



# SLOVENSKI STANDARD

## SIST EN 12007-3:2015

01-julij-2015

Nadomešča:  
SIST EN 12007-3:2000

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**Infrastruktura za plin - Cevovodni sistemi za najvišji delovni tlak do vključno 16 bar - 3. del: Posebne funkcionalne zahteve za jekla**

Gas infrastructure - Pipelines for maximum operating pressure up to and including 16 bar - Part 3: Specific functional requirements for steel

Gasinfrastruktur - Rohrleitungen mit einem maximal zulässigen Betriebsdruck bis einschließlich 16 bar - Teil 3: Besondere funktionale Anforderungen für Stahl

Infrastructures gazières - Canalisations pour pression maximale de service inférieure ou égale à 16 bar - Partie 3: Exigences fonctionnelles spécifiques pour l'acier

**Ta slovenski standard je istoveten z: EN 12007-3:2015**

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**ICS:**

77.140.75	Jeklene cevi in cevni profili za posebne namene	Steel pipes and tubes for specific use
91.140.40	Sistemi za oskrbo s plinom	Gas supply systems

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EUROPEAN STANDARD

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## Gas infrastructure - Pipelines for maximum operating pressure up to and including 16 bar - Part 3: Specific functional requirements for steel

Infrastructures gazières - Canalisations pour pression maximale de service inférieure ou égale à 16 bar - Partie 3: Exigences fonctionnelles spécifiques pour l'acier

Gasinfrastruktur - Rohrleitungen mit einem maximal zulässigen Betriebsdruck bis einschließlich 16 bar - Teil 3: Besondere funktionale Anforderungen für Stahl

This European Standard was approved by CEN on 12 March 2015.

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**EN 12007-3:2015 (E)****Foreword**

This document (EN 12007-3:2015) has been prepared by Technical Committee CEN/TC 234 "Gas infrastructure", the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by November 2015, and conflicting national standards shall be withdrawn at the latest by November 2015.

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 12007-3:2000.

Annex D provides details of significant technical changes between this European Standard and the previous edition.

There is a complete suite of functional standards prepared by CEN/TC 234 "Gas infrastructure" to cover all parts from the input of gas to the transmission system up to the inlet connection of the gas appliances, whether for domestic, commercial or industrial purposes.

In preparing this standard, a basic understanding of gas infrastructure by the user has been assumed.

Gas infrastructure is complex and the importance on safety of its construction and use has led to the development of very detailed codes of practice and operating manuals in the member countries. These detailed statements embrace recognized standards of gas engineering and the specific requirements imposed by the legal structures of the member countries.

[SIST EN 12007-3:2015](https://standards.iteh.ai/catalog/standards/sist/5c2176f3-8794-4a3f-9a8b-190d1e8cb49e/sist-en-12007-3-2015)

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, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## 1 Scope

This European Standard describes the specific functional requirements for steel pipelines in addition to the general functional requirements of EN 12007-1 for maximum operating pressures up to and including 16 bar. This European Standard specifies common basic principles for gas infrastructure. Users of this European Standard should be aware that more detailed national standards and/or codes of practice may exist in the CEN member countries.

This European Standard is intended to be applied in association with these national standards and/or codes of practice setting out the above-mentioned basic principles.

In the event of conflicts in terms of more restrictive requirements in national legislation/regulation with the requirements of this standard, national legislation/regulation takes precedence as illustrated in CEN/TR 13737 (all parts).

CEN/TR 13737 (all parts) gives:

- clarification of all legislation/regulations applicable in a member state;
- if appropriate, more restrictive national requirements;
- a national contact point for the latest information.

