



STEEL



## TAEMYUNG STEEL CORPORATION TSI METAL CORPORATION

SKYPE : TAEMYUNG6370

EMAIL : SALES@TAEMYUNGSTEEL.COM/INFO@TSIMETAL.COM  
WWW.TAEMYUNGSTEEL.COM:WWW.TSIMETAL.COM

### Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine

PLATE	A36,A283-C,D,A285-C,D,A572-50,A203-C,D,A533-1,A353, A588, A516-60,70,A515-65,A387,A537,A573,SPV315,490,S355JO,S275J2, S355J2+M
PIPE	A312/304(L),316(L),410,347,410,310S, SA333-8,3,6,SA335P11,P22, API5L-X42,X46,X52,X60,X70,X80, API2H (W) , A671/A672(LSAW PIPE)
TUBE	T2, T11, T12, T22, T91, T92, A179/A192/ASTM A554-201, 202, 304, 304L, 316, 316L A269-310S, 321, S31803
	Stainless S31803,310,321,347,304,316L,410,430,420,
	Copper C7060T,C7150T,C4430T,C6870-3T, C2600T,C6872T,C1100T,C1201T,C1220T,C44300,C68700,C70600,C71500
	Alloy N10001,N10665,N10276,N06022,N06985,N08020,N04400,N05500,N06617,N06690,N07750,N08810,SB161,444
	INCOLOY NI200,MONEL400, A600,625,617,C276,800, 800HT,825

We Do, Finding, and Effort and Think and Act. (FED-Taemyung Act)

#### PLATE

- 1) STEEL PLATE : SHIPBUILDING
- 2) MACHINING AND CONSTRUCTION : SM490,A572-50, A36, A283-C, SS400
- 3) CIVIL AND PETROCHEMICAL : API2W, API2H50
- 4) PRESSURE VESSEL AND STORAGE TANK : A516-70, A285-C, SB410, SPV490
- 5) MACHINERY : S45C, SCM440
- 6) MARINE EQUIPMENT AND SHIPMARKING : A, AH32, AH36, DH32, DH36, E, EH36 (DNV, ABS, LR, BV, KR)
- 7) STAINLESS STEEL : TYPE 304/316/316L/310/321/410

#### PIPE

- 1) SEAMLESS PIPE AND WELDED PIPE : ERW, LSAW, SPIRAL PIPE, API6L GR.B/X42 ~X80
- 2) PIN TUBE AND BOILER USAGES : SMALL TUBE, A192/A1798TB, RE-DRAWN SEAMLESS TUBE.
- 3) STAINLESS STEEL PIPE AND TUBE :A269 / A213TP304/316/316L/310/410 ETC.
- 4) ALLOY \*(NICKEL +MOLY) : A335



T- Activity
Roles of Taemyung : Bridge of Purchasing Introduction, Prompt delivery, Reasonable Price,
Good Service , Good Information, Good Channel

ALUMINIUM,
<ul style="list-style-type: none"> <li>• 1xxx Series : 1050   1060   1070   1100    1A99 1235 </li> <li>• 3xxx Series : 3105   3003   3A21   3004    3005 </li> <li>• 5xxx Series : 5251   5052   5754   5182    5083 5055 </li> <li>• 6xxx Series : 6061   6063   6A02</li> <li>• 4xxx Series : 4343   4004   4104</li> <li>• 7xxx Series : 7072</li> <li>• 8xxx Series : 8011   8021   8079</li> </ul>

#### Other Material

##### Aluminium Alloys

- 1xxx Pure Alimunium: 1100 ,1060 ,1050...  
2XXX Copper : 2618 ,2219 ,2024 ,2017 ,2014...  
3XXX Manganese: 3005 ,3004 ,3003...  
4XXX Silicon :4643 ,4343 ,4045 ,4043...  
5XXX Magnesium :5652 ,5356 ,5086 ,5083 ,5056 ,5052...  
6XXX Magnesium & Silicon: 6463 ,6082 ,6063 ,6061...  
7XXX Zinc: 7178 ,7175 ,7150 ,7075 ,7079 ,711 ,7010...  
Conditions : F, O, W, H, T

##### Copper Alloys

- Brass : C83300, C83400, C83600, C84400, C84800  
Bronze: C86100, C86500, C90300, C90700, C92600, C93700, C95200, C95600, C87900...  
Copper/Nickel: C70600, C71500, C71640...  
Copper.Beryllium: C17200, C17300...



