

District cooling pipes - Bonded single pipe systems for directly buried cold water networks - Part 2: Factory made fitting assemblies of steel or plastic service pipe, polyurethane thermal insulation and a casing of polyethylene

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

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| See Eesti standard EVS-EN 17415-2:2021 sisaldab Euroopa standardi EN 17415-2:2021 ingliskeelset teksti. | This Estonian standard EVS-EN 17415-2:2021 consists of the English text of the European standard EN 17415-2:2021. |
| Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas. | This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation. |
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English Version

**District cooling pipes - Bonded single pipe systems for
directly buried cold water networks - Part 2: Factory made
fitting assemblies of steel or plastic service pipe,
polyurethane thermal insulation and a casing of
polyethylene**

Réseaux d'eau glacée - Systèmes bloqués de tuyaux
pour les réseaux d'eau glacée enterrés directement -
Partie 2 : Assemblages de raccords manufacturés pour
tubes de service en acier ou en plastique, isolation
thermique en polyuréthane et tube de protection en
polyéthylène

Fernkälterohre - Einzelrohr-Verbundsysteme für
direkt erdverlegte Fernkältenetze - Teil 2: Werkmäßig
gefertigte Verbundformstücke, bestehend aus Stahl-
oder Kunststoff-Mediumrohr, einer Wärmedämmung
aus Polyurethan und einer Ummantelung aus
Polyethylen

This European Standard was approved by CEN on 18 July 2021.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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European foreword

This document (EN 17415-2:2021) has been prepared by Technical Committee CEN/TC 107 “Prefabricated district heating and district cooling pipe system”, the secretariat of which is held by DS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2022, and conflicting national standards shall be withdrawn at the latest by March 2022.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

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Introduction

Factory made bonded single pipe systems for directly buried district cooling networks are of common technical usage. In order to ensure quality including product-related service life, to ensure safety in use, economical energy usage and to facilitate comparability in the market, CEN/TC 107 decided to set up standards for these products.

This document is one of a series of standards which form several parts of EN 17415, *District cooling pipes – Bonded single pipe systems for directly buried cold water networks*:

- *Part 1: Factory made pipe assembly of steel or plastic service pipe, polyurethane thermal insulation and a casing of polyethylene;*
- *Part 2: Factory made fitting assemblies of steel or plastic service pipe, polyurethane thermal insulation and a casing of polyethylene (this document);*
- *Part 3: Factory made steel valve assembly for steel or plastic service pipe, polyurethane thermal insulation and a casing of polyethylene.*

The other standards from CEN/TC 107 covering this subject are:

- EN 17414-1, *District cooling pipes — Factory made flexible pipe systems — Part 1: Classification, general requirements and test methods;*
- EN 17414-2, *District cooling pipes — Factory made flexible pipe systems — Part 2: Bonded system with plastic service pipes; requirements and test methods;*
- EN 17414-3, *District cooling pipes — Factory made flexible pipe systems — Part 3: Non bonded system with plastic service pipes; requirements and test methods;*
- EN XXXXX-1¹, *District cooling pipes — Design and installation of thermal insulated bonded single and twin pipe systems for directly buried cold water networks — Part 1: Design;*
- EN XXXXX-2¹, *District cooling pipes — Design and installation of thermal insulated bonded single and twin pipe systems for directly buried cold water networks — Part 2: Installation;*
- EN 489-1, *District heating pipes — Bonded single and twin pipe systems for buried hot water networks — Part 1: Joint casing assemblies and thermal insulation for hot water networks in accordance with EN 13941-1;*
- EN 14419, *District heating pipes — Bonded single and twin pipe systems for directly buried hot water networks — Surveillance systems.*

Waste management and recycling of materials is dealt with in Annex C.

¹ Under development.

1 Scope

This document specifies requirements, design and test methods for factory made thermally insulated bonded fitting assemblies for directly buried district cooling distribution systems, comprising a service fitting from DN 15 to DN 1200, rigid polyurethane foam insulation and a casing of polyethylene.

The fitting assembly can also include the following additional elements: measuring wires, spacers and diffusion barriers.

This document covers the following fitting assemblies: bend, tee, reducer, cap and anchor.

This document applies only to insulated fitting assemblies, for continuous operation with water at various temperatures (1 to 30) °C and a maximum operation pressure of 25 bar.

The design is based on an expected service life with continuous operation of a minimum 50 years.

NOTE An expected service life of 50 years presupposes that treated water is used.