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## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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EN 1092-1, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 1: Steel flanges*

EN 1514-1, *Flanges and their joints — Dimensions of gaskets for PN-designated flanges — Part 1: Non-metallic flat gaskets with or without inserts*

EN 1514-2, *Flanges and their joints — Gaskets for PN-designated flanges — Part 2: Spiral wound gaskets for use with steel flanges*

EN 1514-3, *Flanges and their joints — Dimensions of gaskets for PN-designated flanges — Part 3: Non-metallic PTFE envelope gaskets*

EN 1514-4, *Flanges and their joints — Dimensions of gaskets for PN-designated flanges — Part 4: Corrugated, flat or grooved metallic and filled metallic gaskets for use with steel flanges*

EN 1515-1, *Flanges and their joints — Bolting — Part 1: Selection of bolting*

EN 1515-2, *Flanges and their joints — Bolting — Part 2: Classification of bolt materials for steel flanges, PN designated*

EN 1591-1, *Flanges and their joints — Design rules for gasketed circular flange connections — Part 1: Calculation*

EN 1591-2, *Flanges and their joints — Design rules for gasketed circular flange connections — Part 2: Gasket parameters*

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EN 1594, *Gas infrastructure — Pipelines for maximum operating pressure over 16 bar — Functional requirements*

EN 1759-1, *Flanges and their joint — Circular flanges for pipes, valves, fittings and accessories, Class designated — Part 1: Steel flanges, NPS 1/2 to 24*

EN 10204, *Metallic products — Types of inspection documents*

EN 10226-1, *Pipe threads where pressure tight joints are made on the threads — Part 1: Taper external threads and parallel internal threads — Dimensions, tolerances and designation*

EN 10255, *Non-Alloy steel tubes suitable for welding and threading — Technical delivery conditions*

EN 12007-1, *Gas infrastructure — Pipelines for maximum operating pressure up to and including 16 bar — Part 1: General functional requirements*

EN 12327, *Gas infrastructure — Pressure testing, commissioning and decommissioning procedures — Functional requirements*

EN 12560-1, *Flanges and their joints — Gaskets for Class-designated flanges — Part 1: Non-metallic flat gaskets with or without inserts*

EN 12560-2, *Flanges and their joints — Dimensions of gaskets for Class-designated flanges — Part 2: Spiral wound gaskets for use with steel flanges*

EN 12560-3, *Flanges and their joints — Gaskets for Class-designated flanges — Part 3: Non-metallic PTFE envelope gaskets*

EN 12560-4, *Flanges and their joints — Gaskets for Class-designated flanges — Part 4: Corrugated, flat or grooved metallic and filled metallic gaskets for use with steel flanges*

EN 12560-5, *Flanges and their joints — Gaskets for Class-designated flanges — Part 5: Metallic ring joint gaskets for use with steel flanges*

EN 12732, *Gas infrastructure — Welding steel pipework — Functional requirements*

EN 12954, *Cathodic protection of buried or immersed metallic structures — General principles and application for pipelines*

EN 13509, *Cathodic protection measurement techniques*

EN 13774, *Valves for gas distribution systems with maximum operating pressure less than or equal to 16 bar — Performance requirements*

EN 15257, *Cathodic protection — Competence levels and certification of cathodic protection personnel*

EN 50162, *Protection against corrosion by stray current from direct current systems*

EN 15280, *Evaluation of a.c. corrosion likelihood of buried pipelines applicable to cathodically protected pipelines*

EN ISO 3183, *Petroleum and natural gas industries — Steel pipe for pipeline transportation systems (ISO 3183)*



### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12007-1 and the following apply.

#### 3.1

##### **compressor joint**

type of joint in which gas tightness is achieved by compression within a socket with or without a seal

#### 3.2

##### **threaded joint**

type of joint in which gas tightness is achieved by metal to metal contact within threads with the assistance of a sealant

#### 3.3

##### **flanged joint**

type of joint in which gas tightness is achieved by compression of a gasket between the faces of two flanges

#### 3.4

##### **insulating joint**

fitting installed to insulate electrically one section of pipeline from another

### 4 Design

#### 4.1 General requirements for selection of steel materials

##### 4.1.1 General

Steel pipes and other pipeline components shall conform to the relevant European or International Standards.

Steel pipe material shall comply with EN ISO 3183 or other suitable European Standards.

Steel types or grades other than those listed in EN ISO 3183 may also be used when their suitability has been demonstrated. The requirements of EN ISO 3183 shall be used for guidance in establishing material properties.

Table 1 gives informative examples of the range of the steel grades available.