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**Prethrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

Welding pipe and Seamless steel pipe, Stainless steel pipe, Alloy pipe.

Stainless steel Round bar, Square Tube, H-beam, Angle Bar, Inverted Angle, Bulb-plate, checkered-steel and stainless Plate.

Round bar. Special steel plate - Alloy Plate, Boiler Plate, Shipbuilding steel Plate(DNV,ABS,RINA,NK,BV,LR,KR, NK,GL) and Steel and stainless

Coil (SPHC & SPCC & GI, HR/CR).If you have deviated any material, equivalent material.



HOT ROLLED STEEL PLATE



T(mm)	WxL (ft)	3x6	4x8	4x10	4x20	5x10	5x20	5x30	6x10	6x20	6x30	8x20
	W(mm)	914	1,219	1,219	1,219	1,524	1,524	1,524	1,829	1,829	1,829	2,438
	kg/m <sup>2</sup>   L(mm)	1,829	2,438	3,048	6,096	3,048	6,096	9,144	3,048	6,096	9,144	6,096
1.6	12.56	21.0	37.3									
2	15.70	26.3	46.7									
2.3	18.05	30.2	53.7									
3	23.55	39.4	70	87.5	175	84	168					
3.5	27.47	42.0	74.7	93.3	187	109	219	328	131	263		
4	31.40	52.5	93.3	117	233	117	233	350	140	280		
4.5	35.32	59.1	105	131	262	146	292	438	175	350		
5	39.25	65.6	117	146	292	164	328	492	197	374	591	525
6	47.10	78.7	140	175	350	182	365	547	219	438	656	583
7	54.95	91.9	163	204	408	219	438	657	263	525	788	700
8	62.80	105	187	233	467	255	510	766	306	613	919	817
9	70.65	118	210	263	525	292	583	875	350	700	1,050	933
10	78.50	131	233	292	583	328	656	985	394	788	1,181	1,050
11	86.35	144	257	321	642	365	729	1,094	438	875	1,313	1,176
12	94.20	158	280	350	700	401	802	1,204	481	963	1,444	1,283
13	102.0	171	303	379	758	438	875	1,313	525	1,050	1,575	1,400
14	109.9	184	327	408	817	474	948	1,422	569	1,137	1,705	1,516
15	117.8	197	350	438	875	510	1,021	1,532	613	1,225	1,838	1,633
16	125.6	210	373	467	933	547	1,094	1,642	657	1,313	1,970	1,751
17	133.4	223	396	496	991	583	1,167	1,751	700	1,400	2,100	1,866
18	141.3	236	420	525	1,050	620	1,239	1,860	744	1,487	2,230	1,982
19	149.2	249	443	554	1,109	656	1,313	1,970	788	1,575	2,363	2,100
20	157.0	263	467	583	1,167	693	1,386	2,080	832	1,664	2,495	2,217
21	164.8	276	490	612	1,225	729	1,459	2,189	875	1,751	2,625	2,333
22	172.7	289	513	642	1,283	765	1,531	2,297	919	1,838	2,755	2,499
23	180.6	302	537	671	1,342	802	1,604	2,407	963	1,926	2,888	2,566
24	188.4	315	560	700	1,400	839	1,678	2,518	1,007	2,014	3,020	2,684
25	196.2	328	583	729	1,458	875	1,750	2,626	1,050	2,101	3,150	2,800
26	204.1	341	607	758	1,517	911	1,823	2,735	1,094	2,188	3,280	2,916
27	212.0	354	630	788	1,575	948	1,896	2,845	1,138	2,276	3,413	3,033
28	219.8	368	653	817	1,633	985	1,969	2,955	1,182	2,364	3,545	3,150
29	227.6	381	676	846	1,691	1,021	2,042	3,064	1,225	2,451	3,675	3,266
30	235.5	394	700	875	1,750	1,057	2,114	3,173	1,269	2,538	3,807	3,382
31	243.4	407	723	904	1,809	1,094	2,188	3,283	1,313	2,626	3,938	3,500
32	251.2	420	747	933	1,867	1,131	2,261	3,393	1,357	2,714	4,070	3,617
33	259.0	433	770	962	1,925	1,167	2,334	3,502	1,400	2,801	4,200	3,733
34	266.9	446	793	991	1,983	1,203	2,406	3,610	1,444	2,888	4,332	3,849
						1,240	2,480	3,721	1,488	2,976	4,463	3,966



