

MATERIAL NUMBER 1.7220 · CLASS 1.7

33MoCr11

Material no. 1.7220

also listed as 34CrMo4

Chemical composition, mechanical and physical property values, and 159 standard designations from 23 regions.

DENSITY 7.74 g/cm³	OTHER DESIGNATIONS 159 in 23 regions	PROPERTY VALUES 15 on file
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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

Not enough recorded composition to predict a transformation temperature for this grade — missing: Ni.

Mechanical properties

51 values across 10 conditions

QUENCHED AND TEMPERED · ROUND PRODUCTS					A % · Lo = 5,65 √So
≤ 16					11
16 – 40					12
40 – 100					14
100 – 160					15
160 – 250					15
QUENCHED AND TEMPERED					RM N/mm ²
≤ 8					1000
8 – 20					900
20 – 50					800
50 – 80					750
QUENCHING 850 - 880°C, OIL, DRAWING 585 - 650°C	RM N/mm ²	RE N/mm ²	A5 %	Z %	KCU kJ/m ²
max thickness 100	950	750	13	42	650
max thickness 120	900	710	13	42	650
max thickness 150	800	600	14	45	650
max thickness 200	700	500	16	45	600
CONDITION · DIMENSION	RM N/mm ²	RE N/mm ²	A %	Z %	HB
Tempering after normalizing	690	440	9	25	201
Tempering after quenching	740	540	9	25	217
SOFT ANNEALED		RM N/mm ²			A80 %
0.3 – 3		600			16
QUENCHING AND DRAWING	RM N/mm ²	RE N/mm ²	A5 %	Z %	KCU kJ/m ²
Ø 25	930	835	12	45	780
TREATED TO IMPROVE SHEARABILITY					HB
Treated to improve shearability					255
SOFT ANNEALED		HB			HV
Soft annealed		223			185

CONDITION · DIMENSION	HB
(annealing) , GOST 4543-71	241
QUENCHED AND TEMPERED	HV
Quenched and tempered	315–465

Physical properties

8 values

CONDITION · DIMENSION	RHO g/cm ³	E GPa	ALPHA 10 ⁻⁶ /K	LAMBDA W/(m·K)	CP J/(kg·K)	RHO_EL nΩ·m
20	7.82	218	–	–	–	328
100	7.8	216	12.3	40.6	462	360
200	7.77	–	12.6	39.8	–	–
300	7.74	205	12.9	38.5	–	425
400	7.7	195	13.9	37.3	–	523
500	7.66	186	14.4	–	–	628
600	–	–	14.6	–	–	–

CONDITION · DIMENSION	E GPa	ALPHA 10 ⁻⁶ /K	LAMBDA W/(m·K)	CP J/(kg·K)	RHO_EL nΩ·m	G GPa
20	210	–	–	461	180	81
100	205	12.3	40.61	–	–	79
200	–	12.6	–	–	–	–
300	185	–	38.52	–	–	71
400	–	13.9	37.26	–	–	–
600	–	14.6	–	–	–	–

PROPERTY	VALUE	UNIT
Density	7.74	g/cm ³
Transformation point Ac1	755	°C
Transformation point Ac3	800	°C
Transformation point Ar3	750	°C
Transformation point Ar1	695	°C

Technological properties

PROPERTY	VALUE	UNIT
Weldability	limited weldability.	

PROPERTY	VALUE	UNIT
Flake sensitivity	predisposed	
Temper brittleness	not predisposed	

Heat treatment

11 regimes

STEP	TEMPERATURE	MEDIUM
Annealing	Temperature not stated	—
source joins the operations with + / procedural order		
Quenching	Temperature not stated	—
Normalizing	Temperature not stated	—
Tempering	500–600 °C	Oil
source joins the operations with + / procedural order		
Quenching	Temperature not stated	—
Tempering	Temperature not stated	—
source joins the operations with + / procedural order		
Quenching	880 °C	—
Tempering	650 °C	—
source joins the operations with + / procedural order		
Quenching	Temperature not stated	—
Tempering	Temperature not stated	—
source joins the operations with + / procedural order		
Annealing	Temperature not stated	—
Annealing	Temperature not stated	—
Tempering	Temperature not stated	—
Normalizing	Temperature not stated	—
Tempering	Temperature not stated	—
Spheroidize annealing	Temperature not stated	—
source joins the operations with + / procedural order		
Quenching	830–870 °C	Oil
Tempering	500–600 °C	—
source joins the operations with + / procedural order		

STEP	TEMPERATURE	MEDIUM
Quenching	830–870 °C	—
Tempering	500–600 °C	—
Quenching and tempering	Temperature not stated	—
Tempering	580 °C	—

