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DEUTSCHE NORM June 2008

DIN EN 10253-4

ICS 23.040.40; 77.140.20 Supersedes: see below

Butt-welding pipe fittings – Part 4: Wrought austenitic and austenitic-ferritic (duplex) stainless steels with specific inspection requirements English version of DIN EN 10253-4:2008-06

Formstücke zum Einschweißen –
Teil 4: Austenitische und austenitisch-ferritische (Duplex-)Stähle mit besonderen Prüfanforderungen
Englische Fassung DIN EN 10253-4:2008-06

Together with DIN EN 10253-2:2008-04, supersedes DIN 2605-1:1991-02, DIN 2605-2:1995-06, DIN 2609:1991-02, DIN 2615-1:1992-05, DIN 2615-2:1992-05, DIN 2616-1:1991-02, DIN 2616-2:1991-02 and DIN 2617:1991-02

Document comprises 99 pages

National foreword

This standard has been prepared by Technical Committee ECISS/TC 29 “Steel tubes and fittings for steel tubes” (Secretariat: UNI/UNSIDER, Italy).

The responsible German body involved in its preparation was the *Normenausschuss Rohrleitungen und Dampfkesselanlagen* (Piping and Boiler Plant Standards Committee), Technical Committee NA 082-00-11 AA *Einschweißfittings.*

This standard includes requirements for stainless steel butt-welding pipe fittings previously specified in the national DIN Standards listed under the superseding note on page 1.

Requirements for butt-welding pipe fittings made of non alloy and alloy steel are specified in DIN EN 10253-2.

Amendments

This standard differs from DIN 2605-1:1991-02, DIN 2605-2:1995-06, DIN 2609:1991-02, DIN 2615-1:1992-05, DIN 2615-2:1992-05, DIN 2616-1:1991-02, DIN 2616-2:1991-02 and DIN 2617:1991-02 as follows:

a) The specifications have been combined into one standard.

b) The present standard deals with fittings made of stainless steels. Fittings of non alloy and alloy steel are specified in DIN EN 10253-2.

Previous editions

DIN 2605: 1953-11, 1962-06
DIN 2605-1: 1991-02
DIN 2605-2: 1991-02, 1995-06
DIN 2606: 1965-07
DIN 2609: 1991-02
DIN 2615: 1964-06
DIN 2615-1: 1992-05
DIN 2615-2: 1992-05
DIN 2616: 1964-06
DIN 2616-1: 1991-02
DIN 2616-2: 1991-02
DIN 2617: 1964-06, 1991-02

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 10253-4

March 2008

ICS 23.040.40; 77.140.20

English Version

Butt-welding pipe fittings - Part 4: Wrought austenitic and austenitic-ferritic (duplex) stainless steels with specific inspection requirements

Raccords à souder bout à bout - Partie 4: Aciers inoxydables austénitiques et austéno-ferritiques avec contrôle spécifique

Formstücke zum Einschweißen - Teil 4: Austenitische und austenitisch-ferritische (Duplex-)Stähle mit besonderen Prüfanforderungen

This European Standard was approved by CEN on 5 January 2008.

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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 CEN Management Centre 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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Ref. No. EN 10253-4:2008: E

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Foreword

This document (EN 10253-4:2008) has been prepared by Technical Committee ECISS/TC 29 “Steel tubes and fittings for steel tubes”, the secretariat of which is held by UNI/UNSIDER.

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 September 2008, and conflicting national standards shall be withdrawn at the latest by September 2008.

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 the EU Directive 97/23/EC.

For relationship with the EU Directive 97/23/EC, see informative Annex ZA, which is an integral part of this document.

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*

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

In writing EN 10253 the competent committee recognized that there are two broad types of products commonly used for stainless steels, and decided to reflect these in the standard by differentiating between two parts, Part 3 and Part 4.

Part 4 defines two types of fittings: Type A fittings have the same wall thickness at the welding ends than a pipe having the same specified wall thickness. Their resistance to internal pressure is, in general, less than that of a straight pipe with the same dimensions. Type B fittings showing increased wall thickness at the body of the fitting are designed to resist the same internal pressure as a straight pipe with same dimensions. These two types of fittings are intended to be used in applications covered by the EU Directive 97/23/EC. According to this Directive and further interpretation guidelines (e.g. guideline 7/19), seamless fittings are considered as materials whereas welded fittings are considered as components. Therefore, in some areas of this European Standard, provisions for seamless and welded fittings are different.

The committee recognized the need to provide a basic type in which the minimum wall thickness of the fitting is guaranteed without formal reference to the pressure resistance. This type is considered in Part 3 and includes products not intended for use in applications covered by the Pressure Equipment Directive category I – IV except applications according to Article 3 Paragraph 3.

Information about structural dimensions of fittings is given in Annex A.

For fittings specified in accordance with this part of EN 10253, the resistance to internal pressure of the fitting may be determined by calculation. Annex B gives information about the calculation.

For some wall thickness series Annex C lists pressure factors for fittings type A and Annex D lists wall thickness values for the body of the fittings of fittings type B.

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.

Introduction

The European Committee for Standardisation (CEN) draws attention to the fact that it is claimed that compliance with this document may involve the use of patents applied to steel grade 1.4410, the compositions of which is given in Table 3.

