

CRA GUIDE TO SELECTION OF NICKEL ALLOYS

Alloy Family	Alloy Type	API Category	Trade Names	UNS Number	Chemical Composition										PREN	API Grade	0.2% Yield Str. (ksi)		Tensile Str. (ksi)	Elong. (%)	CVN Impact (ft-lbs)	Hardness	NACE MR0175/ISO 15156		Alloy Family
					max. wt % or range, unless otherwise indicated												long. at room temperature			trans. at 14F	(HRC)	H ₂ S Limits			
					Cr	Ni	Fe	Mo	Co	Cu	Ti	Nb+Ta	W	AL			min.	max.	min.	min.	min.	max.	Tables	Sour Service Limits	
Solid Solution Nickel Base Alloys	28 Chrome	5CRA Group 3 27-31-4 PSL 1 & 2	28 Chrome Alloy 28	N08028	26.0 to 28.0	29.5 to 32.5	bal.	3.0 to 4.0	—	0.6 to 1.4	—	—	—	—	36 to 41	110 125 140	110 125 140	140 150 160	115 130 145	11% 10% 9%	function of strength & wall thickness	33 35 38	A.14	no limit ≤270F, refer to table for temperatures up to 450F 140 Gr. not recommended for sour service	
	2535	5CRA Group 3 25-32-3 PSL 1 & 2	2535	N08535	24.0 to 27.0	29.0 to 36.5	bal.	2.5 to 4.0	—	1.5	—	—	—	32 to 40											
	2035	5CRA Group 3 22-35-4 PSL 1 & 2	2035	N08135	20.5 to 23.5	33.0 to 38.0	bal.	4.0 to 5.0	—	0.7	—	—	0.2 to 0.8	34 to 41											
	825	5CRA Group 4 21-42-3 PSL 1 & 2	825 2242	N08825	19.5 to 23.5	38.0 to 46.0	bal.	2.5 to 3.5	—	1.5 to 3.0	0.6 to 1.2	—	—	0.2	28 to 35										
	G3	5CRA Group 4 22-50-7 PSL 1 & 2	G3	N06985	21.0 to 23.5	bal.	18.0 to 21.0	6.0 to 8.0	5.0	1.5 to 2.5	—	0.50	1.5	—	41 to 50	110 125 140	110 125 140	140 150 160	115 130 145	11% 10% 9%	function of strength & wall thickness	35 37 38	A.14	no limit ≤300F, refer to table for temperatures up to 450F 140 Gr. not recommended for sour service	
	G2	5CRA Group 4 25-50-6 PSL 1 & 2	G2	N06975	23.0 to 26.0	47.0 to 52.0	bal.	5.0 to 7.0	—	0.7 to 1.2	0.7 to 1.5	—	—	—	40 to 49										
	2550		2550 CRA 2550E	N06255	23.0 to 26.0	47.0 to 52.0	bal.	6.0 to 9.0	—	1.2	0.69	—	3.0	—	43 to 56										
	G50	5CRA Group 4 20-54-9 PSL 1 & 2	G50 Alloy 050	N06950	19.0 to 21.0	50.0 min	15.0 to 20.0	8.0 to 10.0	2.5	0.5	—	0.50	1.0	—	45 to 54	110 125 140	110 125 140	140 150 160	115 130 145	11% 10% 9%	function of strength & wall thickness	35 37 38	A.14	no limit ≤400F, refer to table for temperatures up to 450F	
	C276	5CRA Group 4 15-60-16 PSL 1 & 2	C276	N10276	14.5 to 16.5	bal.	4.0 to 7.0	15.0 to 17.0	2.5	—	—	—	3.0 to 4.5	—	69 to 80										
	C22	N/A	Alloy 22	N06022	20.0 to 22.5	bal.	2.0 to 6.0	12.5 to 14.5	2.5	—	—	—	2.5 to 3.5	—	65 to 76										

