

MATERIAL NUMBER 1.6511 · CLASS 1.6

40XHMA

Material no. 1.6511

also listed as 36CrNiMo4

Chemical composition, mechanical and physical property values, and 91 standard designations from 17 regions.

DENSITY	OTHER DESIGNATIONS	PROPERTY VALUES
7.85 g/cm ³	91 in 17 regions	16 on file

Chemical composition

Mass fraction in %

What this alloy is



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	PREDICTED AE1	PREDICTED ACM	PREDICTED BS
766 °C	731 °C	607 °C	515 °C

Mechanical properties

39 values across 5 conditions

QUENCHED AND TEMPERED	REH N/mm ²	RM N/mm ²	A %
≤ 8	900	1100	10
8 – 20	800	1000	11
20 – 50	700	900	12
50 – 80	600	800	13
≤ 160	–	750	14
160 – 330	–	700	15
330 – 660	–	650	16

QUENCHING 820°C, WATER, DRAWING 600°C, WATER	RM N/mm ²	RE N/mm ²	A5 %	Z %	KCU kJ/m ²
Ø 50	770	590	18	57	680
Ø 75	730	540	18	54	590
Ø 100	720	490	18	56	290

QUENCHING AND DRAWING	RM N/mm ²	RE N/mm ²	A5 %	Z %
Ø 25	660	380	12	40

CONDITION · DIMENSION	HB
(annealing) , GOST 4543-71	217

SOFT ANNEALED	HB
Soft annealed	241

Physical properties

8 values

CONDITION · DIMENSION	RHO g/cm ³	E GPa
20	7.8	212

PROPERTY	VALUE	UNIT
Density	7.85	g/cm ³
Transformation point Ac1	713	°C
Transformation point Ac3	780	°C
Transformation point Ar3	710	°C
Transformation point Ar1	627	°C

Technological properties

PROPERTY	VALUE	UNIT
Weldability	hard weldability.	
Flake sensitivity	predisposed	
Temper brittleness	predisposed	

Designations across standards

91 designations · 3 documented as identical

Russia / CIS		31	United Kingdom		10
36ChNM	gost		110		bs
36KhNM	gost		34CrNiMo6		bs
40G2	gost		36NiCrMo4		bs
40KhN2L	gost		708M40		bs
40KHN2MA	gost		816M40		bs
40KHN2MA	gost		817A37		bs
40KHN2SMA-VD	gost		817M37		bs
40KhN2VA	gost		817M40		bs
40KHSN2MA	gost		818M40		bs
40XH2MA	gost		EN 110		bs
40XH2MA-Ш	gost				
40XHBA	gost		United States		9
40XHMA	gost		G43400		uns
EI-643-VD	gost		G98400	This grade's own name	uns
PK40G2	gost		4340		aisi-sae
PK40Kh2	gost		9840	This grade's own name	aisi-sae
PK40KhN2G	gost		G43400		aisi-sae
PK40N2M	gost		G43406		aisi-sae
ПК40Г2-7.4	gost		G98400		aisi-sae
ПК40Н2М-6.4	gost		Gr.9840		aisi-sae
ПК40Н2М-6.8	gost		A829		astm
ПК40Н2М-7.2	gost				
ПК40Н2М-7.6	gost		France		7
ПК40Х2-6.4	gost		35NCD2		afnor
ПК40Х2-6.8	gost		35NCD5		afnor
ПК40Х2-7.4	gost		35NCD6		afnor
ПК40ХН2Г-6.4	gost		36CrNiMo4		afnor
ПК40ХН2Г-6.8	gost		36NiCrMo4		afnor
ПК40ХН2Г-7.4	gost		40NCD3		afnor
ст.40XH2MA	gost		42CD4TS		afnor
ЭИ643-ВД	gost				
			Italy		6
			35NiCrMo6KB		uni
			36NiCrMo4		uni
			38NiCrMo4		uni
			38NiCrMo4KB		uni
			40NiCrMo7		uni
			KB		uni

Spain	5	Europe	2
35NiCrMo4	une	1.6511	din-en
36CrNiMo4	une	36CrNiMo4	This grade's own name din-en
42CrMo4	une		
F.1280	une	Poland	2
F.1280-35NiCrMo4	une	36HNM	pn
		40HNMA	pn
United States / Aerospace	5		
6359	ams	Bulgaria	2
6409	ams	36CrNiMo4	bds
6414	ams	40ChN2MA	bds
6415	ams		
6454	ams	International	1
		36CrNiMo4	iso
Czechia	4		
16 XXX NN	csn	Serbia	1
16341	csn	Č.5430	srps
16342	csn		
16343	csn	Hungary	1
		36CrNiMo4	msz
Japan	3		
SCNM439	jis	Australia / New Zealand	1
SNCM439	jis	4340	as-nzs
SNCM447	jis		
		Romania	1
		T35MoCrNi08	stas

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 40XHMA

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

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GRADE SEARCH

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ISSUED

Aug 20, 2026