BS ISO 6435:2024

BSI Standards Publication

Stainless steel bars for the reinforcement of concrete

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National foreword

This British Standard is the UK implementation of ISO 6435:2024.

The UK participation in its preparation was entrusted to Technical Committee ISE/104, Concrete Reinforcing and Pre-Stressing Steels.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee Technical Committee ISO/TC 17, *Steel*, Subcommittee SC 16, *Steels for the reinforcement and prestressing of concrete*.

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Stainless steel bars for the reinforcement of concrete

1 Scope

This document specifies technical requirements for hot rolled stainless steel plain bars and ribbed bars used as reinforcement in concrete.

It is applicable to steel delivered in the form of bars, coils and de-coiled products. It does not apply to ribbed bars produced from finished products

The production process is at the discretion of the manufacturer.

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.

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

ISO 6935-1, *Steel for the reinforcement of concrete — Part 1: Plain bars*

ISO 6935-2, *Steel for the reinforcement of concrete — Part 2: Ribbed bars*

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

ISO 15510, *Stainless steels — Chemical composition*

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

EN 196-1, *Methods of testing cement — Part 1: Determination of strength*

EN 197-1, *Cement — Part 1: Composition, specifications and conformity criteria for common cements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 6935-1, ISO 6935-2, ISO 15510 and the following apply.

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
stainless steel bars
stainless steel bars with at least 10,5 % (mass fraction) of chromium and max. 1,2 % (mass fraction) of carbon

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4 Symbols

Symbol	Unit	Description
A	%	Percentage elongation after fracture
A_{gt}	%	Percentage total extension at maximum force
S_0	mm^2	Nominal cross-sectional area
d	mm	Nominal diameter of the bar
R_m	MPa[a]	Tensile strength
$R_{p0,2}$	MPa[a]	0,2 % proof strength, plastic extension
$R_{7,0}$	MPa[a]	7,0 % proof strength, plastic extension

[a] 1 MPa = 1 N/mm^2.

5 Dimensions, mass per unit length and permissible deviations

Dimensions are given in Table 1, mass per unit length and permissible deviations are given in Table 2, Table 3 and Table 4. By agreement between the manufacturer and the purchaser, the following options shall be applied.

— Ribbed bars and plain bars for which the nominal diameters are other than those shown in Table 2 may be used. The permissible deviation of nominal diameters larger than 50 mm shall be ±4 %.

— The permissible deviation on mass per length of plain bars may be replaced by tolerances on diameters.

A list of options for agreement between the manufacturer and the purchaser is provided in Annex B.

Table 1 — Dimensions

Nominal bar diameter d mm		Nominal cross-sectional area[a] S_0 mm^2
Ribbed bars	Plain bars	
6	6	28,3
8	8	50,3
10	10	78,5
12	12	113
14	14	154
16	16	201
20	20	314
	22	380
25		491
28		616
32		804
40		1 257
50		1 964

[a] $S_0 = 0{,}785\,4 \times d^2$.

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Table 2 — Mass per unit length and permissible deviations: Austenite

Nominal bar diameter[a] *d* mm		Mass per unit length[b] kg/m								Permissible deviation[c] %	
R	**P**	4301-304-00-I	4311-304-53-I	4401-316-00-I	4429-316-53-I	4404-316-03-I	4529-089-26-I	4315-304-51-I	4495-316-51-J	**R**	**P**
6	6	0,224		0,226			0,229	0,224	0,226	±8	±8
8	8	0,397		0,402			0,407	0,397	0,402	±8	±8
10	10	0,620		0,628			0,636	0,620	0,628	±6	±5
12	12	0,893		0,904			0,915	0,893	0,904	±6	±5
14	14	1,22		1,23			1,25	1,22	1,23	±5	±5
16	16	1,59		1,61			1,63	1,59	1,61	±5	±5
20	20	2,48		2,51			2,54	2,48	2,51	±5	±5
	22	3,00		3,04			3,08	3,00	3,04		±5
25		3,88		3,93			3,98	3,88	3,93	±4	
28		4,87		4,93			4,99	4,87	4,93	±4	
32		6,35		6,43			6,51	6,35	6,43	±4	
40		9,93		10,06			10,18	9,93	10,06	±4	
50		15,52		15,7			15,91	15,52	15,71	±4	

[a] "R" means ribbed bars and "P" means plain bars.

[b] Mass per unit length = Density × 10^{-3} × S_0.

[c] Permissible deviation refers to a single bar.

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