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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

35	274.8	459	817	1,021	2,042	1,276	2,553	3,831	1,532	3,064	4,595	4,084
36	282.6	473	840	1,050	2,100	1,313	2,625	3,939	1,575	3,151	4,725	4,199
37	290.4	486	863	1,079	2,158	1,349	2,698	4,048	1,619	3,239	4,855	4,315
38	298.3	499	887	1,108	2,217	1,386	2,771	4,158	1,663	3,326	4,988	4,433
39	306.2	521	910	1,138	2,275	1,422	2,845	4,268	1,707	3,414	5,120	4,550
40	314.0	525	933	1,167	2,333	1,459	2,917	4,377	1,751	3,501	5,250	4,666
41	321.8	538	956	1,196	2,391	1,495	2,990	4,486	1,794	3,588	5,380	4,782
42	329.7	551	980	1,225	2,450	1,531	3,063	4,596	1,838	3,676	5,513	4,899
43	337.6	564	1,003	1,255	2,509	1,568	3,136	4,706	1,882	3,764	5,645	5,017
44	315.4	578	1,027	1,284	2,567	1,604	3,209	4,815	1,926	3,851	5,775	5,133
45	353.2	591	1,050	1,312	2,625	1,641	3,281	4,924	1,969	3,938	5,906	5,249
46	361.1	604	1,073	1,342	2,683	1,677	3,355	5,034	2,013	4,026	6,038	5,366
47	639.0	617	1,097	1,371	2,742	1,714	3,428	5,144	2,057	4,114	6,170	5,483



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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

48	376.8	630	1,120	1,400	2,800	1,750	2,500	5,253	2,101	4,201	6,300	5,599
49	384.6	643	1,143	1,429	2,858	1,786	3,573	5,361	2,144	4,288	6,431	5,715