CEN takes no position concerning the evidence, validity and scope of these patent rights.

The holder of these patent rights has assured CEN that they are willing to negotiate licences, under reasonable and non-discriminatory terms and conditions, with applicants throughout the world. In this respect, the statements of the holders of these patent rights are registered with CEN. Information may be obtained from:

Sandvik AB
SE-811 81 SANDVIKEN
Sweden

Attention is drawn to the possibility that some of the elements within this document may be the subject of patent rights other than those indicated above. CEN shall not be responsible for identifying any or all such patents rights.

1 Scope

1.1 This European Standard specifies the technical delivery requirements for seamless and welded butt-welding fittings (elbows, concentric and eccentric reducers, equal and reducing tees, caps) made of austenitic and austenitic-ferritic (duplex) stainless steel which are intended for pressure and corrosion resisting purposes at room temperature, at low temperature or at elevated temperatures.

It specifies:

— the type of fittings;

  — type A (see 7.2)

  — type B (see 7.3)

— the steel grades;

— the mechanical properties;

— the dimensions and tolerances;

— the requirements for inspection and testing;

— the inspection documents;

— the marking;

— the handling and packaging.

NOTE In the case of a harmonised supporting standard for materials, presumption of conformity to the Essential Requirement(s) (ESRs) is limited to technical data of materials in the standard and does not presume adequacy of the material to a specific item of equipment. Consequently the technical data stated in the material standard should be assessed against the design requirements of this specific item of equipment to verify that the ESRs of the Pressure Equipment Directive (PED) are satisfied.

1.2 Unless otherwise specified in this European Standard the general technical delivery requirements in EN 10021 apply.

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 287-1, *Qualification test of welders - Fusion welding - Part 1: Steels*

EN 473, *Non destructive testing - Qualification and certification of NDT personnel - General principles*

EN 910, *Destructive tests on welds in metallic materials – Bend test*

EN 1418, *Welding personnel - Approval testing of welding operators for fusion welding and resistance weld setters for fully mechanized and automatic welding of metallic materials*

EN 10002-1, *Metallic materials - Tensile testing - Part 1: Method of test at ambient temperature*

EN 10002-5, *Metallic materials - Tensile testing - Part 5: Method of testing at elevated temperature*

EN 10021:2006, *General technical delivery conditions for steel products*

EN 10027-1, *Designation systems for steels - Part 1: Steel names*

EN 10027-2, *Designation systems for steels - Part 2: Numerical system*

EN 10028-7, *Flat products made of steels for pressure purposes - Part 7: Stainless steels*

EN 10045-1, *Metallic materials – Charpy impact test - Part 1: Test method*

EN 10088-2, *Stainless steels - Part 2: Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purposes*

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

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

EN 10216-5, *Seamless steel tubes for pressure purposes - Technical delivery conditions - Part 5 : Stainless steel tubes*

EN 10217-7, *Welded steel tubes for pressure purposes - Technical delivery conditions - Part 7: Stainless steel tubes*

EN 10266:2003,*Steel tubes, fittings and structural hollow sections - Symbols and definitions of terms for use in product standards*

EN 10272, *Stainless steel bars for pressure purposes*

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

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

EN ISO 377:1997, *Steel and steel products - Location and preparation of samples and test pieces for mechanical testing (ISO 377:1997)*

EN ISO 1127, *Stainless steel tubes - Dimensions, tolerances and conventional masses per unit length (ISO 1127:1992)*

EN ISO 3166-1, *Codes for the representation of names of countries and their subdivisions - Part 1: Country codes (ISO 3166-1:2006)*

EN ISO 3651-2, *Determination of resistance to intergranular corrosion of stainless steels - Part 2: Ferritic, austenitic and ferritic-austenitic (duplex) stainless steels - Corrosion test in media containing sulfuric acid (ISO 3651-2:1998)*

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

EN ISO 14284, *Steel and iron - Sampling and preparation of samples for the determination of chemical composition (ISO 14284:1996)*

EN ISO 15614-1, *Specification and qualification of welding procedures for metallic materials - Welding procedure test - Part 1: Arc and gas welding of steels and arc welding of nickel and nickel alloys (ISO 15614-1:2004)*

3 Terms and definitions

For the purposes of this document, the relevant definitions given in EN 10020:2000, EN 10021:2006, EN 10052:1993, EN 10079:2007 and EN ISO 377:1997 apply, except as defined below.

3.1
model
for elbows and return bend, the model defines the bending radius of the piece

3.2
welded fitting

3.2.1
fittings made from welded tubes

3.2.2
fittings made from sheet/plate or strip where welding is a part of the manufacturing process

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

3.4
purchaser
person or organisation that orders products in accordance with this European Standard.

NOTE The purchaser is not necessarily, but may be, a manufacturer of pressure equipment in accordance with the EU Directive listed in Annex ZA. Where a purchaser has responsibilities under this EU Directive, this standard will provide a presumption of conformity with the essential requirements of the Directive so identified in Annex ZA

3.5
employer
organisation for which a person works on a regular basis.

NOTE The employer may be either the fitting manufacturer or supplier or a third party organisation providing a service, e.g. NDT