
Cevi za daljinsko ogrevanje - Poviti enocevni sistemi za neposredno vkopana vročevodna omrežja - Tovarniško izdelan cevni sestav iz jeklene delovne cevi, obdane s poliuretansko toplotno izolacijo in zaščitnim plaščem iz polietilena - Dopolnilo A1

District heating pipes - Bonded single pipe systems for directly buried hot water networks
- Factory made pipe assembly of steel service pipe, polyurethane thermal insulation and a casing of polyethylene

Fernwärmerohre - Einzelrohr-Verbundsysteme für direkt erdverlegte Fernwärmenetze -
Werkmäßig gefertigte Verbundrohrsysteme, bestehend aus Stahl-Mediumrohr, einer
Wärmedämmung aus Polyurethan und einer Ummantelung aus Polyethylen

Tuyaux de chauffage urbain - Systèmes bloqués de tuyaux pour les réseaux d'eau
chaude enterrées directement - Assemblages de tubes de service en acier
manufacturés, isolation thermique en polyuréthane et tube de protection en polyéthylène

Ta slovenski standard je istoveten z: EN 253:2019/prA1

ICS:

23.040.07	Cevovodi za daljinsko ogrevanje in njihovi deli	Pipeline and its parts for district heat
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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NORME EUROPÉENNE
EUROPÄISCHE NORM

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EN 253:2019
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ICS 23.040.07; 23.040.10

English Version

District heating pipes - Bonded single pipe systems for directly buried hot water networks - Factory made pipe assembly of steel service pipe, polyurethane thermal insulation and a casing of polyethylene

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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 A1, if approved, will modify the European Standard EN 253:2019. 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.

This draft amendment was established by CEN 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-CENELEC Management Centre has the same status as the official versions.

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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
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Contents	Page
European foreword	3
1 Modifications to Clause 2	4
2 Modifications to 4.2.3	4
3 Modifications to 4.2.4	4
4 Modifications to 4.3.1.1	4
5 Modifications to 4.3.2.3	5
6 Modifications to 4.4.4	5
7 Modifications to 4.4.5	5
8 Modifications to 4.5.3	5
9 Modifications to 4.5.6.1	5
10 Modifications to 5.1.2.5	5
11 Modifications to 5.2.2	5
12 Modifications to 5.2.4	5
13 Modifications to 5.3.4	6
14 Modifications to Annex A, A.2	6
15 Modifications to Annex A, A.5	6
16 Modifications to Annex B, B.1	6
17 Modifications to Annex B, B.4	6
18 Modifications to Annex B, B.5	6
19 Modifications to Annex B, Table B.1	7
20 Modifications to Annex B, Table B.2, 4.3.1.4	7
21 Modifications to Annex B, Table B.4	7
22 Modifications to Annex C, Table C.1	7
23 Modifications to Annex C, C.4.2	7
24 Modifications to Annex C, C.6.1	8
25 Modifications to Annex C, C.7	8
26 Modifications to Annex D	8

European foreword

This document (EN 253:2019/prA1:2022) 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 document is currently submitted to the CEN Enquiry.

This document will supersede EN 253:2019.

In comparison with the previous edition, the following modifications have been made:

- Updates to the normative references (Clause 2)
- Updates and editorial changes (Clause 4 and 5)
- Updates and editorial changes (Annex A, B, C and D)
- Correction of error in formulas (Annex C)

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[SIST EN 253:2020/oprA1:2022](https://standards.iteh.ai/catalog/standards/sist/09d2b026-29bc-4ea6-aab0-d76be583fa73/sist-en-253-2020-opra1-2022)

<https://standards.iteh.ai/catalog/standards/sist/09d2b026-29bc-4ea6-aab0-d76be583fa73/sist-en-253-2020-opra1-2022>

EN 253:2019/prA1:2022 (E)**1 Modifications to Clause 2**

Delete:

ISO 6761, Steel tubes — Preparation of ends of tubes and fittings for welding

and add:

EN ISO 1923, Cellular plastics and rubbers – Determination of linear dimensions

2 Modifications to 4.2.3

Replace first sentence with:

The wall thicknesses, t , shall be in accordance with EN 10220 with a minimum as indicated in Table 1.