T(mm)	WxL (ft)	10x20	10x30	10x40	11x20	11x30	11x40	12x20	12x30	12x40	13x20	13x30
	W(mm)	3,048	3,048	3,048	3,353	3,353	3,353	3,658	3,658	3,658	3,962	3,962
	kg/m <sup>2</sup>   L(mm)	6,096	9,144	12,192	6,096	9,144	12,192	6,096	9,144	12,192	6,096	9,144
1.6	12.56											
2	15.70											
2.3	18.05											
3	23.55											
3.5	27.47											
4	31.40											
4.5	35.32	656	984									
5	39.25	729	1,094									
6	47.10	875	1,313	1,750	963	1,444	1,925	1,050	1,575	2,101	1,137	1,706
7	54.95	1,021	1,531	2,042	1,123	1,685	2,246	1,225	1,838	2,451	1,327	1,991
8	62.80	1,166	1,750	2,334	1,284	1,925	2,567	1,400	2,101	2,801	1,517	2,275
9	70.65	1,313	1,969	2,625	1,444	2,166	2,888	1,575	2,363	3,151	1,706	2,560
10	78.50	1,459	2,188	2,917	1,605	2,407	3,209	1,751	2,626	3,501	1,896	2,844
11	86.35	1,604	2,407	3,209	1,765	2,647	3,530	1,926	2,888	3,851	2,085	3,128
12	94.20	1,750	2,625	3,500	1,925	2,888	3,851	2,101	3,151	4,201	2,275	3,413
13	102.0	1,895	2,843	3,790	2,085	3,127	4,170	2,275	3,412	4,549	2,463	3,695
14	109.9	2,042	3,063	4,084	2,246	3,370	4,493	2,451	3,676	4,902	2,654	3,982
15	117.8	2,189	3,283	4,377	2,408	3,612	4,816	2,627	3,940	5,254	2,845	4,268
16	125.6	2,334	3,500	4,667	2,567	3,851	5,135	2,801	4,201	5,602	3,033	4,550
17	133.4	2,479	3,718	4,957	2,727	4,090	5,453	2,975	4,462	5,950	3,222	4,833
18	141.3	2,625	3,938	5,251	2,888	4,332	5,776	3,151	4,726	6,302	3,412	5,119
19	149.2	2,772	4,258	5,544	3,050	4,574	6,099	3,327	4,991	6,654	3,603	5,406
20	157.0	2,917	4,376	5,834	3,209	4,814	6,418	3,501	5,252	7,002	3,792	5,688
21	164.8	3,062	4,593	6,124	3,369	5,053	6,737	3,675	5,513	7,350	3,980	5,971
22	172.7	3,209	4,813	6,418	3,530	5,295	7,060	3,851	5,777	7,702	4,171	6,257
23	180.6	3,356	5,033	6,711	3,691	5,537	7,383	4,027	6,041	8,055	4,361	6,543
24	188.4	3,500	5,251	7,001	3,851	5,776	7,702	4,201	6,302	8,403	4,550	6,826
25	196.2	3,645	5,468	7,291	4,010	6,015	8,021	4,375	6,563	8,751	4,738	7,108
26	204.1	3,792	5,688	7,584	4,172	6,258	8,344	4,551	6,827	9,103	4,929	7,395
27	212.0	3,939	5,908	7,878	4,333	6,500	8,667	4,728	7,091	9,455	5,120	7,681
28	219.8	4,084	6,126	8,168	4,493	6,739	8,985	4,902	7,352	9,803	5,308	7,963
29	227.6	4,229	6,343	8,458	4,652	6,978	9,304	5,075	7,613	10,151	5,491	8,246
30	235.5	4,376	6,563	8,751	4,814	7,220	9,627	5,252	7,877	10,503	5,687	8,532
31	243.4	4,522	6,784	9,045	4,975	7,463	9,950	5,428	8,142	10,856	5,878	8,818
32	251.2	4,667	7,001	9,335	5,135	7,702	10,269	5,602	8,403	11,204	6,066	9,101
33	259.0	4,812	7,221	9,624	5,294	7,941	10,588	5,776	8,664	11,551	6,255	9,384
34	266.9	4,959	7,439	9,918	5,455	8,183	10,911	5,952	8,928	11,904	6,446	9,670
35	274.8	5,106	7,659	10,212	5,617	8,425	11,234	6,128	9,192	12,256	6,636	9,956
36	282.6	5,251	7,876	10,501	5,776	8,665	11,553	6,305	9,453	12,604	6,825	10,239
37	290.4	5,396	8,093	10,791	5,936	8,904	11,872	6,476	9,714	12,952	7,013	10,521
38	298.3	5,542	8,314	11,085	6,097	9,146	12,195	6,652	9,978	13,304	7,204	10,807
39	306.2	5,689	8,534	11,378	6,259	9,388	12,517	6,828	10,242	13,657	7,395	11,094
40	314.0	5,834	8,751	11,668	6,418	9,627	12,836	7,002	10,503	14,004	7,583	11,376
41	321.8	5,979	8,969	11,958	6,578	9,866	13,155	7,176	10,764	14,352	7,771	11,659
42	329.7	6,126	9,189	12,252	6,739	10,109	13,478	7,352	11,028	14,705	7,962	11,945
43	337.6	6,273	9,409	12,545	6,901	10,351	13,801	7,528	11,293	15,057	8,153	12,231
44	315.4	6,418	9,626	12,835	7,060	10,590	14,130	7,702	11,554	15,405	8,341	12,514
45	353.2	6,562	9,844	13,125	7,219	10,829	14,439	7,876	11,815	15,753	8,530	12,796
46	361.1	6,709	10,064	13,418	7,381	11,071	14,762	8,053	12,079	16,105	8,721	13,083
47	639.0	6,956	10,284	13,712	7,542	11,314	15,085	8,229	12,343	16,457	8,911	13,369
48	376.8	7,001	10,501	14,002	7,702	11,553	15,404	8,403	12,604	16,805	9,100	13,651
49	384.6	7,146	10,719	14,292	7,861	11,792	15,722	8,577	12,865	17,153	9,288	13,934



