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Ductile iron pipelines — Hydrostatic testing after installation

Canalisations en fonte ductile — Essais hydrostatiques après pose



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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. 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 documents 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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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 second edition cancels and replaces the first edition (ISO 10802:1992), which has been technically revised.

The main changes compared to the previous edition are as follows:

- add the safety instructions for hydrostatic testing operation;
- add hydrostatic test flow chart;
- add several diagrams for comprehensiveness;
- add pressure drop test method, as alternative of constant pressure test.

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

Ductile pipelines include many components and jointing solutions to offer a reliable service under the worst situations (high pressure variations, earthquakes, etc.) hence the need of a secure hydrostatic pressure test after having taken into account possible movements of the components.

Every pipeline which has been constructed undergo a water pressure test to ensure the integrity of pipes, joints, fittings and other components such as anchor blocks.

Normally it is made as the assembly of the pipeline progresses, according to the proposed methodology consisting of 3 phases:

- preliminary operations to prepare the test;
- preliminary test to stabilize the pipeline and to evacuate air in the pipeline;
- main pressure test to assess the water tightness of a pipeline at test pressure; it can be done either by a:
 - water loss test: Falling pressure - WLFP or constant pressure – WLCP methods, or
 - pressure drop test - Direct reading – PDDR method.

Figure 1 summarizes the sequence to follow during the test.

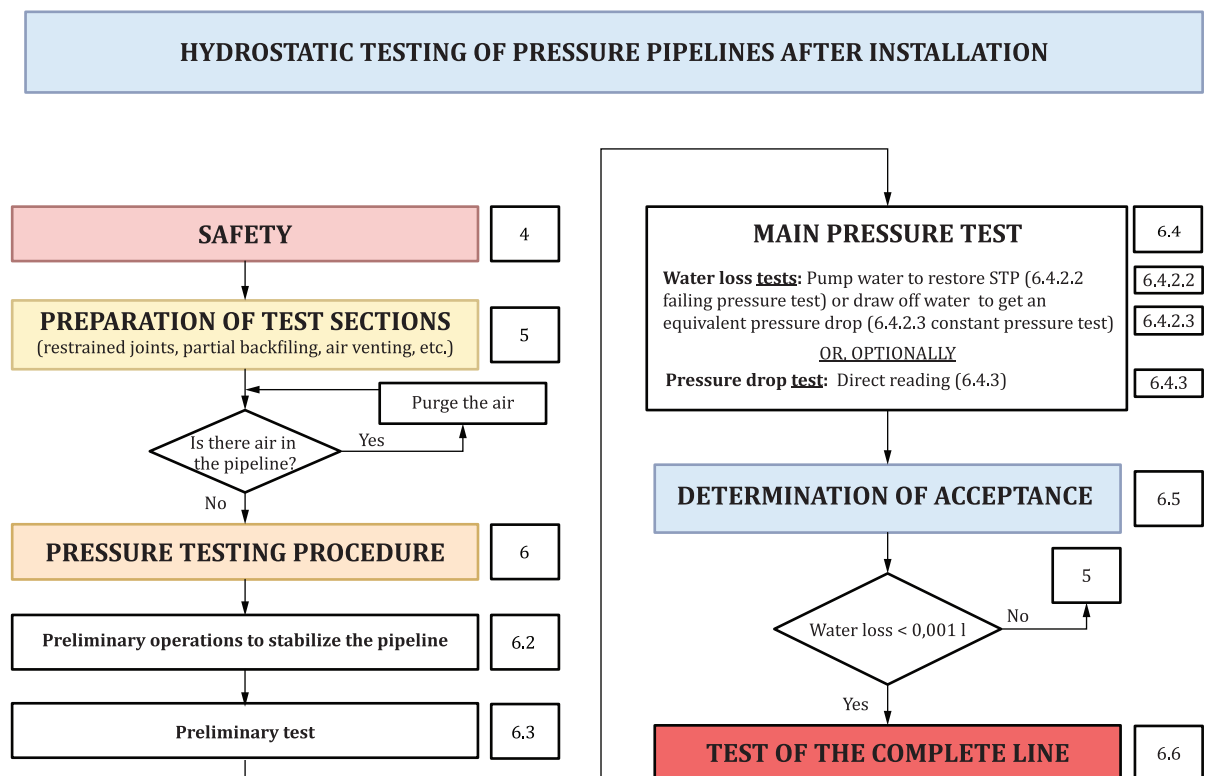


Figure 1 — Testing procedure flow chart

Ductile iron pipelines — Hydrostatic testing after installation

1 Scope

This document specifies site hydrostatic acceptance tests for installed pressure and non-pressure ductile iron pipelines used for conveying water and other liquids.

It does not cover testing of pipelines for gas.

NOTE In this document, all pressures are relative pressures expressed in bars, where 1 bar = 0,1 MPa.

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, *Ductile iron pipes, fittings, accessories and their joints for water applications*

ISO 6708, *Pipework components — Definition and selection of DN (nominal size)*

ISO 7186, *Ductile iron products for sewerage applications*

ISO 7268, *Pipe components — Definition of nominal pressure*

ISO 10804, *Restrained joint systems for ductile iron pipelines — Design rules and type testing*

ISO 16631, *Ductile iron pipes, fittings, accessories and their joints compatible with plastic (PVC or PE) piping systems, for water applications and for plastic pipeline connections, repair and replacement*

ISO 21051¹⁾, *Construction and installation of ductile iron pipeline system*

3 Terms and Definitions

For the purposes of this document, the terms and definitions given in ISO 6708, ISO 7268 and the following apply.

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

— ISO Online browsing platform: available at <https://www.iso.org/obp>

— IEC Electropedia: available at <http://www.electropedia.org/>

3.1

allowable operating pressure

PFA

P_{FA}

maximum internal pressure, excluding surge, that a component can safely withstand in permanent service

[SOURCE: ISO 2531:2009, 3.2, modified — The symbol has been added.]

1) Under preparation. Stage at the time of publication: ISO/FDIS 21051:2020.