Nederlandse
norm

2e Ontwerp

NEN-EN 10216-1

prEN 10216-1

Publikatie uitsluitend voor commentaar

Naadloze stalen buizen voor toestellen onder druk. Technische leveringsvoorwaarden. Deel 1: Buizen van niet-gelegeerde staalsoorten met eigenschappen gespecificeerd bij de omgevingstemperatuur

Seamless steel tubes for pressure purposes. Technical delivery conditions. Part 1: Non-alloy steel tubes with specified room temperature properties

december 1995
UDC 621.643.2-034.14-462.3:669.14.018.252.2

Commentaar voor 1 februari 1996

De European Committee for Standardization (CEN), waarin de nationale normalisatie-instituten van 18 Europese landen samenwerken, heeft gepubliceerd het Europese normontwerp:

prEN 10216-1 Seamless steel tubes for pressure purposes. Technical delivery conditions. Part 1: Non-alloy steel tubes with specified room temperature properties

Definitief vastgestelde Europese normen zullen als Nederlandse norm gelden. Daarom wordt dit normontwerp in Nederland voor commentaar gepubliceerd. Op het ontwerp ingebracht commentaar zal aan de bevoegde normcommissie worden voorgelegd die hiermee rekening zal houden bij de bepaling van de Nederlandse stem. Indien er geen bezwaar bij het NNI wordt ingebracht, kan dat leiden tot ongewijzigd definitieve vaststelling van het ontwerp als norm.

Van Europese normen bestaan drie officiële versies: Engels, Frans, Duits. Voor Nederland zal de Engelse versie gelden, tenzij voor een geautoriseerde versie in het Nederlands wordt gekozen.

Normcommissie 341 074 "Stalen buizen"

Prijsklasse 24

Nederlands Normalisatie-instituut

Kalfjeslaan 2, Postbus 5059, 2600 GB Delft, Telefoon (015) 2 690 390, Fax (015) 2 690 190

DRAFT
prEN 10216-1

EUROPEAN STANDARD

NORME EUROPEENNE

EUROPÄISCHE NORM

November 1995

ICS 23.040.10

Descriptors :

English version

Seamless steel tubes for pressure purposes - Technical delivery conditions - Part 1: Non-alloy steel tubes with specified room temperature properties

Nahtlose Stahlrohre für Druckbeanspruchungen - Technische Lieferbedingungen - Teil 1: Rohre aus unlegierten Stählen mit festgelegten Raumtemperatureigenschaften

This draft European Standard is submitted to the CEN members for CEN enquiry. It has been drawn up by Technical Committee ECISS/TC 29 .

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Ref. No. prEN 10216-1:1995 E

CONTENTS

FOREWORD

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

This European Standard is derived, with modifications, from ISO 9329-1:1989 "Seamless steel tubes for pressure purposes - Technical delivery conditions - Part 1 : Unalloyed steels with specified room temperature properties".

According to the Common CEN/CENELEC Rules, the following countries are bound to implement this European Standard : Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

1 SCOPE

1.1 This part of this European Standard specifies the technical delivery conditions for two qualities, T1 and T2, of seamless tubes of circular cross section, with specified room temperature properties, made of non-alloy steel.

Other parts of this European Standard are in course of preparation, namely :

prEN 10216-2 : Non-alloy and alloy steels with specified elevated temperature properties.
prEN 10216-3 : Fine grain steel tubes.
prEN 10216-4 : Non-alloy and alloy steels with specified low temperature properties.
prEN 10216-5 : Stainless steel tubes.

1.2 Another European Standard series covering tubes for pressure purposes is :

prEN 10217 : Welded steel tubes for pressure purposes.

1.3 In addition to the requirements of this European Standard, the general technical delivery conditions specified in EN 10021 apply.

2 NORMATIVE REFERENCES

This European Standard incorporates, by dated or undated references, 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 those 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 473 Qualification and certification of NDT personnel - General principles.

EN 10002 Metallic materials - Tensile testing.
Part 1 : Method of test (at ambient temperature).

