SLOVENSKI STANDARD
oSIST prEN 10080:2023

01-marec-2023

Nadomešča:
SIST EN 10080:2005

Jeklo za armiranje betona - Varivo armaturno jeklo - Splošno

Steel for the reinforcement of concrete - Weldable reinforcing steel - General

Stahl für die Bewehrung von Beton - Schweißgeeigneter Betonstahl - Allgemeines

Aciers pour l'armature du béton - Aciers soudables pour béton armé - Généralités

Ta slovenski standard je istoveten z: **prEN 10080**

ICS:

77.140.15	Jekla za armiranje betona	Steels for reinforcement of concrete

oSIST prEN 10080:2023 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 10080

January 2023

ICS 77.140.15

Will supersede EN 10080:2005

English Version

Steel for the reinforcement of concrete - Weldable reinforcing steel - General

Aciers pour l'armature du béton - Aciers soudables pour béton armé - Généralités

Stahl für die Bewehrung von Beton - Schweißgeeigneter Betonstahl - Allgemeines

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 459/SC 4.

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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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

Ref. No. prEN 10080:2023 E

Contents

Page

European foreword

This document (prEN 10080:2023) has been prepared by Technical Committee CEN/TC 459 “ECISS - European Committee for Iron and Steel Standardization”[1], the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 10080:2005.

This document has been prepared under Mandate M/115 rev. 1:2009-05 given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Regulation (EU) No 305/2011.

For relationship with EU Regulation (EU) No 305/2011, see informative Annex ZA, which is an integral part of this document.

prEN 10080:2023 includes the following significant technical changes with respect to EN 10080:2005:

— normative references and definitions updated;

— Table 2 with chemical composition revised;

— statements concerning testing, i.e. bond testing, fatigue, etc. revised, including new figure;

— clauses concerning the assessment and verification of constancy of performance (AVCP) revised;

— new figures and statements in Clause 10 concerning identification of manufacturer and products;

— Annex D and E (i.e. pull-out test and comparison of steel grades) deleted;

— Annex ZA updated according to the actual requirements.

Additional editorial changes have been made.

[1] Through its sub-committee SC 4 “Concrete reinforcing and prestressing steels” (secretariat: DIN).”

Introduction

This document does not define levels or classes. They should be defined in accordance with this document by values for R_m, R_e, A_{gt}, R_m/R_e, $R_{e,act.}/R_{e,nom.}$ (if applicable), fatigue strength (if required), cyclic load strength (if required), strength at elevated temperature (if required), bendability, weldability, bond strength, shear force of welded or clamped joints (for welded fabric or lattice girders) and tolerances on dimensions.

1 Scope

1.1 This document specifies general requirements and definitions for the essential characteristics of weldable reinforcing steel used for the reinforcement of concrete structures, delivered as finished products in the form of:

— bars (including those produced by the reinforcing steel manufacturer from coil);

— coils;

— sheets of factory-made machine-welded fabric;

— lattice girders.

1.2 Steels according to this document have a ribbed, indented or smooth surface.

NOTE 1 The protrusions between indentations of indented reinforcing steel have the same function as transverse ribs of ribbed reinforcing steel. There is no definition which specifies the difference between ribbed and indented surface geometry. Therefore, in this document, the same bond parameters are used for ribbed and indented steel.

1.3 This document does not apply to:

— non-weldable reinforcing steel;

— galvanized reinforcing steel;

— epoxy-coated reinforcing steel;

— corrosion resistant reinforcing steel;

— prestressing steels;

— indented strip;

— further processing by a processor, e.g. de-coiling/straightening, cutting or cutting and bending.

NOTE 2 Further processing could influence some essential characteristics of the product.

