BRITISH STANDARD

BS EN
10059:2003

Hot rolled square steel bars for general purposes — Dimensions and tolerances on shape and dimensions

The European Standard EN 10059:2003 has the status of a British Standard

ICS 77.140.60

National foreword

This British Standard is the official English language version of EN 10059:2003.

The UK participation in its preparation was entrusted to Technical Committee ISE/31, Wrought steels, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 9 and a back cover.

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Amendments issued since publication

Amd. No.	Date	Comments

ISBN 0 580 43002 2

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 10059

October 2003

ICS 77.140.60

English version

Hot rolled square steel bars for general purposes - Dimensions and tolerances on shape and dimensions

Carrés en acier laminés à chaud pour usages généraux - Dimensions et tolérances sur la forme et les dimensions

Warmgewalzte Vierkantstäbe aus Stahl für allgemeine Verwendung - Maße, Formtoleranzen und Grenzabmaße

This European Standard was approved by CEN on 18 September 2003.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Ref. No. EN 10059:2003 E

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Foreword

This document (EN 10059:2003) has been prepared by Technical Committee ECISS/TC 11 “Structural steel sections and hot rolled steel bars for engineering use — Dimensions and tolerances”, the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by April 2004, and conflicting national standards shall be withdrawn at the latest by April 2004.

This European Standard replaces:

EURONORM 59-78 *Hot rolled square bars for general purposes.*

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 specifies the nominal dimensions and the tolerances on dimensions and shape of hot-rolled finished square steel bars for general purposes.

2 Normative references

This European Standard incorporates by dated or undated reference 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 these 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 (including amendments).

EN 10079:1992, *Definition of steel products*.

EN 10088-1, *Stainless steels — Part 1: List of stainless steels*.

3 Terms and definitions

For the purposes of this European Standard the terms and definitions given in EN 10079:1992 apply.

4 Designation

The designation of hot-rolled square steel bars shall comprise:

— the term ”square bar”;

— the number of this European Standard (EN 10059);

— the dimensions in mm (size x length (M, F or E, see Table 3));

— the number of the quality standard and the steel name or steel number of the ordered steel.

EXAMPLE

Square bar EN 10059 - 60x6000M

steel EN 10025 - S235JR

5 Dimensions

Hot rolled square bars for general purposes complying with this European Standard shall be delivered with the specified dimensions range given in Table 1 and illustrated in Figure 1. The preferred dimensions are presented in Table 1.

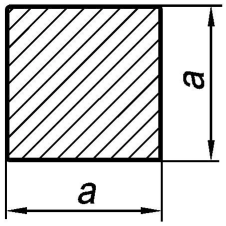


Figure 1 — Hot rolled square bar

Table 1 — Preferred sizes, mass and size tolerances of hot rolled square bars for general purposes

Size a	Limit deviation [a]	Mass [b c]	Area of cross section		Size a	Limit deviation [a]	Mass [b c]	Area of cross section
(mm)	(mm)	(kg/m)	(cm^2)		(mm)	(mm)	(Kg/m)	(cm^2)
8		0,502	0,64		40		12,6	16,0
10		0,785	1,00		45		15,9	20,3
12	± 0,4	1,13	1,44		50	± 0,8	19,6	25,0
13		1,33	1,69		55		23,7	30,3
14		1,54	1,96		60		28,3	36,0
15		1,77	2,25		65	± 1,0	33,2	42,3
16		2,01	2,56		70		38,5	49,0
18		2,54	3,24		75		44,2	56,3
20	± 0,5	3,14	4,00		80		50,2	64,0
22		3,80	4,84		90		63,6	81,0
24		4,52	5,76		100	± 1,3	78,5	100
25		4,91	6,25		110		95,0	121
26		5,31	6,76		120	± 1,5	113	144
28		6,15	7,84		130		133	169
30	± 0,6	7,07	9,00		140		154	196
32		8,04	10,2		150	± 1,8	177	225
35		9,62	12,3					

[a] When ordering, the total ranges for the permissible deviations may, by agreement, be entirely on the plus side.

[b] Calculated using density of 7,85 kg/dm^3

[c] The masses of stainless steel bars shall be multiplied by the factors according to EN 10088-1.

6 Tolerances on dimensions and shape

6.1 Size (*a*)

The deviation from nominal size (*a*) shall be within the tolerance given in Table 1.

6.2 Length (*L*)

Depending on the type of length square bars shall be cut to lengths within tolerances given in Table 3.

6.3 Corner radius (*r*)

The corner radius (*r*) shall comply with the requirements given in Table 2.

