

BS EN 1594:2013

Incorporating corrigendum December 2013



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Gas infrastructure — Pipelines for maximum operating pressure over 16 bar — Functional requirements

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National foreword

This British Standard is the UK implementation of EN 1594:2013. It supersedes BS EN 1594:2009 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee GSE/33, Gas supply.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Published by BSI Standards Limited 2013

ISBN 978 0 580 84605 2

ICS 23.040.01; 75.200

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 September 2013.

Amendments/corrigenda issued since publication

Date	Text affected
31 December 2013	Implementation of CEN correction notice 25 September 2013: Figure 2 corrected.

English Version

Gas infrastructure - Pipelines for maximum operating pressure over 16 bar - Functional requirements

Infrastructures gazières - Canalisation pour pression
maximale de service supérieure à 16 bar - Prescriptions
fonctionnelles

Gasinfrastruktur - Rohrleitungen für einen maximal
zulässigen Betriebsdruck über 16 bar - Funktionale
Anforderungen

This European Standard was approved by CEN on 18 July 2013.

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-CENELEC 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-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

This document (EN 1594:2013) 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 March 2014, and conflicting national standards shall be withdrawn at the latest by March 2014.

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 1594:2009.

Annex J 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 of the gas infrastructure 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.

Compliance to this standard ensures the interoperability, safety and reliability requirements of pipeline systems.

Directive 2009/73/EC concerning common rules for the internal market in natural gas and the related Regulation (EC) No 715/2009 on conditions for access to the natural gas transmission networks also aim at technical safety (security) including technical reliability of the European gas system. These aspects are also in the scope of CEN/TC 234 standardization. In this respect, CEN/TC 234 evaluated the indicated EU legislation and amended this technical standard accordingly, where required and appropriate.

A list of the relevant functional standards prepared by CEN/TC 234 is included in Clause 2 and the Bibliography of this document.

CEN/TC 234 will continue its work updating this European Standard to the latest developments at regular intervals.

In preparing this European Standard, a basic understanding of gas supply by the user has been assumed.

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

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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.

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Introduction

This European Standard describes the general functional requirements for gas supply through pipe systems and covers the pressure range greater than 16 bar maximum operating pressure (MOP) for steel systems. It gives normative and informative references for safe and secure gas infrastructure. It applies to their design, construction, operation and the related aspects of safety, environment and public health, all in order to provide a safe and secure supply of gas.

The requirements of this European Standard are based on safe gas engineering practice under conditions normally encountered in the gas industry. Requirements for all unusual conditions cannot be specifically provided for, nor are all engineering and construction details prescribed.

Existing industrial safety regulations applying to work areas, safety devices and safe work practices are not intended to be supplanted by this European Standard.

Managers with responsibilities for the design, construction and operation of gas infrastructure will have regard to the guidance given in this European Standard and to other relevant standards. It is the responsibility of these managers and engineers to apply these functional requirements, supplemented with other proven good practice to the particular circumstances of all gas infrastructures.

The designer, constructor or operator of pipeline systems is cautioned that this European Standard is not a design handbook or code of practice. Additional national or company standards describing the details are needed. These detailed standards should be in line with the basic principles of this European Standard.

In preparing this European Standard it was recognised that the suite of relevant European Standards is incomplete. Reference may be made where appropriate to international, national or other standards until relevant European Standards are available.

1 Scope

This European Standard is applicable to pipelines with a maximum operating pressure (MOP) over 16 bar for the carriage of processed, non-toxic and non-corrosive natural gas according to EN ISO 13686 in onland gas infrastructure.

This European Standard is also applicable to pipelines with a maximum operating pressure (MOP) over 16 bar for the carriage of non-conventional gases such as injected biomethane, complying with EN ISO 13686 and for which a detailed technical evaluation of the functional requirements is performed ensuring there are no other constituents or properties of the gases that can affect the integrity of the pipeline.

Onland gas infrastructure is where:

- pipeline elements are made of unalloyed or low-alloyed carbon steel;
- pipeline elements are joined by welds, flanges or mechanical couplings;
- the pipeline is not located within commercial or industrial premises as an integral part of the industrial process on these premises except for any pipelines and facilities supplying such premises;
- the design temperature of the system is between $-40\text{ }^{\circ}\text{C}$ and $120\text{ }^{\circ}\text{C}$ inclusive.

This European Standard applies to onshore pipeline systems from the point where the pipeline first crosses what is normally accepted as battery limit between on and offshore, e.g.:

- first isolation valve;
- the base of steep sea shelf;
- above the high water/low water mark onto mainland;
- an island.

This European Standard also applies to a pipeline system with a starting point onshore, also when parts of the pipeline system on the mainland subsequently cross fjords, lakes etc.

This European Standard does not apply to existing pipelines, in use prior to the publication of this European Standard, nor to modifications to existing pipelines.

Gas infrastructures covered by this European Standard begin after the gas producer's metering station. The functional demarcation of the pipeline system within a plant area will be determined from case to case. Generally speaking, this will be directly after the first isolating valve of the installation.

