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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 714-2025

Replacing GB/T 714-2015

Structural steel for bridge

桥梁用结构钢

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1 Scope

GB/T 714-2025 is the Chinese national standard covering bridge steel - the grades and their yield and tensile properties through the thickness, the impact toughness at low temperature, the weldability expressed through the carbon equivalent, the through-thickness ductility, and the weathering grades. It replaces GB/T 714-2015, under the China Iron and Steel Association. In force from 1 May 2026. It was issued on 31 October 2025 and has been in force since 1 May 2026, replacing GB/T 714-2015. The document is under the responsibility of the China Iron and Steel Association. This page is published from the official record of the 2025 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This Document specifies the designation method, ordering details, manufacturing process, technical requirements, test methods, inspection rules, packaging, marking, and quality certificate of structural steel for bridge. This Document applies to single-rolled steel plates for bridge structural steel with a thickness not exceeding 150 mm, and hot-rolled steel strips and sheared steel plates for bridge structural steel with a thickness not exceeding

25.4 mm (hereinafter referred to as steel plates and strips).

2 Normative References

The provisions in following documents become the essential provisions of this Document through reference in this Document. For the dated documents, only the versions with the

dates indicated are applicable to this Document; for the undated documents, only the latest version (including all the amendments) is applicable to this Document.

GB/T 222 Permissible tolerances for chemical composition of steel products

GB/T 223 (all parts) Iron, steel and alloy - Methods for chemical analysis

GB/T 228.1 Metallic materials - Tensile testing - Part

3 Terms and Definitions

For the purposes of this Document, the following terms and definitions apply.

3.1 Normalizing A heat treatment process in which steel is heated to a suitable temperature above the phase transformation point and then cooled in air to a temperature below certain phase transformation point.

3.2 Thermomechanical rolling It is a rolling process in which the final deformation of steel is carried out within a certain temperature range, thereby ensuring that the steel acquires properties that cannot be obtained through heat treatment alone. NOTE

1.Thermomechanical rolling includes the process of increasing the cooling rate in tempered or non-tempered conditions. Tempering includes self-tempering but excludes direct quenching and quenching followed by tempering. NOTE

2.Also known as TMCP (Thermomechanical Controlled Process), and in some publications as "controlled rolling".

3.3 Quenched and tempered The heat treatment method involves quenching the steel and then tempering it at high temperature.

3.4 Atmospheric corrosion resisting steel Steel that adds certain alloying elements, such as Cr, Ni, Cu, and Mo, and improves its atmospheric corrosion resistance by forming a dense rust layer on the metal matrix surface. NOTE

1.Atmospheric corrosion resisting steel is also called weathering steel, code. NH. NOTE

2.For bridge site reference environments for uncoated applications of atmospheric corrosion resisting steel, see Appendix A.

4 Designation Method

The steel designation consists of four parts. the first letter of the pinyin (Qu) for "yield strength", the specified minimum yield strength value, the first letter of the pinyin (qiao) for "bridge", and the quality grade symbol. NOTE 1.Q + specified minimum yield strength value + q, abbreviated as steel grade. EXAMPLE 1.Q420qD. Where. Q - the first letter of the pinyin (Qu) for "yield strength"; 420 - the specified minimum yield strength value, in MPa; q - the first letter of the pinyin (qiao) for "bridge"; D - quality grade D. Bridge steel with

weathering resistance properties is designated by adding "weathering" (NH) after the above-mentioned designation. NOTE 2.Q + specified minimum yield strength value + q + NH, also abbreviated as steel grade. EXAMPLE 2.Q420qDNH. NH - the first letter of the pinyin (Nai Hou) for "weathering". When thickness-direction properties are required for steel plates, a symbol representing the thickness-direction (Z-direction) property level (Z15, Z25, Z35) shall be added after the designations specified above, such as Q420qDZ35, Q420qDNHZ35.

5 Ordering Details

Contracts or orders placed according to this Document shall include at least the following.

a) This Document number;

b) Product name;

d) Specification;

e) Dimensions, shape, and precision requirements;

f) Weight (quantity);

g) Delivery condition;

h) Special requirements.

6 Manufacturing Process

6.1 Smelting method Steel is smelted in a converter or electric furnace and subjected to ladle refining treatments such as vacuum degassing.

6.2 Delivery condition Steel shall be delivered in thermomechanical rolling (TMCP), thermomechanical rolling (TMCP) + tempered, or quenched and tempered delivery condition, as indicated in the quality certificate. When the thickness of steel plates of Q345q and Q370q grades is greater than 100mm but no greater than 150mm, delivery in the normalizing condition can be agreed upon by both the supplier and the purchaser.

7.1 Designations and chemical composition

7.1.1 The designations and chemical compositions (smelting analysis) of steels in different delivery conditions shall conform to the provisions of Tables 1 to