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T(mm)	WxL (ft)	3x6	4x8	4x10	4x20	5x10	5x20	5x30	6x10	6x20	6x30	8x20
	W(mm)	914	1,219	1,219	1,219	1,524	1,524	1,524	1,829	1,829	1,829	2,438
	kg/m <sup>2</sup>   L(mm)	1,829	2,438	3,048	6,096	3,048	6,096	9,144	3,048	6,096	9,144	6,096
50	392.5	656	1,167	1,459	2,917	1,824	3,646	5,471	2,188	4,376	6,263	5,833
51	400.4	669	1,190	1,488	2,975	1,860	3,720	5,582	2,232	4,464	6,695	5,950
52	408.2	683	1,213	1,517	3,033	1,896	3,792	5,690	2,276	4,551	6,825	6,066
53	416.0	696	1,236	1,546	3,091	1,932	3,865	5,799	2,319	4,638	6,956	6,182
54	423.9	709	1,260	1,575	3,150	1,969	3,938	5,909	2,363	4,726	7,088	6,299
55	431.8	722	1,283	1,606	3,209	2,006	4,011	6,019	2,407	4,815	7,220	6,417
56	439.6	735	1,306	1,634	3,267	2,042	4,084	6,128	2,451	4,902	7,350	6,532
57	447.4	748	1,330	1,663	3,325	2,078	4,156	6,237	2,494	4,989	7,481	6,648
58	455.3	761	1,353	1,692	3,383	2,115	4,230	6,347	2,538	5,077	7,613	6,766
59	463.2	771	1,377	1,721	3,442	2,152	4,303	6,457	2,582	5,165	7,745	6,883
60	471.0	788	1,400	1,750	3,500	2,188	4,376	6,566	2,626	5,252	7,875	6,999
61	478.8	801	1,423	1,779	3,558	2,224	4,448	6,674	2,669	5,339	8,006	7,115
62	486.7	814	1,446	1,809	3,617	2,261	4,521	6,785	2,713	5,427	8,138	7,232
63	494.6	827	1,470	1,838	3,675	2,297	4,595	6,895	2,757	5,515	8,170	7,350
64	502.4	840	1,493	1,867	3,733	2,334	4,667	7,003	2,801	5,602	8,400	7,466
65	510.2	853	1,516	1,896	3,791	2,370	4,740	7,112	2,844	5,689	8,531	7,582
66	518.1	856	1,540	1,925	3,850	2,407	4,813	7,222	2,888	5,777	8,663	7,699
67	526.0	879	1,563	1,955	3,909	2,443	4,887	7,332	2,932	5,865	8,795	7,816
68	533.8	892	1,586	1,984	3,967	2,480	4,959	7,441	2,946	5,952	8,925	7,932
69	541.6	906	1,610	2,013	4,025	2,516	5,032	7,550	3,019	6,039	9,056	8,048
70	549.5	919	1,633	2,042	4,083	2,552	5,105	7,660	3,063	6,127	9,188	8,166
71	557.4	932	1,657	2,071	4,142	2,589	5,178	7,770	3,108	6,215	9,320	8,283
72	565.2	945	1,680	2,100	4,200	2,625	5,251	7,879	3,151	6,302	9,450	8,399
73	573.0	958	1,703	2,129	4,258	2,662	5,323	7,986	3,194	6,389	9,581	8,515
74	580.9	971	1,726	2,159	4,317	2,698	5,397	8,098	3,239	6,477	9,713	8,632
75	588.3	984	1,750	2,188	4,375	2,735	5,470	8,208	3,283	6,565	9,845	8,750
76	596.6	998	1,773	2,212	4,433	2,771	5,542	8,317	3,326	6,652	9,975	8,865
77	604.4	1,010	1,796	2,246	4,491	2,807	5,615	8,425	3,370	6,739	10,106	8,981
78	612.3	1,024	1,820	2,275	4,550	2,844	5,688	8,535	3,414	6,827	10,238	9,099
79	620.2	1,037	1,843	2,305	4,609	2,881	5,762	8,646	3,458	6,915	10,370	9,216
80	628.0	1,050	1,866	2,333	4,667	2,917	5,834	8,754	3,501	7,002	10,500	9,332
81	635.8	1,063	1,890	2,363	4,725	2,954	5,907	8,863	3,545	7,089	10,631	9,448
82	643.7	1,076	1,913	2,392	4,783	2,990	5,980	8,973	3,589	7,177	10,763	9,566
83	651.6	1,089	1,937	2,421	4,842	3,027	6,053	9,083	3,663	7,265	10,895	9,683
84	659.4	1,103	1,960	2,450	4,900	3,063	6,126	9,192	3,676	7,352	11,025	9,499
85	667.2	1,116	1,983	2,479	4,958	3,099	6,198	9,301	3,720	7,439	11,156	9,915
86	675.1	1,129	2,006	2,509	5,017	3,136	6,272	9,411	3,764	7,527	11,288	10,032
87	683.0	1,142	2,030	2,539	5,075	3,173	6,345	9,521	3,808	7,615	11,420	10,149
88	690.8	1,155	2,053	2,567	5,133	3,209	6,418	9,630	3,851	7,702	11,550	10,265
89	698.6	1,168	2,076	2,596	5,190	3,245	6,490	9,738	3,895	7,789	11,681	10,381
90	706.5	1,181	2,100	2,625	5,250	3,282	6,563	9,849	3,939	7,877	11,813	10,499
91	714.4	1,194	2,123	2,655	5,309	3,318	6,637	9,959	3,983	7,966	11,945	10,616
92	722.2	1,208	2,146	2,684	5,367	3,355	6,709	10,067	4,026	8,053	12,075	10,732
93	730.0	1,221	2,170	2,712	5,425	3,391	6,782	10,176	4,070	8,140	12,206	10,848
94	737.9	1,234	2,193	2,742	5,483	3,428	6,855	10,283	4,114	8,228	12,338	10,965
95	745.8	1,247	2,217	2,771	5,542	3,464	6,928	10,396	4,158	8,316	14,470	11,083
96	753.6	1,260	2,240	2,800	5,600	3,500	7,001	10,505	4,201	8,406	12,600	11,198
97	761.4	1,273	2,263	2,829	5,658	3,537	7,073	10,614	4,245	8,490	12,731	11,314
98	769.3	1,286	2,286	2,859	5,717	3,573	7,147	10,724	4,289	8,578	12,863	11,432
99	777.2	1,299	2,310	2,888	5,775	3,610	7,220	10,834	4,333	8,666	12,995	11,549





