

Steel threaded pipe fittings

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 31 and a back cover.

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Steel threaded pipe fittings

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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 Central Secretariat has the same status as the official versions.

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

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Foreword

This European Standard has been prepared by Technical Committee ECISS/TC 29, Steel tubes and fittings for steel tubes, the Secretariat of which is held by UNI.

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of an identical text or by endorsement, at the latest by October 2000, and conflicting national standards shall be withdrawn at the latest by October 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies requirements for threaded fittings of nominal sizes from DN 6 to DN 150 inclusive, made out of welded or seamless steel tubes, forging and rolled bars. It is applicable to those threaded steel pipe fittings that are used in the transportation and distribution of liquid or gas.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporate in it by amendments or revision. For undated references, the latest edition of the publication referred to applies (including amendments).

EN 10204, *Metallic products – Types of inspection documents*.

EN ISO 6708, *Pipework components – Definition and selection of DN (nominal size) (ISO 6708:1995)*.

ISO 7-1¹⁾, *Pipe threads where pressure-tight joints are made on the threads – Part 1: Dimensions, tolerances and designation*.

ISO 7-2¹⁾, *Pipe threads where pressure-tight joints are made on the threads – Part 2: Verification by means of limit gauges*.

ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads – Part 1: Dimensions, tolerances and designation*.

ISO 228-2, *Pipe threads where pressure-tight joints are not made on the threads – Part 2: Verification by means of limit gauges*.

3 Terms and definitions

For the purposes of this standard, the following terms and definitions apply:

3.1

nominal size (DN)

DN: as defined in EN ISO 6708

NOTE The comparison between the thread size designation and the nominal size (DN) is given in Table A.1 for information only.

3.2

seamless fitting

fitting manufactured from seamless tube, forging or rolled bar

3.3

fabricated fitting

fitting manufactured either from a welded tube or where the welding forms part of the fabrication of the fitting

3.4

tubular

fitting manufactured from medium or heavy pipe as defined in Table 6. These fittings are defined in Tables 21 to 24

¹⁾ European Standards are under development (series EN 10226). When published, they may be agreed at the time of enquiry and/or order.

4 Designation

The fitting in accordance with this European Standard shall be designated by the following in the sequence shown:

- 1) type of fitting (see Tables 7 to 24);
- 2) reference to this European Standard (EN 10241);
- 3) either nominal size (DN), or thread size.

Fittings which have the same nominal sizes (DN) are designated only with that DN (see example 1).

EXAMPLE 1:

For an equal female elbow with DN 50 run, the designation will be:

Elbow - EN 10241 - DN 50

Fitting which has differing nominal sizes shall be shown as in the sequence 1-2 where 1 refers to the run and 2 refers to the branch or the reduction (see examples 2 and 3).

EXAMPLE 2:

For a reducing tee with DN 50 run and DN 25 branch, the designation will be:

Reducing tee - EN 10241 - DN 50 × DN 25

EXAMPLE 3:

For a bush with DN 40 and a reduction DN 25, the designation will be:

Bush - EN 10241 - DN 40 × DN 25

5 Information to be supplied by the purchaser

5.1 Mandatory information

The following information shall be supplied by the purchaser, at the time of enquiry and/or order:

- 1) the quantity to be delivered;
- 2) the designation (see clause 4).

5.2 Options

A number of options are specified in this European Standard and they are listed below.

In the event that the purchaser does not indicate a wish to implement any of these options at the time of enquiry and/or order, the fittings shall be supplied in accordance with the basic specification.

- 1) Taper internal thread type Rc conforming to ISO 7-1
- 2) Parallel external thread type GA or GB conforming to ISO 228-1
- 3) Parallel internal thread type G conforming to ISO 228-1
- 4) Zinc protective coating (see 8.2)

- 5) Leaktightness test (see 9.1)
- 6) Special packaging (see clause 11)
- 7) Inspection document 2.1 (see clause 12)

6 Technical requirements

6.1 Fitting manufacture

Dimensions and tolerances of differing types of fittings shall be as given in Tables 5 to 24.

6.2 Surface condition

The fitting shall have a smooth surface consistent with the manufacturing process and be free from burrs; surface marks may be ground. Unless otherwise specified in the Tables 11 and 12, the female thread entrance shall be chamfered.

Repairs by welding, other than the weld seam, are forbidden.

6.3 Material

6.3.1 Chemical composition

The fitting shall be manufactured from steel having the chemical composition indicated in Tables 1 and 2.

Table 1 - Chemical composition of seamless steel fittings

C max. %	S max. %	P max. %
0,25	0,35	0,09

Table 2 - Chemical composition of fabricated fittings and tubulars

C max. %	Mn max. %	P max. %	S max. %
0,25	1,40	0,045	0,045

6.3.2 Mechanical properties

The fitting shall be manufactured from base material having the mechanical properties indicated in Tables 3 and 4. These properties shall not be subject to verification on the fitting.

