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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 30015-2013

Bronze alloy rod and bar for overhead contact lines

接触网用青铜棒

Issued on: November 27, 2013 **Implemented on: August 1, 2014**

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Standardization Administration of the PRC

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Foreword

This standard was drafted in accordance with GB/T 1.1-2009 given rules. This standard is a development of the special requirements of high-speed railway with copper rod. The reference to the standard EN12163.1998 "Copper and Copper Alloys General purpose bar "in CuNi2Si Bar technical requirements. This standard by the national non-ferrous metals Standardization Technical Committee (SAC/TC243) centralized. This standard is drafted by: Chinalco Luoyang Copper Co., Ltd., Jiangsu Haimen Riverside Group, including copper permanent brass Co., Ltd., Baoji Railway Electrification Bureau Group Co., Ltd. equipment. This standard was drafted. Zhao Wanhua, Lu Yan, Li Zhong Qi, Han Weiguang, thunderstorm, Yang Haili, Zhu Yingli, Zhang Shu, Chen, Wang Xiuqin, Cao Xiulan. Catenary bronze rods

1 Scope

China's national standard for the bronze alloy rod and bar used in overhead contact line fittings. It specifies the requirements, the test methods, the inspection rules, the marking, packaging, transport and storage, the quality certificate and the contents of the contract or purchase order, and it applies to the bronze alloy bar used for the fittings of high speed electrified railway catenary. The overhead contact line is the wire a train's pantograph slides against, and everything that holds it up is a fitting: the clamps, the droppers, the registration arms, the clips and the connectors. Those fittings are made largely from copper alloys, and the requirements on them are unusual. They carry current, so conductivity matters. They are mechanically loaded, continuously and dynamically, by a wire under tension that is struck by a pantograph passing at three hundred kilometres per hour - and the wave that the pantograph sends along the wire arrives at every fitting. They are outdoors for decades with no maintenance access except at night under possession. And they cannot fail: a dropped contact wire stops a railway and can destroy a pantograph and the roof of a train. The alloy this standard covers is a nickel silicon bronze, developed for exactly that combination, and the standard was written by reference to the technical requirements for CuNi2Si bar in EN 12163. That alloy is precipitation hardened: the nickel silicide precipitates give it a strength approaching that of steel while retaining a conductivity far above that of a

structural alloy, which is the combination the application needs and which very few materials provide. The standard specifies the composition, the temper, the mechanical properties, the electrical conductivity, the dimensions and tolerances and the surface quality. Issued on 27 November 2013 and in force since 1 August 2014.

This standard specifies the high-speed electrified railway catenary parts bronze alloy rod requirements, test methods, inspection rules and signs, including Equipment, transportation, storage, quality certificate and contract (or purchase order) content. This standard applies to high-speed electrified railway catenary parts bronze alloy bar.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document.

GB/T 228.1-2010 metal material tensile test - Part 1. room temperature test methods (

ISO 6892-1.2009, MOD) Test Method.

GB/T 231.1 metallic materials Brinell hardness test - Part 1 (ISO 6506-1.2005, MOD)

GB/T 3310 copper and copper alloy rod ultrasonic flaw detection method

GB/T 5121 (all parts) of copper and copper alloys -

GB/T 8888 heavy non-ferrous metal processing products, packaging, labeling, transportation and storage

GB/T 10567.2 copper and copper alloy processing material residual stress - Ammonia test test method

GB/T 26303.2 copper and copper alloy processing material Dimensions detection methods - Part 2. rods, wire, profiles YS/T 336 copper, nickel and alloy pipe and bar fracture test method YS/T 347 copper and copper alloys average grain size measurement method YS/T 482 copper and copper alloy analysis photoemission spectroscopy

3.1 Categories

3.1.1 grade specifications state Rod grades, status and specifications shall comply with the requirements of Table 1. Table 1 grades, status and specifications Grade Product Category Status Specifications/mm Diameter (or margins) Length QSi0.6-

2.1 Rods Square bar Softening annealing (O60) Solid solution hardening (TQ55) Precipitation hardening cold solution (TH04) Precipitation hardening cold solution (TH08) ~ 10 ~ 5000 401 000

Note. 1 agreed between, also can supply other specifications of the bar; 2QSi0.6-

2.1 equivalent to EN12163.1998 in CuNi2Si grades.