STEEL



**TAEMYUNG STEEL CORPORATION  
TSI METAL CORPORATION**

SKYPE : TAEMYUNG6370

EMAIL : SALES@TAEMYUNGSTEEL.COM/INFO@TSIMETAL.COM  
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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

100	785.0	1,313	2,333	2,917	5,833	3,646	7,293	10,945	4,376	8,753	13,125	11,665
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T(mm)	WxL (ft)	10x20	10x30	10x40	11x20	11x30	11x40	12x20	12x30	12x40	13x20	13x30
	W(mm)	3,048	3,048	3,048	3,353	3,353	3,353	3,658	3,658	3,658	3,962	3,962
	kg/m <sup>2</sup>   L(mm)	6,096	9,144	12,192	6,096	9,144	12,192	6,096	9,144	12,192	6,096	9,144
50	392.5	7,293	10,939	14,585	8,023	12,034	16,045	8,753	13,129	17,506	9,479	14,220
51	400.4	7,439	11,159	14,879	8,184	12,276	16,368	8,929	13,393	17,858	9,670	14,506
52	408.2	7,584	11,377	15,169	8,344	12,515	16,687	9,103	13,654	18,206	9,858	14,789
53	416.0	7,729	11,594	15,459	8,503	12,755	17,006	9,277	13,915	18,554	10,046	15,072
54	423.9	7,876	11,814	15,752	8,665	12,997	17,329	9,453	14,179	18,906	10,237	15,358
55	431.8	8,023	12,034	16,046	8,826	13,239	17,652	9,629	14,444	19,258	10,428	15,644
56	439.6	8,168	12,252	16,336	8,985	13,478	17,971	9,803	14,705	19,606	10,616	15,927
57	447.4	8,313	12,469	16,625	9,145	13,717	18,290	9,977	14,966	19,954	10,805	16,209
58	455.3	8,459	12,689	16,919	9,306	13,959	18,613	10,153	15,230	20,306	10,995	16,496
59	463.2	8,606	12,909	17,213	9,468	14,202	18,936	10,329	15,494	20,659	11,186	16,782
60	471.0	8,751	13,127	17,502	9,627	14,441	19,254	10,503	15,755	21,007	11,375	17,064
61	478.8	8,896	13,344	17,792	9,787	14,680	19,573	10,677	16,016	21,354	11,563	17,347
62	486.7	9,043	13,564	18,036	9,948	14,922	19,896	10,853	16,280	21,707	11,754	17,633
63	494.6	9,190	13,785	18,379	10,110	15,164	20,219	11,030	16,544	22,059	11,945	17,919
64	502.4	9,335	14,002	18,669	10,269	15,404	20,538	11,204	16,805	22,407	12,153	18,202
65	510.2	9,480	14,219	18,959	10,428	15,643	20,857	11,377	17,066	22,755	12,321	18,485
66	518.1	9,626	14,439	19,253	10,590	15,885	21,180	11,554	17,330	23,107	12,512	18,771
67	526.0	9,773	14,660	19,546	10,751	16,127	21,503	11,730	17,595	23,460	12,703	19,057
68	533.8	9,918	14,877	19,836	10,911	16,366	21,822	11,904	17,856	23,807	12,891	19,340
69	541.6	10,063	15,094	20,126	11,070	16,605	22,141	12,078	18,117	24,155	13,080	19,622
70	549.5	10,210	15,315	20,419	11,232	16,848	22,464	12,254	18,381	24,508	13,270	19,908
71	557.4	10,356	15,535	20,713	11,393	17,090	22,787	12,430	18,645	24,860	13,461	20,195
