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Flanges and their joints - Bolting - Part 4: Selection of bolting for equipment subject to the Pressure Equipment Directive 97/23/EC

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**Flanges and their joints - Bolting - Part 4: Selection of bolting for
equipment subject to the Pressure Equipment Directive
97/23/EC**

Brides et leurs assemblages - Boulonnerie - Partie 4:
Sélection de la boulonnerie pour équipements relevant de
la Directive Equipements sous pression 97/23/CE

Flansche und ihre Verbindungen - Schrauben und Muttern -
Teil 4: Auswahl von Schrauben und Muttern zur
Anwendung im Gültigkeitsbereich der Druckgeräterichtlinie
97/23/EG

This European Standard was approved by CEN on 14 November 2009.

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Foreword

This document (EN 1515-4:2009) 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of an identical text or by endorsement, at the latest by June 2010, and conflicting national standards shall be withdrawn at the latest by June 2010.

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 has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

EN 1515, *Flanges and their joints — Bolting*, consists of the following parts:

- *Part 1: Selection of bolting*
- *Part 2: Classification of bolt materials for steel flanges, PN designated*
- *Part 3: Classification of bolt materials for steel flanges, class designated*
- *Part 4: Selection of bolting for equipment subject to the Pressure Equipment Directive 97/23/EC*

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

1 Scope

This European Standard is applicable to the selection of bolting for equipment subject to the Pressure Equipment Directive 97/23/EC.

It specifies standards and additional requirements for dimensions, materials and technical conditions of delivery for bolting.

The bolting selection covered by this European Standard is regarded to be used for combination with flanges according to the series EN 1092 (PN designated flanges) and the series EN 1759 (Class designated flanges).

The selection is based on commonly used materials, bolts and nuts. It covers temperature ranges of the general service of standard flanges (based on PN or Class).

NOTE 1 The bolting selection given may be used in combination with non-standard flanges too provided that the range of application of the equipment for which the bolting is intended to be used is covered. It is the purchaser's option to decide on this.

When selecting bolting according to this European Standard it is essential to take into account other parameters such as type of fluids, corrosion hazards and relaxation at elevated temperatures.

The purpose of this European Standard is to provide a selection of most commonly used bolting types and bolting material combinations as well a tool for easy selection of suitable bolting for equipment.

It is not the intention to specify all possible applications but to give guidance on the most commonly applications. According to this, e.g. application limits for material in the creep range are not explicitly covered in this European Standard but some bolting materials listed (see Table 3, footnote h) are suitable to be used in this temperature range. Wherever the starting material standard provides mechanical properties for this temperature range respective reference is made in Table 3.

NOTE 2 Special services and ambient conditions may require the application of coatings. It is the purchaser's option to decide on this. Depending on the coating used, a verification of the temperature ranges given in Table 3 may be required.

2 Normative references

The following referenced documents are indispensable for the application 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 764-5:2002, *Pressure Equipment — Part 5: Compliance and Inspection Documentation of Materials*

EN 1092-1:2007, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 1: Steel flanges*

EN 1759-1:2004, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, Class designated — Part 1: Steel flanges, NPS 1/2 to 24*

EN 10204:2004, *Metallic products — Types of inspection documents*

EN 10269:1999, *Steels and nickel alloys for fasteners with specified elevated and/or low temperature properties*

EN 13445-3:2009, *Unfired pressure vessels — Part 3: Design*

EN 13480-3:2002, *Metallic industrial piping — Part 3: Design and calculation*

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