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 1766:2017, *Products and systems for the protection and repair of concrete structures — Test methods — Reference concretes for testing*

EN 10020:2000, *Definition and classification of grades of steel*

EN 10079:2007, *Definition of steel products*

EN 12390-3:2019, *Testing hardened concrete — Part 3: Compressive strength of test specimens*

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

EN ISO 7500-1:2018, *Metallic materials — Calibration and verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Calibration and verification of the force-measuring system (ISO 7500-1:2018)*

EN ISO 15630-1:2019, *Steel for the reinforcement and prestressing of concrete — Test methods — Part 1: Reinforcing bars, rods and wire (ISO 15630-1:2019)*

EN ISO 15630-2:2019, *Steel for the reinforcement and prestressing of concrete — Test methods — Part 2: Welded fabric and lattice girders (ISO 15630-2:2019)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 10020:2000 and EN 10079:2007 and the following apply.

3.1
reinforcing steel
steel product with a circular or practically circular cross-section which is suitable for the reinforcement of concrete

3.2
ribbed reinforcing steel
reinforcing steel with at least two rows of transverse ribs, which are uniformly distributed over the entire length

3.3
longitudinal rib
uniform continuous protrusion parallel to the axis of the bar, rod or wire

3.4
transverse rib or indentation
any rib or protrusion between indentations on the surface of the bar, other than a longitudinal rib

3.5
rib height
a_m
distance from the highest point of the rib (transverse or longitudinal), or protrusion between indentations, to the surface of the core, to be measured normal to the axis of the bar

3.6
rib or indentation spacing
c
distance between the centres of two consecutive transverse ribs or two consecutive protrusions between indentations measured parallel to the axis of the bar

3.7
angle of transverse rib or indentation inclination
β
angle between the axis of the transverse rib or protrusion between indentations and the longitudinal axis of the bar

3.8
transverse rib or protrusion flank inclination
α
angle of the rib or protrusion flank, measured perpendicular to the longitudinal axis of the rib

3.9
relative rib area
f_R
area of the projection of all ribs or protrusions between indentations on a plane perpendicular to the longitudinal axis of the bar, rod or wire, divided by the rib spacing and the nominal circumference

3.10
indented reinforcing steel
reinforcing steel with at least two rows of indentations, which are uniformly distributed over the entire length

3.11
rib- or protrusion- top width
b
width of the top of a transverse rib or protrusion between indentations to be measured normal to the axis of the transverse rib or protrusion

3.12
plain reinforcing steel
reinforcing steel with a smooth surface

3.13
coil
single length of reinforcing steel usually bar, rod or wire wound in concentric rings

3.14
nominal cross-sectional area
A_n
cross-sectional area equivalent to the area of a circular plain bar of the same nominal diameter, *d* (i.e. $\frac{\pi d^2}{4}$)

3.15
welded fabric
arrangement of longitudinal and transverse bars, rods or wires of the same or different nominal diameter and length that are arranged substantially at right angles to each other and factory electrical resistance welded together by automatic machines at all points of intersection

3.16
lattice girder
two or three-dimensional metallic structure comprising an upper chord, one or more lower chords and continuous or discontinuous diagonals which are welded by machine or mechanically assembled to the chords

3.17
specified value
any value which is defined in a standard and has not been measured or calculated with measured values

Note 1 to entry: A specified value can be a characteristic, a minimum, a maximum or any testing value and can be declared by the manufacturer in his declaration of performance.

3.18
test parameter
any value which defines testing conditions such as e.g. testing temperature, specified maximum stress in the fatigue test or bending diameter in the bend test

3.19
characteristic value
value of a material or product essential characteristic having a prescribed probability of not being attained in a hypothetical unlimited test series

Note 1 to entry: This value generally corresponds to a specific fractile of the assumed statistical distribution of the particular essential characteristic of the material or product.

