

**District heating pipes - Preinsulated bonded pipe
systems for directly buried hot water networks -
Surveillance systems**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 14419:2009 sisaldab Euroopa standardi EN 14419:2009 ingliskeelset teksti.</p> <p>Standard on kinnitatud Eesti Standardikeskuse 30.04.2009 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 11.03.2009.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 14419:2009 consists of the English text of the European standard EN 14419:2009.</p> <p>This standard is ratified with the order of Estonian Centre for Standardisation dated 30.04.2009 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.</p> <p>Date of Availability of the European standard text 11.03.2009.</p> <p>The standard is available from Estonian standardisation organisation.</p>
--	---

ICS 23.040.01

Võtmesõnad:

Standardite reprodutseerimis- ja levitamisoigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:
Aru 10 Tallinn 10317 Eesti; www.evs.ee; Telefon: 605 5050; E-post: info@evs.ee

English Version

District heating pipes - Preinsulated bonded pipe systems for
directly buried hot water networks - Surveillance systems

Tuyaux de chauffage urbain - Systèmes bloqués de tuyaux
préisolés pour les réseaux d'eau chaude enterrés
directement - Systèmes de surveillance

Fernwärmerohre - Werkmäßig gedämmte
Verbundmantelrohrsysteme für erdverlegte
Fernwärmenetze - Überwachungssysteme

This European Standard was approved by CEN on 3 February 2009.

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 Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

	page
Foreword.....	4
Introduction	5
1 Scope	6
2 Normative references	6
3 Terms and definitions	6
4 Basic functional requirements	8
4.1 Dependency of Manufacturer of pipe elements.....	8
4.2 Performance.....	8
5 Manufacture of measuring elements	9
5.1 General requirements.....	9
5.2 Installation, assembly and operation	9
5.3 Characteristics	9
5.4 Reliability	9
5.5 Maintenance	9
5.6 Longitudinal tightness	9
5.7 Marking of measuring elements.....	9
5.8 Technical documentation	9
5.8.1 General.....	9
5.8.2 For installation of measuring wires within pipe elements	9
5.8.3 For assembly of measuring elements in the field	10
5.8.4 For operation of a surveillance system	10
6 Manufacture of pipe elements with measuring elements.....	10
6.1 General requirements.....	10
6.2 Compatibility test.....	10
6.2.1 Before series production	10
6.2.2 Test procedure	10
6.2.3 Replication of test.....	10
6.3 Installation of measuring elements	10
6.3.1 Restrictions regarding type of measuring element	10
6.3.2 No electrical contact.....	10
6.3.3 Connections	10
6.3.4 Geometry of installation.....	11
6.3.5 Spacers	11
6.3.6 Mechanical tightening	11
6.4 After pipe element manufacturing	11
6.5 Measuring wires at free ends	11
6.5.1 Wire length	11
6.5.2 Protection of measuring wires	11
6.6 Tests.....	11
6.6.1 General.....	11
6.6.2 Continuity of measuring wire	11
6.6.3 No electrical contact.....	11
6.7 Quality control programme.....	12
6.8 Technical documentation	12
6.8.1 General.....	12
6.8.2 For assembly of measuring elements in the field	12
6.8.3 For operation of a surveillance system	12
7 Assembly of measuring elements in field.....	12

7.1	Check upon receipt of pipe elements.....	12
7.2	Extension of an existing measuring section	12
7.2.1	Actual state	12
7.2.2	Change of system.....	12
7.3	Wiring design diagram.....	12
7.4	Assembly work in joints	13
7.5	Assembly check	13
7.6	Test after finishing a measuring section	13
7.6.1	General	13
7.6.2	Continuity of measuring elements	13
7.6.3	No electrical contact and moisture.....	13
7.6.4	Functional test.....	13
7.7	Test and measurement during system operation	13
7.8	Quality control programme	14
7.9	Technical documentation	14
Annex A	(informative) Principal function	15
Annex B	(informative) Principal parts of a measuring section	16
Annex C	(normative) Technical documentation	17
Annex D	(normative) Loop test by pipe Manufacturer	21
D.1	General	21
D.2	Conductor continuity test with an optical or acoustic signal.....	21
D.3	Measuring ohmic resistance	22
Annex E	(normative) High voltage test by pipe Manufacturer	23
Annex F	(informative) Quality control programme	24
F.1	General	24
F.2	Quality control programme for Manufacturer of pipe elements with measuring wires	24
F.3	Quality control programme for Contractor assembling the measuring elements in field.....	25
Annex G	(normative) Loop test in field.....	27
Annex H	(normative) Measuring of the electrical insulation resistance in field	28
Bibliography	29

Foreword

This document (EN 14419:2009) has been prepared by Technical Committee CEN/TC 107 “Prefabricated District Heating 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 September 2009, and conflicting national standards shall be withdrawn at the latest by September 2009.