Add a note to Table 1:

NOTE The nominal diameter DN 15 is not relevant for factory made pipe, fitting and valve assemblies of the European Standards EN 253, 448 and 488. The European Standards EN 15698 for pipe, fitting and valve assemblies take reference to this nominal diameter.

3 Modifications to 4.2.4

Replace the clause with:

The outer surface of the steel service pipe shall comply with rust grade A, B or C according to EN ISO 8501-1, without pitting.

In order to ensure proper bonding between the steel service pipe and the thermal insulation prior to thermal insulation, the outer surface of the pipe is recommended to be clean from rust, mill scale, oil, grease, dust, paint, moisture and other contaminants.

Add the following new subclause after 4.2.4:

4.2.5 Pipe ends

Steel service pipes used for the manufacturing of pipe assemblies shall be delivered with bevelled ends according to EN 10217-2, EN 10216-2 and EN 10217-5. The bevel shall have an angle α of $30_0^{+5^\circ}$ with a root face of $1,6 \text{ mm} \pm 0,8 \text{ mm}$.

Bevelling is applicable for specified nominal wall thicknesses $\geq 3,2 \text{ mm}$.

For this, the relevant order options according to EN 10216-2, EN 10217-2 or EN 10217-5 should be agreed.

4 Modifications to 4.3.1.1

Replace third paragraph with:

The carbon black content shall, when tested in accordance with ISO 6964, be (2,0 to 2,5) % by mass.

and

Replace second bullet in the 4th paragraph with:

— Dispersion appearance rating not worse than A3 in ISO 18553.

5 Modifications to 4.3.2.3

Replace first paragraph with:

In case of separately manufactured casing the internal and external surfaces, in case of directly extruded casing onto the thermal insulation of the external surface of the casing shall be clean and free from such grooving or other defects that might impair its functional properties (see 5.2.1).

6 Modifications to 4.4.4

Replace first paragraph with:

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

7 Modifications to 4.4.5

Replace second sentence with:

The volume of each specimen after the test shall be 75 %–150 % of the original volume.

8 Modifications to 4.5.3

Replace second paragraph with:

Service pipe ends shall be prepared for welding in accordance with 4.2.5.

9 Modifications to 4.5.6.1

Replace last paragraph with:

The estimation of service life at continuous operating temperatures higher than 120 °C is outside the scope of this document.

10 Modifications to 5.1.2.5

Replace the clause with:

The outside dimensions of the test specimens shall be measured according to EN ISO 1923 with an accuracy of $\pm 0,1$ mm.

11 Modifications to 5.2.2

Replace the third paragraph with:

Depending on the diameter of the casing, the number of test bars to be cut and tested shall be in accordance with Table 7.

12 Modifications to 5.2.4

Replace the note with:

NOTE Registered trademark: Hoechst AG, Clariant GmbH: Extensive text experiences are available for this test fluid which allows the comparison of test results and the definition of requirements. This information is given for the convenience of users of this document and does not constitute an endorsement by CEN of the product named. Equivalent products may be used if they can be shown to lead to the same results. In this case this is concerning a comparison of the number of the molecules of ethyleneoxide in the chain of polyglycoether. [8]

EN 253:2019/prA1:2022 (E)**13 Modifications to 5.3.4**

Replace first sentence with:

The foam density shall be determined in accordance with EN ISO 845.

14 Modifications to Annex A, A.2

Replace last sentence with:

This is not implemented yet in this document.

