ICS 23.040.99 SLOVENSKÁ TECHNICKÁ NORMA Január 2021

STN	**Potrubia diaľkového chladenia Spájané jednorúrkové bezkanálové systémy rozvodu studenej vody uložené v zemi Časť 1: Priemyselne vyrobené potrubné zostavy z oceľových alebo plastových potrubí s polyuretánovou tepelnou izoláciou a plášťom z polyetylénu**	**STN EN 17415-1** 38 3381

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

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 12/20

Obsahuje: EN 17415-1:2020

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EUROPEAN STANDARD

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EUROPÄISCHE NORM

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English Version

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

Réseaux d'eau glacée - Systèmes bloqués de tuyaux pour les réseaux d'eau glacée enterrés directement - Partie 1 : Assemblage de tube de service en acier ou en matière plastique, isolation thermique en polyuréthane et protection en polyéthylène

Fernkältesysteme - Verbundmantelrohrsysteme für direkt erdverlegte Fernkältenetze - Teil 1: Werkmäßig gedämmtes Verbund-Rohrsystem, bestehend aus Stahl oder Plastik Mediumrohr, Polyurethan-Wärmedämmung und einem Außenmantel aus Polyethylen

This European Standard was approved by CEN on 22 June 2020.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 17415-1:2020) has been prepared by Technical Committee CEN/TC 107 "Prefabricated district heating and district cooling pipe systems", 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of an identical text or by endorsement, at the latest by January 2021, and conflicting national standards shall be withdrawn at the latest by January 2021.

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.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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* (this document);

— *Part 2: Factory made fitting assemblies of steel or plastic service pipe, polyurethane thermal insulation and a casing of polyethylene*[1];

— *Part 3: Factory made steel valve assembly for steel or plastic service pipe, polyurethane thermal insulation and a casing of polyethylene*[1];

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 ZZZZZ-1, *District cooling pipes – Design and installation of thermal insulated bonded single and twin pipe systems for directly buried cold water networks – Part 1: Design*[1];

— EN ZZZZZ-2, *District cooling pipes – Design and installation of thermal insulated bonded single and twin pipe systems for directly buried cold water networks – Part 2: Installation*[1];

— 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 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 straight lengths of factory made thermally insulated pipe-in-pipe assemblies for directly buried district cooling distribution systems, comprising a service pipe from DN 15 to DN 1200, rigid polyurethane foam insulation and a casing of polyethylene. The pipe assembly can also include the following additional elements: measuring wires, spacers and diffusion barriers.

This document applies only to insulated pipe 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.

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 10216-1:2013, *Seamless steel tubes for pressure purposes — Technical delivery conditions — Part 1: Non-alloy steel tubes with specified room temperature properties*

EN 10216-2, *Seamless steel tubes for pressure purposes — Technical delivery conditions — Part 2: Non-alloy and alloy steel tubes with specified elevated temperature properties*

EN 10217-1:2019, *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 10217-2, *Welded steel tubes for pressure purposes — Technical delivery conditions — Part 2: Electric welded non-alloy and alloy steel tubes with specified elevated temperature properties*

EN 10217-5, *Welded steel tubes for pressure purposes — Technical delivery conditions — Part 5: Submerged arc welded non-alloy and alloy steel tubes with specified elevated temperature properties*

EN 10220, *Seamless and welded steel tubes — Dimensions and masses per unit length*

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

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

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

EN 17414-2, *District cooling pipes — Factory made flexible pipe systems — Part 2: Bonded system with plastic service pipes - Requirements and test methods*

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

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

EN ISO 1133 (all parts), *Plastics — Determination of the melt mass-flow rate (MFR) and melt volume-flow rate (MVR) of thermoplastics (ISO 1133 series)*

EN ISO 2505, *Thermoplastics pipes — Longitudinal reversion — Test method and parameters (ISO 2505)*

EN ISO 3126, *Plastics piping systems — Plastics components — Determination of dimensions (ISO 3126)*

EN ISO 3127:2017, *Thermoplastics pipes — Determination of resistance to external blows — Round-the-clock method (ISO 3127:1994)*

EN ISO 4590, *Rigid cellular plastics — Determination of the volume percentage of open cells and of closed cells (ISO 4590)*

EN ISO 6259-1, *Thermoplastics pipes — Determination of tensile properties — Part 1: General test method (ISO 6259-1)*

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 9080, *Plastics piping and ducting systems — Determination of the long-term hydrostatic strength of thermoplastics materials in pipe form by extrapolation (ISO 9080)*

EN ISO 11357-6, *Plastics — Differential scanning calorimetry (DSC) — Part 6: Determination of oxidation induction time (isothermal OIT) and oxidation induction temperature (dynamic OIT) (ISO 11357-6)*

EN ISO 12162, *Thermoplastics materials for pipes and fittings for pressure applications — Classification, designation and design coefficient (ISO 12162)*

ISO 6964, *Polyolefin pipes and fittings — Determination of carbon black content by calcination and pyrolysis — Test method*

ISO 11414:2009, *Plastics pipes and fittings — Preparation of polyethylene (PE) pipe/pipe or pipe/fitting test piece assemblies by butt fusion*

ISO 13953, *Polyethylene (PE) pipes and fittings — Determination of the tensile strength and failure mode of test pieces from a butt-fused joint*

ISO 16770, *Plastics — Determination of environmental stress cracking (ESC) of polyethylene — Full-notch creep test (FNCT)*

ISO 18553, *Method for the assessment of the degree of pigment or carbon black dispersion in polyolefin pipes, fittings and compounds*