

ISO/FDIS 16132:2023(E)

~~Date: 2023-10-27~~

ISO/TC 5/SC 2/~~WG 24~~

Secretariat: AFNOR

Date: 2023-11-30

Ductile iron pipes and fittings — Seal coats for cement mortar linings

Tuyaux et raccords en fonte ductile — Seal coats pour les revêtements de mortier de ciment

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

FDIS stage

~~Edited DIS -
MUST BE USED
FOR FINAL
DRAFT~~

© ISO 2023

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ~~ISO's~~ISO's member body in the country of the requester.

ISO ~~Copyright Office~~copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: + 41 22 749 01 11

~~Email:~~ copyright@iso.org

~~E-mail:~~ copyright@iso.org

~~Website:~~ www.iso.orgwww.iso.org

Published in Switzerland.

iTeh Standards (<https://standards.iteh.ai>) Document Preview

ISO/FDIS 16132

<https://standards.iteh.ai/catalog/standards/sist/899b8943-4eb7-4d32-adee-55c4811e102c/iso-fdis-16132>

Contents—Page

Foreword	vi
Introduction	vii
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Materials in contact with water intended for human consumption	2
5 Performance test requirements	2
5.1 Short-term sealing efficiency	2
5.2 Long-term sealing efficiency	2
5.3 Cyclic pressure	3
6 Routine test requirements	3
6.1 General	3
6.2 Visual appearance	3
6.3 Coating thickness	4
6.4 Adhesion	4
7 Marking	4
Annex A (normative) Short-term sealing efficiency	5
A.1 Principle	5
A.2 Materials	5
A.3 Apparatus	5
A.4 Preparation of test samples	5
A.5 Procedure	5
Annex B (normative) Long-term sealing efficiency	9
B.1 Principle	9
B.2 Materials	9
B.3 Apparatus	9
B.4 Preparation of test samples	10
B.5 Procedure	10
Annex C (normative) Cyclic pressure test	13
C.1 Principle	13
C.2 Apparatus and material	13
C.3 Sample preparation	13
C.4 Procedure	13
Annex D (normative) Coating thickness measurement using test film	15
D.1 Principle	15
D.2 Apparatus	15

D.3	Preparation of test samples	15
D.4	Micrometer measurement method	15
D.5	Weight and area method — Procedure	16
Annex E (normative)	Adhesion test	17
E.1	Principle	17
E.2	Apparatus	17
E.3	Procedure	17
Annex F (normative)	Quality assurance	19
F.1	General	19
Bibliography		20

Foreword — v

Introduction — vii

1 — Scope — Error! Bookmark not defined.

2 — Normative references — Error! Bookmark not defined.

3 — Terms and definitions — 2

4 — Materials in contact with water intended for human consumption — Error! Bookmark not defined.

5 — Performance test requirements — [ISO/FDIS 16132](https://standards.iteh.ai/catalog/standards/sist/899b8943-4eb7-4d32-adee-55c4811e102c/iso-fdis-16132) — 3

5.1 — Short term sealing efficiency — 3

5.2 — Long term sealing efficiency — 3

5.3 — Cyclic pressure — 3

6 — Routine test requirements — Error! Bookmark not defined.

6.1 — General — Error! Bookmark not defined.

6.2 — Visual appearance — 4

6.3 — Coating thickness — 4

6.4 — Adhesion — 4

7 — Marking — 4

Annex A (normative) Short term sealing efficiency — 5

A.1 — Principle — 5

A.2 — Materials — 5

A.3 — Apparatus — 5

A.4 — Preparation of test samples — 5

A.5 — Procedure — 6

Annex B (normative) Long-term sealing efficiency — 8

B.1 — Principle — 8

B.2 — Materials — 8

B.3 — Apparatus — 8

B.4 — Preparation of test samples — 9

B.5 — Procedure — 9

Annex C (normative) Cyclic pressure test — 11

C.1 — Principle — 11

C.2 — Apparatus and material — 11

C.3 — Sample preparation — 11

C.4 — Procedure — 11

Annex D (normative) Coating thickness measurement using test film — 13

D.1 — Principle — Error! Bookmark not defined.

D.2 — Apparatus — Error! Bookmark not defined.

D.3 — Preparation of test samples — Error! Bookmark not defined.

D.4 — Micrometer measurement method — Error! Bookmark not defined.

D.5 — Weight and area method — Procedure — Error! Bookmark not defined.

Annex E (normative) Adhesion test — Error! Bookmark not defined.

E.1 — Principle — Error! Bookmark not defined.

E.2 — Apparatus — Error! Bookmark not defined.

E.3 — Procedure — Error! Bookmark not defined.

