

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

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ICS 77.140.60

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National foreword

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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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EUROPEAN STANDARD

EN 10059

NORME EUROPÉENNE

EUROPÄISCHE NORM

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

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of an identical text or by endorsement, at the latest by April 2004, and conflicting national standards shall be withdrawn at the latest by April 2004.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



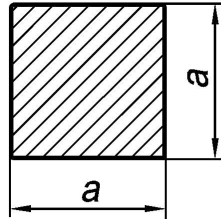


Figure 1 — Hot rolled square bar

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	± 0,4	0,502	0,64	40	± 0,8	12,6	16,0		
10		0,785	1,00	45		15,9	20,3		
12		1,13	1,44	50		19,6	25,0		
13		1,33	1,69	55		± 1,0	23,7	30,3	
14		1,54	1,96	60			28,3	36,0	
15		1,77	2,25	65			33,2	42,3	
16		2,01	2,56	70			38,5	49,0	
18		± 0,5	2,54	3,24		75	± 1,3	44,2	56,3
20			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	78,5	100			
25	4,91		6,25	110	± 1,5	95,0		121	
26	5,31		6,76	120		113		144	
28	± 0,6	6,15	7,84	130	± 1,8	133	169		
30		7,07	9,00	140		154	196		
32		8,04	10,2	150		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/dm³

rs shall be multiplied by the factors according to EN 10088-1.

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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

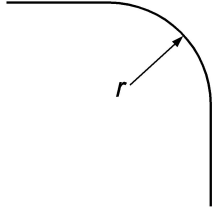
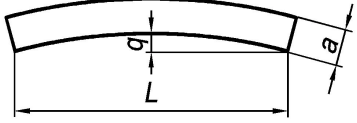
Dimensions in mm		
Corner radius r	Nominal size	r
	$8 \leq a \leq 12$	$r \leq 1$
	$12 < a \leq 20$	$r \leq 1,5$
	$20 < a \leq 30$	$r \leq 2$
	$30 < a \leq 50$	$r \leq 2,5$
	$50 < a \leq 100$	$r \leq 3$
	$100 < a \leq 150$	$r \leq 4$
Straightness q	Nominal size	Tolerance
	$a \leq 25$	<i>Not fixed</i>
	$25 < a \leq 80$	$q \leq 0,4 \%$ of L
	$80 < a$	$q \leq 0,25 \%$ of L
Twist	Nominal size	Tolerance
	$8 \leq a \leq 14$	4°/m with a max. of 24°
	$14 < a \leq 50$	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	$a \leq 50$	1,50
	$50 < a \leq 75$	2,25
	$75 < a \leq 100$	3,00
	$100 < a \leq 150$	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	± 25 mm
	≥ 6 000 to	± 50 mm
	≤ 13 000	
^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 .

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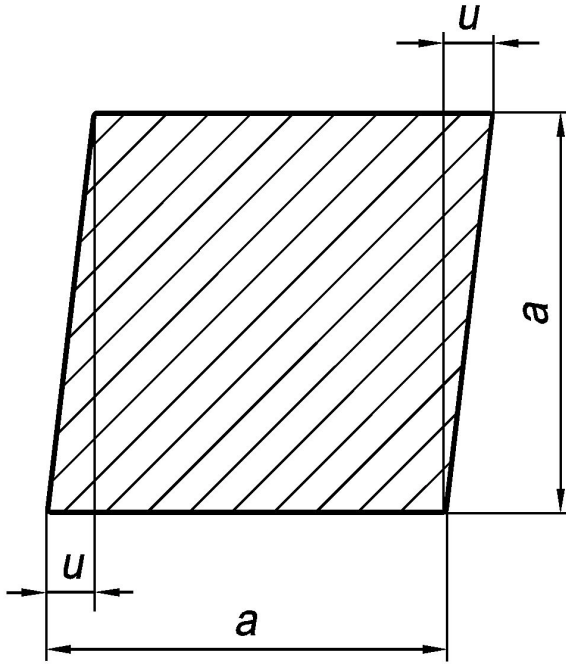


Figure 2 — Out-of-squareness

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