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Fitingi iz temprane železove litine s prižemnimi priključki za železne cevi

Malleable cast iron fittings with compression ends for steel pipes

Tempergussfittings mit Klemmanschlüssen für Stahlrohre

Raccords à compression en fonte malléable pour tubes d'acier

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Malleable cast iron fittings with compression ends for steel pipes

Raccords à compression en fonte malléable pour tubes d'acier

Tempergussfittings mit Klemmanschlüssen für Stahlrohre

This draft European Standard is submitted to CEN members for second enquiry. It has been drawn up by the Technical Committee CEN/TC 459/SC 10.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (prEN 10344:2024) has been prepared by Technical Committee CEN/TC 459 “ECISS — European Committee for Iron and Steel Standardization”¹, the secretariat of which is held by AFNOR.

This document is currently submitted to the second CEN Enquiry.

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¹ Through its sub-committee CEN/TC 459/SC 10 “Steel tubes, and iron and steel fittings” (secretariat: UNI).

1 Scope

This document specifies the requirements for the design, performance and testing of fittings made of malleable cast iron (see also Clause 5 Materials) with compression ends for steel pipes.

This document applies to steel piping systems for different application fields, such as supply and distribution of gas, water for general purposes (e.g. irrigation) as well as for human consumption, aqueous liquids and pressurized air.

This document contains requirements and tests relating to compression fittings which can be connected to smooth walled steel pipes. The fittings can also incorporate other types of connection, such as threaded ends in conformance with EN 10226-1, flanged ends, compression ends for connection for pipes other than steel, and can also take on various structural shapes, such as, straight adaptor piece, elbow or T-piece. Their range of sizes covers nominal sizes DN 10 to DN 100 (fitting size 3/8 to 4).

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.

EN 549, *Rubber materials for seals and diaphragms for gas appliances and gas equipment*

EN 681-1, *Elastomeric seals — Materials requirements for pipe joint seals used in water and drainage applications — Part 1: Vulcanized rubber*

EN 682, *Elastomeric Seals — Materials requirements for seals used in pipes and fittings carrying gas and hydrocarbon fluids*

EN 806-2, *Specification for installations inside buildings conveying water for human consumption — Part 2: Design*

EN 1562, *Founding — Malleable cast irons*

EN 1775:2007, *Gas supply — Gas pipework for buildings - Maximum operating pressure less than or equal to 5 bar — Functional recommendations*

EN 10204, *Metallic products — Types of inspection documents*

EN 10216-1, *Seamless steel tubes for pressure purposes — Technical delivery conditions — Part 1: Non-alloy steel tubes with specified room temperature properties*

EN 10217-1, *Welded steel tubes for pressure purposes — Technical delivery conditions — Part 1: Electric welded and submerged arc welded non-alloy steel tubes with specified room temperature properties*

EN 10226-1, *Pipe threads where pressure tight joints are made on the threads — Part 1: Taper external threads and parallel internal threads — Dimensions, tolerances and designation*

EN 10226-3, *Pipes threads where pressure tight joint are made on the threads — Part 3: Verification by means of limit gauges*

EN 10255, *Non-alloy steel tubes suitable for welding and threading — Technical delivery conditions*

EN 10284, *Malleable cast iron fittings with compression ends for polyethylene (PE) piping systems*

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EN 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests*

EN ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation (ISO 228-1)*

EN ISO 228-2, *Pipe threads where pressure-tight joints are not made on the threads — Part 2: Verification by means of limit gauges (ISO 228-2)*

EN ISO 1460, *Metallic coatings — Hot dip galvanized coatings on ferrous materials — Gravimetric determination of the mass per unit area (ISO 1460)*

EN ISO 2178, *Non-magnetic coatings on magnetic substrates — Measurement of coating thickness — Magnetic method (ISO 2178)*

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

EN ISO 9227, *Corrosion tests in artificial atmospheres — Salt spray tests (ISO 9227)*

EN ISO 19892, *Plastics piping systems — Thermoplastics pipes and fittings for hot and cold water — Test method for the resistance of joints to pressure cycling (ISO 19892)*

ISO 2859-1, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

3 Terms and definitions

For the purposes of this document, the following terms and definitions 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 <https://www.electropedia.org/>

3.1 General terms

3.1.1

fitting

connecting piece for pipes and other piping accessories, consisting of one or more parts

3.1.2

compression fitting

connecting piece for pipes and other piping accessories, equipped with minimum one compression end, sealing by elastomeric gaskets on smooth walled pipe ends

3.1.3

transition fitting

fitting jointing different types of pipe and/or comprising different types of outlet

3.1.4

end-load-resistant joint

joint which can resist axial loads without additional external mechanical pipe support

3.1.5**non-end-load-resistant joint**

joint which cannot resist axial loads without additional external mechanical pipe support

3.1.6**fitting size**

nominal size of the connecting (steel) pipe(s)

Note 1 to entry: For transition fittings, the size designation follows the type of the outlet.