This European Standard also describes the mechanical requirements for pipework in stations with a maximum operating pressure greater than 16 bar. Welding requirements are described in a special application standard on welding for gas infrastructures EN 12732. Functional requirements for stations are given in:

- EN 1776, *Gas supply systems — Natural gas measuring stations — Functional requirements*
- EN 1918-5, *Gas supply systems — Underground gas storage — Part 5: Functional recommendations for surface facilities*
- EN 12186, *Gas supply systems — Gas pressure regulating stations for transmission and distribution — Functional requirements*
- EN 12583, *Gas supply systems — Compressor stations — Functional requirements*

This European Standard specifies common basic principles for gas infrastructures. Users of this European Standard should be aware that there may exist more detailed national standards and codes of practice 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 principles.

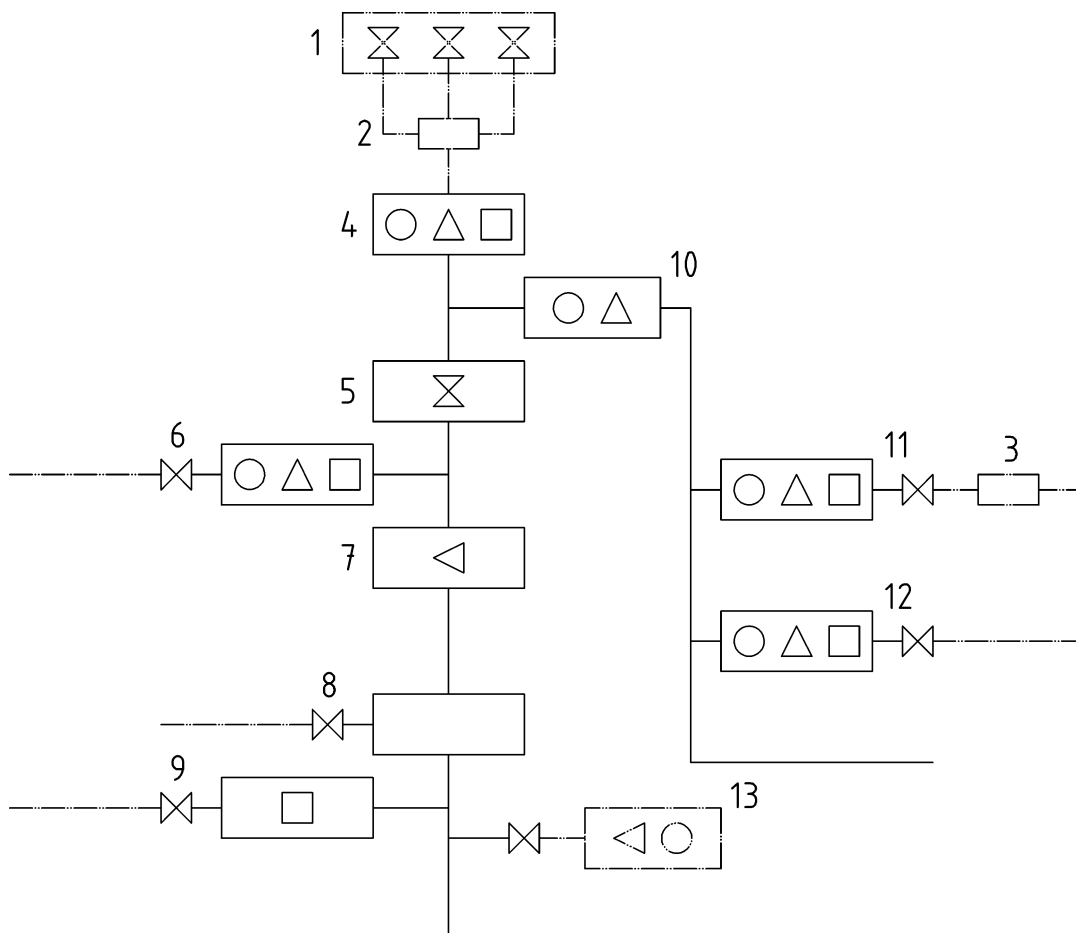
In the event of conflicts in terms of more restrictive requirements in the national legislation/regulation with the requirements of this European Standard, the national legislation/regulation takes precedence as illustrated in CEN/TR 13737 (all parts).

NOTE CEN/TR 13737 (all parts) contains:

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

Reference is made in this European Standard to relevant European and other recognised standards for products used to construct and operate gas infrastructures.

A schematic representation of pipelines for gas transmission is given in Figure 1.



Key

Symbols	Stations
— pipelines covered by this standard	1 P – well, production
- - - pipelines not covered by this standard	2 T – treatment
○ pressure regulation	3 D – odourisation
△ pressure safety system	4 S 1 – gas receiving
□ metering system	5 S 2 – valve station
◁ compression	6 S 3 – delivery station
⋈ valve	7 S 4 – compressor station
⋈ isolation device	8 S 5 – other supply (e.g. for blending)
	9 S 6 – export or import
	10 S 7 – pressure regulating
	11 S 8 – domestic distribution
	12 S 9 – industrial distribution
	13 S 10 – storage

Figure 1 — Schematic representation of pipelines for gas supply over 16 bar