

CHEMICAL COMPOSITION & MECHANICAL PROPERTIES



Rolled Steel Plates for General Structural Use																			
Standard	Product Grade	Thickness mm	CHEMICAL COMPOSITION												Thickness mm	MECHANICAL PROPERTIES			
			C	Mn	Si	P	S	Cr	Ni	Cu	Mo	Nb	V	Ti		Tensile Strength	Yield Strength	Elongation	
			Max, %	%	%	Max, %	Max, %	%	%	%	%	%	%	%		Min, Mpa	Min, Mpa	Min, %	
JIS G 3101	SS330	6 ≤ t ≤ 120	-	-	-	0.050 Max	0.050 Max	-	-	-	-	-	-	-	t ≤ 16	330-430	205	6 < t ≤ 16 =21	
			16 < t ≤ 40	195	16 < t ≤ 40 =26														
			40 < t	175	40 < t=28														
	SS400	6 ≤ t ≤ 100	-	-	-	0.050 Max	0.050 Max	-	-	-	-	-	-	-	t ≤ 16	400-510	245	6 < t ≤ 16 =17	
			16 < t ≤ 40	235	16 < t ≤ 40 =21														
			40 < t	215	40 < t=23														
	SS490	6 ≤ t ≤ 100	-	-	-	0.050 Max	0.050 Max	-	-	-	-	-	-	-	t ≤ 16	490-610	285	6 < t ≤ 16 =15	
			16 < t ≤ 40	275	16 < t ≤ 40 =19														
			100 < t	255	40 < t=21														
	SS540	6 ≤ t ≤ 40	0.30 Max	1.60 Max	-	0.040 Max	0.040 Max	-	-	-	-	-	-	-	t ≤ 16	540 Min	400	6 < t ≤ 16 =13	
			16 < t ≤ 40	390	16 < t ≤ 50 =17														
	JIS G 3106	SM400A	t ≤ 50	0.23 Max	2.5xC Min	-	0.035 Max	0.035 Max	-	-	-	-	-	-	-	t ≤ 16	400-510	245	6 < t ≤ 16 =18
50 < t ≤ 200			0.25 Max	16 < t ≤ 40												235		16 < t ≤ 50 =22	
SM400B		t ≤ 50	0.20 Max	0.60-1.40	0.35 Max	0.035 Max	0.035 Max	-	-	-	-	-	-	-	-	40 < t ≤ 100	215	205	50 < t =24
		50 < t ≤ 200	0.22 Max													100 < t			
SM400C		t ≤ 100	0.18 Max	1.40 Max	0.35 Max														
SM490A		t ≤ 50	0.20 Max	1.60 Max	0.55 Max	0.035 Max	0.035 Max	-	-	-	-	-	-	-	-	t ≤ 16	490-610	325	6 < t ≤ 16 =17
		50 < t ≤ 200	0.22 Max													16 < t ≤ 40		315	16 < t ≤ 50 =21
SM490B		t ≤ 50	0.18 Max	1.60 Max	0.55 Max	0.035 Max	0.035 Max	-	-	-	-	-	-	-	-	40 < t ≤ 100	295	285	50 < t =23
		50 < t ≤ 200	0.20 Max													100 < t			
SM490C		t ≤ 100	0.18 Max																
SM490YA		t ≤ 100	0.20 Max	1.60 Max	0.55 Max	0.035 Max	0.035 Max	-	-	-	-	-	-	-	-	t ≤ 16	491-610	365	6 < t ≤ 16 =15
			16 < t ≤ 40													355		16 < t ≤ 50 =19	
SM490YB		t ≤ 100	0.20 Max	1.60 Max	0.55 Max	0.035 Max	0.035 Max	-	-	-	-	-	-	-	-	40 < t ≤ 75	325	460	6 < t ≤ 16 =19
			75 < t ≤ 100													430			
SM570		t ≤ 100	0.18 Max	1.60 Max	0.55 Max	0.035 Max	0.035 Max	-	-	-	-	-	-	-	-	t ≤ 16	570-720	460	6 < t ≤ 16 =19
			16 < t ≤ 40													450		16 < t=26	
			40 < t ≤ 75													430		20 < t=20	
			75 < t ≤ 100													420			
ASTM	A36	6 < t ≤ 20	0.25 Max	-	0.40 Max	0.04 Max	0.05 Max	-	-	0.20	-	-	-	-	6 < t ≤ 20	400-550	250	GL200m=20 GL50m=23	
		20 < t ≤ 40	0.25 Max	0.80-1.20	0.40 Max	0.04 Max	0.05 Max	-	-	0.20	-	-	-	-	20 < t ≤ 40				
		40 < t ≤ 65	0.26 Max	0.80-1.20	0.15-0.40	0.04 Max	0.05 Max	-	-	0.20	-	-	-	-	40 < t ≤ 65				
		65 < t ≤ 100	0.27 Max	0.85-1.20	0.15-0.40	0.04 Max	0.05 Max	-	-	0.20	-	-	-	-	65 < t ≤ 100				
	A283 Gr A Max. Thickness 100	t ≤ 40	0.14 Max	0.90 Max	0.40 Max	0.035 Max	0.04 Max	-	-	0.20	-	-	-	-	-	t ≤ 40	310-415	165	GL200m=27 GL50m=30
		40 < t			0.15-0.40											40 < t			
	A283 Gr B Max. Thickness 105	t ≤ 40	0.17 Max	0.90 Max	0.40 Max	0.035 Max	0.04 Max	-	-	0.20	-	-	-	-	-	t ≤ 40	310-415	185	GL200m=25 GL50m=28
		40 < t			0.15-0.40											40 < t			
	A283 Gr C Max. Thickness 100	t ≤ 40	0.24 Max	0.90 Max	0.40 Max	0.035 Max	0.04 Max	-	-	0.20	-	-	-	-	-	t ≤ 40	310-415	205	GL200m=22 GL50m=25
		40 < t			0.15-0.40											40 < t			
	A283 Gr D Max. Thickness 100	t ≤ 40	0.27 Max	0.90 Max	0.40 Max	0.035 Max	0.04 Max	-	-	0.20	-	-	-	-	-	t ≤ 40	310-415	230	GL200m=20 GL50m=23
		40 < t			0.15-0.40											40 < t			
A573 Gr.70	t ≤ 13	0.27 Max	0.85-1.20	0.15-0.40	0.035 Max	0.04 Max	-	-	-	-	-	-	-	-	t ≤ 13	485-620	290	GL200m=18 GL50m=21	
	13 < t ≤ 40	0.28 Max													13 < t ≤ 40				
S235 JR	t ≤ 16	0.17			0.035	0.035	-	-	0.55	-	-	-	-	-	t ≤ 16				
		16 < t ≤ 40													0.17				16 < t ≤ 40
		40 < t													0.20				40 < t
	t ≤ 16	0.17													t ≤ 16				

