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Properties of Stainless Steel

Mechanical Properties of Wrought Stainless Steel* (All Properties Specified, usually Flat)

Common Type	UNS No	Condition	0.2% Proof Strength MPa	Tensile Strength MPa	Tensile Elongation %		Brinell Hardness HB	Rockwell Hardness HRB	Vickers Hardness HV Max
					≤1.2mm Min	>1.2mm Min			
201	S20100	Annealed	310	655	40	40	217	100	240
202	S20200	Annealed	260	620	40	40	241	-	-
301	S30100	Annealed	205	515	40	40	217	95	210
301	S30100	1/4 hard	515	860	25	25	-	-	-
301	S30100	1/2 hard	760	1035	15	18	-	-	-
301	S30100	3/4 hard	930	1205	10	12	-	-	-
301	S30100	Full hard	965	1275	8	9	-	-	-
302	S30200	Annealed	205	515	40	40	201	92	210
302HQ	S30430	Annealed	-	605 max	-	-	-	-	-
303	S30300	Annealed	240	585	50	50	-	-	-
304	S30400	Annealed	205	515	40	40	201	92	210
304L	S30403	Annealed	170	485	40	40	201	92	210
305	S30500	Annealed	-	585 max	-	-	-	-	-
+	S30815	Annealed	310	600	40	40	217	95	-
309S	S30908	Annealed	205	515	40	40	217	95	225
310S	S31008	Annealed	205	515	40	40	217	95	225
316	S31600	Annealed	205	515	40	40	217	95	225
316L	S31603	Annealed	170	485	40	40	217	95	225
316Ti	S31635	Annealed	205	515	40	40	217	95	225
317	S31700	Annealed	205	515	35	35	217	95	-
317L	S31703	Annealed	205	515	40	40	217	95	-
321	S32100	Annealed	205	515	40	40	217	95	210
347	S34700	Annealed	205	515	40	40	201	92	-
904L	N08904	Annealed	215	490	35	35	-	90	-
409	S40900	Annealed	205	380	20	22	179	88	-
430	S43000	Annealed	205	450	20	22	183	88	210
444	S44400	Annealed	275	415	20	20	217	96	200
446	S44600	Annealed	280	480	20	-	-	-	-
1.4003	S41003	Annealed	280	460	18	18	220	-	-
2205	S31803	Annealed	450	620	25	25	293	[31]	-
+	S32304	Annealed	400	600	25	25	290	[32]	-
+	S32750	Annealed	550	795	15	15	310	[32]	-
+	S32760	Annealed	550	750	25	25	270	[28]	-
+	S32550	Annealed	550	760	15	15	302	[32]	-
410	S41000	Annealed	205	450	20	22	217	96	210

416	S41600	Annealed	276	517	30	30	-	-	-
420	S42000	Cold Finished	-	520	-	42	255	-	-
431	S43100	Cold Finished	-	965 max	-	-	285	-	-
440A	S44002	Cold Finished	-	-	-	-	285	-	-
440C	S44004	Cold Finished	-	-	-	-	285	-	-
17-4PH	S17400	H1025	1000	1070	12	12	401	[42]	-

+ Proprietary alloy names apply.

* Consult the relevant product standard for definitive values.

