BS EN 10253-1:2026

BSI Standards Publication

Butt-welding pipe fittings

Part 1: Wrought carbon steel for general use and without specific inspection requirements



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National foreword

This British Standard is the UK implementation of EN 10253-1:2026. It supersedes BS EN 10253-1:1999, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee ISE/110, Steel Tubes, and Iron and Steel Fittings.

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

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European foreword

This document (EN 10253-1:2026) has been prepared by Technical Committee CEN/TC 459 “ECISS – European Committee for Iron and Steel Standardization”[1], the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by February 2027, and conflicting national standards shall be withdrawn at the latest by February 2027.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 10253-1:1999.

EN 10253-1:2026 includes the following significant technical changes with respect to EN 10253-1:1999:

a) restructuring of Clauses to reflect new layout of EN 10253-2 and EN 10253-4;

b) revision of introduction;

c) revision of scope;

d) update of normative references;

e) update of terms, symbols and abbreviations;

f) removal of dished ends;

g) moved steel grade S265 from Annex A to Clause 9;

h) update of options;

i) revision of technical requirements and dimensions to reflect current state of the art;

j) revision of Figures;

k) moved dimensions to Annex A;

l) standard editorially revised.

EN 10253 comprises a series of European Standards about *Butt-welding pipe fittings*, namely:

— *Part 1: Wrought carbon steel for general use and without specific inspection requirements;*

— *Part 2: Non alloy and ferritic alloy steels with specific inspection requirements;*

— *Part 3: Wrought austenitic and austenitic-ferritic (duplex) stainless steels without specific inspection requirements;*

[1] Through its sub-committee SC 10 “Steel tubes, and iron and steel fittings” (secretariat: UNI).

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— *Part 4: Wrought austenitic and austenitic-ferritic (duplex) stainless steels with specific inspection requirements.*

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

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Introduction

In writing this document the competent committee recognized that there are two broad types of products commonly used, and decided to reflect these in the standard by differentiating between two parts.

EN 10253-1 describes fittings without formal reference to the pressure resistance, which are not intended to be used in applications, covered by the European Legislation for Pressure Equipment.

EN 10253-2 defines fittings that are intended to be used in applications covered by the European Legislation for Pressure Equipment.

The selection of steel type and requirement level depend on many factors; the properties of the fluid to be conveyed, the service conditions, the design code and any statutory requirements should all be taken into consideration. Therefore this document gives no detailed guidelines for the application of different parts. It is the ultimate responsibility of the user to select the appropriate part for the intended application.

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1 Scope

This document specifies the technical delivery requirements for seamless and welded butt-welding fittings (elbows, concentric and eccentric reducers, equal and reducing tees, caps) made of wrought carbon steel without specific inspection requirements.

It specifies:

a) steel grade and its chemical compositions;

b) mechanical properties;

c) dimensions and tolerances;

d) requirements for inspection and testing;

e) inspection documents;

f) marking;

g) protection and packaging.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 10020, *Definition and classification of grades of steel*

EN 10021, *General technical delivery conditions for steel products*

EN 10079, *Definition of steel products*

EN 10168, *Steel products — Inspection documents — List of information and description*

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

EN 10266, *Steel tubes, fittings and structural hollow sections — Symbols and definitions of terms for use in product standards*

EN ISO 377, *Steel and steel products — Location and preparation of samples and test pieces for mechanical testing (ISO 377)*

EN ISO 2566-1, *Steel — Conversion of elongation values —Part 1: Carbon and low alloy steels (ISO 2566-1)*

EN ISO 3166-1, *Codes for the representation of names of countries and their subdivisions — Part 1: Country code (ISO 3166-1)*

EN ISO 4885, *Ferrous materials — Heat treatments — Vocabulary (ISO 4885)*

EN ISO 5817, *Welding — Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) — Quality levels for imperfections (ISO 5817)*

EN ISO 6506-1, *Metallic materials — Brinell hardness test — Part 1: Test method (ISO 6506-1)*

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EN ISO 6892-1, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature (ISO 6892-1)*

EN ISO 9606-1, *Qualification testing of welders — Fusion welding — Part 1: Steels (ISO 9606-1)*

EN ISO 9712, *Non-destructive testing — Qualification and certification of NDT personnel (ISO 9712)*

EN ISO 10893-10, *Non-destructive testing of steel tubes — Part 10: Automated full peripheral ultrasonic testing of seamless and welded (except submerged arc-welded) steel tubes for the detection of longitudinal and/or transverse imperfections (ISO 10893-10)*

EN ISO 10893-11, *Non-destructive testing of steel tubes — Part 11: Automated ultrasonic testing of the weld seam of welded steel tubes for the detection of longitudinal and/or transverse imperfections (ISO 10893-11)*

EN ISO 15607, *Specification and qualification of welding procedures for metallic materials — General rules (ISO 15607)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 10020, EN 10021, EN 10079, EN ISO 377, and EN ISO 4885 and the following apply

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
model
designation for elbows, return bends, and reducers

Note 1 to entry: For elbows and return bends the model defines the bending diameter of the piece.

Note 2 to entry: For reducers the model defines concentric, eccentric, or concentric - form 1 shape of the piece.

3.2
weld during manufacture
weld made for obtaining a fitting

Note 1 to entry: This term does not include the tube welds when a tube is used as starting material.

3.3
seamless fitting
fitting manufactured without welding from starting material which is not welded

3.4
welded fitting
fitting made from welded starting material or fitting where welding is a part of the manufacturing process

4 Symbols and abbreviations

For the purposes of this document, the symbols defined in EN 10266 and the following apply:

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A	Percentage of elongation at rupture, with reference to gauge length of 5,65 $\sqrt{S_o}$
B	Back to face distance for return bends, expressed in millimetres
C	Centre to centre distance for return bends (C = 2R), expressed in millimetres
D	Specified outside diameter for elbows, return bends, equal tees, caps and the major outside diameter for reducers and reducing tees, expressed in millimetres
D_1	Specified minor outside diameter for reducers and reducing tees, expressed in millimetres
D_{max}	Maximum diameter in one section, expressed in millimetres
D_{min}	Minimum diameter in the same section, expressed in millimetres
F	Distance from the axis of the branch outlet to the face of the centre body of tees, expressed in millimetres
G	Distance from the axis of the centre line to the face of the branch outlet expressed in millimetres
ID	Inside diameter at the welding ends of elbows, return bends, equal tees and at the major welding end of reducers and reducing tees ($ID = D - 2T$), expressed in millimetres
ID_1	Inside diameter at the minor welding end of reducers and reducing tees ($ID_1 = D_1 - 2T_1$), expressed in millimetres
K	Total height for caps, expressed in millimetres
L	Face to face distance for reducers, expressed in millimetres
O_v	Out of roundness, expressed in %
R	Bending radius of elbows and return bends, expressed in millimetres
R_1	Inside spherical radius of cap, expressed in millimetres
R_2	Inside knuckle radius of cap, expressed in millimetres
R_{eH}	Upper yield strength, expressed in megapascals
R_m	Tensile strength, expressed in megapascals
$R_{p0,2}$	Minimum 0,2 % proof strength, plastic extension expressed in megapascals
T	Specified wall thickness at the welding ends for elbows, return bends, equal tees and caps or on the D end for reducers and reducing tees, expressed in millimetres
T_1	Specified wall thickness on the D_1 welding end of reducers and reducing tees, expressed in millimetres
W	Distance from the extrados to the centre of a 90° elbow at the welding ends, expressed in millimetres
X	Tolerance on the form of fittings
Z	Distance from the extrados to the centre of a 45° elbow at the welding ends, expressed in millimetres

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