

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

The European Standard EN 10060:2003 has the status of a  
British Standard

ICS 77.140.60

## National foreword

This British Standard is the official English language version of EN 10060:2003.

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.

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

### Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the *BSI Catalogue* under the section entitled “International Standards Correspondence Index”, or by using the “Search” facility of the *BSI Electronic Catalogue* or of British Standards Online.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

**Compliance with a British Standard does not of itself confer immunity from legal obligations.**

This British Standard, was published under the authority of the Standards Policy and Strategy Committee on 1 December 2003

### 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.

The BSI copyright notice displayed in this document indicates when the document was last issued.

### Amendments issued since publication

Amd. No.	Date	Comments

© BSI 1 December 2003

ISBN 0 580 43001 4

---

ICS 77.140.60

English version

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

Ronds laminés à chaud - Dimensions et tolérances sur la  
forme et les dimensions

Warmgewalzte Rundstäbe aus Stahl - Maße,  
Formtoleranzen und Grenzabmaße

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

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This European Standard exists 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.



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

**Management Centre: rue de Stassart, 36 B-1050 Brussels**

<b>Contents</b>		<b>page</b>
Foreword .....		3
1	Scope.....	4
2	Normative references.....	4
3	Terms and definitions .....	4
4	Designation.....	4
5	Dimensions .....	5
6	Tolerances on dimensions and shape .....	8
6.1	Diameter ( <i>d</i> ) .....	8
6.2	Length ( <i>L</i> ).....	8
6.3	Straightness ( <i>q</i> ) .....	8
6.4	Ovality .....	8
7	Measurement .....	9
7.1	Diameter .....	9
7.2	Length .....	9
7.3	Straightness.....	9
7.4	Ovality .....	9

## Foreword

This document (EN 10060:2003) 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 60-77 *Hot rolled round bars for general purposes.*

EURONORM 65-80 *Hot rolled round steel bars for screws and rivets.*

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 round steel bars.

## 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 round steel bars shall comprise:

- the term "round bar";
- the number of this European Standard (EN 10060);
- dimensions in mm (diameter and length (M, F or E, see Table 4)) ;
- tolerance class P, if necessary;
- the number of the quality standard and the steel name or steel number of the ordered steel.

### EXAMPLE 1

Round bar EN 10060 - 40x6000M

steel EN 10025 - S235JR

### EXAMPLE 2

Round bar EN 10060 - 26,65x3600F - P

steel EN 10083-1 - 42CrMo4

## 5 Dimensions

Hot rolled round 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.

Hot rolled round bars for precision purposes complying with this European Standard shall be delivered with the specified dimensions range given in Table 1 and Table 2.

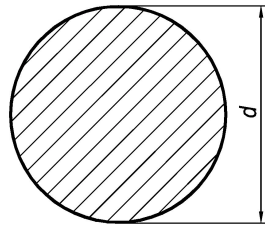


Figure 1 — Hot rolled round bar

Table 1 — Preferred dimensions, mass and dimensional tolerances of hot rolled round steel bars for general and precision purposes

Diameters <sup>a</sup> <i>d</i> (mm)	Limit deviation <sup>b</sup> Normal (mm)	Limit deviation <sup>b</sup> Precision ( <i>P</i> ) (mm)	Mass <sup>c, d</sup> (kg/m)	Area of cross section (cm <sup>2</sup> )	
10	± 0,4	± 0,15	0,617	0,785	
12			0,888	1,13	
13		± 0,20	± 0,20	1,04	1,33
14				1,21	1,54
15				1,39	1,77
16	1,58			2,01	
18	2,00			2,54	
19	2,23			2,84	
20	± 0,5	± 0,20	2,47	3,14	
22			2,98	3,80	
24			3,55	4,52	
25			3,85	4,91	
26	± 0,6	± 0,25	4,17	5,31	
27			4,49	5,73	
28			4,83	6,16	
30		5,55	7,07		
32		6,31	8,04		
35		7,55	9,62		
36	± 0,8	± 0,30	7,99	10,2	
38			8,90	11,3	
40		9,86	12,6		
42		10,9	13,9		
45		12,5	15,9		
48	± 0,40	± 0,40	14,2	18,1	
50			15,4	19,6	
52			16,7	21,2	
55			18,7	23,8	
60	± 1	± 0,50	22,2	28,3	
63			24,5	31,2	
65			26,0	33,2	
70			30,2	38,5	
73			32,9	41,9	
75			34,7	44,2	
80	± 1,3	Not applicable	39,5	50,3	
85			44,5	56,7	
90			49,9	63,6	
95			55,6	70,9	
100			61,7	78,5	
105	± 1,5	Not applicable	68,0	86,6	
110			74,6	95,0	
115			81,5	104	
120			88,8	113	
125	± 2	Not applicable	96,3	123	
130			104	133	
135			112	143	
140			121	154	



**Table 1 — Preferred dimensions, mass and dimensional tolerances of hot rolled round steel bars for general and precision purposes (continued)**

Diameters <sup>a</sup> <i>d</i> (mm)	Limit deviation <sup>b</sup> Normal (mm)	Limit deviation <sup>b</sup> Precision ( <i>P</i> ) (mm)	Mass <sup>c,d</sup> (kg/m)	Area of cross Section (cm <sup>2</sup> )
145	± 2	Not applicable	130	165
150			139	177
155			148	189
160			158	201
165	± 2,5		168	214
170			178	227
175			189	241
180			200	254
190			223	284
200			247	314
220	± 3		298	380
250	± 4		385	491

<sup>a</sup> Diameters greater than 250 mm may be delivered with the limit deviation of +/- 6,0 mm.  
<sup>b</sup> When ordering, the total ranges for the permissible deviations may, by agreement, be entirely on the plus side.  
<sup>c</sup> Calculated using density of 7,85 kg/dm<sup>3</sup>  
<sup>d</sup> The masses of stainless steel bars shall be multiplied by the factors according to EN 10088-1.