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Table 1 — Examples of the range of steel grades available

MOP	Standard	Steel grade	Supply condition	Charpy Kv J	Minimum yield strength MPa
≤ 5 bar	prEN 10255:2015	S235GT	-	-	235
≤ 16 bar	EN ISO 3183	L245 L290 L320 L360	PSL2 In all cases, either R/ N/ Q/ M as applicable	27J @ 0 °C	245 290 320 360
≤ 16 bar	EN 10216-1	P235TR2 P265TR2	Either NP/ NW/ NR as applicable	27J @ 0 °C	235 265
≤ 16 bar	EN 10217-1	P235TR2 P265TR2	Either NP/ NW/ NR as applicable	27J @ 0 °C	235 265
≤ 16 bar	EN 10216-2	P235GH P265GH	Either +N/ NP/ NW/ NR as applicable	27J @ 0 °C	235 265
≤ 16 bar	EN 10217-2	P235GH P265GH	Either +N/ NP/ NW/ NR as applicable	27J @ 0 °C	235 265

**Key**

PSL	product specification level (see EN ISO 3183, 6.1.2)
R	as rolled (see EN ISO 3183, 4.2 and Table 3)
M	thermomechanically rolled or formed (see EN ISO 3183, 4.63, 4.64 and Table 3)
N	full pipe normalized, normalized rolled or normalized formed (see EN 10216-2, Table 1) normalizing forming
+N	full pipe normalized, normalized rolled or normalized formed (see EN 10216-2, Table 1)
NP	pipe full body normalized (see EN 10217-1/ EN 10217-2, Table 1)
NR	pipe normalized rolled or hot (stretch) reduced within the normalizing temperature range (see EN 10217-1/ EN 10217-2, Table 1)
NW	pipe normalized only in weld zone (see EN 10217-1/ EN 10217-2, Table 1)
Q	quenched and tempered (see EN ISO 3183, 4.5 and Table 3)

**4.1.2 Quality level**

The quality level as defined by the relevant standards for other pipeline components shall be compatible with the quality level of the pipes.

EXAMPLE For welding and jointing purposes.

Steel pipes shall be qualified with respect to their strength, fracture toughness and weldability.

**4.1.3 Weldability**

Pipes and other pipeline components shall be capable of being welded reliably under site conditions. To meet the weldability criteria, the value of the carbon equivalent value (CEV) of pipes and other pipeline components, based on the steel ladle analysis, shall be less than or equal to 0,45 for grades with specified

minimum yield strength (SMYS) not exceeding 360 Mpa, unless otherwise agreed between the pipeline operator and manufacturer. This value shall be guaranteed by the manufacturer. For all grades of steel, the maximum carbon content shall not exceed 0,22 % and the maximum guaranteed values of sulphur and phosphorus contents shall not exceed 0,035 % for each element or 0,05 % in total on the ladle analysis.

NOTE 1 Carbon equivalent is given by the formula:

$$CE = C + \frac{Mn}{6} + \frac{Cr + Mo + V}{5} + \frac{Cu + Ni}{15} \leq 0,45$$

where

*CE* is the carbon equivalent;

*C* is the weight percentage of carbon content;

*Mn* is the weight percentage of manganese content;

*Cr* is the weight percentage of chromium content;

*Mo* is the weight percentage of molybdenum content;

*V* is the weight percentage of vanadium content;

*Cu* is the weight percentage of copper content;

*Ni* is the weight percentage of nickel content.

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NOTE 2 This CEV formula as shown in Note 1 is appropriate for welding steel pipe of SMYS smaller or equal than 360 MPa for pressures up to and including 16 bar. Other CEV formulae suitable for higher strength steels may be used at the discretion of the asset owner.

If in exceptional cases grades of steel are used which do not fulfil these requirements, the manufacturer shall give detailed data concerning the weldability of the material. The pipeline operator may fix a test of weldability, if the provided data are not sufficient.

#### 4.1.4 Impact energy

When climatic conditions require, materials with proven impact properties at lower temperatures shall be used.

#### 4.1.5 Inspection documents for components

The minimum level of conformity of components shall be certified by an inspection document in accordance with EN 10204, 3.1 or 3.2 as requested from the customer. For dimensions which are not included in EN ISO 3183, the minimum requirements shall be agreed between the manufacturer and the purchaser (Charpy impact test).

## 4.2 Pipes and fittings

### 4.2.1 Steel pipes

The requirements for steel pipes of external diameter greater than DN 600 shall be agreed between the pipeline operator and manufacturer.