3.1.7**fitting body**

main pressure-bearing part of a fitting

3.1.8**outlet**

end of a fitting for the purpose of connection with a pipe by a compression end or other threaded piping accessories

3.1.9**run**

two principal axially aligned outlets of a tee

3.1.10**branch**

side outlet of a tee

3.1.11**compression end**

end in which a mechanical joint is formed by the tightening of a nut or fastening of a flange to compress a grip or locking ring onto the outside wall of the tube to create a pressure tight connection

Note 1 to entry: The assembled joint should be understood as being demountable.

Note 2 to entry: The purpose of a compression end is to connect pipe and fitting body using a compression system, consisting of a body and a nut or flange, by using common tools.

3.1.12**grip****locking ring**

ring that holds the pipes in place and prevents pull out from the joint

3.1.13**minimum bore**

smallest internal diameter of a fitting measured at any cross-section

3.1.14**smooth wall**

smooth pipe surface in the seal and clamping area which is unshaped, undamaged and untreated

Note 1 to entry: Cleaning and deburring is not regarded as treatment.

prEN 10344:2024 (E)**3.1.15****demountability**

characteristic of a fitting to disconnect and re-assemble the joint without destroying the fitting body and the pipe, except the components of the jointing system, such as the sealing and grip or locking rings

3.1.16**jointing thread**

pipe threads according to EN 10226-1 where pressure-tight joints are made on threads

3.1.17**fastening thread**

pipe threads according to EN ISO 228-1 where pressure-tight joints are not made on threads

Note 1 to entry: For fastening threads, the pressure-tight joint is made by compressing two sealing surfaces outside the threads, optionally by using an appropriate seal.

3.1.18**component test**

test to verify the performance of a fitting carried out on the non-assembled fitting or fitting parts

3.1.19**assembly test**

test to verify the fitness for purpose of an assembled fitting connected with the pipe(s)

3.2 Terms relating to movability**3.2.1****angular deflection**

maximum angle α subtended between the axes of the fitting and the connected pipe when the assembly still remains leak-tight following two full deflections by $\pm\alpha$ in relation to the starting position

Note 1 to entry: α is according to manufacturer's specifications.

3.2.2**axial movability**

axial path within which the fitting remains leak-tight following two full path changes by $\pm a$ in relation to the starting position

Note 1 to entry: a is according to manufacturer's specifications.

3.2.3**torsional angle**

maximum angle β within the piece can twist around its axis, when the assembly still remains leak-tight following two full twists by $\pm\beta$ in relation to the starting position

Note 1 to entry: β is according to manufacturer's specifications.

3.2.4**resistance to pull-out**

characteristic of the joint to withstand axial forces, applied mechanically or through internal pressure, while remaining leak-tight

3.3 Terms relating to pressure and temperature

3.3.1

allowable operating pressure

PFA

maximum operating pressure of the connected pipe joint(s) in continuous function

3.3.2

allowable operating temperature

TFA

maximum operating temperature of the connected pipe joint(s) in continuous function

4 Types of fittings

Types and shapes of fittings are to the discretion of the manufacturer and therefore not standardized or limited regarding measurements.

5 Materials

5.1 General

All materials of fitting body and components shall be resistant against the medium of the respective application.

NOTE In case of potable water, national hygienic requirements can apply.

5.2 Material of the fitting body

The material used for the fitting body shall be malleable cast iron conforming to EN 1562. The grade of material used shall be selected from the following grades:

Grade EN-GJMW-400-5 for fittings in white heart malleable iron;

Grade EN-GJMB-350-10 for fittings in black heart malleable iron.

5.3 Elastomers

The material of elastomeric sealing rings used in fittings shall be chosen depending on the specific application. For potable water application, it shall be chosen according to EN 681-1 and for gas supply according to EN 682, and/or EN 549 and shall conform to the appropriate class and type. For applications in cold geographic areas or for cooling circuits the minimum design temperature is -20 °C (see Table 2) and the test requirements specified in 9.3.7 shall be considered. For elevated temperatures above 70 °C , see Table 2, the test temperature in 9.3.7 shall be raised to the maximum operating temperature in the relevant application.

NOTE For the choice of elastomeric materials, local regulations and requirements can apply.

6 Corrosion protection

6.1 General

In applications where corrosion protection is required, the components shall be adequately protected as follows.

NOTE For the choice of corrosion protection, local regulations and requirements can apply.