Designations across standards

159 designations · 12 documented as identical

United States	24	Russia / CIS	12
G41300	uns	30ChMNA	gost
G41350 This grade's own name	uns	30KhM	gost
G41370 This grade's own name	uns	30XM	gost
H41350 This grade's own name	uns	30XM	gost
H41370 This grade's own name	uns	35ChM	gost
4130	aisi-sae	35KHM	gost
4135 This grade's own name	aisi-sae	35KHML	gost
4135 4137	aisi-sae	35XM	gost
4135H This grade's own name	aisi-sae	35XM	gost
4137 This grade's own name	aisi-sae	AS38KHGM	gost
4137 4135	aisi-sae	AC38XГМ	gost
4137H This grade's own name	aisi-sae	сТ.35XM	gost
G41300	aisi-sae		
G41350	aisi-sae	France	11
G41370	aisi-sae	25CD4	afnor
H41350	aisi-sae	25CD4FF	afnor
H41370	aisi-sae	25CrMo4	afnor
J13045	aisi-sae	30CD4	afnor
J13048	aisi-sae	30CD4FF	afnor
J13345	aisi-sae	34CD4	afnor
4135	astm	34CD4FF	afnor
A322	astm	34CrMo4	afnor
A331	astm	34CrMo4RR	afnor
AMS 6352 F	astm	35CD4	afnor
		38CD4	afnor
Spain	12		
25CrMo4	une	United Kingdom	10
34CrMo4	une	1717COS110	bs
35CrMo4	une	19B	bs
35CrMo4DF	une	25CrMo4	bs
AM25CrMo4	une	34CrMo4	bs
AM26CrMo4	une	708A25	bs
AM34CrMo4	une	708A30	bs
F.1250	une	708A37	bs
F.1254	une	708M32	bs
F.222	une	738M32 This grade's own name	bs
F.8231	une	EN19B	bs
F.8331	une		

United States / Aerospace		10	Italy		7
6345		ams	25CrMo4		uni
6346		ams	25CrMo4KB		uni
6348		ams	30CrMo4		uni
6350		ams	34CrMo4		uni
6351		ams	34CrMo4KB		uni
6360		ams	35CrMo4		uni
6361		ams	35CrMo4F		uni
6370		ams			
6371		ams	Poland		7
6374		ams	25HM		pn
			26HM		pn
			30HM		pn
			35HM		pn
			35HMA		pn
			L25HM		pn
			L35HM		pn
			Romania		7
			26MoCr11		stas
			33MoCr11		stas
			34MoCr11		stas
			34MoCr11AS		stas
			34MoCr11q		stas
			T30CrMo3		stas
			T34MoCr09		stas
			Bulgaria		6
			25ChML		bds
			25CrMo4		bds
			30ChM		bds
			30ChML		bds
			34CrMo4		bds
			35ChM		bds
			Czechia		5
			14141		csn
			15130		csn
			15131		csn
			15141		csn
			15141 PH		csn
			Sweden		4
			2225		ss
			2233		ss
			2234		ss
			SIS 14 2234	This grade's own name	ss
Japan		10			
SCCrM1		jis			
SCCRM3		jis			
SCM2		jis			
SCM3		jis			
SCM420		jis			
SCM430		jis			
SCM432		jis			
SCM435		jis			
SCM435H		jis			
SCM440H		jis			
South Korea		9			
SCCrM1		ks			
SCCrM3		ks			
SCM420		ks			
SCM420TK		ks			
SCM430		ks			
SCM432		ks			
SCM435		ks			
SCM435H		ks			
SCM435TK		ks			
China		7			
30CrMo		gb			
34CrMo4	This grade's own name	gb			
35CrMo		gb			
ML30CrMo		gb			
ML30CrMoA		gb			
ML35CrMo		gb			
ZG35CrMo		gb			

Hungary		4	Europe		2
25CrMo4	msz		1.7220		din-en
34CrMo4	msz		34CrMo4	This grade's own name	din-en
CMo 3	msz		Australia / New Zealand		2
CMo3Z	msz		4130		as-nzs
International		3	4130H		as-nzs
34CrMo4	iso		Austria		2
34CrMo4E	iso		BOHLERV330		onorm
34CrMoS4	iso		BOHLERV340		onorm
Finland		3	Serbia		1
25CrMo4	sfs		Č.4731		srps
G-25CrMo4	sfs		Belgium		1
G-34CrMo4	sfs		34CrMo4		nbn

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 33MoCr11

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

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DATASHEET ONLINE	GRADE SEARCH	MATERIAL NO.	ISSUED
View the material page	Search all grades	1.7220	Aug 20, 2026