

CRA GUIDE TO SELECTION OF STAINLESS STEELS

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			
					C	CR	Ni	Mo	Cu	Ti	V	W	N			min.	max.	min.	min.	min.	max.	Tables	Sour Service Limits		
Martensitic Stainless Steel	13 Chrome	5CT 13Cr L80	13CR 420 Mod 13Cr L80	S42000	0.15 to 0.22	12.0 to 14.0	0.5	—	0.25	—	—	—	—	12 to 14	80	80	95	95	function of specimen size	function of wall thickness	23	A.19	H ₂ S ≤ 1.5 psi, pH ≥ 3.5		
	Modified 13 Chrome	N/A	13CRM	N/A	0.03	11.0 to 14.0	4.0 to 6.0	0.2 to 1.2	—	—	—	—	—	12 to 18	80	80	95	90	function of specimen size and strength	29 29 29/30	27 28 32	not recommended for sour service			
			HP1	N/A	0.04	12.0 to 14.0	3.5 to 4.5	0.8 to 1.5	—	—	—	—	—	15 to 19	110	100	140	115							
	Super 13 Chrome	5CRA Group 1 13-5-2 PSL 1 & 2	13CRS CR13S	S41426	0.03	11.5 to 13.5	4.5 to 6.5	1.5 to 3.0	—	0.01 to 0.5	0.5	—	—	16 to 23	80 95 110	80 95 110	95 105 140	90 105 115	function of specimen size and strength	29 29 29/30	27 27 32	A.19	H ₂ S ≤ 1.5 psi, pH ≥ 3.5 110 Gr. not recommended for sour service		
			S13CR	S41425	0.05	12 to 15	4.0 to 7.0	1.5 to 2.0	0.03	—	—	—	0.06 to 0.12	17 to 22	80 95 110	80 95 110	95 105 140	90 105 115						function of specimen size and strength	29 29 29/30
		5CRA Group 1 13-5-2 PSL 1	SCR13	S41427	0.03	11.5 to 13.5	4.5 to 6.0	1.5 to 2.5	—	0.01 to 0.5	0.1 to 0.5	—	—	16 to 22	80 95 110	80 95 110	95 105 140	90 105 115	function of specimen size and strength	29 29 29/30	27 29 32	A.21	1.5 psi H ₂ S, pH ≥ 3.5, Cl ≤ 6 g/l 110 Gr. not recommended for sour service		
			HP2	N/A	0.04	12.0 to 14.0	4.5 to 5.5	1.8 to 2.5	—	—	—	—	—	18 to 22	80 95 110	80 95 110	95 105 140	90 105 115						function of specimen size and strength	29 29 29/30
	15 Chrome	N/A	15 Cr	S42500	0.08 to 0.2	14.0 to 16.0	1.0 to 2.0	0.3 to 0.7	—	—	—	—	0.2	15 to 18	N/A	80	95	90			22	A.19	H ₂ S ≤ 1.5 psi, pH ≥ 3.5		
			UHP-15CR Super 15Cr	N/A	0.04	14.0 to 16.0	6.0 to 7.0	1.8 to 2.5	1.5	—	—	—	—	20 to 24	125	125	150	135	function of specimen size and strength		37	not recommended for sour service			
	17 Chrome	N/A	17CRS Super 17Cr	N/A	0.03	16.0 to 18.0	4.0 to 5.5	2.0 to 3.0	2.0 to 3.0	—	0.1	—	—	23 to 28	125	125	145	130					function of specimen size and strength		38