Table 3 - Mechanical properties of seamless steel fittings

Tensile strength min. N/mm ²	Elongation min. %
320	20

Table 4 - Mechanical properties of fabricated fittings and tubulars

Tensile strength min. N/mm ²	Yields strength min. N/mm ²	Elongation min. %
320	195	20

6.4 Threads

Internal threads shall be parallel and external threads shall be taper conforming to ISO 7-1, except for certain tubulars in Tables 21, 23 and 24 or when the purchaser specifies other types of thread (see 5.2, option 1 or 2 or 3); in this case the type of thread shall be identified.

7 Dimensions and tolerances

7.1 Dimensions

Fittings shall have the appropriate dimensions given in Tables 6 to 24.

7.2 Tolerances

When tolerances are not specified in Tables 5 to 24, dimensions are nominal and subjected to manufacturing tolerances.

7.2.1 Tolerances on length of fitting

The tolerances on the overall length of the fitting, centre to face, centre to centre and back to face dimensions are given in Table 5.

Table 5 - Tolerances

Dimensions in mm

Dimension	Up to and including 25	Over 25 to 40	Over 40 to 65	Over 65 to 75	Over 75 to 150	Over 150
Tolerance	+1,5 0	+3,0 0	+4,5 0	+6,0 0	+8,0 0	+10,0 0

7.2.2 Tolerances on diameters

Unless otherwise stated in tables, the tolerances on outside diameters are given in Table 6.

7.2.3 Tolerance on threads

The axis of screw threads shall be accurate within $\pm 0,5^\circ$ of the specified angle for fittings described in Tables 7 to 23 and $\pm 1,5^\circ$ for fittings described in Table 24.

8 Protection

8.1 General

The fitting shall be supplied black and shall be protected by a protective coating, e.g. light oil.

8.2 Zinc protective coating

When a zinc protective coating is specified by the purchaser (see 5.2, option 4), one of the methods given in 8.2.1 to 8.2.3 shall be applied, at the discretion of the manufacturer.

8.2.1 Hot dip zinc galvanizing

Galvanizing of fittings shall be performed before the thread cutting operation and shall be by means of the hot dip method. The minimum average coating thickness shall be $55 \mu\text{m}$ on the outside of the fitting, with a local average of $45 \mu\text{m}$ on 100 mm^2 .

The hot dip zinc bath shall contain not less than 98,5 % pure zinc.

8.2.2 Electro zinc plating

Electro zinc plating shall be performed on the finished black fitting. The minimum coating thickness on the outside of the fitting shall be $8 \mu\text{m}$.

8.2.3 Zinc flake

Zinc flake non-electrolytically applied cured coating shall be performed on the finished black fitting. The coating thickness on the outside of the fitting shall be between $5 \mu\text{m}$ to $10 \mu\text{m}$.

NOTE The zinc coating thickness can be checked with an electronic and/or magnetic appliance.

9 Inspection and testing

9.1 Leaktightness test

Each fitting, after being threaded, shall be capable of withstanding, without any signs of leakage, the hydrostatic or air test as specified in clauses 9.1.1 and 9.1.2. This test shall only be carried out when specified by the purchaser at the time of enquiry and/or order (see 5.2, option 5).

9.1.1 Hydrostatic test

Hydrostatic test, using water or light oil as a medium.

9.1.1.1 Tubulars

These shall be tested to a minimum internal pressure of 50 bar.

9.1.1.2 Fabricated fittings

These shall be tested to a minimum internal pressure of 75 bar.

9.1.1.3 Seamless fittings

These shall be tested to a minimum internal pressure of 150 bar.

9.1.2 Air test

Air test, with the fitting fully immersed in water or light oil as a medium.

Tubulars, fabricated fittings and seamless fittings shall be tested to a minimum internal air pressure of 7 bar.

9.2 Inspection of threads

9.2.1 Inspection method

Threads manufactured in accordance with ISO 7-1 shall be verified in accordance with ISO 7-2.

Threads manufactured in accordance with ISO 228-1 shall be verified in accordance with ISO 228-2.

9.2.2 Thread electro zinc plating

Where fittings have been electro zinc plating, this can result in the thread being covered in uneven particles of zinc; these particles may be removed with a plug or a brush.

10 Marking

The manufacturer's brand or logo shall, depending on the size of fittings, either be applied on a label attached on the packaging or be marked indelibly on each fitting.

11 Packaging

Unless special packaging is specified by the purchaser at the time of enquiry and/or order (see 5.2, option 6), fittings shall be supplied, either singly or in sacks or bags.

12 Inspection documents

Fittings shall be delivered without an inspection document.

At the request of purchaser (see 5.2, option 7), the manufacturer shall provide a certificate of compliance, in accordance with EN 10204 type 2.1.