BRITISH STANDARD

BS EN 10263-2:2001
Incorporating Corrigendum No. 1

Steel rod, bars and wire for cold heading and cold extrusion —

Part 2: Technical delivery conditions for steels not intended for heat treatment after cold working

The European Standard EN 10263-2:2001 has the status of a British Standard

ICS 77.140.60; 77.140.65

National foreword

This British Standard is the official English language version of EN 10263-2:2001. Together with BS EN 10263-1:2001, BS EN 10263-3:2001 and BS EN 10263-4:2001 it supersedes BS 3111-1:1987, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee ISE/71, Steel rods for wire drawing, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible 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

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This British Standard, having been prepared under the direction of the Engineering Sector Committee, was published under the authority of the Standards Committee and comes into effect on 15 August 2001

Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 8, an inside back cover and a back cover.

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

Amendments issued since publication

Amd. No.	Date	Comments
13450 Corrigendum No. 1	13 September 2001	Addition of supersession details

ISBN 0 580 37621 4

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 10263-2

June 2001

ICS 77.140.60; 77.140.65

English version

Steel rod, bars and wire for cold heading and cold extrusion — Part 2: Technical delivery conditions for steels not intended for heat treatment after cold working

Barres, fil machine et fils en acier pour transformation à froid et extrusion à froid — Partie 2: Conditions techniques de livraison des aciers n'étant pas destinés à un traitement thermique après travail à froid

Walzdraht, Stäbe und Draht aus Kaltstauch- und Kaltfließpreßstählen — Teil 2: Technische Lieferbedingungen für nicht für eine Wärmebehandlung nach der Kaltverarbeitung vorgesehene Stähle

This European Standard was approved by CEN on 19 April 2001.

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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.

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Ref. No. EN 10263-2:2001 E

Contents

Foreword

This European Standard has been prepared by Technical Committee ECISS/TC 15, Wire-rod - Qualities, dimensions, tolerances and specific tests, the Secretariat of which is held by UNI.

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 December 2001, and conflicting national standards shall be withdrawn at the latest by December 2001.

This European Standard EN 10263 is subdivided as follows:

- *Part 1: General technical delivery conditions;*
- *Part 2: Technical delivery conditions for steels not intended for heat treatment after cold working;*
- *Part 3: Technical delivery conditions for case hardening steels;*
- *Part 4: Technical delivery conditions for steels for quenching and tempering;*
- *Part 5: Technical delivery conditions for stainless steels.*

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, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

1.1 This part of EN 10263 is applicable to round rod and bars and wire with a diameter up to and including 100 mm, of non-alloy and alloy steel, intended for cold heading and cold extrusion without subsequent heat treatment on the final components.

1.2 This part of EN 10263 is complemented by EN 10263-1.

2 Normative references

This European Standard incorporates by date 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 date 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 10020	*Definitions and classification of grades of steel.*
EN 10263-1	*Steel rod, bars and wire for cold heading and cold extrusion — Part 1: General technical delivery conditions.*

3 Terms and definitions

For the purposes of this standard the definitions in EN 10263-1 apply.

4 Classification and designation

4.1 Classification

All steel grades covered by this part of EN 10263 are non-alloy or alloy (8MnSi7) quality steels according to EN 10020.

4.2 Designation

4.2.1 Steel names

See EN 10263-1:2001.

4.2.2 Steel numbers

See EN 10263-1:2001.

5 Production process

5.1 General

See EN 10263-1:2001.

5.2 Deoxidation

All steel grades quoted in Table 2, except 8MnSi7, are aluminium-killed steels. By agreement aluminium may be replaced by another suitable element having a similar effect.

6 Requirements

6.1 Delivery condition

The delivery conditions in which the products covered by this part of this European Standard are normally supplied, the product forms and the applicable requirements, are given in Table 1.

6.2 Chemical composition

6.2.1 Heat analysis

The chemical composition shall be in accordance with the values specified in Table 2 for the heat analysis.

6.2.2 Product analysis

In cases where a product analysis is requested, the admissible deviations from the values specified for the heat analysis are indicated in Table 3.

6.3 Mechanical properties

The mechanical properties of the products, to be determined by the tensile test, shall be in accordance with the prescriptions given in Table 4.

6.4 Surface quality

See EN 10263-1:2001.

6.5 Supplementary or special requirements

Other requirements that can be agreed at the time of enquiry and order are described in annex B of EN 10263-1:2001.

Table 1 — Summary of delivery conditions, product forms and applicable requirements

Delivery condition		Symbols	Products form [a]			Applicable requirements		
			rod	bar	wire			
Untreated	as hot rolled	+U	X	X	—	Chemical composition as specified in Tables 2 and 3	Mechanical properties as specified in Table 4	Supplementary or special requirements as specified in annex B of EN 10263-1:2001 [b]
	peeled	+U+PE	X	X	—			
	cold drawn	+U+C	—	X	X			
	cold drawn and spheroidized	+U+C+AC	—	X	X			
	cold drawn and spheroidized and skin passed	+U+C+AC+LC	—	X	X			
Annealed to achieve spheroidized carbides	as treated or peeled	+AC or AC+PE	X	X	—			
	cold drawn	+AC+C	—	X	X			
Other			Other delivery conditions can be agreed at the time of ordering					

[a] X = applicable.
— = not applicable.

[b] If agreed at the time of the order.