Typical Physical Properties - Annealed Condition

Grade or type	UNS No	Density (kg/m ³)	Elastic Modulus (a) GPa	Mean Coefficient of Thermal Expansion (b)			Thermal Conductivity		Specif Heat 0 100°C J/kg.K
				0-100°C μm/m/ °C	0-315°C μm/m/ °C	0-538°C μm/m/ °C	At 100°C W/m.K	At 500°C W/m.K	
201	S20100	7800	197	15.7	17.5	18.4	16.2	21.5	500
202	S20200	7800	-	17.5	18.4	19.2	16.2	21.6	500
301	S30100	8000	193	17.0	17.2	18.2	16.2	21.5	500
302	S30200	8000	193	17.2	17.8	18.4	16.2	21.5	500
302B	S30215	8000	193	16.2	18.0	19.4	15.9	21.6	500
303	S30300	8000	193	17.2	17.8	18.4	16.2	21.5	500
304	S30400	8000	193	17.2	17.8	18.4	16.2	21.5	500
304L	S30403	8000	193	17.2	17.8	18.4	16.3	21.5	500
302HQ	S30430	8000	193	17.2	17.8	-	11.2	21.5	500
304N	S30451	8000	196	17.2	17.8	18.4	16.3	21.5	500
305	S30500	8000	193	17.2	17.8	18.4	16.2	21.5	500
308	S30800	8000	193	17.2	17.8	18.4	15.2	21.6	500
309	S30900	8000	200	15.0	16.6	17.2	15.6	18.7	500
310	S31000	8000	200	15.9	16.2	17.0	14.2	18.7	500
314	S31400	7800	200	-	15.1	-	17.5	20.9	500
316	S31600	8000	193	15.9	16.2	17.5	16.2	21.5	500
316L	S31603	8000	193	15.9	16.2	17.5	16.3	21.5	500
316N	S31651	8000	196	15.9	16.2	17.5	14.4	-	500
317	S31700	8000	193	15.9	16.2	17.5	16.2	21.5	500
317L	S31703	8000	200	16.5	-	18.1	14.4	-	500
321	S32100	8000	193	16.6	17.2	18.6	16.1	22.2	500
329	S32900	7800	186	10.1	11.5	-	-	-	460
330	N08330	8000	196	14.4	16.0	16.7	-	-	460
347	S34700	8000	193	16.6	17.2	18.6	16.1	22.2	500
384	S38400	8000	193	17.2	17.8	18.4	16.2	21.5	500
409	S40900	7800	200	11.7	12.0	12.4	24.9	-	460
410	S41000	7800	200	9.9	11.4	11.6	24.9	28.7	460
416	S41600	7800	200	9.9	11.0	11.6	24.9	28.7	460
420	S42000	7800	200	10.3	10.8	11.7	24.9	-	460
430	S43000	7800	200	10.4	11.0	11.4	26.1	26.3	460
430F	S43020	7800	200	10.4	11.0	11.4	26.1	26.3	460
431	S43100	7800	200	10.2	12.1	-	20.2	-	460
434	S43400	7800	200	10.4	11.0	11.4	-	26.3	460
436	S43600	7800	200	9.3	-	-	23.9	26.0	460
440C	S44004	7800	200	10.2	-	-	24.2	-	460
444	S44400	7800	200	10.0	10.6	11.4	26.8	-	420
446	S44600	7800	200	10.4	10.8	11.2	20.9	24.4	500
630	S17400	7500	196	10.8	11.6	-	18.3	23.0	460
631	S17700	7800	204	11.0	11.6	-	16.4	21.8	460
+	N08904	7900	195	16.0	17.5	-	14.0	-	500
+	S30815	7800	200	16.3	17.3	18.0	14.0	18.0	500
+	S31803	7800	200	13.7	14.7	-	19.0	-	480
+	S32304	7800	200	13.0	-	-	16.0	-	470
+	S32750	7800	200	13.0	14.0	-	17.0	-	470
3CR12	S41003	7800	205	10.8	11.3	12.0	31.0	32.0	480

4565S	S34565	8000	190	14.5	16.3	17.2	14.5	-	510
+	S32760	7600	190	12.8	13.8	-	14.4	-	480

(a) 1GPa = 1000MPa

(b) $\mu\text{m}/\text{m}/^\circ\text{C} = \times 10^{-6}/^\circ\text{C}$ (c) 1% flow in 10,000 hours at 540°C

Magnetic permeability of all 300 series austenitic steels in the annealed condition is approximately 1.02

+ Proprietary alloy names apply