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**Seamless Abrasion-Resistant
Steel Pipes for Mortar Service**

输送砂浆用耐磨无缝钢管

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Seamless Abrasion-Resistant Steel Pipes for Mortar Service

1 Scope

This Standard specifies the designation, ordering contents, size, shape, weight, technical requirements, test methods, inspection rules, package, mark and quality certificate of the seamless abrasion-resistant steel pipe for mortar service.

This Standard is applicable to abrasion-resistant seamless steel pipe (hereinafter referred to as steel pipe) for concrete, cement mortar, and slurry services.

2 Normative References

The following documents are essential to the application of 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) are applicable to this document.

GB/T 222 Method for Determination of Permissible Tolerance of the Chemical Composition of Steel Finished Product

GB/T 223.5 Steel and Iron - Determination of Acid-Soluble Silicon and Total Silicon Content - Reduced Molybdenosilicate Spectrophotometric Method

GB/T 223.12 Methods for Chemical Analysis of Iron, Steel and Alloy - The Sodium Carbonate Separation-Diphenyl Carbazide Photometric Method for the Determination of Chromium Content

GB/T 223.14 Methods for Chemical Analysis of Iron, Steel and Alloy - The N-Benzoyl-N-Phenylhydroxylamine Extraction Photometric Method for the Determination of Vanadium Content

GB/T 223.19 Methods for Chemical Analysis of Iron, Steel and Alloy - The Neocuproine-Chloroform Extraction Photometric Method for the Determination of Copper Content

GB/T 223.23 Iron, Steel and Alloy-Determination of Nickel Content - The Dimethylglyoxime Spectrophotometric Method

Infrared Absorption Method after Combustion in an Induction Furnace (Routine Method)

YB/T 4149 Continuously Cast Round Billet for Seamless Steel Tube Rolling

YB/T 5221 Alloy Structure Steel Round Tube Blank Hot Rolled and Forged for Making Seamless Tube

YB/T 5222 Quality Carbon Structural Steel Round Tube Blank

3 Designation

The steel designation consists of two parts, namely, the first capital letter of Chinese Pinyin “Nai Mo”, NM; and specified minimum Rockwell hardness after heat treatment.

Example: NM60, thereof:

NM - first capital letter of Chinese Pinyin “Nai Mo” [**Translator note: i.e. Abrasion-Resistant**];

60 - specified minimum Rockwell hardness after heat treatment.

4 Ordering Contents

The contract or order list that orders products as per this Standard shall include the following contents:

- a) This Standard number;
- b) Product name;
- c) Steel designation;
- d) Size and specification;
- e) Ordering quantity (total weight or total length);
- f) Delivery state;
- g) Particular requirements.

5 Size, Shape, Weight

5.1 Outer diameter and wall thickness

When using vortex to test, the artificial defects of the comparative sample tube shall conform to the acceptance level E4H or E4 provisions in GB/T 7735-2016; when performing the magnetic-leaked test, the longitudinal artificial defects on the outer surface of the comparative sample tube shall conform to the acceptance level F4 provisions in GB/T 12606-2016; when using ultrasonic to test, the artificial defects of the comparative sample tube shall conform to the acceptance level L4 provisions in GB/T 5777-2008.

6.6 Surface quality

6.6.1 The inner and outer surface of the steel pipe shall be free of visible cracks, folds, rolling-folds, separation layers and scars; these defects shall be removed completely; the actual wall thickness of the removal position shall be no less than the minimum allowable wall thickness.

6.6.2 The straight allowable depth shall conform to the following provisions:

- a) Cold-drawing (rolling) steel pipe: no greater than 4% wall thickness; the maximum depth is 0.3mm;
- b) Hot-rolling (expanding) steel pipe: no greater than 5% wall thickness; the maximum depth is 0.5mm.

6.6.3 Other local imperfections that don't exceed the negative wall thickness deviation are allowed to exist.

7 Test Methods

7.1 The chemical composition analysis and sampling of steel and steel pipe shall be performed as per the rules specified in GB/T 20066. The instrumental analysis of chemical composition shall be performed as per the provisions of GB/T 4336, GB/T 20123; the wet analysis shall be performed as per the provisions of GB/T 223.5, GB/T 223.12, GB/T 223.14, GB/T 223.19, GB/T 223.23, GB/T 223.59, GB/T 223.63, GB/T 223.69, GB/T 223.84, GB/T 223.85; however, the arbitration shall be performed as per the wet analysis.

7.2 The Rockwell hardness shall be measured near the middle of the wall thickness of the steel pipe.

7.3 The size and shape of steel pipe shall be measured by measuring gauge that meet the accuracy requirements one by one.

7.4 The inner and outer surface of the steel pipe shall be visually inspected one by one under full lighting conditions.

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