EN 10020 Definitions and classification of grades of steel.

EN 10021 General technical delivery requirements for iron and steel products.

EN 10027 Designation systems for steels.
Part 1 : Steel names, principal symbols.
Part 2 : Numerical system.

EN 10045 Metallic materials - Charpy impact test.
Part 1 : Test method.

EN 10052 Vocabulary of heat treatment terms for ferrous products.

EN 10079 Definition of steel products.

EN 10204 Metallic products - Types of inspection documents .

EN 10233 Metallic materials - Tubes - Flattening test.

EN 10234 Metallic materials - Tubes - Drift expanding test.

ENV 10220 Seamless and welded steel tubes, dimensions and masses per unit length.

EN ISO 9001 Quality systems - Model for quality assurance in design/development, production, installation and servicing. (ISO 9001: 1994)

EN ISO 9002 Quality system - Model for quality assurance in production, installation and servicing. (ISO 9002: 1994)

prEN ISO 377[1)] Steel and steel products - Location of samples and test pieces for mechanical testing.

prEN 10246[1)] Non destructive testing of steel tubes.
Part 1[1)]: Automatic electromagnetic testing of seamless and welded (except submerged arc welded) ferromagnetic steel tubes for verification of hydraulic leak tightness.
Part 3 [1)]: Automatic eddy current testing of seamless and welded (except submerged arc welded) steel tubes for the detection of imperfections.
Part 5[1)]: Automatic full peripheral magnetic transducer/flux leakage testing of ferromagnetic seamless and welded (except submerged arc welded) steel tubes for the detection of longitudinal imperfections.
Part 7[1)]: Automatic full peripheral ultrasonic testing of seamless and welded (except submerged arc welded) steel tubes for the detection of longitudinal imperfections.

prEN 10256[1)] Non destructive testing of steel tubes - Qualification and competence of level 1 and level 2 NDT personnel.

prEN 10266[1)] Steel tubes, fittings and structural hollow sections - Definitions and symbols for use in product standards.

EURONORM 168 Iron and steel products - Inspection documents.

ISO 2566 Steel - Conversion of elongation values.
Part 1 : Carbon and low-alloy steels.

ISO/DIS 14284 Iron and steel products - Sampling and preparation of samples for the determination of the chemical composition.

IC 10 Designation systems for steel; additional symbols for steel names (ECISS information circular).

IC 11 Iron and steel; review of available methods for chemical analysis (ECISS information circular).

[1)] *In preparation; until this document is published as a European Standard, the corresponding national standard(s) should be agreed at the time of enquiry and order.*

3 DEFINITIONS

3.1 General

For the purpose of this European Standard, the definitions in EN 10020, EN 10021, EN 10052; EN 10079, prEN ISO 377 and ISO/DIS 14284 shall apply.

3.2 Employer

The organisation for which a person works on a regular basis. The employer may be either the tube manufacturer or supplier, or a third party organisation providing a service, e.g. NDT.

4 SYMBOLS AND DENOMINATIONS

See prEN 10266.

5 CLASSIFICATION AND DESIGNATION

5.1 Classification

Within the steel grades given in Tables 2 and 4, two qualities T1 and T2 are specified. These differ in respect of specified aluminium content, impact properties and inspection and testing requirements. In accordance with the classification system in EN 10020, the steels are designated as non-alloy quality steels.

5.2 Designation

5.2.1 Steel grades, for the tubes covered by this European Standard, are designated by the steel name and the steel number. Steel names are allocated in accordance with EN 10027 Part 1 and ECISS Information Circular 10 (IC 10). The steel numbers are allocated in accordance with EN 10027 Part 2.

5.2.2 The designation by the steel name consists of:
- the number of this European Standard (EN 10216-1).
- the capital letter P for pressure purposes.
- the indication of the specified minimum yield strength, for thicknesses $\leq$ 16 mm, expressed in N/mm^2.
- the alphanumeric T1 for qualities without specified impact properties.
- the alphanumeric T2 for qualities with specified impact properties.

