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Technical Specification for Sherardizing

Coatings on Iron and Steel Articles

钢结构件渗锌耐蚀作业质量控制

评定技术规范

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Technical Specification for Sherardizing Coatings on Iron and Steel Articles

1 Scope

This Standard specifies relevant terms, and technical requirements of quality control and assessment of sherardizing coatings anti-corrosion operation of iron and steel articles (hereinafter referred to as sherardizing operation).

This Standard is applicable to surface sherardizing operation of carbon steel, low-alloy steel and cast-iron components, fasteners and structural parts.

This Standard is not applicable to sherardizing operation of steel structural components that have precision requirements towards external dimension; steel structural components that bear soldered joints or organic material joints; steel structural components that need to be tempered at the temperature of 360 °C to satisfy the requirement of mechanical properties.

2 Normative References

The following documents are indispensable to the application of this Standard. In terms of references with a specified date, only versions with a specified date are applicable to this Standard. The latest version (including all the modifications) of references without a specified date is also applicable to this Standard.

GB/T 230.1 Metallic Materials - Rockwell Hardness Test - Part 1: Test Method (scales A, B, C, D, E, F, G, H, K, N, T)

GB/T 4956 Non-magnetic Coatings on Magnetic Substrates - Measurement of Coating Thickness - Magnetic Method

GB/T 6462 Metallic and Oxide Coatings - Measurement of Coating Thickness - Microscopical Method

GB/T 6890 Zinc Powder

GB/T 10125 Corrosion Tests in Artificial Atmospheres - Salt Spray Tests

GB/T 13912-2002 Metallic Coatings - Hot Dip Galvanized Coatings on Fabricated Iron

3 Terms and Definitions

The following terms and definitions are applicable to this document.

3.1 Sherardizing

Sherardizing is an anti-corrosion method that forms a zinc-iron alloy coating on the surface by rotating and heating up steel structural components, zinc powder, additives and activators in a sealed container.

3.2 Sherardized Coatings

Sherardized coating refers to a zinc-iron alloy coating that is formed on the surface of steel structural components because of the mutual diffusion of zinc and iron atoms.

3.3 Sherardized Articles

Sherardized article refers to steel structural components that are processed through sherardizing throughout the process.

3.4 Colored Seal

Colored seal refers to the process of sealing sherardized coating on sherardized pieces with a colored material.

3.5 Colorless Seal

Colorless seal refers to the process of sealing sherardized coating on sherardized pieces with a colorless or transparent material.

3.6 Sherardized Anti-corrosion Coatings

Sherardized anti-corrosion coating is a compound anti-corrosion coating that is formed after sealing the sherardized coating.

4 Technical Requirements

4.1 Thickness Level of Sherardized Coatings

In accordance with the requirements of adopting steel structural components under different environments, sherardized coatings can be divided into several thickness levels. Thickness level of sherardized coatings shall comply with the stipulation in Table 1 below.

or eliminate reddish brown spots that are generated because of premature iron atom precipitation in sherardized coatings in accelerated corrosion test or application.

4.5 Performance of Sherardized Coatings

4.5.1 Appearance

4.5.1.1 There shall be no dust, excessive spot, delamination or stripping on the surface of the sherardized coatings; the appearance colors shall be uniform; there shall be no obvious chromatic aberration.

4.5.1.2 After sherardizing, fasteners shall have distinct and clean screw threads that will not affect the normal operation.

4.5.1.3 When sherardized articles' defects (such as sand hole and slag inclusion, etc.) lead to partial non-sherardized coatings after sherardizing, it shall not be deemed as quality defect.

4.5.2 Thickness

4.5.2.1 Thickness of the sherardized coatings shall comply with the stipulation in Table 1.

4.5.2.2 The sherardized coatings shall be uniform; thickness deviation of the sherardized coatings of the same sherardized article shall not be > 10% of the average thickness of the sherardized coatings.

4.5.3 Hardness

In terms of high-strength structural components, such as spring and high-strength fasteners, hardness test of base metal shall be conducted after sherardizing. The result shall not be < the hardness of base metal before sherardizing.

4.5.4 Corrosion resistance

Neutral salt spray corrosion time of different thickness levels of sherardized coatings shall comply with the stipulation in Table 3 below.

Table 3 -- The Lowest Time Requirement of Red Rust Emerging after Neutral Salt Spray Test

Thickness Level	SZn15f	SZn30f	SZn40f	SZn50f	SZn60f	SZn70f	SZn80f	SZn90f	SZn100f	SZn120f
Red Rust Emerging Time/h	≥ 72				≥ 120			≥ 300		

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