3.20
minimum value
value below which no test result shall fall

3.21
maximum value
value which no test result shall exceed

3.22
factory production control
permanent internal control of production performed by the manufacturer

3.23
standard essential characteristic
essential characteristic which is included in this document as part of the factory production control requirements for every test unit

3.24
special essential characteristic
essential characteristic (fatigue strength, cyclic load strength and strength at elevated temperature) included in this document which is not determined as part of the factory production control requirements for every test unit

3.25
standard welded fabric
welded fabric manufactured according to specified delivery conditions and available from stock

3.26
purpose made welded fabric
welded fabric manufactured according to user's specific requirements

3.27
longitudinal wire
reinforcing steel in the manufacturing direction of the welded fabric

3.28
transverse wire
reinforcing steel perpendicular to the manufacturing direction of the welded fabric

3.29
twin wires
two wires of the same level or class and nominal diameter placed adjacent to each other as a pair in welded fabrics

3.30
pitch of welded fabric
centre-to-centre distance of wires in a sheet of welded fabric

Note 1 to entry: For twin wire fabric the pitch is measured between the tangents of the adjacent wires.

3.31
overhang of welded fabric
u_1, u_2, u_3, u_4
length of longitudinal or transverse wires projecting beyond the centre of the outer crossing wire in a sheet of welded fabric

Note 1 to entry: For twin wire welded fabric the overhang is measured from the tangent line of the adjacent wires.

3.32
length of a welded fabric sheet
L
dimension of the longest side of a sheet of welded fabric

3.33
width of a welded fabric sheet
B
dimension of the shortest side of the sheet of welded fabric

3.34
standard lattice girder
lattice girder manufactured according to specified delivery conditions and available from stock

3.35
purpose made lattice girder
lattice girder manufactured according to user's specific requirements

3.36
lower chord
set of longitudinal reinforcing steels placed in the lower part of a lattice girder

Note 1 to entry: The constituent longitudinal reinforcing steels of the lower chord can be interlinked or not.

3.37
upper chord
longitudinal reinforcement placed in the upper part of a lattice girder, of which the base steel is either a reinforcing steel or a steel strip

3.38
diagonals
reinforcing steels linking the upper and lower chord of a lattice girder

Note 1 to entry: They form harmonic curves in the case of continuous diagonals or are independent elements in the case of discontinuous diagonals.

3.39
lattice girder length
$\boldsymbol{L}$
overall length of a lattice girder

3.40
design height of a lattice girder
$\boldsymbol{H_1}$
distance between the lowest point of the lower chord and the highest point of the upper chord

3.41
overall height of a lattice girder
$\boldsymbol{H_2}$
distance between the lowest point and the highest point of a lattice girder

3.42
lattice girder overhang
$\boldsymbol{u_1, u_2}$
length of the diagonals beyond either the upper chord (u_1) or the lower chord (u_2)

3.43
design width of a lattice girder
$\boldsymbol{B_1}$
distance between the outlying points of the lower chords

3.44
overall width of a lattice girder
$\boldsymbol{B_2}$
distance between the outlying points of a lattice girder

3.45
pitch of diagonals
$\boldsymbol{P_s}$
distance between equivalent consecutive junction points of the diagonals with the chords

3.46
angle of inclination of diagonals
$\boldsymbol{\vartheta}$
angle between the axis of a diagonal and the longitudinal axis of a lattice girder in the plane of the diagonal in the middle of the height of a lattice girder

3.47
class
range of levels, delimited by a minimum and a maximum value, of performance of a construction product

Note 1 to entry: Definition according to CPR.

3.48
threshold level
means of a minimum or maximum performance level of an essential characteristic of a construction product

Note 1 to entry: Definition according to CPR.

3.49
level
result of the assessment of the performance of a construction product in relation to its essential characteristics, expressed as a numerical value

3.50
cast
metal taken from the same melt in a furnace or ladle or from several melts mixed in the same furnace or ladle

3.51
test unit
defined quantity of bars, rods, wires, welded fabric or lattice girders which is considered to be produced under uniform conditions, and from which a representative test sample is to be taken

Note 1 to entry: Welded fabric or lattice girders that can be considered as produced under conditions which are presumed uniform and can be represented by a test sample.

3.52
acceptance quality limit
quality level of a test unit corresponding to a predetermined acceptance probability on the operating characteristic curve

3.53
operating characteristic curve
curve showing, for a given sampling plan, the probability that an acceptance criterion is satisfied, as a function of the quality level of a test unit

4 Symbols

Symbols used in this European Standard are listed in Table 1.