
International Standard



8179

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Ductile iron pipes — External zinc coating

Tuyaux en fonte ductile — Revêtement extérieur au zinc

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8179 was prepared by Technical Committee ISO/TC 5, *Ferrous metal pipes and metallic fittings*.

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Ductile iron pipes — External zinc coating

1 Scope and field of application

This International Standard deals with the external coating of ductile iron pipes at the works by zinc coating. This zinc coating may be factory-applied to ductile iron pipes, at the manufacturer's option since other types of coating are possible.

It includes specifications concerning zinc, and requirements for its application and coating inspection.

It also includes information on the finishing layer applied on the zinc coated surface. It should be noted that zinc coating is not mandatory as other forms of protection are available.

2 Reference

ISO 2531, *Ductile iron pipes, fittings and accessories for pressure pipe-lines.*

3 Materials

The coating materials are metallic zinc with a content of at least 99 % or zinc-rich paint which contains more than 85 % zinc in dry film.

4 Specification for zinc coating

4.1 Pipe surface condition

The zinc shall normally be applied on oxide-surfaced pipe. It may be applied on a blast-cleaned pipe.

The pipe surface shall be dry, and free from rust or non-adhering particles or foreign matter such as oil or grease.

4.2 Method of application

4.2.1 Metallic zinc coating

The coating shall be applied at the works by projecting small droplets of zinc heated to the molten state by means of spray-guns.

The design and construction of the spray equipment are not within the scope of this International Standard.

4.2.2 Zinc-rich paint coating

The coating shall be applied at the works by spraying or brushing zinc-rich paint onto the pipe surface.

The design and construction of the coating equipment are not within the scope of this International Standard.

5 Characteristics of the coating

5.1 Appearance

The zinc coating shall cover the external surface of the pipe apart from the socket face. It shall be free from such defects as bare patches or lack of adhesion. A spiralled appearance is permissible provided the zinc coating masses comply with the requirements of 5.2.

Pipes with damaged areas of coating caused by handling are acceptable, provided the area of damage is less than 5 cm² per square metre coated.

The manufacturer is permitted to carry out repairs by any procedure of his choice, for example zinc-rich painting, provided the requirements of 5.2 and 6 are met.

5.2 Zinc coating mass

5.2.1 Metallic zinc coating

The mass of sprayed metal as measured under the conditions defined in 6.3 shall be not less than 130 g/m².

5.2.2 Zinc-rich paint coating

The mass of zinc coating as measured under the conditions defined in clause 6 shall be not less than 150 g/m².

6 Inspection

Inspection tests shall be the responsibility of the manufacturer. If requested by the customer, the manufacturer shall provide a certificate of test.

6.1 Uniformity of coating

Continuous inspection shall be carried out by visual examination during local measurement.

The manufacturer shall ensure uniformity of the coating by periodic local measurement.

6.2 Mean zinc coating mass

The purchaser or his representative may attend the inspection tests.

In this case he shall submit a request to attend to the manufacturer who will give him due notice.

Inspections occur at least twice a month on each installation, preferably on pipes of different diameters.

6.3 Procedure

A rectangular sample holder film of 500 mm length and 50 mm width is applied to the pipe before passing it through the zinc coating equipment, the sample holder being placed longitudinally in line with the outside surface of the pipe wall.

The mass of zinc coating, ρ_A , expressed in grams per square metre, is calculated from the mass difference of the sample holder before and after pipe coating.

$$\rho_A = 40 (M_2 - M_1) K$$

where

M_1 and M_2 are masses before and after zinc coating, expressed to an accuracy of 0,1 g;

K is a correction factor depending on the nature of the sample holder which takes account of the difference in surface roughness between the sample holder and the pipe.

The value of K shall be specified in the test documents.

For information

- for sand-blasted steel sheet: $1,0 \leq K \leq 1,2$
- for polyester sheet: $1,15 \leq K \leq 1,20$.

In case of zinc-rich painting, M_2 should be measured after the sample has been dried for 5 hours at 110 °C.

7 Finishing layer

After zinc coating, the pipe shall be given a finishing coat based on bituminous products or synthetic resins compatible with zinc, applied at the manufacturer's choice by any proven procedure such as gun spraying or brush coating.

The finishing layer shall have good adherence, free from such defects as bare patches or trickles. After drying it shall not be sticky.

The mean thickness of the finishing layer shall be not less than 70 μm , and nowhere less than 50 μm .

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