5.2.3 The steel grade shall be designated as per the following examples:

EXAMPLE 1: EN 10216-1 P 195 T1

Number of this European Standard.

Steel for pressure purposes.

Specified minimum yield strength (N/mm²), for thicknesses not greater than 16 mm.

Without specified impact properties.

EXAMPLE 2: EN 10216-1 P 265 T2

Number of this European Standard.

Steel for pressure purposes.

Specified minimum yield strength (N/mm²), for thicknesses not greater than 16 mm

With specified impact properties

6 INFORMATION TO BE SUPPLIED BY THE PURCHASER

6.1 Mandatory information

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

a) The quantity to be delivered (mass, total length, number of pieces).
b) The term "tube".
c) The designation of the steel grade according to this European Standard (see 5.2).
d) The dimensions [outside diameter, wall thickness] (see table 5).

6.2 Options

A number of options are specified in this European Standard and these are listed below. In the event that the purchaser does not indicate his wish to implement any of these options at the time of enquiry and order, the supplier shall supply in accordance with the basic specification (see 6.1).

1) Normalizing heat treatment (see 7.3.2).
2) Restriction on copper and tin contents (see table 2).
3) Product analysis (see 8.2.2).
4) Flattening or drift expanding test for quality T2 (see 8.3).
5) Longitudinal impact testing at -10° C (see table 4).
6) Special end preparation (see 8.6).
7) Exact lengths (see 8.7.2) ;
8) Specific inspection for quality T1 (see 9.1).
9) The type of inspection document other than the standard document (see 9.2.1).
10) Test unit restriction for tubes with D ≥ 76,1 mm (see 10.1.1).
11) Selection of leak-tightness test method (see 11.6.1).
12) Wall thickness measurement away from the ends (see 11.7).
13) Non-destructive testing for quality T2 (see 11.9).
14) Special marking (see 12.2).
15) Special protection (see clause 13).

6.3 Example of an order

100 tonnes of hot-finished seamless tube in accordance with this European Standard, with an external diameter of 168,3 mm, a wall thickness of 4,5 mm, made of steel grade P235T2 with specified room temperature properties, to be submitted to specific inspection and testing involving the issuing of a 3.1.C inspection certificate in accordance with EN 10204:

100 tonnes Tube EN 10216-1 - P235T2 - 168,3 x 4,5 - Option 9, 3.1.C

7 Manufacturing process

7.1 Steelmaking process

The steelmaking process is at the discretion of the manufacturer.

7.2 Deoxidation process

The steel shall be fully killed.

7.3 Tube manufacture and delivery conditions

7.3.1 The manufacturer, supplier or the stockholder, where products are supplied through a stockist, shall operate a quality system in accordance with EN ISO 9002.[1)]

[1)] *This requirement is also fulfilled by a quality system in accordance with EN ISO 9001.*

All NDT activities shall be carried out by qualified and competent level 1 and/or level 2 NDT personnel approved by the employer. At the discretion of the manufacturer these personnel may be qualified in accordance with prEN 10256 or certificated in accordance with EN 473.
All level 1 and 2 personnel and NDT operations shall be authorised by a level 3 NDT individual approved by the employer and certificated in accordance with EN 473.

7.3.2 The tubes shall be manufactured by a seamless process. The forming operations and delivery conditions are shown in Table 1.

Table 1 : Forming operations and delivery conditions

Forming operation	Quality	Delivery condition
Hot finished	T1	As rolled, normalized or normalized-formed [1)]
	T2	Normalized or normalized-formed [1)]
Hot rolled + cold finished	T1 and T2	Normalized
1) At the discretion of the manufacturer, unless option 1 is specified.		

Option 1 (see 6.2): The tube shall be supplied normalized.

8 TECHNICAL REQUIREMENTS

8.1 General

The tubes, when supplied in a delivery condition indicated in table 1 and inspected in accordance with clauses 9, 10 and 11, shall comply with the requirements of this part of this European Standard.

