

MATERIAL NUMBER 1.7131 · CLASS 1.7

18YuA

Material no. 1.7131

also listed as 16MnCr5

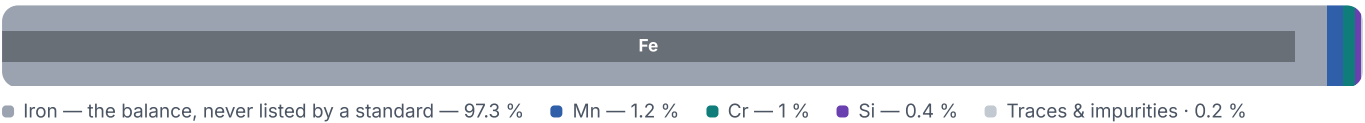
Chemical composition, mechanical and physical property values, and 78 standard designations from 23 regions.

DENSITY 7.76 g/cm³	OTHER DESIGNATIONS 78 in 23 regions	PROPERTY VALUES 14 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, Mo.

Mechanical properties

24 values across 8 conditions

QUENCHING 850°C, OIL, DRAWING 200°C, AIR	RM N/mm²	RE N/mm²	A5 %	Z %	KCU kJ/m²
5	1520	1320	12	50	720
20	980	730	15	55	1130
CONDITION · DIMENSION					HB
(annealing) , GOST 4543-71					217
(cold-worked) , GOST 4543-71					229
SOFT ANNEALED	HB		HRB		HV
Soft annealed	207		84		170
TREATED TO HARDNESS RANGE					HB
Treated to hardness range					156–207
TREATED TO FERRITE-PEARLITE STRUCTURE AND HARDNESS RANGE					HB
Treated to ferrite-pearlite structure and hardness range					140–187
NORMALIZED					HB
Normalized					138–187
CONDITION · DIMENSION	RM N/mm²	RE N/mm²	A5 %	Z %	KCU kJ/m²
Bar, GOST 4543-71	980	885	9	50	780
CONDITION · DIMENSION					RM N/mm²
200					1000

Physical properties

8 values

CONDITION · DIMENSION	RHO g/cm ³	E GPa	ALPHA 10 ⁻⁶ /K	LAMBDA W/(m·K)	CP J/(kg·K)
20	7.8	211	–	37	–
100	–	205	10	38	495
200	–	197	11.5	38	508
300	–	191	12.3	37	525
400	–	176	12.8	35	537

CONDITION · DIMENSION	RHO g/cm ³	E GPa	ALPHA 10 ⁻⁶ /K	LAMBDA W/(m·K)	CP J/(kg·K)
500	–	168	13.3	34	567
600	–	155	13.6	31	588
700	–	136	–	30	626
800	–	129	–	29	705

PROPERTY	VALUE	UNIT
Density	7.76	g/cm ³
Transformation point Ac1	740	°C
Transformation point Ac3	825	°C
Transformation point Ar3	730	°C
Transformation point Ar1	650	°C

Technological properties

PROPERTY	VALUE	UNIT
Weldability	without limitations.	
Flake sensitivity	not predisposed	
Temper brittleness	weakly predisposed	

Heat treatment

2 regimes

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

Designations across standards

78 designations · 6 documented as identical

United States		11	China		5
G51150	This grade's own name	uns	15CrMn		gb
G51170	This grade's own name	uns	16MnCr		gb
G51200		uns	18CrMn		gb
5115	This grade's own name	aisi-sae	20CrMn		gb
5117	This grade's own name	aisi-sae	20CrMnTi		gb
5120		aisi-sae			
G51150		aisi-sae	France		4
G51200		aisi-sae	16MC4		afnor
H51200		aisi-sae	16MC5		afnor
SAE5115		aisi-sae	16MnCr5RR		afnor
SA-29 Grade 5115		astm	20MC5		afnor
Russia / CIS		8	Sweden		4
18ChG		gost	2127		ss
18KHG		gost	2173		ss
18KHGT		gost	2511		ss
18YuA		gost	SIS 14 2127	This grade's own name	ss
18XГ		gost			
Sv-18KhGS		gost	Czechia		4
Sv-18KhMA		gost	14220		csn
cT.18XГ		gost	14221		csn
			14222		csn
			14223		csn
United Kingdom		6	Poland		4
16MnCr5		bs	15HG		pn
20MnCr5		bs	16HG		pn
527M17		bs	18HGT		pn
527M20		bs	20HG		pn
590H17		bs			
590M17		bs			
Spain		5	Romania		4
16MnCr5		une	17MnCr10		stas
20MnCr5		une	18MnCr10q		stas
F.1515		une	18MnCr11		stas
F.1515-16MnCr5		une	20MnCr12		stas
F.1516		une			
International		5	Europe		2
16MnCr5		iso	1.7131		din-en
16MnCrS5		iso	16MnCr5	This grade's own name	din-en
20MnCr5		iso			
20MnCrS5		iso	Japan		2
21MnCr5		iso	SMnC420		jis
			SMnC420H		jis
			Italy		2
			16MnCr5		uni
			20MnCr5		uni

Hungary		2	Latin America		1
BC3	msz		5115	copant	
BC3Z	msz				
Australia / New Zealand		2	Serbia		1
5120	as-nzs		Č.4320	srps	
5120H	as-nzs				
Bulgaria		2	Belgium		1
16ChG	bds		16MnCr5	nbn	
18ChG	bds				
Slovakia		1	Finland		1
14 220	stn		20MnCr5	sfs	
			South Korea		1
			SMnC420H	ks	

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 18YuA

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

[Start an enquiry](#)

DATASHEET ONLINE	GRADE SEARCH	MATERIAL NO.	ISSUED
View the material page	Search all grades	1.7131	Aug 20, 2026