ASTM	A515 Gr.60	50 < t ≤ 100	0.29 Max	0.90 Max	0.15-0.40	0.035 Max	0.035 Max	0.30	0.40	0.40	0.12	0.02	0.03	0.03	50<t≤100	415-550	220	GL200m=21 GL50m=25
		100 < t ≤ 200	0.31 Max												100<t≤200			
		200 < t	0.31 Max												200 < t			
	A515 Gr.65	t ≤ 25	0.28 Max	0.90 Max	0.15-0.40	0.035 Max	0.035 Max	0.30	0.40	0.40	0.12	0.02	0.03	0.03	t ≤ 25	450-585	240	GL200m=19 GL50m=23
		25 < t ≤ 50	0.31 Max												25<t≤50			
		50 < t ≤ 100	0.33 Max												50<t≤100			
		100 < t ≤ 200	0.33 Max												100<t≤200			
	A515 Gr.70	200 < t	0.33 Max	1.20 Max	0.15-0.40	0.035 Max	0.035 Max	0.30	0.40	0.40	0.12	0.02	0.03	0.03	200 < t	485-620	260	GL200m=17 GL50m=21
		t ≤ 25	0.31 Max												t ≤ 25			
		25 < t ≤ 50	0.33 Max												25<t≤50			
		50 < t ≤ 100	0.35 Max												50<t≤100			
	A516 Gr.55	100 < t ≤ 200	0.35 Max	0.60-1.20	0.15-0.40	0.035 Max	0.035 Max	-	-	-	-	-	-	-	100<t≤200	380-515	205	GL200m=23 GL50m=27
		200 < t	0.35 Max												200 < t			
		t ≤ 12.5	0.18 Max												t ≤ 12.5			
		12.5 < t ≤ 50	0.20 Max												12.5<t≤50			
	A516 Gr.60	50 < t ≤ 100	0.22 Max	0.60-0.90	0.15-0.40	0.035 Max	0.035 Max	-	-	-	-	-	-	-	50<t≤100	415-550	220	GL200m=21 GL50m=25
		100 < t ≤ 200	0.24 Max												100<t≤200			
		200 < t	0.26 Max												200 < t			
		t ≤ 12.5	0.21 Max												t ≤ 12.5			
	A516 Gr.65	12.5 < t ≤ 50	0.23 Max	0.85-1.20	0.15-0.40	0.035 Max	0.035 Max	-	-	-	-	-	-	-	12.5<t≤50	450-585	240	GL200m=19 GL50m=23
		50 < t ≤ 100	0.25 Max												50<t≤100			
		100 < t ≤ 200	0.27 Max												100<t≤200			
		200 < t	0.27 Max												200 < t			
	A516 Gr.70	50 < t ≤ 100	0.28 Max	0.85-1.20	0.15-0.40	0.035 Max	0.035 Max	-	-	-	-	-	-	-	50<t≤100	485-620	260	GL200m=17 GL50m=21
100 < t ≤ 200		0.29 Max	100<t≤200															
200 < t		0.29 Max	200 < t															
t ≤ 12.5		0.24 Max	t ≤ 12.5															
A516 Gr.70	12.5 < t ≤ 50	0.28 Max	0.85-1.20	0.15-0.40	0.035 Max	0.035 Max	-	-	-	-	-	-	-	12.5<t≤50	485-620	260	GL200m=17 GL50m=21	
	50 < t ≤ 100	0.30 Max												50<t≤100				
	100 < t ≤ 200	0.31 Max												100<t≤200				
	200 < t	0.31 Max												200 < t				