8.2 Chemical composition

8.2.1 Cast analysis

The cast analysis reported by the steel producer shall apply and comply with the requirements of table 2.

Table 2: Chemical composition (cast analysis)[1)], in %

Steel Grade			C max.	Si max.	Mn max.	P max.	S max.	Al (total) min.	Cr max.	Cu[2)] max.	Mo max.	Nb[3)] max.	Ni max.	Ti[3)] max.	V[3)] max.	Cr+Cu +Mo+Ni max.
Steel Name		Steel Number														
P195	T1		0,13	0,35	0,70	0,030	0,025	-	0,30	0,30	0,08	0,010	0,30	0,03	0,02	0,70
	T2							0,02								
P235	T1		0,16	0,35	1,20	0,030	0,025	-	0,30	0,30	0,08	0,010	0,30	0,03	0,02	0,70
	T2							0,02								
P265	T1		0,20	0,40	1,40	0,030	0,025	-	0,30	0,30	0,08	0,010	0,30	0,03	0,02	0,70
	T2							0,02								

1) Elements not included in this table shall not be intentionally added to the steel without the agreement of the purchaser, except for elements which may be added for finishing the cast. All appropriate measures shall be taken by the steel maker to prevent the addition of undesirable elements from scrap or other materials used in the steelmaking process.

2) *Option 2 (see 6.2): In order to facilitate subsequent forming operations, an agreed maximum copper content lower than that indicated and an agreed specified maximum tin content shall apply.*

3) The content of these elements need not be reported, unless intentionally added to the cast

Bestelformulier

NEN

Stuur naar:

NEN Standards Products & Services
t.a.v. afdeling Klantenservice
Antwoordnummer 10214
2600 WB Delft

NEN Standards Products & Services

Postbus 5059
2600 GB Delft

Vlinderweg 6
2623 AX Delft

T (015) 2 690 390
F (015) 2 690 271

www.nen.nl/normshop

Ja, ik bestel

__ ex. NEN-EN 10216-1:1995 2e Ontw. en Naadloze stalen buizen voor toestellen onder druk - Technische leveringsvoorwaarden - Deel 1: Buizen van niet-gelegeerde staalsoorten met eigenschappen gespecificeerd bij de omgevingstemperatuur — € 23.50

Wilt u deze norm in PDF-formaat? Deze bestelt u eenvoudig via www.nen.nl/normshop

Gratis e-mailnieuwsbrieven

Wilt u op de hoogte blijven van de laatste ontwikkelingen op het gebied van normen, normalisatie en regelgeving? Neem dan een gratis abonnement op een van onze e-mailnieuwsbrieven. www.nen.nl/nieuwsbrieven

Gegevens

Bedrijf / Instelling

T.a.v. O M O V

E-mail

Klantnummer NEN

Uw ordernummer BTW nummer

Postbus / Adres

Postcode Plaats

Telefoon Fax

Factuuradres (indien dit afwijkt van bovenstaand adres)

Postbus / Adres

Postcode Plaats

Datum Handtekening

Retourneren

Fax: (015) 2 690 271
E-mail: klantenservice@nen.nl
Post: NEN Standards Products & Services,
t.a.v. afdeling Klantenservice
Antwoordnummer 10214,
2600 WB Delft
(geen postzegel nodig).

Voorwaarden

- De prijzen zijn geldig tot 31 december 2016, tenzij anders aangegeven.
- Alle prijzen zijn excl. btw, verzend- en handelingskosten en onder voorbehoud bij o.m. ISO- en IEC-normen.
- Bestelt u via de normshop een pdf, dan betaalt u geen handeling en verzendkosten.
- Meer informatie: telefoon (015) 2 690 391, dagelijks van 8.30 tot 17.00 uur.
- Wijzigingen en typefouten in teksten en prijsinformatie voorbehouden.
- U kunt onze algemene voorwaarden terugvinden op: www.nen.nl/leveringsvoorwaarden.

Normalisatie: de wereld op één lijn.

preview - 2016