**Table 2 — Dimensions, mass and dimensional tolerances of hot rolled round steel bars for precision applications, for example for screws and rivets**

Diameter <i>d</i>	Limit deviation Precision ( <i>P</i> )	Mass <sup>a,b</sup>	Area of section	Dimension <i>d</i>	Limit deviation Precision ( <i>P</i> )	Mass <sup>a,b</sup>	Area of section
(mm)	(mm)	(kg/m)	(cm <sup>2</sup> )	(mm)	(mm)	(kg/m)	(cm <sup>2</sup> )
9,75	± 0,15	0,586	0,75	32,55	± 0,30	6,53	8,32
11,75		0,851	1,08	35,55		7,79	9,93
13,75	± 0,20	1,17	1,48	38,55		9,16	11,67
15,70		1,52	1,94	41,50		± 0,40	10,62
17,70		1,93	2,46	44,50	12,21		15,55
19,70		2,39	3,05	47,50	13,91		17,72
21,70		2,90	3,70	51,50	16,35		20,83
23,65		± 0,25	3,45	4,39			
26,65	4,38		5,58				
29,60	5,40		6,88				

<sup>a</sup> Calculated using density of 7,85 kg/dm<sup>3</sup>

<sup>b</sup> 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 Diameter ( $d$ )

The deviation from nominal diameter ( $d$ ) shall be within the tolerance given in Table 1 and Table 2.

NOTE In the Table 1 there are two tolerance classes, normal and precision (P).

### 6.2 Length ( $L$ )

Depending on the type of length the bars shall be cut to lengths within tolerances given in Table 4.

### 6.3 Straightness ( $q$ )

The straightness shall comply with the requirements given in Table 3. The requirements for waviness may be agreed at the time of enquiry and order.

### 6.4 Ovality

The deviation for roundness shall not exceed 75% of the tolerance range given in Table 1 and Table 2.

**Table 3 — Tolerances on straightness of hot rolled round bars**

Dimensions in mm

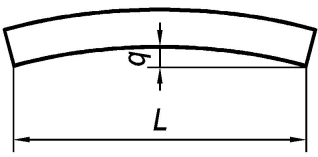
Straightness $q$		
	Nominal diameter	Tolerance
	$d \leq 25$	<i>Not fixed</i>
	$25 < d \leq 80$	$q \leq 0,4 \% \text{ of } L$
	$80 < d \leq 250$	$q \leq 0,25 \% \text{ of } L$

Table 4 — Tolerances on lengths

Type of length <sup>a</sup>	Range (mm)	Limit deviation <sup>b</sup>
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	
<sup>a</sup> The purchaser shall indicate in the enquiry and order the type of length required and the length range or length required. <sup>b</sup> If agreed during the enquiry and order, products may be delivered on upper limits.		

## 7 Measurement

### 7.1 Diameter

The diameter shall be measured at any point situated at least 100 mm from the end of the 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 bar.

### 7.3 Straightness

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

### 7.4 Ovality

The ovality shall be measured as the difference of the greatest diameter and the smallest diameter in the same plane perpendicular to the axis of the bar. The ovality shall be measured at any point situated at least 100 mm from the end of the bar.

---

---

## BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

### Revisions

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using this British Standard would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover.  
Tel: +44 (0)20 8996 9000. Fax: +44 (0)20 8996 7400.

BSI offers members an individual updating service called PLUS which ensures that subscribers automatically receive the latest editions of standards.

### Buying standards

Orders for all BSI, international and foreign standards publications should be addressed to Customer Services. Tel: +44 (0)20 8996 9001.  
Fax: +44 (0)20 8996 7001. Email: [orders@bsi-global.com](mailto:orders@bsi-global.com). Standards are also available from the BSI website at <http://www.bsi-global.com>.

In response to orders for international standards, it is BSI policy to supply the BSI implementation of those that have been published as British Standards, unless otherwise requested.

### Information on standards

BSI provides a wide range of information on national, European and international standards through its Library and its Technical Help to Exporters Service. Various BSI electronic information services are also available which give details on all its products and services. Contact the Information Centre.  
Tel: +44 (0)20 8996 7111. Fax: +44 (0)20 8996 7048. Email: [info@bsi-global.com](mailto:info@bsi-global.com).

Subscribing members of BSI are kept up to date with standards developments and receive substantial discounts on the purchase price of standards. For details of these and other benefits contact Membership Administration.  
Tel: +44 (0)20 8996 7002. Fax: +44 (0)20 8996 7001.  
Email: [membership@bsi-global.com](mailto:membership@bsi-global.com).

Information regarding online access to British Standards via British Standards Online can be found at <http://www.bsi-global.com/bsonline>.

Further information about BSI is available on the BSI website at <http://www.bsi-global.com>.

### Copyright

Copyright subsists in all BSI publications. BSI also holds the copyright, in the UK, of the publications of the international standardization bodies. Except as permitted under the Copyright, Designs and Patents Act 1988 no extract may be reproduced, stored in a retrieval system or transmitted in any form or by any means – electronic, photocopying, recording or otherwise – without prior written permission from BSI.

This does not preclude the free use, in the course of implementing the standard, of necessary details such as symbols, and size, type or grade designations. If these details are to be used for any other purpose than implementation then the prior written permission of BSI must be obtained.

Details and advice can be obtained from the Copyright & Licensing Manager.  
Tel: +44 (0)20 8996 7070. Fax: +44 (0)20 8996 7553.  
Email: [copyright@bsi-global.com](mailto:copyright@bsi-global.com).