

# SVENSK STANDARD

## SS-EN 10217-5:2019



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### **Svetsade rör av stål för tryckändamål – Tekniska leveransbestämmelser –**

### **Del 5: Pulverbågsvetsade rör av olegerade och legerade stål med fordrade högttemperaturegenskaper**

### **Welded steel tubes for pressure purposes – Technical delivery conditions –**

### **Part 5: Submerged arc welded non-alloy and alloy steel tubes with specified elevated temperature properties**

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Denna standard ersätter SS-EN 10217-5:2004, utgåva 1 och SS-EN 10217-5/A1:2005, utgåva 1.

The European Standard EN 10217-5:2019 has the status of a Swedish Standard. This document contains the official version of EN 10217-5:2019.

This standard supersedes the SS-EN 10217-5:2004, edition 1 and SS-EN 10217-5/A1:2005, edition 1.

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EUROPEAN STANDARD

EN 10217-5

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2019

ICS 23.040.10; 77.140.75

Supersedes EN 10217-5:2002

English Version

**Welded steel tubes for pressure purposes - Technical  
delivery conditions - Part 5: Submerged arc welded non-  
alloy and alloy steel tubes with specified elevated  
temperature properties**

Tubes soudés en acier pour service sous pression -  
Conditions techniques de livraison - Partie 5: Tubes  
soudés à l'arc immergé en aciers non allié et allié avec  
caractéristiques spécifiées à température élevée

Geschweißte Stahlrohre für Druckbeanspruchungen -  
Technische Lieferbedingungen - Teil 5:  
Unterpulvergeschweißte Rohre aus unlegierten und  
legierten Stählen mit festgelegten Eigenschaften bei  
erhöhten Temperaturen

This European Standard was approved by CEN on 25 February 2019.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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-CENELEC 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

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

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## SS-EN 10217-5:2019 (E)

### European foreword

This document (EN 10217-5:2019) has been prepared by Technical Committee CEN/TC 459 “ECISS - European Committee for Iron and Steel Standardization”<sup>1</sup>, 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 October 2019, and conflicting national standards shall be withdrawn at the latest by October 2019.

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 10217-5:2002.

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 2014/68/EU.

For relationship with EU Directive 2014/68/EU (formerly 97/23/EC), see informative Annex ZA, which is an integral part of this document.

This European Standard consists of the following parts, under the general title *Welded steel tubes for pressure purposes – Technical delivery conditions*:

*Part 1: Electric welded and submerged arc welded non-alloy steel tubes with specified room temperature properties*

*Part 2: Electric welded non-alloy and alloy steel tubes with specified elevated temperature properties*

*Part 3: Electric welded and submerged arc welded alloy fine grain steel tubes with specified room, elevated and low temperature properties*

*Part 4: Electric welded non-alloy steel tubes with specified low temperature properties*

*Part 5: Submerged arc welded non-alloy and alloy steel tubes with specified elevated temperature properties*

*Part 6: Submerged arc welded non-alloy steel tubes with specified low temperature properties*

*Part 7: Stainless steel tubes*

Another European Standard series covering tubes for pressure purposes is:

EN 10216, *Seamless steel tubes for pressure purposes*.

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

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<sup>1</sup> Through its subcommittee SC 10 “Steel tubes, and iron and steel fittings” (secretariat: UNI)



## 1 Scope

This document specifies technical delivery conditions for two test categories of submerged arc longitudinally (SAWL) or helically (SAWH) welded tubes of circular cross section, with specified elevated temperature properties, made from non-alloy quality steel or alloy special steel.

NOTE 1 These tube grades are intended to support the essential requirements of EU Directive 2014/68/EU in respect of pressure equipment covered under all relevant Categories as set out in Article 13 of that Directive.

NOTE 2 Once this standard is published in the Official Journal of the European Union (OJEU), presumption of conformity to the Essential Safety Requirements (ESR) of Directive 2014/68/EU is limited to the technical data for the materials in this standard and does not presume adequacy of the material for a specific item of pressure equipment. Consequently, the assessment of the technical data stated in this material standard against the design requirements of this specific item of equipment to verify that the ESRs of the Pressure Equipment Directive are satisfied, needs to be done by the designer or manufacturer of the pressure equipment, taking also into account the subsequent manufacturing processes which may affect properties of the base materials.

