BS EN 10263-2:2017

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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

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 10263-2

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Supersedes EN 10263-2:2001

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

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Ref. No. EN 10263-2:2017 E

Contents

Page

European foreword

This document (EN 10263-2:2017) has been prepared by Technical Committee ECISS/TC 106 "Wire rod and wires", the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by May 2018, and conflicting national standards shall be withdrawn at the latest by May 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 10263-2:2001.

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 steel.*

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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 EN 10263-1 is indispensable for this part of EN 10263.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 10020, *Definition and classification of grades of steel*

EN 10263-1:2017, *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 document, the terms and definitions given in EN 10263-1:2017 apply.

4 Classification and designation

4.1 Classification

All steel grades covered by this part of EN 10263 are non-alloy or alloy special steels (8MnSi7 and 7MnB8) according to EN 10020.

4.2 Designation

4.2.1 Steel names

See EN 10263-1:2017.

4.2.2 Steel numbers

See EN 10263-1:2017.

5 Production process

5.1 General

See EN 10263-1:2017.

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 Cast analysis

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

6.2.2 Product analysis

In cases where a product analysis is requested, the admissible deviations from the values specified for the cast 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 10263-1:2017.

6.5 Supplementary or special requirements

Other requirements that can be agreed at the time of enquiry and order are described in Annex A of EN 10263-1:2017.

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

Delivery condition	Symbols	Product form [a]			Applicable requirements		
		rod	bar	wire			
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 A of EN 10263-1 [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 or Annealed to achieve spheroidized carbides and peeled	+AC or +AC+PE	X	X	—			
Annealed to achieve spheroidized carbides and cold drawn	+AC+C	—	X	X			
other	Other delivery conditions may be agreed at the time of ordering						

a X = applicable
— = not applicable

b If agreed at the time of enquiry and order.

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

Steel grades		C	Si	Mn	P	S	Al [b]
Name	Number				max.	max.	
C2C	1.0314	0,03 max.	0,10 max.	0,20 to 0,40[d]	0,020	0,025	0,020 to 0,060
C4C	1.0303	0,02 to 0,06	0,10 max.	0,25 to 0,40	0,020	0,025	0,020 to 0,060
C8C	1.0213	0,06 to 0,10	0,10 max.	0,25 to 0,45	0,020	0,025	0,020 to 0,060
C10C	1.0214	0,08 to 0,12	0,10 max.[c]	0,30 to 0,50	0,025	0,025	0,020 to 0,060
C15C	1.0234	0,13 to 0,17	0,10 max.[c]	0,35 to 0,60	0,025	0,025	0,020 to 0,060
C17C	1.0434	0,15 to 0,19	0,10 max. [c]	0,65 to 0,85	0,025	0,025	0,020 to 0,060
C20C	1.0411	0,18 to 0,22	0,10 max.[c]	0,70 to 0,90[d]	0,025	0,025	0,020 to 0,060
8MnSi7	1.5113	0,10max.	0,90 to 1,10	1,60 to 1,80	0,025	0,025	0,020 max.
7MnB8[e, f]	1.5519	0,06 to 0,09	0,15 to 0,25	1,85 to 1,95	0,015	0,025	0,02 to 0,04

[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 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 to 0,25 % may be specified for hot dip galvanising; 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 %.

[e] For steel grade 1.5519 following elements may be added: Cr ≤ 0,2 %; Mo ≤ 0,05 %, Ni ≤ 0,25 %, V = 0,03 to 0,05 %, Ti = 0,06 to 0,1 %, B = 0,001 5 % to 0,003 0 %.

[f] specific application is patented

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 designation		Diameter		Delivery Condition											
				+U or +U+PE		+AC or +AC+PE		+U+C		+U+C+AC		+U+C+AC+LC		+AC+C	
				MECHANICAL PROPERTIES											
Name	Number	above	up to	R_m max.	Z [a] min	R_m max.	Z min	R_m max.	Z min	R_m max.	Z min	R_m max.	Z min	R_m max.	Z min
		mm	mm	MPa	%	MPa	%	MPa	%	MPa	%	MPa	%	MPa	%
C2C	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	-	-	-	-	-	-	-	-

Steel designation		Diameter		Delivery Condition											
				+U or +U+PE		+AC or +AC+PE		+U+C		+U+C+AC		+U+C+AC+LC		+AC+C	
				MECHANICAL PROPERTIES											
Name	Number	above	up to	R_m max.	Z [a] min	R_m max.	Z min	R_m max.	Z min	R_m max.	Z min	R_m max.	Z min	R_m max.	Z min
		mm	mm	MPa	%	MPa	%	MPa	%	MPa	%	MPa	%	MPa	%
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	5	10	540 [b]	60	-	-	800 [b]	-	-	-	-	-	-	-
		10	25	520 [b]	60	-	-	800 [b]	-	-	-	-	-	-	-
7MnB8 [c]	1.5519	5	10	650 [b]	60	-	-	800 [b]	-	-	-	-	-	-	-
		10	25	600 [b]	55	-	-	800 [b]	-	-	-	-	-	-	-
		25	40	600 [b]	55	-	-	800 [b]	-	-	-	-	-	-	-

a The values are given only for information.

b Minimum values.

c Specific application is patented

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