



SLOVENSKI STANDARD

SIST EN 14419:2009

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Nadomešča:
SIST EN 14419:2004

Cevi za daljinsko ogrevanje - Izolirani vezani cevni sistemi za podzemeljska toplovodna omrežja - Kontrolni sistemi

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

Fernwärmerohre - Werkmäßig gedämmte Verbundmantelrohrsysteme für erdverlegte Fernwärmenetze - Überwachungssysteme

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

Ta slovenski standard je istoveten z: EN 14419:2009

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91.140.65	Oprema za ogrevanje vode	Water heating equipment

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EUROPEAN STANDARD

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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.

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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.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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EN 14419:2009 (E)**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of an identical text or by endorsement, at the latest by September 2009, and conflicting national standards shall be withdrawn at the latest by September 2009.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.

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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.

EN 14419:2009 (E)**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)*

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply.

3.1**pipe element**

preinsulated pipes, valves and fittings manufactured according to EN 253, EN 448, EN 488, EN 15632-4 and EN 15698-1

3.2

pipe system

complete pipe installation, including joints, branches, accessories, etc. and adjacent pipes based on pipe element (cf. 3.1) and joints manufactured and assembled in accordance with EN 489

3.3

surveillance system

system that consists of measuring sections and measuring instruments for surveillance of pipe systems.

NOTE The principal parts of a measuring section of a surveillance system are given in Annex B.

3.4

system characteristics

electrical parameters used by the individual surveillance system for surveillance purpose or for test of functionality

3.5

measuring instrument

electrical instrument used for indicating of deviations and disorders, which are sensed by the measuring elements in a measuring section

3.6

measuring section

pipe section with continuously connected measuring elements terminating at the connection points

NOTE Main pipes and branches can be part of the same measuring section.

3.7

measuring element

all elements built-in to the pipe systems that enable the detection of moisture

NOTE This can be measuring wires or various measuring sensors.

3.8

measuring wire

electrical wire used for detection of moisture and/or for transport of electrical signals relevant for the surveillance system

NOTE 1 Depending on the system several measuring wires for different purposes can be used.

NOTE 2 The measuring wires can be bare or insulated, straight or twisted two and two.

3.9

measuring sensor

component that changes system characteristics when exposed to moisture

NOTE A sensor is a component only operating at a specific point.

3.10

detection of moisture

detection of moisture-related parameters with measuring instruments

NOTE 1 Only moisture in the insulation due to defects or bad workmanship is relevant

NOTE 2 The parameters could be electrical resistance and/or impedance.

3.11

deviation

result of comparing the values for moisture-related parameters measured by the surveillance system with the values given in the technical documentation

EN 14419:2009 (E)**3.12****multiple deviations**

two or more deviations that are present at the same time in a measuring section

3.13**disorder**

electrical interruption and/or short circuit in a measuring section

3.14**location of moisture**

procedure to find the position of moisture related parameters

3.15**location of disorder**

procedure to find the position of a disorder

3.16**installation of measuring elements**

process of installation of the measuring elements into the district heating pipes during pipe element production

3.17**assembly of measuring elements**

process where a fitter during assembly of pipe elements connects measuring elements into a measuring section

3.18**connection point**

accessible place outside the pipe system where a measuring instrument can be connected to a measuring section

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NOTE

The place could be in a shaft, in a house connection, in a measuring post, in a cabinet, etc.

3.19**longitudinal water tightness**

ability to prevent water spread in longitudinal direction of the pipe, valve, fitting or joint

3.20**maintenance free**

when no maintenance or service is required on a component in order to retain full functionality of the component during its service life

3.21**service life**

span of time during which the component is expected to function, given normal maintenance and operation conditions

4 Basic functional requirements**4.1 Dependency of Manufacturer of pipe elements**

The function of a surveillance system with similar measuring elements shall be independent of any Manufacturer of pipe elements and of any Manufacturer of joints for pipe systems.

4.2 Performance

The surveillance system shall be able to perform:

— detection of moisture;

- detection of deviations;
- detection of multiple deviations;
- detection of disorders;
- location of moisture;
- location of disorders.

NOTE The measuring system and type of technology used can vary provided the performance requirements listed can be achieved.

5 Manufacture of measuring elements

5.1 General requirements

Measuring elements shall be part of a surveillance system that fulfils the basic functional requirements given in Clause 4.

5.2 Installation, assembly and operation

Measuring elements shall be suitable for installation, assembly and operating conditions with respect to thermal, mechanical and chemical conditions in pipe systems.

5.3 Characteristics

Measuring elements of a specific surveillance system shall have uniform system characteristics.

5.4 Reliability

Measuring elements shall have at least the same service life as a pipe system.

5.5 Maintenance

Measuring elements and other parts of the surveillance system for installation in the ground shall be maintenance free.

5.6 Longitudinal tightness

Measuring elements shall not influence the longitudinal water tightness of the pipe insulation negatively.

5.7 Marking of measuring elements

If the measuring elements are marked to indicate different functions, the marking shall be durable under normal operating conditions for pipe systems during the service life of the system.

5.8 Technical documentation

5.8.1 General

The following documents shall be available on request:

5.8.2 For installation of measuring wires within pipe elements

- Documents given in Annex C, Table C.1 positions No 1-6.

EN 14419:2009 (E)**5.8.3 For assembly of measuring elements in the field**

— Documents given in Annex C, Table C.2 positions No 1-7.

5.8.4 For operation of a surveillance system

— Documents given in Annex C, Table C.3 positions No 1-3.

6 Manufacture of pipe elements with measuring elements**6.1 General requirements**

Measuring elements to be installed within pipe elements shall fulfil all the requirements given in Clause 5.

6.2 Compatibility test**6.2.1 Before series production**

Before series production of pipe element with measuring elements a compatibility test shall be made in order to ensure that system characteristics made available by the Manufacturer of measuring elements (cf. 5.8.2) are fulfilled during the production.

6.2.2 Test procedure

The Manufacturer of pipe elements shall develop and describe a test procedure that fulfils the requirements relevant for the specific surveillance system.

6.2.3 Replication of test

The compatibility test shall be replicated every time the production process is changed or the type of measuring element is changed.

6.3 Installation of measuring elements**6.3.1 Restrictions regarding type of measuring element**

Only measuring wires shall be installed in pipe elements.

6.3.2 No electrical contact

The installation of measuring wires within pipe elements shall ensure that no electrical contact occurs between individual conductors of the measuring wires between conductors and any service pipe or between conductors and any electrical conductive diffusion barrier.

NOTE The definition of electrical contact is given in Annex E.

6.3.3 Connections

Connections of measuring wires shall not be located in pipe elements.

Connection of measuring wires inside T-fittings can be accepted. The position of the connection shall be properly registered in the documentation material given in 6.8.