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Ductile iron pipes, fittings, accessories and their joints — Thermal preinsulated products

Tuyaux, raccords et accessoires en fonte ductile et leurs assemblages — Produits préisolés thermiques

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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 on 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 the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is 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 9349:2004), which has been technically revised with the following changes:

— its scope has been limited to the conveyance of fluids at temperature not exceeding 50 °C;

— its style and presentation have been reviewed and improved.

Ductile iron pipes, fittings, accessories and their joints — Thermal preinsulated products

1 Scope

This document specifies the requirements and test methods applicable to preinsulated ductile iron pipes, fittings, accessories and their joints for the construction of pipelines (or parts thereof):

— to convey water (e.g. potable water), wastewater and other liquids;

— to be operated with or without pressure;

— to be installed below or above ground;

— to limit temperature variations of the conveyed fluids. These pipelines are mainly used to prevent the water to be conveyed from freezing by providing external insulation.

NOTE 1 In this document, all pressures are relative pressures expressed in bars[1)].

This document gives, in addition to the specifications of the existing International Standards for the conveying ductile iron pipes and fittings, specifications for materials, dimensions and tolerances, mechanical and thermal properties of the thermal insulation layer and external casing of preinsulated ductile iron pipes, fittings and accessories.

This document covers preinsulated ductile iron pipes, fittings and accessories of a size range extending from DN 60 to DN 600 inclusive, which are as follows:

— manufactured with socketed, flanged or spigot ends for jointing by means of various types of gaskets which are not within the scope of this document;

— preinsulated in the works (excluding on site application of the insulation layer and/or the casing);

— normally delivered internally and externally coated;

— intended for fluid temperatures from 0 °C to 50 °C, excluding frost.

NOTE 2 Other applications are possible by agreement between manufacturer and purchaser.

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 527-2, *Plastics — Determination of tensile properties — Part 2: Test conditions for moulding and extrusion plastics*

ISO 844, *Rigid cellular plastics — Determination of compression properties*

ISO 845, *Cellular plastics and rubbers — Determination of apparent density*

ISO 1183-3, *Plastics — Methods for determining the density of non-cellular plastics — Part 3: Gas pyknometer method*

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

1) 100 kPa = 1 bar.

ISO 6892-1, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature*

ISO 7186, *Ductile iron products for sewerage applications*

ISO 8497, *Thermal insulation — Determination of steady-state thermal transmission properties of thermal insulation for circular pipes*

ISO/TR 25901-3, *Welding and allied processes — Vocabulary — Part 3: Welding processes*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 2531 apply.

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

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

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
conveying pipe
pipe conveying the fluid

3.2
conveying fitting
pipeline component conveying the fluid and corresponding to a change in direction, to a diversion, or to a blanking off of the pipeline

3.3
preinsulated pipe
factory-produced ductile iron pipe comprising a conveying pipe, external thermal insulation and casing

3.4
preinsulated fitting
factory-produced ductile iron fitting comprising a conveying fitting, external thermal insulation and casing

3.5
casing
external protection of the thermal insulation layer made from PE or PVC or steel, in tubular or any suitable shape

3.6
thermal insulation
layer of porous and rigid polyurethane foam between the conveying pipe/fittings and casing, intended to reduce heat transfer between the fluid in the conveying pipe and the external environment

4 Technical requirements

4.1 General

A preinsulated pipe (or fitting) is generally manufactured by injection moulding the polyurethane foam thermal insulation layer between the ductile iron conveying pipe (or fitting) and a casing which provides the external protection against mechanical damage and moisture ingress.

The external diameter *DR* of a preinsulated pipe or fitting is the external diameter of the casing.