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 10204, *Metallic products - Types of inspection documents*

EN 10253-2, *Butt-welding pipe fittings - Part 2: Non alloy and ferritic alloy steels with specific inspection requirements*

EN 12201-2, *Plastics piping systems for water supply, and for drainage and sewerage under pressure — Polyethylene (PE) — Part 2: Pipes*

EN 12201-3, *Plastics piping systems for water supply, and for drainage and sewerage under pressure — Polyethylene (PE) — Part 3: Fittings*

EN 12201-5, *Plastics piping systems for water supply, and for drainage and sewerage under pressure - Polyethylene (PE) - Part 5: Fitness for purpose of the system*

EN 12814-1, *Testing of welded joints of thermoplastics semi-finished products - Part 1: Bend test*

EN 13018, *Non-destructive testing - Visual testing - General principles*

EN 13067, *Plastics welding personnel - Qualification of welders - Thermoplastics welded assemblies*

EN 13941-1, *District heating pipes - Design and installation of thermal insulated bonded single and twin pipe systems for directly buried hot water networks - Part 1: Design*

EN 13941-2, *District heating pipes - Design and installation of thermal insulated bonded single and twin pipe systems for directly buried hot water networks - Part 2: Installation*

EN 14419, *District heating pipes - Bonded single and twin pipe systems for buried hot water networks - Surveillance systems*

EN 14870-1, *Petroleum and natural gas industries - Induction bends, fittings and flanges for pipeline transportation systems - Part 1: Induction bends (ISO 15590-1)*

EN 17248, *District heating and district cooling pipe systems - Terms and definitions*

EN 17415-1:2020, *District cooling pipes - Bonded single pipe systems for directly buried cold water networks - Part 1: Factory made pipe assembly of steel or plastic service pipe, polyurethane thermal insulation and a casing of polyethylene*

EN ISO 3452-1, *Non-destructive testing - Penetrant testing - Part 1: General principles (ISO 3452-1)*

EN ISO 5579, *Non-destructive testing - Radiographic testing of metallic materials using film and X- or gamma rays - Basic rules (ISO 5579)*

EN ISO 5817, *Welding - Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) - Quality levels for imperfections (ISO 5817)*

EN ISO 8501-1, *Preparation of steel substrates before application of paints and related products - Visual assessment of surface cleanliness - Part 1: Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings (ISO 8501-1)*

EN ISO 9606-1, *Qualification testing of welders - Fusion welding - Part 1: Steels (ISO 9606-1)*

EN ISO 9692-1:2013, *Welding and allied processes - Types of joint preparation - Part 1: Manual metal arc welding, gas-shielded metal arc welding, gas welding, TIG welding and beam welding of steels (ISO 9692-1:2013)*

EN ISO 9934-1, *Non-destructive testing - Magnetic particle testing - Part 1: General principles (ISO 9934-1)*

EN ISO 10675-1, *Non-destructive testing of welds - Acceptance levels for radiographic testing - Part 1: Steel, nickel, titanium and their alloys (ISO 10675-1)*

EN ISO 11666, *Non-destructive testing of welds - Ultrasonic testing - Acceptance levels (ISO 11666)*

EN ISO 14732, *Welding personnel - Qualification testing of welding operators and weld setters for mechanized and automatic welding of metallic materials (ISO 14732)*

EN ISO 15607, *Specification and qualification of welding procedures for metallic materials - General rules (ISO 15607)*

EN ISO 16810, *Non-destructive testing - Ultrasonic testing - General principles (ISO 16810)*

EN ISO 17636-1, *Non-destructive testing of welds - Radiographic testing - Part 1: X- and gamma-ray techniques with film (ISO 17636-1)*

EN ISO 17636-2, *Non-destructive testing of welds - Radiographic testing - Part 2: X- and gamma-ray techniques with digital detectors (ISO 17636-2)*

EN ISO 17637, *Non-destructive testing of welds - Visual testing of fusion-welded joints (ISO 17637)*

EN ISO 17638, *Non-destructive testing of welds - Magnetic particle testing (ISO 17638)*

EN ISO 17640, *Non-destructive testing of welds - Ultrasonic testing - Techniques, testing levels, and assessment (ISO 17640)*

EN ISO 23277, *Non-destructive testing of welds - Penetrant testing - Acceptance levels (ISO 23277)*

EN ISO 23278, *Non-destructive testing of welds - Magnetic particle testing - Acceptance levels (ISO 23278)*