6.4 Straightness (*q*)

The straightness shall comply with the requirements given in Table 2. The requirements for waviness may be agreed at the time of enquiry and order.

6.5 Twist

Twist shall comply with the requirements given in Table 2.

6.6 Out-of-squareness (*u*)

Out-of -squareness (*u*) shall be within the tolerance given in Table 2.

Table 2 — Tolerances on dimensions and shape of hot rolled square bars for general purposes

Dimensions in mm

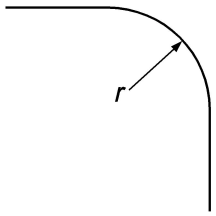
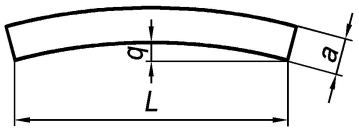
Corner radius *r*	Nominal size	*r*
	$8 \le a \le 12$	$r \le 1$
	$12 < a \le 20$	$r \le 1{,}5$
	$20 < a \le 30$	$r \le 2$
	$30 < a \le 50$	$r \le 2{,}5$
	$50 < a \le 100$	$r \le 3$
	$100 < a \le 150$	$r \le 4$
Straightness *q*	Nominal size	Tolerance
	a ≤ 25	*Not fixed*
	$25 < a \le 80$	$q \le 0{,}4$ % of *L*
	$80 < a$	$q \le 0{,}25$ % of *L*
Twist	Nominal size	Tolerance
	$8 \le a \le 14$	4°/m with a max. of 24°
	$14 < a \le 50$	3°/m with a max. of 18°
	$50 < a$	3°/m with a max. of 15°
Out-of-squareness *u*	Nominal size	Tolerance
See Figure 2	a ≤ 50	1,50
	50 < a ≤ 75	2,25
	75 < a ≤ 100	3,00
	$100 < a \le 150$	4,50

Table 3 — Tolerances on lengths

Type of length [a]	Range (mm)	Limit deviation [b]
Manufacturing length (M)	3 000 to 13 000 with a range of 2 000 per order item.	10 % of bars supplied may be below the minimum for the ordered range but not less than 75 % of the minimum of the range.
Fixed length (F)	3 000 to 13 000	± 100 mm
Exact length (E)	< 6 000 ≥ 6 000 to ≤ 13 000	± 25 mm ± 50 mm

[a] The purchaser shall indicate in the enquiry and order the type of length required and the length range or length required.
[b] When ordering, the total ranges for the permissible deviations may, by agreement, be entirely on the plus side.

7 Measurement

7.1 Size

The size shall be measured at any point situated at least 100 mm from the end of the square bar. Shearing may deform the bar ends. The condition of the ends may be agreed at time of enquiry and order.

7.2 Length

The length shall be measured as the longest length of the square bar.

7.3 Corner radius

The radius shall be measured by a radius gauge at any point situated at least 100 mm from the end of the square bar.

7.4 Straightness

The straightness shall be measured over the total length (L) of the bar.

7.5 Twist

The square bar shall be placed on a horizontal surface with one side at one end pressed against the surface. At the opposite end of the square bar the difference in height of the two lower corners from a horizontal surface shall be measured.

7.6 Out-of-squareness

Out-of-squareness shall be measured according to Figure 2 as the difference u on the nominal size a.

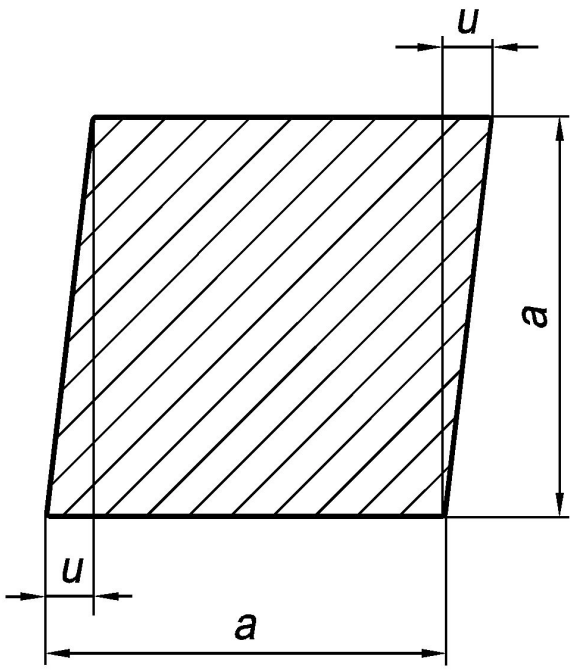


Figure 2 — Out-of-squareness

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