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

DL/T 680-2015

Replacing DL/T 680-1999

Specification for electric power industry wear-resistant pipes

电力行业耐磨管道技术条件

(English Translation)

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1 Scope

This standard specifies the classification, designation, technical requirements, test methods, inspection rules, marking, packaging, storage and transportation of electric power industry wear-resistant pipes.

This standard is applicable to the wear-resistant pipes conveying such materials as pulverized coal, coal ash (coal cinder), limestone powder, gypsum slurry, etc.; other pipes with wear-resistant requirements may refer to this standard.

2 Normative References

The following documents are indispensable for the application of this document. For dated references, only the dated edition applies. For undated references, the latest edition (including all the amendments) of the normative document applies.

GB/T 223.4 Alloyed Steel - Determination of Manganese Content - Potentiometric or Visual Titration Method
GB/T 223.5 Steel and Iron - Determination of Acid-soluble Silicon and Total Silicon Content - Reduced Molybdosilicate Spectrophotometric Method
GB/T 223.11 Iron, Steel and Alloy - Determination of Chromium Content - Visual Titration or Potentiometric Titration Method
GB/T 223.18 Methods for Chemical Analysis of Iron, Steel and Alloy - The Sodium Thiosulfate Separation Iodimetric Method for the Determination of Copper Content
GB/T 223.23 Iron, Steel and Alloy - Determination of Nickel Content - The Dimethylglyoxime Spectrophotometric Method
GB/T 223.26 Iron, Steel and Alloy - Determination of Molybdenum Content - The Thiocyanate Spectrophotometric Method

GB/T 223.59 Iron, Steel and Alloy - Determination of Phosphorus Content - Bismuth Phosphomolybdate Blue Spectrophotometric Method and Antimony Phosphomolybdate Blue Spectrophotometric Method GB/T 223.60 Methods for Chemical Analysis of Iron, Steel and Alloy - The Perchloric Acid Dehydration Gravimetric Method for the Determination of Silicon Content GB/T 223.67 Iron Steel and Alloy - Determination of Sulfur Content - Methylene Blue Spectrophotometric Method GB/T 223.69 Iron, Steel and Alloy - Determination of Carbon Contents - Gas-volumetric Method after Combustion in the Pipe Furnace 12 Quality of the inner and outer surfaces of wear-resistant pipe is inspected visually or with corresponding measuring tools.

6.2 Geometric dimension

Geometric dimension is measured with corresponding measuring tools like caliper, steel tape, template, thickness gauge, etc.

6.3 Pressure resistance capability

Test of pressure resistance capability is carried out according to the method specified in 5.4 of this standard.

6.4 Chemical component analysis of metal

Chemical composition analysis test of metal is carried out according to the methods specified in GB/T 223.4, GB/T 223.5, GB/T 223.11, GB/T 223.18, GB/T 223.23, GB/T 223.26, GB/T 223.59, GB/T 223.60, GB/T 223.67, GB/T 223.69, GB/T 223.71, GB/T 223.72, GB/T 4336, GB/T 14203 and GB/T 20066.

6.5 Mechanical performance of metal

6.5.1

Rockwell hardness test of metal is carried out according to the method specified in GB/T 230.1; product hardness detection may be carried out with Leeb hardness tester according to the method specified in GB/T 17394.1, GB/T 17394.4 or JB/T 9378.

6.5.2

Impact test of metal is carried out according to the method specified in GB/T 229.

6.6 Performance of ceramic lining material

6.6.1

Volume density test is carried out according to the method specified in GB/T 2997.

6.6.2

Vickers hardness test is carried out according to the method specified in GB/T 16534;

Rockwell hardness test is carried out according to GB/T 27979; Mohs hardness test is carried out according to the method specified in EN 101.

6.6.3

Wear resistance test is carried out according to the method specified in DL/T 902.

6.6.4

Performance test of single ceramic lining (block) is carried out according to the method specified in GB/T 27979 or JC/T 848.1.

6.7 Performance of rubber lining material

6.7.1

Tests of tensile strength and elongation at break are carried out according to the methods specified in GB/T 528.

6.7.2

Shore hardness test is carried out according to the method specified in GB/T 531.1.

6.7.3

Wear resistance test is carried out according to the method specified in GB/T 1689.

6.7.4

Hot air aging performance test is carried out according to the method specified in GB/T 3512.

6.8 Performance of high-temperature wear-resistant lining material

6.8.1

Volume density test is carried out according to the method specified in GB/T 2997.

6.8.2

Breaking strength and compressive strength tests are carried out according to the methods specified in YB/T 5201.

6.8.3

Wear resistance test is carried out according to the method specified in GB/T 18301.

6.9 Performance of cast stone lining material

6.9.1

Volume density test is carried out according to the method specified in GB/T 2997.

6.9.2

Wear resistance test is carried out according to the method specified in JC/T 260.

6.9.3

Bending strength test is carried out according to the method specified in JC/T 263.

6.9.4

Mohs hardness test is carried out according to the method specified in EN 101.

6.10.1 Chemical component test is carried out according to the method specified in GB/T

3045.

6.10.2 Volume density test is carried out according to the method specified in GB/T 2997.

6.10.3 Breaking strength test is carried out according to the method specified in GB/T 3001.

6.10.4 Bending strength test is carried out according to the method specified in GB/T 6569.

6.10.5 Wear resistance test is carried out according to the method specified in GB/T 18301.

6.10.6 Mohs hardness test is carried out according to the method specified in EN 101.

7.1.1 Quality of the inner and outer surfaces, dimensional deviation, chemical component

and inner pipe wall hardness of metallic wear-resistant pipe and wear resistant white cast iron bi-metallic composite wear-resistant pipe.

7.1.2 Quality of the inner and outer surfaces, dimensional deviation, chemical component

and inner pipe wall hardness of inner wall hardening alloy steel wear-resistant pipe and bi-metallic inner pipe hardening alloy steel composite wear-resistant pipe.

7.1.3 Quality of the inner and outer surfaces, dimensional deviation, chemical component

and inner pipe wall hardness of surfacing composite wear-resistant pipe.