



National Standards Authority of Ireland

IRISH STANDARD

I.S. EN 1515-1:2000

ICS 21.060.10

21.060.20

23.040.60

**FLANGES AND THEIR JOINTS - BOLTING -
PART 1: SELECTION OF BOLTING**

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*This Irish Standard was
published under the
authority of the National
Standards Authority of
Ireland
and comes into effect on
March 17, 2000*

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EUROPEAN STANDARD

EN 1515-1

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 1999

ICS 21.060.10; 21.060.20; 23.040.60

English version

Flanges and their joints - Bolting - Part 1: Selection of bolting

Brides et leurs assemblages - Boulonnerie - Partie 1:
Sélection de la boulonnerie

Flansche und ihre Verbindungen - Schrauben und Muttern -
Teil 1: Auswahl von Schrauben und Muttern

This European Standard was approved by CEN on 25 September 1999

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

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 74 "Flanges and their joints", 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of an identical text or by endorsement, at the latest by May 2000, and conflicting national standards shall be withdrawn at the latest by May 2000.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association. This European Standard is considered to be a supporting standard to those application and product standards which in themselves support an essential safety requirement of a New Approach Directive and which make reference to this European Standard.

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.

EN 1515 consists of two Parts:

Part 1: Selection of bolting

Part 2: Combination of flange and bolting materials for steel flanges, PN designated

1 Scope

This European Standard is applicable to the selection of bolting for PN designated flanges in accordance with EN 1092 series and Class designated flanges in accordance with EN 1759 series¹⁾.

It specifies standards for dimensions, materials and technical conditions of delivery for bolts, stud bolts and nuts.

The bolting of within standard is selected for the combined use with flanges from the EN 1092 series and EN 1759 series but not for general purpose.

¹⁾ prEN 1759-1 is in preparation whereas prEN 1759-3 and prEN 1759-4 are publicly available.

The selection of the materials is based on commonly used materials. It covers all pressure and temperature ranges of the general service of standard flanges.

For special applications other materials may be selected by the user.

In some cases, similar alloys have been included, which differ only by carbon contents (e.g. 0,25% or 0,42%), because of the different requirements of the national standards. When the new European Standards are produced, it is expected that the opportunity to rationalise these many grades, will result in a reduction of standardised grades.

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 incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 1092	Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories - PN designated
prEN 1759-3	Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, class designated - Part 3: Copper alloy and composite flanges
prEN 1759-4	Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, class designated - Part 4: Aluminium alloy flanges
EN 10269	Steels and nickel alloys for fasteners with specified elevated and/or low temperature properties
EN 20898-1	Mechanical properties of fasteners - Part 1: Bolts, screws and studs (ISO 898-1: 1998)
EN 20898-2	Mechanical properties of fasteners - Part 2: Nuts with specified proof load values - Coarse thread (ISO 898-2: 1992)
EN 24014	Hexagon head bolts - Product grades A and B (ISO 4014 : 1988)
EN 24016	Hexagon head bolts - Product grade C (ISO 4016 : 1988)
EN 24032	Hexagon nuts, style 1 - Product grades A and B (ISO 4032 : 1986)
EN 24033	Hexagon nuts, style 2 - Product grades A and B (ISO 4033 : 1979)
EN 24034	Hexagon nuts - Product grade C (ISO 4034 : 1986)
EN ISO 3506-1	Mechanical properties of corrosion-resistant stainless steel fasteners - Part 1 : Bolts, screws and studs (ISO 3506-1 : 1997)
EN ISO 3506-2	Mechanical properties of corrosion-resistant stainless steel fasteners - Part 2 : Nuts (ISO 3506-2 : 1997)
ISO 261	ISO general purpose metric screw threads - General plan
ISO 965-2	ISO general purpose metric screw threads – Tolerances - Part 2: Limits of sizes for general purpose external and internal screw threads - Medium quality

3 Selection of bolting types

The selection of bolting types specified in table 1 is based on the material. It is necessary that all other service conditions such as fluids are taken into account by the user of the standard.

Table 1: Types of bolting

Dimensional Standard		Material or property class	Remarks
Bolts Stud bolts	Nuts		
EN 24016	EN 24034	4.6/5 5.6/5 6.8/6	Hexagon head bolt
EN 24014	EN 24032 EN 24033 ¹⁾	all	Hexagon head bolt
Annex A of this standard	EN 24032 EN 24033 ¹⁾	all	Stud bolt, threaded full length
1) Nuts in accordance with EN 24033 are normally used for industrial plants. For sizes \geq M39 nuts with $m=d$ are recommended.			

4 Selection of bolting materials

The selection of bolting materials specified in table 2 is based on PN or Class and the allowable temperature. It is necessary that all other service conditions such as fluid are taken into account by the user of this standard.

Table 2: Materials and service limits

Line No	PN Class up to	Tempe- rature range °C	Type of material		Steel designation name or property class Steel designation number Material standard	
			bolts	nuts	bolts	nuts
1	PN 40 Cl. 300	-10 to 120	C-St	C-St	4.6 - EN 20898-1	5 - EN 20898-2
2	PN 40 ¹⁾ Cl. 300	-10 to 300	C-St	C-St	5.6 - EN 20898-1	5 - EN 20898-2
3	PN 40 ¹⁾ Cl. 300	-10 to 300	C-St	C-St	6.8 - EN 20898-1	6 - EN 20898-2
4	PN 40 ¹⁾ Cl. 300	-10 to 300	C-St	C-St	8.8 - EN 20898-1	8 - EN 20898-2
5	all	-10 to 450	0,25C-1Cr-Mo	C-St elev. temp.	25CrMo4 1.7218 EN 10269	C35E 1.1181 EN 10269
6	all	-10 to 450	0,42C-1Cr-Mo	C-St elev. temp.	42CrMo4 1.7225 EN 10269	C45E 1.1191 EN 10269
7	all	-60 to 400	0,25C-1Cr-Mo	18Cr-9Ni	25CrMo4 1.7218 EN 10269	A2-50, A2-70 - EN ISO 3506-2

continued

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