15 Modifications to Annex A, A.5

Replace text under Figure A.3 with:

In principle, this test could have been implemented into this document to ensure a service life of 30 years at 120 °C continuous operating temperature but it was decided not to do so for the following reasons:

16 Modifications to Annex B, B.1

Replace second paragraph with:

A quality system certified to be in accordance with EN ISO 9001 with reference to this document and the obtained statistics of consistency of test results can be used to adjust inspection frequencies to the actual needs.

17 Modifications to Annex B, B.4

Replace paragraph with:

This inspection is primarily intended as an evaluation of the extent and the proper functioning of the manufacturer's quality control. This inspection also includes sampling of products to ensure that the requirements specified in this document are fulfilled. Additional inspections are normally made at least once a year. The suggested extent of the inspections is given in Tables B.1 to B.4.

Replace title clause with:

Additional inspection

Replace 3rd column header below 'Test frequency' in Tables B.1 to B.4 with:

Clause	Item	Test frequency		
		Manufacturer's test	Manufacturer's type quality control	Additional inspection

18 Modifications to Annex B, B.5

Delete the clause.

19 Modifications to Annex B, Table B.1

Add new row:

4.2.5	Pipe ends	None	Receiving inspection procedure	None
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20 Modifications to Annex B, Table B.2, 4.3.1.4

Replace "Inspection of records" with;

Inspection of records of the initial material.

21 Modifications to Annex B, Table B.4

Replace second footnote with:

For type test of the thermal conductivity, 4.5.7 and 4.5.8, the result should be reported together with the foam density, cell size, compressive strength and the composition of the gas in the cells of the insulation based on the same pipe sample.

and add new row:

4.5.3	Preparation of pipe ends for welding	None	If cut steel pipes are used for manufacturing	None
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22 Modifications to Annex C, Table C.1

Replace "Mean temperature of the insulation" with:

Mean temperature of the thermal insulation

Replace "Inner diameter of insulation material" with:

Inner diameter of thermal insulation, i.e. outer diameter of service pipe

Replace "Outer diameter of insulation material" with:

Outer diameter of thermal insulation

Replace "Thermal conductivity of insulation material" with:

Thermal conductivity of thermal insulation

23 Modifications to Annex C, C.4.2

Replace the clause with:

The inside and outside diameters of the service pipe (d_i) and (d_o) shall be measured with a slide calliper. The casing shall be measured with a flexible steel tape to obtain the circumference, which is divided by π to obtain the outside diameter (D_c), in at least 4 equally spaced positions along the test specimen.

The thickness of the casing (t) shall be measured at 4 points equally spaced around the circumference at both ends of the specimen and the inside diameter (D_i) is then calculated.

EN 253:2019/prA1:2022 (E)

24 Modifications to Annex C, C.6.1

Replace first sentence with:

The thermal conductivity at the mean temperature in the thermal insulation shall be calculated by linear regression using the results obtained at the different pipe temperatures.

25 Modifications to Annex C, C.7

Replace title with:

C.7 Symbols and units

Replace Formula C.1 with:

$$\lambda_i = \frac{\ln\left(\frac{D_i}{d_o}\right)}{\frac{2 \cdot \pi \cdot (T_1 - T_4) \cdot L}{\Phi} - \frac{1}{\lambda_c} \ln\left(\frac{D_c}{D_i}\right) - \frac{1}{\lambda_s} \ln\left(\frac{d_o}{d_i}\right)}$$

Replace Formula C.2 with:

$$T_3 = T_4 + \frac{\Phi}{2 \cdot \pi \cdot L \cdot \lambda_c} \ln\left(\frac{D_c}{D_i}\right)$$

Replace Formula C.4 with:

$$T_2 = T_1 - \frac{\Phi}{2 \cdot \pi \cdot L \cdot \lambda_s} \ln\left(\frac{d_o}{d_i}\right)$$

26 Modifications to Annex D

Replace clause with:

Necessary requirements for waste management and recycling of materials used for district heating pipes should be stated in the manufacturer's documentation and be submitted to the purchaser.