72	565.2	10,501	15,752	21,003	11,553	17,329	23,105	12,604	18,906	25,208	13,650	20,477
73	573.0	10,646	15,970	21,293	11,712	17,568	23,424	12,778	19,167	25,556	13,838	20,760
74	580.9	10,793	16,190	21,586	11,874	17,810	23,747	12,954	19,431	25,908	14,029	21,046
75	588.3	10,940	16,410	21,880	12,035	18,053	24,070	13,130	19,695	26,260	14,220	21,332
76	596.6	11,085	16,627	22,170	12,195	18,292	24,389	13,304	19,956	26,608	14,408	21,615
77	604.4	11,230	16,845	22,460	12,354	18,531	24,708	13,478	20,217	26,956	14,596	21,897
78	612.3	11,377	17,065	22,753	12,515	18,773	25,031	13,654	20,481	27,309	14,787	22,184
79	620.2	11,523	17,285	23,047	12,677	19,015	25,350	13,828	20,746	27,661	14,978	22,470
80	628.0	11,668	17,502	23,336	12,836	19,254	25,673	14,004	21,007	28,009	15,168	22,752
81	635.8	11,813	17,720	23,626	12,996	19,494	25,992	14,173	21,268	28,357	15,355	23,035
82	643.7	11,960	17,940	23,920	13,157	19,736	26,314	14,355	21,532	28,709	15,545	23,321
83	651.6	12,107	18,160	24,213	13,319	19,978	26,637	14,531	21,796	29,061	15,736	23,607
84	659.4	12,252	18,377	24,503	13,478	20,217	26,958	14,705	22,057	29,409	15,925	23,890
85	667.2	12,397	18,595	24,793	13,638	20,456	27,275	14,879	22,318	29,757	16,113	24,173
86	675.1	12,543	18,815	25,087	13,799	20,699	27,598	15,055	22,582	30,109	16,304	24,459
87	683.0	12,690	19,035	25,380	13,961	20,941	27,921	15,231	22,846	30,462	16,494	24,745
88	690.8	12,835	19,253	25,670	14,120	21,180	28,240	15,405	23,107	30,810	16,683	25,028
89	698.6	12,980	19,470	25,960	14,279	21,419	28,559	15,579	23,368	31,158	16,871	25,310
90	706.5	13,127	19,690	26,254	14,441	21,661	28,882	15,755	23,632	31,510	17,062	25,596
91	714.4	13,274	19,910	26,547	14,602	21,904	29,205	15,931	23,897	31,862	17,253	25,883
92	722.2	13,418	20,128	26,837	14,762	22,143	29,524	16,105	24,158	32,210	17,441	26,165
93	730.0	13,563	20,345	27,127	14,921	22,382	29,842	16,279	24,419	32,558	17,630	26,448
94	737.9	13,710	20,565	27,420	15,083	22,624	30,165	16,455	24,683	32,910	17,820	26,734
95	745.8	13,857	20,785	27,714	15,244	22,866	30,488	16,631	24,947	33,263	18,011	27,020
96	753.6	14,002	21,003	28,004	15,405	23,105	30,807	16,805	25,208	33,611	18,199	27,303
97	761.4	14,147	21,220	28,294	15,563	23,345	31,126	16,979	25,469	33,958	18,388	27,586
98	769.3	14,294	21,440	28,587	15,734	23,587	31,449	17,155	25,733	34,311	18,579	27,872
99	777.2	14,440	21,661	28,881	15,886	23,829	31,772	17,332	25,997	34,663	18,769	28,158
100	785.0	14,585	21,878	29,171	16,045	24,068	32,091	17,506	26,258	35,011	18,958	27,441



