NATIONAL STANDARD OF THE

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Code for construction and quality acceptance of industrial non-ferrous metallic piping engineering

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1.0.1 In order to improve the construction level of industrial non-ferrous metal pipeline

projects, strengthen the quality control and acceptance of the construction process of industrial non-ferrous metal pipeline projects, ensure the quality of the project, this Code is hereby formulated.

1.0.2 This Code is applicable to the construction and quality acceptance of industrial

pipeline projects of copper, aluminum, lead, nickel, titanium, zirconium, tantalum, niobium and their alloys.

1.0.3 This Code does not apply to the construction and quality acceptance of the

following industrial non-ferrous metal pipeline projects.

1 The manufacturer designs complete sets of pipes, that are integrated into the equipment.

3 Pipes for offshore facilities and underground mines.

1.0.4 The construction and quality acceptance of industrial non-ferrous metal pipeline projects shall not only comply with this Code, but also comply with the relevant national standards.

2 Terms

2.0.1 Industry non-ferrous metal pipeline Process pipes, other auxiliary pipes, pipes serving industrial production, which are are connected or assembled by non-ferrous metal pipes and other piping components, to transport process media in production device.

2.0.2 Intergranular corrosion In some environments, when the dissolution rate of the grain boundaries is greater than the dissolution rate of the grains themselves, corrosion occurs along the metal grain boundaries or grain boundaries.

2.0.3 Solution treatment A heat treatment process, in which the alloy is heated to a high temperature and maintained at a constant temperature in the single-phase region, so that the excess phase is fully dissolved into the solid solution and then rapidly cooled, to obtain a supersaturated solid solution.

2.0.4 Roundness The ratio -- of the difference between the maximum outer diameter and the minimum outer diameter on the cross section of the elbow TO the average of the maximum outer diameter and the minimum outer diameter.

3 Basic requirements

3.0.1 Pipeline projects shall have approved construction program, construction plan, other technical documents, before construction.

3.0.2 Process handover inspection shall be conducted between pipeline engineering

construction and other related disciplines, meanwhile quality acceptance records shall be formed.

3.0.3 During the pipeline project construction process, various construction technical

documents, construction records, inspection reports, quality acceptance records, and other project acceptance work shall be completed.

3.0.4 The quality acceptance of industrial non-ferrous metal pipeline projects can be

divided into item work, segment work (sub-division work).

3.0.5 The non-ferrous metal pipeline project in the same unit project can be divided into

one segment work or several sub-division work.

4.1.1 Piping components shall have product quality certification documents from the

manufacturer; the technical parameters shall meet the requirements of the design documents.

4.2.1 The outer diameter and wall thickness of the pipe shall be inspected before use.

The outer diameter inspection shall comply with the current national standards for non-ferrous metals and alloy products; where there are no requirements for non-standard pipe design, the allowable deviation of wall thickness shall comply with the provisions of Table 4.2.1.

4.2.2 Where there is no requirement in the design, the straightness of the pipe shall

comply with the provisions of Table 4.2.2.

4.3 Valves inspection

4.3.1 Appearance quality inspection shall be carried out before the valve is installed, which shall comply with the following requirements.

4.4.1 The surface of pipe fittings shall be smooth and clean, without defects such as

cracks, pinholes, folds, delamination, dents, scratches, blisters, etc.

4.5 Storage and transportation of piping components

4.5.1 Piping components shall be stored separately and neatly, according to category, material, specification. They shall be labeled. They shall not be stored in a mixed manner. Steel stamps must not be used for marking pipes and pipe fittings. The materials used for marking nickel and nickel alloy pipes must not contain halogens or halides; meanwhile

measures such as anti-corrosion, anti-deformation, anti-surface damage shall be taken.

4.6 Quality inspection and acceptance

I Main control items

4.6.1 Piping components shall be checked against the quality certification documents

provided by the manufacturer. The performance parameters shall comply with the provisions of relevant technical documents.

Inspection quantity. 100% inspection.

Inspection method. Check the certificate of conformity and quality inspection report;

check relevant technical documents.

5.1 General requirements

5.1.1 Special processing tools shall be used for pipe processing. During processing, measures shall be taken to prevent pipe damage, deformation, deterioration, and reduction of material performance. Iron tools shall not be used in direct contact with pipes.

5.2.1 Pipe straightening and rounding shall be carried out on a platform, which is paved

with soft pads. Straightening shall meet the following requirements.

5.2.2 After the pipe is straightened and rounded, the inside and outside of the pipe shall

be cleaned.

5.3 Pipe cutting and groove processing

5.3.1 Mechanical methods should be used for cutting copper, aluminum, lead, nickel, titanium, zirconium and their alloy pipes. When thermal cutting is used, mechanical methods shall be used to remove the heat-affected area of the cutting. Tantalum, niobium and their alloy pipes should be cut by wire cutting or mechanical methods.

5.4.1 The bending radius of the elbow shall comply with the provisions of the design

documents. If there is no provision in the design documents, it should comply with the provisions of Table 5.4.1.