## 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 10021:2006, *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 10168:2004, *Steel products — Inspection documents — List of information and description*

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

EN 10220, *Seamless and welded steel tubes — Dimensions and masses per unit length*

CEN/TR 10261, *Iron and steel — European standards for the determination of chemical composition*

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

EN ISO 148-1:2016, *Metallic materials — Charpy pendulum impact test — Part 1: Test method (ISO 148-1:2016)*

EN ISO 377:2017, *Steel and steel products — Location and preparation of samples and test pieces for mechanical testing (ISO 377:2017)*

EN ISO 2566-1:1999, *Steel — Conversion of elongation values — Part 1: Carbon and low alloy steels (ISO 2566-1:1984)*

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

EN ISO 5173:2010, *Destructive tests on welds in metallic materials — Bend tests (ISO 5173:2009)*

## SS-EN 10217-5:2019 (E)

EN ISO 6892-1:2016, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature (ISO 6892-1:2016)*

EN ISO 6892-2:2018, *Metallic materials — Tensile testing — Part 2: Method of test at elevated temperature (ISO 6892-2:2018)*

EN ISO 10893-6:2011, *Non-destructive testing of steel tubes — Part 6: Radiographic testing of the weld seam of welded steel tubes for the detection of imperfections (ISO 10893-6:2011)*

EN ISO 10893-7:2011, *Non-destructive testing of steel tubes — Part 7: Digital radiographic testing of the weld seam of welded steel tubes for the detection of imperfections (ISO 10893-7:2011)*

EN ISO 10893-8:2011, *Non-destructive testing of steel tubes — Part 8: Automated ultrasonic testing of seamless and welded steel tubes for the detection of laminar imperfections (ISO 10893-8:2011)*

EN ISO 10893-9:2011, *Non-destructive testing of steel tubes — Part 9: Automated ultrasonic testing for the detection of laminar imperfections in strip/plate used for the manufacture of welded steel tubes (ISO 10893-9:2011)*

EN ISO 10893-11:2011, *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 10893-11:2011)*

EN ISO 14174:2012, *Welding consumables — Fluxes for submerged arc welding and electroslag welding — Classification (ISO 14174:2012)*

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

EN ISO 17639:2013, *Destructive tests on welds in metallic materials — Macroscopic and microscopic examination of welds (ISO 17639:2003)*

ISO 11484:2009, *Steel products — Employer's qualification system for non-destructive testing (NDT) personnel*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 10020, EN 10021, EN 10266, EN ISO 4885 and the following apply.

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

#### 3.1

##### **test category**

classification that indicates the extent and level of inspection and testing

#### 3.2

##### **employer**

organisation for which a person works on a regular basis

Note 1 to entry: The employer may be either the tube manufacturer or a third party organization providing services, such as Non-Destructive Testing (NDT).

### 3.3

#### SAW

##### **submerged-arc welded tube**

tubular product having one or two longitudinal seams, or one helical seam, produced using the submerged-arc welding process

### 3.4

#### SAWH

##### **submerged-arc helical welded tube**

tubular product having one helical weld seam produced using the submerged-arc welding process

### 3.5

#### SAWL

##### **submerged-arc longitudinal welded tube**

tubular product having one or two longitudinal weld seams produced using the submerged-arc welding process

## 4 Symbols

For the purposes of this document, the symbols given in EN 10266 apply.

## 5 Classification and designation

### 5.1 Classification

In accordance with the classification system in EN 10020, the steel grades P235GH and P265GH are classified as non-alloy quality steels and steel grade 16Mo3 is classified as an alloy special steel.

### 5.2 Designation

**5.2.1** For the tubes covered by this document, the steel designation consists of:

— the number of this European Standard, e.g. EN 10217-5;

plus either:

— the steel name in accordance with EN 10027-1;

or:

— the steel number allocated in accordance with EN 10027-2.

**5.2.2** The steel name of non-alloy steel grades is designated by:

— the capital letter P for pressure purposes;

— the indication of the specified minimum yield strength at room temperature for thickness  $T$  less than or equal to 16 mm, expressed in MPa (see Table 4);

— the symbols GH for elevated temperature.

**5.2.3** The steel name of alloy steel grade 16Mo3 is designated by the chemical composition (see Table 2).