Annex F (normative) Quality assurance — 17

Bibliography — Error! Bookmark not defined.

~~Edited DIS -
MUST BE USED
FOR FINAL
DRAFT~~

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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 5, *Ferrous metal pipes and metallic fittings*, Subcommittee SC 2, *Cast iron pipes, fittings and their joints*.

This third edition cancels and replaces the second edition (ISO 16132:2016) which has been technically revised.

The main changes are as follows:

- ~~X-cut~~ X-cut method has been incorporated instead of cross-cut for adhesion test as per ISO 16276-2:2007;
- ~~List a~~ List list of performance tests and routine tests has been incorporated in ~~Annex F~~ Annex F;
- ~~Short-short-term~~ Short-term sealing efficiency and ~~Long-long-term~~ Long-term sealing efficiency methods in ~~Annex A~~ Annex A and ~~Annex B~~ Annex B have been modified.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The intended purpose of a seal coat is to reduce the contact between a cement mortar lining and the contents of a water main, thereby restricting the leaching of inorganic materials into the water supply.

Seal coats are usually specified where the pipeline is to convey soft waters and/or where residence times are very long. Supply water quality data for such pipelines should be discussed between the prospective client and the seal coated pipe supplier to ensure the suitability of the product for use.

Attention is drawn to the fact that seal coated cement mortar lined surfaces in contact with, or likely to come into contact with, potable water need to conform to the requirements of national or international water supply or water quality regulations. Approval can be required for the individual components of the system, or for the combined system, depending upon the requirements of those national or international water supply or water quality regulations when used

- in accordance with the product manufacturer's instructions for use,
- under any other appropriate conditions defined for that product within any published list of substances, products and processes approved to those water supply or water quality regulations.

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

ISO/FDIS 16132

<https://standards.iteh.ai/catalog/standards/sist/899b8943-4eb7-4d32-adee-55c4811e102c/iso-fdis-16132>

~~Edited DIS -
MUST BE USED
FOR FINAL~~

Ductile iron pipes and fittings — Seal coats for cement mortar linings

1 Scope

This document specifies the requirements for seal coatings for factory application to the surfaces of cement mortar linings, which are factory applied to the interior of ductile iron pipes and fittings.

It provides the performance requirements for short-term sealing efficiency, long-term durability and cyclic pressure, as well as the routine testing requirements for visual appearance, coating thickness and adhesion.

This document is applicable to products for potable and irrigation water and for other applications as per agreement between manufacturer and customer.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 2531:2009, *Ductile iron pipes, fittings, accessories and their joints for water applications*

ISO 2439:2008, *Flexible cellular polymeric materials — Determination of hardness (indentation technique)*

ISO 10523:2008, *Water quality — Determination of pH*

ISO 16276-2:2007, *Corrosion protection of steel structures by protective paint systems — Assessment of, and acceptance criteria for, the adhesion/cohesion (fracture strength) of a coating — Part 2: Cross-cut testing and X-cut testing*

4.3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1 ductile iron

type of cast iron used for pipes, fittings and accessories in which graphite is present primarily in spheroidal form

3.2

fitting

casting other than a pipe, which allows pipeline deviation or change of direction or bore

Note 1-to-entry:- Flanged sockets, flanged spigots and collars are also classified as fittings.

3.3

test film

film of consistent thickness and density, morphologically stable at the temperature of the substrate during seal coat application, used as a surrogate surface for the measurement of coating thicknesses

3.4

pipe

casting of uniform bore, with straight axis, having either socket, spigot or flanged ends

Note 1-to-entry:- This does not apply to flanged sockets or flanged spigots and collars, which are classified as fittings.

3.5

product

seal coated, cement mortar lined iron pipe or fitting

3.6

seal coat

coating applied over a cement mortar lining to control the interactions between the lining and the inside flowing fluid

3.7

performance test

proof of design test, done once and repeated only after a relevant change of material or supplier of the seal coat or lining, or relevant change in process design

54 Materials in contact with water intended for human consumption

Manufacturers shall submit the hygienic certificate of seal coat meeting the requirement of ISO 2531:2009, 4.1.4 for the material in contact with water intended for human consumption, in case the pipes are to be used for water application.

65 Performance test requirements

6.15.1 Short-term sealing efficiency

When tested in accordance with **Annex A**, the pH of the test water shall not exceed 9,5.

By agreement between the manufacturer of the product and the customer, other performance tests with other exposure periods, test waters and/or limits of pH value can be undertaken to suit particular national or customer requirements.

6.35.2 Long-term sealing efficiency

When tested in accordance with **Annex B**, the pH of the test water shall not exceed 9,5 for each of the test samples.