

# ALLOY STEEL MECHANICAL & CHEMICAL PROPERTIES

Specification	Type	Grade	Chemical Composition (%)															Mechanical Properties				Hydrostatic Test Pressure	Hardness (max.)	
			C		Mn		P	S	Si		Cr		Mo		Cu	Ni	V	Yield Strength		Tensile Strength				% Elongation (G.L. 50 mm WT 8 mm) e (min.)
			Min	Max.	Min	Max.	Max	Max	Min.	Max	Min.	Max	Min.	Max	Max	Max	Max	Min.		Min.				
			PSI	MPa	PSI	MPa																		
ASTM A213	S	T-2	0.10	0.20	0.30	0.61	0.025	0.025	0.10	0.30	0.50	0.81	0.44	0.65	-	-	-	30,000	205	60,000	415	30		85 HRB 163 HB / 170 HV
		T-5	-	0.15	0.30	0.60	0.025	0.025	-	0.50	4.00	6.00	0.45	0.65	-	-	-	30,000	205	60,000	415	30		85 HRB (Max.) 163 HB / 170 HV (Max.)
		T-11	0.05	0.15	0.30	0.60	0.025	0.025	0.50	1.00	1.00	1.50	0.44	0.65	-	-	-	30,000	205	60,000	415	30		85 HRB (Max.) 163 HB / 170 HV (Max.)
		T-12	0.05	0.15	0.30	0.61	0.025	0.025	-	0.50	0.80	1.25	0.44	0.65	-	-	-	32,000	220	60,000	415	30		85 HRB (Max.) 163 HB / 170 HV (Max.)
		T-22	0.05	0.15	0.30	0.60	0.025	0.025	-	0.50	1.90	2.60	0.87	1.13	-	-	-	30,000	205	60,000	415	30		85 HRB (Max.) 163 HB / 170 HV (Max.)
ASTM A335	S	P-1	0.10	0.20	0.30	0.80	0.025	0.025	0.10	0.50	-	-	0.44	0.65	-	-	-	30,000	205	55,000	380	30	P = 2 S t/D S = 60% of SMYS	
		P-2	0.10	0.20	0.30	0.61	0.025	0.025	0.10	0.30	0.50	0.81	0.44	0.65	-	-	-	30,000	205	55,000	380	30		
		P-5	-	0.15	0.30	0.60	0.025	0.025	-	0.50	4.00	6.00	0.45	0.65	-	-	-	30,000	205	60,000	415	30		
		P-11	0.05	0.15	0.30	0.60	0.025	0.025	0.50	1.00	1.00	1.50	0.44	0.65	-	-	-	30,000	205	60,000	415	30		
		P-12	0.05	0.15	0.30	0.61	0.025	0.025	-	0.50	0.80	1.25	0.44	0.65	-	-	-	32,000	220	60,000	415	30		
		P-22	0.05	0.15	0.30	0.60	0.025	0.025	-	0.50	1.90	2.60	0.87	1.13	-	-	-	30,000	205	60,000	415	30		

P - Hydrostatic Test Pressure (Bar) ; D - Specified Outside Diameter (mm) ; t - Specified Wall Thickness (mm)  
A - Cross Sectional Area (inch / mm) ; U - Specified Tensile Strength (PSI / MPa)  
E : ERW (Electric Resistance Welded) ; S - Seamless ; SMYS - Specified Min. yield Strength.