Table 2 — Chemical composition — Heat analysis % by mass [a]

Steel grades		C	Si	Mn	P max.	S max.	Al [b]
Steel name	Steel number						
C2C	1.0314	0,03 max.	0,10 max.	0,20/0,40 [d]	0,020	0,025	0,020/0,060
C4C	1.0303	0,02/0,06	0,10 max.	0,25/0,40	0,020	0,025	0,020/0,060
C8C	1.0213	0,06/0,10	0,10 max.	0,25/0,45	0,020	0,025	0,020/0,060
C10C	1.0214	0,08/0,12	0,10 max. [c]	0,30/0,50	0,025	0,025	0,020/0,060
C15C	1.0234	0,13/0,17	0,10 max. [c]	0,35/0,60	0,025	0,025	0,020/0,060
C17C	1.0434	0,15/0,19	0,10 max. [c]	0,65/0,85	0,025	0,025	0,020/0,060
C20C	1.0411	0,18/0,22	0,10 max. [c)]	0,70/0,90 [d)]	0,025	0,025	0,020/0,060
8MnSi7	1.5113	0,10 max.	0,90/1,10	1,60/1,80	0,025	0,025	

[a] Elements not quoted in this table should not be intentionally added to the steel without the agreement of the purchaser, except those intended for finishing the heat All reasonable precautions shall be taken in order to prevent the addition of elements from scrap or other material used in the production process. However, residual elements may be present provided that they do not affect the hardenability, mechanical properties and applicability.
[b] Aluminium may be replaced by another element or elements having a similar effect.
[c] For grades C10C, C15C, C17C, C20C, a silicon content of 0,15/0,35 % may be specified for hot dip galvanizing; in this case the mechanical properties as stated in Table 4 may be affected.
[d] For grades C2C and C20C a lower manganese content may be specified with a range of 0,20 %.

Table 3 — Permissible deviations between product analysis and the limiting values specified in Table 2 for the heat analysis

Elements	Limiting values of the cast (heat) analysis % by mass	Permissible deviation for the product analysis % by mass [a]
C	≤ 0,22	±0,02
Si	≤ 1,00	+0,03
	> 1,00	±0,05
Mn	≤ 1,00	±0,04
	> 1,00 ≤ 1,80	±0,05
P	≤ 0,025	+0,005
S	≤ 0,025	+0,005
Al	≤ 0,060	±0,005

[a] ± means that in one heat the deviation of the product analysis for a given element may occur over the upper value or under the lower value of the specified range in Table 2, but not both at the same time.

Table 4 — Rod, bars and wire not intended for heat treatment after cold working — Mechanical properties

Steel grade		Diameter		Delivery Condition											
				+U or +U+PE		+AC or +AC+PE		+U+C		+U+C+AC		+U+C+AC+LC		+AC+C	
Steel name	Steel number	above	up to	MECHANICAL PROPERTIES											
		mm	mm	R_m max. MPa	Z [c] min %	R_m max. MPa	Z min %	R_m max. MPa	Z min %	R_m max. MPa	Z min %	R_m max. MPa	Z min %	R_m max. MPa	Z min %
C2C [a]	1.0314	2	5	-	-	-	-	-	-	310	80	350	75	-	-
		5	10	360	75	-	-	450	70	300	80	340	75	-	-
		10	40	360	75	-	-	440	70	300	80	340	75	-	-
		40	100	360	75	-	-	440	68	300	80	340	75	-	-
C4C	1.0303	2	5	-	-			-	-	320	77	360	73	-	-
		5	10	390	70	330	75	470	66	310	77	350	73	410	70
		10	40	390	70	330	75	460	66	300	77	350	73	400	70
		40	100	390	70	330	75	-	-	-	-	-	-	-	-
C8C	1.0213	2	5	-	-	-	-	-	-	350	72	390	68	-	-
		5	10	410	65	360	70	490	63	340	72	380	68	450	65
		10	40	410	65	360	70	480	63	340	72	380	68	440	65
		40	100	410	65	360	70	-	-	-	-	-	-	-	-
C10C	1.0214	2	5	-	-	-	-	-	-	370	72	410	68	-	-
		5	10	430	60	380	70	520	58	360	72	400	68	470	63
		10	40	430	60	380	70	510	58	360	72	400	68	460	63
		40	100	430	60	380	70	-	-	-	-	-	-	-	-
C15C	1.0234	2	5	-	-	-	-	-	-	390	70	430	66	-	-
		5	10	460	58	400	68	550	56	380	70	420	66	490	63
		10	40	460	58	400	68	540	56	380	70	420	66	480	63
		40	100	460	58	400	68	-	-	-	-	-	-	-	-
C17C	1.0434	2	5	-	-	-	-	-	-	430	67	470	63	-	-
		5	10	520	58	440	65	610	56	420	67	460	63	530	60
		10	40	520	58	440	65	600	56	420	67	460	63	520	60
		40	100	520	58	440	65	-	-	-	-	-	-	-	-
C20C	1.0411	2	5	-	-	-	-	-	-	470	67	510	63	-	-
		5	10	560	55	480	65	650	53	460	67	500	63	570	60
		10	40	560	55	480	65	640	53	460	67	500	63	560	60
		40	100	560	55	480	65	-	-	-	-	-	-	-	-
8MnSi7	1.5113	2	5	-	-	-	-	-	-	-	-	-	-	-	-
		5	10	540 [b]	60	-	-	800 [b]	-	-	-	-	-	-	-
		10	25	520 [b]	60	-	-	800 [b]	-	-	-	-	-	-	-
		25	40	-	-	-	-	-	-	-	-	-	-	-	-

[a] For this grade the condition is “soft annealing”.
[b] Minimum values: 1 Mpa = 1 N/mm^2.
[c] The values are given only for information.

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