

## Stainless Steels

Alloy Type	Similar Designation	Condition	Hardness Min.	Ultimate Tensile Strength psi	Yield Strength psi	Elongation % in 1 in.	Remarks	Castability	Resistance to Hot Tearing	Shrinkage	Fluidity
302	AMS 5358C	As Cast or Solution Annealed	R <sub>p</sub> 85	65,000	30,000	35	Best Combination of Castability and Corrosion Resistance	100	A	A	A
303	MIL-S-81591 IC303	As Cast or Solution Annealed	R <sub>p</sub> 85	65,000	30,000	35	Free Machining Stainless	95	B	A	A
304L	ASTM-A-744 Gr CF3 AMS 5370	As Cast or Solution Annealed	R <sub>p</sub> 85	63,000	28,000	35	Cryogenic Applications	100	A	A	A
310	ASTM-A-297 Gr HK	As Cast or Solution Annealed	R <sub>p</sub> 85	65,000	30,000	35	Oxidation Resistance of 2000°F	90	A	A	A
316L	ASTM-A-744 Gr CF3M AMS 5360	As Cast or Solution Annealed	R <sub>p</sub> 85	65,000	30,000	35	Food Equipment, Paper Making Equipment	100	A	A	A
347	ASTM-A-743 Gr CF6C	As Cast or Solution Annealed	R <sub>p</sub> 85	70,000	32,000	30	Weldable Grade	95	A	A	A
CN-7M	ASTM-A-743 Gr CN7M	As Cast or Solution Annealed	R <sub>p</sub> 80	65,000	25,000	35	Sulfuric Acid Resistant	95	A	A	A
410	MIL-S-81591 IC410	Air or Oil Quench and Draw	R <sub>c</sub> 42	200,000	150,000	6	Good Combination of Hardness and Corrosion Resistance	95	B	C	A
			R <sub>c</sub> 40	180,000	140,000	8					
			R <sub>c</sub> 36	160,000	120,000	12					
		Annealed	R <sub>p</sub> 95	95,000	75,000	18					
			R <sub>p</sub> 95 max	70,000	45,000	20					
416	MIL-S-81591 IC416	Air or Oil Quench and Draw	R <sub>c</sub> 38	160,000	130,000	5	Free Machining Grade of 410. Not as Tough as 410	85	B	C	A
			R <sub>p</sub> 95	95,000	75,000	12					
		Annealed	R <sub>p</sub> 95 max	70,000	40,000	15					
420	ASTM-A-743 Gr CA40 IC CA-40	Low Carbon Quench and Draw	R <sub>c</sub> 46	200,000	150,000	3	Similar to 410. Higher Hardness but Less Tough Better wear resistance	90	B	C	A
		High Carbon Quench and Draw	R <sub>c</sub> 48	200,000	150,000	3					
		Annealed	R <sub>c</sub> 28 max	90,000	60,000	12					
431	MIL-S-81591 IC431	Quench and Draw	R <sub>c</sub> 38	170,000	130,000	5	Best Corrosion Resistance of Series	90	B	C	A
		Annealed	R <sub>c</sub> 28 max	90,000	60,000	12					
440C	AMS 5352C	Quench and Draw	R <sub>c</sub> 58	*	*	Nil	Highest Hardness Best Cutlery Grade	85	B	C	A
		Annealed	R <sub>c</sub> 30 max	90,000	60,000	2					
17-4PH	IC 17-4PH	Normalized & Solution Anneal or Double Solution Anneal	R <sub>c</sub> 30-36	140,000	100,000	10	Age Hardening Alloy. Best Combination of Corrosion Resistance and Hardness	95	B	B	A
	AMS 5355F	Normalized & Solution Anneal or Double Solution Anneal Plus Aging	R <sub>c</sub> 40	180,000	160,000	6					

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Carbon	Manganese	Silicon	Chromium	Molybdenum	Nickel	Tungsten	Cobalt	Phosphorous	Sulfur	Vanadium	Iron	Copper	Aluminum	Zinc	Titanium	Magnesium	Other
0.25	1.50	2.00	17.0 19.0	0.75	8.0 10.0			0.04	0.20		Bal.	0.75					
0.16	1.50	2.00	18.0 21.0	.40 .80	9.0 12.0			0.04	.20 .40		Bal.	0.50					
0.03	1.50	2.00	17.0 21.0		8.0 12.0			0.04	0.04		Bal.						
.20 .60	2.00	2.00	24.0 28.0	0.50	18.0 22.0			0.04	0.04		Bal.						
0.03	1.50	1.50	17.0 21.0	2.0 3.0	9.0 13.0			0.04	0.04		Bal.						
0.08	1.50	2.00	18.0 21.0		9.0 12.0			0.04	0.04		Bal.						Cb/Ta 8 x C-1.0
0.07	1.50	1.50	19.0 22.0	2.0 3.0	27.5 30.5			0.04	0.04		Bal.	3.0 4.0					
.05 .15	1.00	1.00	11.5 14.0	0.50	0.50			0.04	0.03		Bal.	0.50					
0.15	1.25	1.50	11.5 14.0	0.50	0.50			0.05	.15 .35		Bal.	0.50					Zr 0.50
.20 .40	1.00	1.50	11.5 14.0	0.50	1.00			0.04	0.04		Bal.						
.08 .15	1.00	1.00	15.0 17.0		1.50 2.20			0.04	0.04		Bal.						N <sub>2</sub> 0.03/0.12 C+ N <sub>2</sub> .22 max.
.95 1.20	1.00	1.00	16.0 18.0	.35 .75	0.75			0.04	0.03		Bal.	0.75					
0.06	0.70	.50 1.00	15.5 16.7		3.60 4.60			0.04	0.03		Bal.	2.80 3.50					N <sub>2</sub> 0.05 Cb/Ta 0.15/0.40