SLOVENSKI STANDARD
SIST EN 253:2009+A1:2014/oprA2:2014

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Cevi za daljinsko ogrevanje - Izolirani vezani cevni sistemi za podzemeljska toplovodna omrežja - Cevni sestav iz jeklene cevi, poliuretanske toplotne izolacije in zunanjega polietilenskega plašča

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

Fernwärmerohre - Werkmäßig gedämmte Verbundmantelrohrsysteme für direkt erdverlegte Fernwärmenetze - Verbund-Rohrsystem bestehend aus Stahl-Mediumrohr, Polyurethan-Wärmedämmung und Außenmantel aus Polyethylen

Tuyaux de chauffage urbain - Systèmes bloqués de tuyaux préisolés pour les réseaux d'eau chaude enterrés directement - Tube de service en acier, isolation thermique en polyuréthane et protection en polyéthylène

Ta slovenski standard je istoveten z: **EN 253:2009+A1:2013/prA2**

ICS:

23.040.10	Železne in jeklene cevi	Iron and steel pipes
91.140.65	Oprema za ogrevanje vode	Water heating equipment

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English Version

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This draft amendment is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 107.

This draft amendment A2, if approved, will modify the European Standard EN 253:2009+A1:2013. If this draft becomes an amendment, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (EN 253:2009+A1:2013/prA2:2013) 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 document is currently submitted to the CEN Enquiry.

Introduction

This document contains the following amendments to EN 253:2009:

The use of steel grade P235TR1 has been restricted to medium pipe diameters ≤ 60,3 mm (DN 50) Table 1, *Steel service pipe specification*) and the text below the table has been amended accordingly.

Requirements and test methods for the following properties of the polyurethane rigid foam insulation (PUR) have been reintroduced in the standard:

— cell structure (uniformity, cell size, closed cell content);

— foam density;

— water absorption at elevated temperature.

The informative Annex D, *Guidelines for inspection and testing*, has been amended according to the reintroduction of requirements and test methods for the polyurethane rigid foam insulation (PUR).

The headline of clause F.5.7, *Axial heat loss*, has been corrected.

1 Changes to clause 4.2, Steel service pipes

Delete the present subclause 4.2.1 and substitute by the following new text and Table 1:

4.2.1 Specification

The technical delivery conditions of the steel service pipe shall be in accordance with Table 1.

Table 1 — Steel service pipe specification

Type of pipe	Diameter	EN standard	Material[a]
Seamless	All	EN 10216-2	P235GH
ERW	≤ 60,3 mm (DN 50)	EN 10217-1	P235TR1 [b] or P235TR2
ERW	All	EN 10217-2	P235GH
SAW	All	EN 10217-5	P235GH

[a] Equivalent or higher steel grades according to approved EN standards may be used by agreement.

[b] If P235TR1 material is used an impact test at 0 ºC as for P235TR2 shall be performed.

For higher steel grades than those given in table 1 the yield strength is defined in their related standards. If such higher steel grades are used for medium pipes, it shall be verified that all components used in the involved part of the system are compatible to the higher yield strength of the pipes.

Further information on the required steel grades is given in prEN 13941-1:20XX[1], clauses 5.3.2. and 5.3.3.

All steel pipes and components used for manufacturing of pipe assemblies under the scope of this standard shall as a minimum be delivered *to the manufacturer* with an inspection certificate 3.1 according to EN 10204. The inspection certificate shall on request be passed on to the customer.

In case a material related inspection certificate 3.1 according to EN 10204 is required by the client who orders the preinsulated pipe assemblies, this information shall be given whilst placing the order with the manufacturer of the preinsulated pipe assemblies.

NOTE Any later request for provision of such documentation can be too late and can possibly not be met by the manufacturer, since the manufacturer has to organize the assignment of 3.1 certificates to pipes and part of pipes before starting the production.

A length of pipe shall not include a circular joint.

2 Changes to sub-clause 4.4, Polyurethane rigid foam insulation (PUR)

Delete the present sub-clause 4.4.2 and substitute by the following new text:

[1] Revision of EN 13941:2009.

4.4.2 Cell structure

The PUR-foam shall have a uniform cell structure free from smears. The average cell size of the cells in a radial direction shall be less than 0.5 mm, determined in accordance with 5.3.2.1.

The closed cell content determined in accordance with 5.3.2.2 shall be not less than 88 %.

