SLOVENSKI STANDARD
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Steel tubes, fittings and structural hollow sections - Symbols and definitions of terms for use in product standards

Steel tubes, fittings and structural hollow sections - Symbols and definitions of terms for use in product standards

Stahlrohre, Fittings und Hohlprofile für den Stahlbau - Symbole und Definition von Begriffen für die Verwendung in Erzeugnisnormen

Tubes en acier, accessoires et profils creux en acier pour la construction - Symboles et définitions des termes a utiliser dans les normes de produits

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Contents

Foreword

This document (EN 10266:2003) has been prepared by Technical Committee ECISS/TC 29, "steel tubes and fittings for steel tubes", the secretariat of which is held by UNI.

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of an identical text or by endorsement, at the latest by February 2004, and conflicting national standards shall be withdrawn at the latest by February 2004.

This European Standard is derived from ISO 3545 “Steel tubes and fittings - Symbols for use in specifications”.

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, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard gives the symbols and definitions of terms for use in product standards for steel tubes, fittings and steel structural hollow sections.

NOTE For definitions of terms non specific to tubular products, see other relevant standards e.g. EN ISO 9000 [1].

2 Definitions of terms to be used in product standards

2.1
tube
hollow long product open at both ends, of any cross sectional shape

2.2
structural hollow section
tube intended to be used for construction purposes

2.3
fitting
component for attaching to a tube for joining tubes together or for changing the direction or bore of a tube

2.4
seamless tube (S)
tube made by piercing a solid product to obtain a tube hollow, which is further processed, either hot or cold, into its final dimensions

2.5
welded tube (W)
tube made by forming a hollow profile from a flat product and welding adjacent edges together. After welding the tube may be further processed, either hot or cold, into its final dimensions

2.6
butt welded tube (BW)
(*also known as continuous weld tube or Fretz Moon tube*) tube made by a continuous process in which decoiled strip, welded end to end, is passed through a furnace, formed into a hollow profile and the seam weld made by further raising of the temperature of the adjacent edges (e.g. using a jet of oxygen), and pressing the edges together

2.7
electric welded tube (EW)
tube made by pressure welding, in a continuous or non continuous process, in which strip is formed cold into a hollow profile and the seam weld made by heating the adjacent edges through the resistance to the passage of high or low frequency current, and pressing the edges together. The electric current may be applied either by direct electrode contact or by induction.

2.8
high frequency welded tube (HFW)
tube made by pressure welding, in a continuous or non continuous process, in which strip is formed cold into a hollow profile and the seam weld made by heating the adjacent edges through the resistance to the passage of a high frequency current, and pressing the edges together. The electric current may be applied either by direct electrode contact or by induction.

2.9
submerged arc welded tube (SAW)
tube made by forming either hot or cold a hollow profile from strip or plate and welding the adjacent edges together, without pressure, by addition of filler metal. The adjacent edges and the filler metal are heated to welding temperature by an arc generated by the resistance to the passage of an electric current. The arc generated and the molten metal are protected from atmospheric contamination by the presence of a layer of flux.

The tubes may have one or two longitudinal seam welds (SAWL) or one helical seam weld (SAWH) with at least one pass on the inside of the tube and at least one pass on the outside of the tube.

2.10
combination welded tube (COW)
tube made by forming either hot or cold a hollow profile from strip or plate and welding the adjacent edges together, without pressure, by addition of filler metal. The first pass is made by a continuous gas metal arc welding process followed by automatic submerged arc welding with at least one pass on the inside of the tube and at least one pass on the outside of the tube.

The tube may have one or two longitudinal seam welds (COWL) or one helical seam weld (COWH).

2.11
jointer
two pieces of tube connected together by a circumferential weld (to obtain the required delivery length)

2.12
strip end weld
weld that joins strip ends together

2.13
random length
delivery length where the length and tolerance of individual tubes are not defined. However a length range may be agreed.

2.14
approximate length
delivery length, specified by the purchaser, with a unilateral or a bilateral tolerance as specified in the product standard

2.15
standard length
delivery length, with a unilateral or a bilateral tolerance as specified in the product standard

2.16
exact length
delivery length, specified by the purchaser, with a restricted unilateral tolerance as specified in the product standard

2.17
manufacturer
organization that manufactures products in accordance with the relevant standard(s) and declares the compliance of the delivered products with all applicable provisions of the relevant standard(s)

2.18
agreement
contractual arrangement between manufacturer and purchaser at the time of enquiry and order

3 Symbols for use in product standards

3.1 General symbols

Symbol	Unit	Definition
A	cm^2	Cross sectional area of the product
B	mm	Specified length of the side of square tube of hollow section or the length of the shorter side or a rectangular tube or hollow section (see Figure 2)
CC	-	Concentricity $CC = \frac{T\max - T\min}{T\max + T\min}$
D	mm	Specified outside diameter (see Figure 1)
D_{max} D_{min}	mm	Maximum and minimum outside diameter of a circular tube or hollow section measured in the same plane (see Figure 1)
d	mm	Inside diameter (see Figure 1)
H	mm	Specified length of the longer side of a rectangular tube or hollow section (see Figure 2)
L	mm	Tube or piece length
M	kg/m	Mass per unit length
O	%	Out of roundness $O = 100 \times (D_{max} - D_{min})/D$
T	mm	Specified wall thickness
T_{max} T_{min}	mm	Maximum and minimum wall thickness of a circular tube or hollow section measured in the same plane (see Figure 1)

3.2 Additional symbols for structural hollow sections

Symbol	Unit	Definition
C_1/C_2	mm	Length of corner region of a square or rectangular hollow section (see Figure 2)
C_t	cm^3	Torsional modulus constant
e	mm	Deviation from straightness (see Figure 3)
I	cm^4	Second moment of area
I_t	cm^4	Torsional inertia constant (polar moment of inertia in the case of circular hollow section only)
I_Y	cm^4	Second moment of area about the y axis (see Figure 4)
I_Z	cm^4	Second moment of area about the z axis (see Figure 4)
i	mm	Radius of gyration $i = \sqrt{I / A}$
i_Y	mm	Radius of gyration about y axis $i_Y = \sqrt{I_Y / A}$
i_Z	mm	Radius of gyration about x axis $i_Z = \sqrt{I_Z / A}$
R	mm	External corner radius of a square or rectangular hollow section (see Figure 2)
V	mm	Total measured twist (see Figure 3)
V_1	mm	Twist measured at one end of a section
W_{el}	cm^3	Elastic section modulus
W_{ely}	cm^3	Elastic section modulus about the y axis $W_{ely} = I/(H/2)$
W_{elz}	cm^3	Elastic section modulus about the z axis $W_{elz} = I/(B/2)$
W_{pl}	cm^3	Plastic section modulus
W_{ply}	cm^3	Plastic section modulus about the y axis
W_{plz}	cm^3	Plastic section modulus about the z axis
x	mm	Concavity (x_1), or convexity (x_2) (see Figure 3)
θ	° (degree)	Angle between adjacent faces of square or rectangular hollow section (see Figure 3)