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

This document supersedes EN 14419:2003.

This second edition cancels and replaces the first edition (EN 14419:2003), which has been technically revised.

Annexes A, B and F are informative. Annexes C, D, E, G and H are normative.

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

Introduction

The first edition of EN 14419 was approved in 2003. The main areas of the current revision are:

- testing procedures have been changed in order to include pipe elements with diffusion barriers according to revised version of EN 253:2009;
- testing procedures have been changed in order to include pipe elements for twin pipes according to EN 15698-1;
- pipe elements produced according to standard for preinsulated flexible pipe systems with bonded metal service pipes EN 15632-4 and standard for twin pipes EN 15698-1 have been added to the definitions of pipe elements suitable for instalment of measuring wires for surveillance systems;
- the text regarding testing (cf. 6.4 and 7.1) has been put in agreement with the text in 6.6 (all elements shall be tested);
- the term “moisture” has been deleted as a specific term and replaced by a note to the term “detection of moisture”;
- the term “QM-Programme” has been changed to “Quality control programme” in order to standardize the wording to other standards under TC 107.

This standard is a supplement to:

- EN 253, *District heating pipes – Preinsulated bonded pipe systems for directly buried hot water networks – Pipe assembly of steel service pipe, polyurethane thermal insulation and outer casing of polyethylene*
- EN 448, *District heating pipes – Preinsulated bonded pipe systems for directly buried hot water networks – Fitting assemblies of steel service pipes, polyurethane thermal insulation and outer casing of polyethylene*
- EN 488, *District heating pipes – Preinsulated bonded pipe systems for directly buried hot water networks – Steel valve assembly for steel service pipes, polyurethane thermal insulation and outer casing of polyethylene*
- EN 489, *District heating pipes – Preinsulated bonded pipe systems for directly buried hot water networks – Joint assembly for steel service pipes, polyurethane thermal insulation and outer casing of polyethylene*
- EN 13941, *Design and installation of preinsulated bonded pipe systems for district heating*
- EN 15632-1, *District heating pipes – Pre-insulated flexible pipe systems – Part 1: Classification, general requirements and test methods*
- EN 15632-4, *District heating pipes – Pre-insulated flexible pipe systems – Part 4 : Bonded system with metal service pipes; requirements and test methods*
- EN 15698-1, *District heating pipes – Preinsulated bonded twin pipe systems for directly buried hot water networks – Part 1: Twin pipe assembly of steel service pipe, polyurethane thermal insulation and outer casing of polyethylene*

These are all standards for preinsulated bonded pipe systems for directly buried hot water networks.

1 Scope

This European Standard specifies basic functional requirements for surveillance systems for district heating pipe systems, specific requirements for measuring elements and their installation within preinsulated bonded pipes, valves and fittings, and the field assembly of these measuring elements in pipe joints.

This standard specifies requirements for the manufacture of measuring elements, for the manufacture of preinsulated bonded pipe elements with measuring elements and for the assembly of the measuring elements in the field.

All requirements and recommendations described in this standard are based on the experience gained with existing surveillance systems and their principal function, cf. Annex A.

The specific requirements given are only valid for electrical wire based surveillance systems forming an integral part of the pipes, valves, fittings and joints.

2 Normative references

The following referenced documents are indispensable for the application 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 253, *District heating pipes – Preinsulated bonded pipe systems for directly buried hot water networks – Pipe assembly of steel service pipe, polyurethane thermal insulation and outer casing of polyethylene*

EN 448, *District heating pipes – Preinsulated bonded pipe systems for directly buried hot water networks – Fitting assemblies of steel service pipes, polyurethane thermal insulation and outer casing of polyethylene*

EN 488, *District heating pipes – Preinsulated bonded pipe systems for directly buried hot water networks – Steel valve assembly for steel service pipes, polyurethane thermal insulation and outer casing of polyethylene*

EN 489, *District heating pipes – Preinsulated bonded pipe systems for directly buried hot water networks – Joint assembly for steel service pipes, polyurethane thermal insulation and outer casing of polyethylene*

EN 15632-4, *District heating pipes – Pre-insulated flexible pipe systems – Part 4: Bonded system with metal service pipes; requirements and test methods*

EN 15698-1, *District heating pipes – Preinsulated bonded twin pipe systems for directly buried hot water networks – Part 1: Twin pipe assembly of steel service pipe, polyurethane thermal insulation and outer casing of polyethylene*

EN 61557-2, *Electrical safety in low voltage distribution systems up to 1000 V a.c. and 1500 V d.c. – Equipment for testing, measuring or monitoring of protective measures – Part 2: Insulation resistance (IEC 61557-2:2007)*