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

GB/T 17456.2-2025

**Ductile iron pipes, fittings and accessories - External
zinc-based coating - Part 2: Zinc rich paint with finishing layer
(English Translation)**

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1 Scope

This Document specifies the technical requirements and test methods for applying zinc-rich paint coatings and finishing coatings to the outer surfaces of ductile iron pipes, fittings, and accessories in the factory, as defined in GB/T 13295, GB/T 26081, and GB/T 43492.

This Document applies to zinc-rich paint coatings with finishing layers on the outer surfaces of ductile iron pipes, fittings, and accessories.

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 13295 Ductile iron pipes, fittings and accessories for water or gas applications (GB/T 13295-2019, ISO 2531:2009, MOD)

GB/T 13452.2 Paints and varnishes - Determination of film thickness (GB/T 13452.2-2008, ISO 2808.2007, IDT)

GB/T 26081 Ductile iron pipes, fittings and accessories for sewerage applications (GB/T 26081-2022, ISO 8176.2011, MOD)

GB/T 43492 Thermal pre-insulated ductile iron pipes, fittings and accessories (GB/T 43492-2023, ISO 9349.2017, MOD)

3 Terms and Definitions

For the purposes of this Document, there are no terms and definitions apply.

4 Materials

The zinc-based coating material shall be an inorganic or organic zinc-rich coating with a dry film zinc content of no less than 85% (mass fraction); and the finishing coating shall be an asphalt coating or a synthetic resin coating compatible with the zinc-rich paint coating.

5.1 Substrate surface condition

5.1.1

The surface of the pipe component substrate shall be dry, free of dust, and free of any loosely adhering particles or foreign matter, such as oil or grease.

5.1.2

The zinc-rich paint coating may be applied directly to the outer surface of the annealed pipe component, or to the outer surface after sandblasting, shot blasting, or grinding, as determined by the manufacturer.

5.2 Coating method

5.2.1

The zinc-rich paint may be sprayed or brushed onto the outer surface of the pipe component.

5.2.2

The design and structure of the spraying equipment are not covered in this Document.

5.3 Coating requirements

5.3.1

The zinc-rich paint coating shall cover the outer surface of the pipe components and shall be free from defects such as exposed surfaces or poor adhesion.

5.3.2

When the mass of zinc-rich paint coating meets the requirements of 5.4, a spiral appearance is permissible.

5.3.3

The manufacturer shall specify in its product manual any abnormal conditions that do not affect the performance of the coating system.

5.3.4

For operational damage to the zinc-rich paint coating, the coating surface is considered qualified if the cumulative area of the damaged area per square meter does not exceed 5 cm² and the smaller side dimension of the damaged area is less than 5 mm. Larger area of damage shall be repaired according to the provisions of 5.5.

5.4 Coating mass

5.4.1

The mass of zinc-rich paint coatings determined according to 7.1 shall be graded as follows, with Grade I applied unless otherwise specified by the purchaser.

- Grade I. Average mass no less than 150 g/m², local mass no less than 130 g/m²;
- Grade II. Average mass no less than 235 g/m², local mass no less than 210 g/m²;
- In highly corrosive soil environments, the supplier and purchaser may negotiate and determine a higher zinc-based coating mass.

NOTE: Zinc-rich paint coatings of 130 g/m², 150 g/m², 210 g/m², and 235 g/m² are equivalent to the masses of metallic zinc coating of 110 g/m², 130 g/m², 180 g/m², and 235 g/m², respectively.

5.4.2

Before fabricating the insulation layer according to GB/T 43492, a zinc-rich paint coating should be applied, with an average mass of no less than 70 g/m² and a minimum local mass of no less than 60 g/m². Depending on the manufacturer's production process or as agreed upon by both the supplier and the purchaser, a zinc-rich paint coating may not be necessary.

NOTE: 60 g/m² and 70 g/m² zinc-rich paint coatings are equivalent to the masses of metallic zinc coating of 50 g/m² and 60 g/m², respectively.

5.4.3

The manufacturer shall visually inspect the surface quality and uniformity of the coating on each pipe component and shall periodically test the quality of the zinc-rich paint coating according to the method in 7.1.

5.4.4

Factory mass control inspections shall ensure compliance with the requirements of this

Document. Factory mass control test shall be the sole determining factor for coating thickness acceptance. When on-site verification information is required, the supplier and the purchaser shall agree upon and agree to use one of the methods in Appendix A for inspection.

5.4.5

When selecting a coating based on soil characteristics, refer to Appendix B.

5.5 Coating repair

Uncoated areas, such as areas covered by the test piece, and areas with coating damage exceeding the limits specified in 5.3.4, may be repaired using a zinc-rich paint with a dry film zinc content (mass fraction) of no less than 85%. The repaired coating shall comply with the provisions of 5.3 and 5.4.

6 Finishing Coating

6.1

After the pipeline components are applied a zinc-rich paint coating, an asphalt coating or a synthetic resin coating compatible with the zinc-rich paint coating shall be used as the finishing coating material.

6.2

The manufacturer may determine the method of applying the finishing coating, such as spraying or brushing. The finishing coating shall uniformly cover the zinc-rich paint coating, with no exposed areas or poor adhesion.

6.3

The thickness of the finishing coating shall be measured according to the provisions of 7.2.

The average dry film thickness shall be no less than 70µm, and the minimum local thickness shall be no less than 50µm.

6.4

The test method for the thickness of the finishing coating is determined by the manufacturer.