

MATERIAL NUMBER 1.4541 · CLASS 1.4

321S22

Material no. 1.4541

also listed as X6CrNiTi18-10

Chemical composition, mechanical and physical property values, and 175 standard designations from 24 regions.

DENSITY 7.9 g/cm³	OTHER DESIGNATIONS 175 in 24 regions	PROPERTY VALUES 9 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: Mo.

Mechanical properties

23 values across 7 conditions

CONDITION · DIMENSION		RM N/mm ²	A5 %		HB		
Bar cold-worked , GOST 18907-73		880–930	–		–		
Wire, GOST 18143-72		590–880	20–25		–		
12KH18N9T (12X18H9T) , Forging GOST 25054-81		–	–		170		
CONDITION · DIMENSION		RM N/mm ²	RE N/mm ²	A %	HB	HRB	HV
Plate/Sheet Hot-rolled		520	205	40	–	–	–
Hot-rolled		–	–	–	187	90	200
SOFT ANNEALED							HB
Soft annealed							215
SOLUTION ANNEALED							HB
Solution annealed							210
QUENCHING 1020 - 1100°C,COOLING AIR		RM N/mm ²	RE N/mm ²		A5 %	Z %	
to Ø 60		540	196		40	55	
QUENCHING 1050 - 1100°C		RM N/mm ²	RE N/mm ²		A5 %	Z %	
to 1000		510	196		35–40	40–48	
CONDITION · DIMENSION		RM N/mm ²	RE N/mm ²		A5 %	A5 %	
Sheet trick, GOST 7350-77		530			215	38	

Physical properties

2 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	7.9	195	–	–	–	725
100	7.86	189	16.6	16	469	792
200	7.82	182	17	18	486	861
300	7.78	175	17.6	20	498	920
400	7.74	167	18	21	511	976
500	7.69	–	18.3	23	519	1028
600	7.65	153	18.6	25	528	1075

CONDITION · DIMENSION	RHO g/cm³	E GPa	ALPHA 10 ⁻⁶ /K	LAMBDA W/(m·K)	CP J/(kg·K)	RHO_EL nΩ·m
700	7.6	143	18.9	26	532	1117
800	7.56	135	19.3	28	544	1149
900	7.51	–	19.5	29	548	1176
1000	–	–	20.1	–	–	–

PROPERTY	VALUE	UNIT
Density	7.9	g/cm³

Technological properties

PROPERTY	VALUE	UNIT
Weldability	without limitations.	

Designations across standards

175 designations · 3 documented as identical

United States		53	A988	astm
S32100	This grade's own name	uns	F2281	astm
S32109		uns	F593	astm
0890A		aisi-sae	F594	astm
30321		aisi-sae	F738	astm
321	This grade's own name	aisi-sae	F836	astm
321H		aisi-sae		
S32100		aisi-sae	United Kingdom	25
S32109		aisi-sae	1010	bs
A 182 Grade F321		astm	1105	bs
A 312 Grade TP321		astm	2S129	bs
A 403 Grade WP321		astm	321 S 50	bs
A1012		astm	321 S 51-490	bs
A1049		astm	321 S 51-510	bs
A167		astm	321S12	bs
A182		astm	321S18	bs
A193		astm	321S20	bs
A193 Grade B8T CL1		astm	321S22	bs
A194		astm	321S31	bs
A213		astm	321S51	bs
A240		astm	321S59	bs
A249		astm	58B	bs
A264		astm	EN58B	bs
A269		astm	LW18	bs
A276		astm	LW24	bs
A312		astm	LWCF 18	bs
A313		astm	LWCF 24	bs
A314		astm	S129	bs
A320		astm	S31 EN 58B	bs
A320 Grade B8T		astm	S524	bs
A336		astm	S526	bs
A358		astm	T67	bs
A376		astm	X6CrNiTi18-10	bs
A409		astm		
A430		astm		
A473		astm		
A479		astm		
A484		astm		
A511		astm		
A554		astm		
A580		astm		
A632		astm		
A774		astm		
A778		astm		
A813		astm		
A814		astm		
A943		astm		
A965		astm		

Russia / CIS		22	China		8
06Ch18N10T	gost		0Cr18Ni10Ti		gb
06X18H10T	gost		0Cr18Ni11Ti		gb
08Ch18N10T	gost		0Cr18Ni9Ti		gb
08KH18N10T	gost		1Cr18Ni11Ti		gb
08KH18N12T	gost		1Cr18Ni9T		gb
08X18H10T	gost		1Cr18Ni9Ti		gb
08X18H10T	gost		H0Cr20Ni10Ti		gb
08X18H12T	gost		OCr18Ni10Ti		gb
09Ch18N10T	gost				
0X18H10T	gost		France		7
0X18H12T	gost		321F00		afnor
10Ch18N10T	gost		Z10CNT18-10		afnor
10X18H10T	gost		Z10CNT18-11		afnor
12Ch18N10T	gost		Z6CN18-10		afnor
12KH18N10T	gost		Z6CNT18-10		afnor
12KH18N9T	gost		Z6CNT18-12		afnor
12X18H10T	gost		Z6CNT18.11		afnor
12X18H9T	gost				
Ch18N10T	gost		Poland		6
X18H10T	gost		0H18N10T		pn
X18H9T	gost		0H18N10T 1H18N9T 1H18N10T		pn
ЭИ914	gost		1H18N10T		pn
			1H18N12T		pn
			1H18N9T		pn
			1H18N9T lub 0H18N10T 1H18N10T		pn
United States / Aerospace		8			
5510	ams				
5557	ams		Spain		5
5559	ams		F.332		une
5570	ams		F.3523		une
5576	ams		F.3553		une
5645	ams		F.3553-X 7 CrNiTi 18-11		une
5689	ams		X6CrNiTi18-10		une
7490	ams				
Japan		8	Italy		4
SUS 321FB	jis		X6CrNiTi18-11KG		uni
SUS 321TB	jis		X6CrNiTi18-11KT		uni
SUS 321TKA	jis		X6CrNiTi1811		uni
SUS 321TP	jis		X8CrNiTi1811		uni
SUS F 321	jis				
SUS Y 321	jis		Hungary		4
SUS321	jis		H5Ti		msz
SUS321TK	jis		KO36Ti		msz
			KO37Ti		msz
			X6CrNiTi18-10		msz

Bulgaria	4	Romania	2
OCh18N10T	bds	10TiNiCr180	stas
Ch18N12T	bds	12TiNiCr180	stas
Ch18N9T	bds		
X6CrNiTi18-10	bds	Austria	2
Europe	3	X6CrNiTi18-10KKW	onorm
1.4541	din-en	X6CrNiTi18-10S	onorm
X10CrNiTi18-9	din-en	Sweden	1
X6CrNiTi18-10	din-en	2337	ss
Czechia	3	Brazil	1
17246	csn	321	abnt
17247	csn		
17248	csn	Serbia	1
South Korea	3	Č.4572	srps
STS321	ks	former Yugoslavia	1
STS321TKA	ks	Č.4572	jus
STSF321	ks		
Slovakia	2	Australia / New Zealand	1
17 246	stn	321	as-nzs
17 247	stn	Finland	1
		731	sfs

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 321S22

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

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DATASHEET ONLINE

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MATERIAL NO.

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ISSUED

Aug 20, 2026