

MATERIAL NUMBER 1.0503 · CLASS 1.0

SM45

Material no. 1.0503

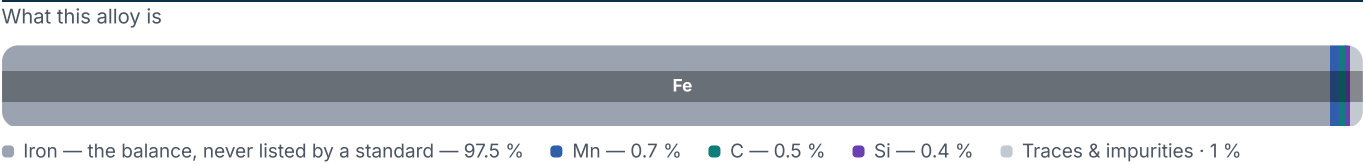
also listed as C45

Chemical composition, mechanical and physical property values, and 93 standard designations from 23 regions.

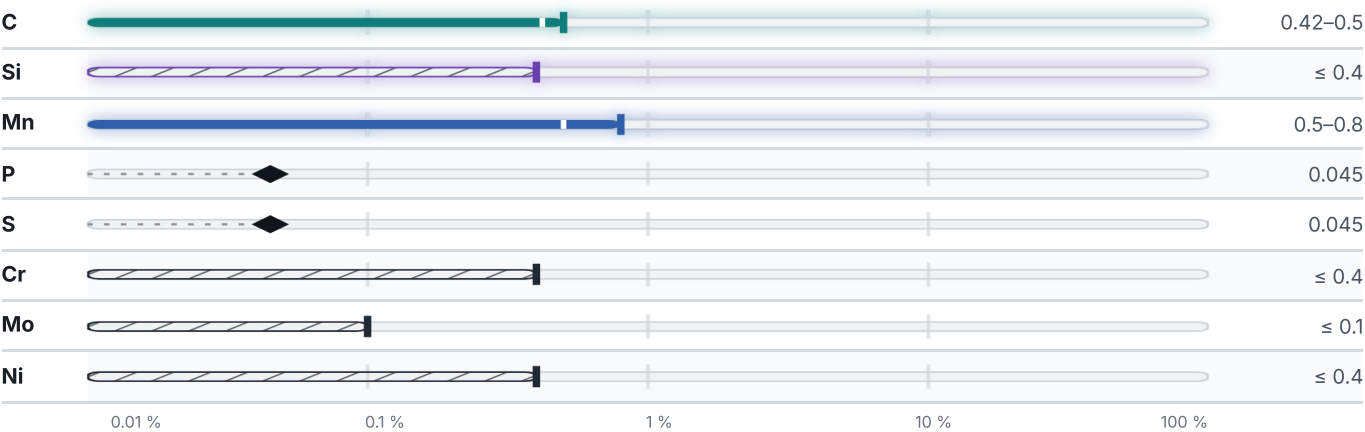
DENSITY 7.85 g/cm³	OTHER DESIGNATIONS 93 in 23 regions	PROPERTY VALUES 9 on file
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Chemical composition

Mass fraction in %



Logarithmic scale, 0.01 % to 100 % — every value here compares directly, decade by decade.



The scale is logarithmic, not the element's raw share of the alloy — the only honest way to fit 0.01 % and 100 % in one picture, and it means every value here can be compared with every other.

Predicted transformation temperatures

computed from composition · °C

PREDICTED AE3 764 °C	PREDICTED AE1 724 °C	PREDICTED ACM 637 °C	PREDICTED BS 556 °C
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Mechanical properties

21 values across 5 conditions

NORMALIZED	RM N/mm ²	A %
≤ 16	620	14
16 – 100	580	16
100 – 250	560	16
250 – 500	540	–
500 – 1000	530	–
COLD DRAWN / HARD	RM N/mm ²	A %
5 – 10	750–1050	5
10 – 16	710–1030	6
16 – 40	650–1000	7
40 – 63	630–900	8
63 – 100	580–850	8
TREATED TO IMPROVE SHEARABILITY	HB	
Treated to improve shearability	255	
SOFT ANNEALED	HB	
Soft annealed	207	
AS ROLLED AND TURNED	HB	
As rolled and turned	172–242	

Physical properties

1 values

PROPERTY	VALUE	UNIT
Density	7.85	g/cm ³

Heat treatment

1 regimes

STEP	TEMPERATURE	MEDIUM
source joins the operations with + / procedural order		
Normalizing	Temperature not stated	—
Normalizing	Temperature not stated	—

STEP	TEMPERATURE	MEDIUM
Tempering	Temperature not stated	—

Designations across standards

93 designations · 5 documented as identical

France	15	Spain	7
1C45	afnor	C45	une
2C45	afnor	C45E	une
AF65	afnor	C45k	une
AF65C45	afnor	C48k	une
C40E	afnor	F.114	une
C45	afnor	F.1140	une
C45E	afnor	F.1142	une
C45RR	afnor		
CC45	afnor	China	6
XC42H1	afnor	45	gb
XC42H1TS	afnor	45H	gb
XC45	afnor	ML45	gb
XC45H1	afnor	SM45	gb
XC48	afnor	ZG310-570	gb
XC48H1	afnor	ZGD345-570	gb
United States	14	Italy	6
G10430 This grade's own name	uns	1C45	uni
G10450 This grade's own name	uns	C43	uni
1042	aisi-sae	C45	uni
1043 This grade's own name	aisi-sae	C45E	uni
1044	aisi-sae	C45R	uni
1045 This grade's own name	aisi-sae	C46	uni
1045H	aisi-sae		
G10420	aisi-sae	Japan	4
G10430	aisi-sae	S45C	jis
G10440	aisi-sae	S48C	jis
G10450	aisi-sae	SWRCH45K	jis
Gr.1043	aisi-sae	SWRCH48K	jis
M1044	aisi-sae		
A830	astm	Australia / New Zealand	4
United Kingdom	9	1045	as-nzs
060A47	bs	HK1042	as-nzs
070M46	bs	K1042	as-nzs
080M	bs	K1045	as-nzs
080M46	bs	Europe	3
1449-50CS	bs	1.0503	din-en
1449-50HS	bs	C45 This grade's own name	din-en
50HS	bs	Gr.1043	din-en
C45	bs		
C45E	bs		

Romania	3	Switzerland	2
OLC45	stas	C45	snv
OLC45q	stas	Ck45	snv
OLC45X	stas		
Bulgaria	3	South Korea	2
45	bds	SM45C	ks
C45	bds	SM48C	ks
C45E	bds		
Belgium	3	International	1
C45-1	nbn	C45	iso
C45-2	nbn		
C46	nbn	Russia / CIS	1
Sweden	2	45	gost
1650	ss	Slovakia	1
1672	ss	12 050	stn
Czechia	2	Poland	1
12050	csn	45	pn
12056	csn	Serbia	1
Hungary	2	Č.1530	srps
A3	msz	Austria	1
C45E	msz	C45SW	onorm

Note on use. The data is compiled to the best of our knowledge from publicly available standards and manufacturer documentation. It replaces neither material testing nor an inspection document to EN 10204. Please request a mill certificate to EN 10204 2.1, 3.1 or 3.2 together with your enquiry. The standard in its current valid edition always prevails.

Enquiry about SM45

Quotation, availability, mill certificate or a technical question — directly on the material page.

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DATASHEET ONLINE

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GRADE SEARCH

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ISSUED

Aug 20, 2026