Steel Plates for Shipbuilding and Hull Structural

ABS	Gr.A	t ≤ 12.5	0.23 Max	-	0.50 Max	0.035 Max	0.035 Max	-	-	-	-	-	-	-	-	-	-	t ≤ 12.5	400-520	235	22	
		12.5 < t		C x 2.5 Min														12.5 < t				
	Gr.B	t ≤ 100	0.21 Max	0.80-1.10	0.35 Max	0.035 Max	0.035 Max	-	-	-	-	-	-	-	-	-	-	-	t ≤ 100	400-520	235	22
		Gr.D	t ≤ 25	0.21 Max	0.60-1.35	0.10-0.35	0.035 Max	0.035 Max	-	-	-	-	-	-	-	-	-	-	-	t ≤ 25	400-520	235
	25 < t ≤ 100		0.70-1.35		25<t≤100																	
	AH32	-	0.18 Max	0.90-1.60	0.10-1.50	0.035 Max	0.035 Max	0.20	0.40	0.35	0.08	0.02	0.05	0.02	-	440-590	315	22	-			
	DH32																					
	EH32																					
	AH40	-	0.18 Max	0.90-1.61	0.10-1.50	0.035 Max	0.035 Max	0.20	0.40	0.35	0.08	0.02	0.05	0.02	-	490-620	355	21	-			
DH40																						
EH40																						

High Strength Low Alloy Steel for Structural Quality

ASTM	A572 Gr.42	120	0.21 Max	1.50 Max	0.40 Max	0.04 Max	0.05 Max	-	-	-	-	-	-	-	-	-	-	-	120	415	290	GL200m=20 GL50m=24
	A572 Gr.50	100	0.23 Max	1.50 Max	0.40 Max	0.04 Max	0.05 Max												100	450	345	GL200m=18 GL50m=21
	A572 Gr.60	32	0.26 Max	1.50 Max	0.40 Max	0.04 Max	0.05 Max												32	520	415	GL200m=16 GL50m=18
	A572 Gr.65	32 < t ≤ 40	0.23 Max	1.65 Max	0.40 Max	0.04 Max	0.05 Max												32<t≤40	550	450	GL200m=15 GL50m=17
		t ≤ 40	0.26 Max	1.35 Max	0.40 Max	0.04 Max	0.05 Max															
	A709 Gr.50	-	0.23 Max	1.35 Max	0.15-0.40	0.04 Max	0.05 Max												-	-	-	0.005