The average area of voids and bubbles determined on the five cross sections in accordance with 5.3.2.3 shall not constitute more than 5 % of the nominal cross sectional area of the PUR foam. No single void shall leave less than 1/3 of the nominal insulation thickness between the steel service pipe and the casing.

Add new sub-clauses 4.4.4 and 4.4.5 with the following new text:

4.4.4 Foam density

The density of the foam at any position shall comply with the criteria below when measured in accordance with 5.3.4.

At both pipe ends, all three specimens, shall each have a density of minimum 55 kg/m^3.

4.4.5 Water absorption at elevated temperature

When tested in accordance with 5.3.5, the water absorption after 90 minutes of immersion in boiling water shall not exceed 10 % of the original volume.

3 Changes to sub-clause 5.1.2, Test specimens

Delete the present sub-clause 5.1.2.4 and 5.1.2.5 and substitute by the following new text:

5.1.2.4 When cutting test specimens from the foam to determine cell structure (4.4.2), compressive strength (4.4.3), foam density (4.4.4) and water absorption (4.4.5), the foam adjacent to the service pipe surface and casing surface shall be excluded; a clearance of at least 5 mm and 3 mm respectively shall be allowed.

5.1.2.5 At the locations where test specimens are taken to determine cell structure (4.4.2), compressive strength (4.4.3), foam density (4.4.4) and water absorption (4.4.5), at least 3 test specimens shall be taken, equally distributed around the circumference.

4 Changes to sub-clause 5.3, Polyurethane rigid foam insulation (PUR)

Delete the present sub-clause 5.3.2 and substitute by the following new text:

5.3.2 Cell structure

5.3.2.1 The size of the cells shall be determined over a length of 10 mm measured in a radial direction with the centre of the 10 mm measurement coinciding with the centre point of the applied insulation.

The size of the cells shall be the quotient of the test length and the number of cells counted along the radial line of test length selected and shall be determined as an average value of measurements on 3 specimens.

5.3.2.2 The ratio of open to closed cells shall be determined in accordance with ISO 4590:2002 (method 1).

Deviating from the procedure described in ISO 4590 the test specimen shall be a cube with an edge of 25 mm. If this size of cube cannot be cut from the insulation in accordance with 5.1.2, the dimensions shall be 25 mm × 25 mm × t, where t is the maximum radial thickness.

5.3.2.3 Voids and bubbles shall be determined on cross sections of the insulation material.

Minimum 1,5 m from the foam end, 5 circumferential cuts through the casing and the insulation shall be made with a distance of 100 mm including a total of 400 mm casing.

The four 100 mm rings of casing and insulation shall be removed one by one and the five cross section surfaces inspected for voids and bubbles.

All voids larger than 6 mm in any direction shall be measured in 2 directions perpendicular to each other, and the product of the 2 measurements shall be defined as the area of the void.

Voids smaller than 6 mm shall be neglected.

The addition of the area of all the voids shall be expressed as a percentage of the total inspected area.

Delete the present sub-clause 5.3.3 and substitute by the following new text:

5.3.3 Compressive strength

The compressive strength in a radial direction shall be tested in accordance with ISO 844.

Test specimens shall be taken in accordance with 5.1.2. The test specimen shall be 30 mm × 30 mm × t or a cylinder with a diameter of 30 mm and a length of t, where t is the maximum obtainable dimension in the radial direction but not exceeding 20 mm.

The test result shall be determined as an average value of 3 measurements.

For the Manufacturer's quality control other qualified - fully documented correlated method may be used.

Add new sub-clauses 5.3.4 and 5.3.5 with the following new text:

5.3.4 Foam density

The foam density shall be measured in accordance with ISO 845.

Test specimens shall be taken from both pipe ends in sets of 3 in accordance with 5.1.2. Each test specimen shall be 30 mm × 30 mm × t where t is the maximum obtainable thickness but not exceeding 30 mm. Alternatively, test specimens shall be cylindrical, 30 mm long in the axial direction of the pipe and of diameter d where d is the maximum obtainable diameter but not exceeding 30 mm.

For the Manufacturer's quality control other qualified - fully documented correlated method can be used.

5.3.5 Water absorption

The test shall be performed on a cube with an edge of 25 mm, or a cylinder of length 25 mm in the axial direction of the pipe and a diameter of 25 mm. The mass (m_0) of the test specimen shall be determined to an