cast-steel shot and grit (ISO 11124-3:1993, IDT)

GB/T 18838.4-2008 Preparation of steel substrates before application of paints and related products - Specifications for metallic blast-cleaning abrasives - Part 4. Low-carbon cast-steel shot (ISO 11124-4:1993, IDT)

GB/T 20066-2006 Steel and Iron-Sampling and Preparation of Samples for

the Determination of Chemical Composition (ISO 14284.1996, IDT)

HG/T 2453-1993 Phenolic varnish

JB/T 10061-1999 Commonly used specification for A-mode ultrasonic flaw detector using pulse echo technique

JB/T 10062-1999 Testing methods for performance of probes used in ultrasonic flaw detection

JB/T 10174-2008 Methods of quality inspection on shot-peening for steel-iron parts

TB/T 499-2003 Locomotive wheel rim tread profile

ASTM E1245-03 Standard Practice for Determining the Inclusion or Second-Phase Constituent Content of Metals by Automatic Image Analysis

3.1 Wheel manufacturer shall produce and inspect according to the pattern

approved by prescribed procedures. Wheel type schematic diagram and dimensions symbol are shown in Figure 1. Wheel dimensions tolerances are shown in Table 1.

3.2 It uses LM type rim tread profile specified in TB/T 449-2003.

Hardness inspection shall be conducted on 3 points equally spaced circumferentially on the outer surface of rim. The indentation shall be obtained on the same diameter in the area specified in Figure 5. The inspection method shall be the one specified in GB/T 231.1-2009. Press-ball diameter is 10 mm.

4.5.1.1 Microstructure

After wheel rim is quenching and tempering, its structure shall be fine pearlite. A small amount of ferrite along grain boundary is allowed. There shall be no other harmful texture which affect wheel performance.

4.5.1.2 Crystal granularity

Crystal granularity shall not be less than grade 6.