STEEL



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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

Designation	Chemical Composition (WT%)				
	C	Si	Mn	P	S
SPHC	≤0.15	-	≤0.60	≤0.050	≤0.050
SPHD	≤0.10	-	≤0.50	≤0.040	≤0.040
SPHE	≤0.10	-	≤0.50	≤0.030	≤0.035
SS300	-	-	-	≤0.050	≤0.050
SS400	≤0.30	-	≤0.60	≤0.050	≤0.050
SS490	-	-	-	≤0.050	≤0.050
SS540	-	-	-	≤0.040	≤0.040
SM400A	≤0.23	-	-	-	-
SM400B	≤0.20	≤0.35	≤1.40	≤0.035	≤0.035
SM400C	≤0.18	-	-	-	-
SM490A	≤0.20	-	-	-	-
SM490B	≤0.18	≤0.55	≤0.16	≤0.035	≤0.035
SM490C	≤0.18	-	-	-	-
SM490YA	≤0.20	-	-	-	-
AM490YB	≤0.20	≤0.55	≤0.16	≤0.035	≤0.035
SPA-H	≤0.12	0.25~0.75	0.20~0.50	0.070~0.150	≤0.040
SPHT1	≤0.10	-	≤0.50	-	-
SPHT2	≤0.18	-	≤0.60	-	-
SPHT3	≤0.25	≤0.35	0.30~0.90	≤0.040	≤0.040
SPHT4	≤0.30	-	0.30~1.00	-	-
STKT540	≤0.23	≤0.55	≤0.15	≤0.040	≤0.040
STKT590	≤0.12	≤0.40	≤2.00	≤0.030	≤0.030
STK290	-	-	-	-	-
STK400	≤0.25	-	-	≤0.040	≤0.040
STK490	≤0.18	≤0.55	≤1.50	-	-
STK540	≤0.23	≤0.55	≤2.00	-	-
STKM11A	≤0.12	-	≤0.60	-	-
STKM12A	≤0.20	-	≤0.60	-	-
STKM13A	≤0.25	≤0.35	0.30~1.00	≤0.040	≤0.040
STKM13B	≤0.25	-	0.30~1.00	-	-

Designation	Chemical Composition (WT%)				
	C	Si	Mn	P	S
API J55	-	-	-	≤0.030	≤0.030
STB340	≤0.18	-	0.30~0.60	-	-
STB410	≤0.32	≤0.35	0.30~0.80	≤0.030	-
STB510	≤0.25	-	1.00~1.50	-	-
API X42	≤0.29	-	≤1.25	≤0.030	≤0.030
API X46	≤0.31	-	≤1.35	≤0.030	≤0.030
API X 56	≤0.31	-	≤1.35	≤0.030	≤0.030
API X 52	≤0.26	-	≤1.35	≤0.030	≤0.030
API X 60	≤0.26	-	≤1.35	≤0.030	≤0.030
API X 65	≤0.26	-	≤1.40	≤0.030	≤0.030
SAE 1040	0.36~0.44	-	0.60~0.90	-	-
SAE 1045	0.42~0.50	-	0.60~0.90	-	-
SAE 1008	≤0.10	-	≤0.50	-	-
SAPH310	-	-	-	≤0.040	≤0.040
SAPH370	-	-	-	-	-
SAPH400	-	-	-	-	-
SAPH440	-	-	-	-	-
S10C	0.08~0.13	-	0.30~0.60	-	-
S12C	0.10~0.15	0.15~0.35	0.30~0.60	≤0.030	≤0.035
S40C	0.37~0.43	-	0.60~0.90	-	-
S45C	0.42~0.48	-	0.60~0.90	-	-
SG255	-	-	≤0.20	-	-
SG295	-	≤0.35	≤1.00	-	-
SG325	≤0.20	≤0.55	≤1.50	≤0.040	≤0.040
SG365	-	≤0.55	≤1.50	-	-



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Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine





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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

Designation	Mpa Tensile strength	Elongation						blending test		
		<1.6	1.6~2.0	2.0~2.5	2.5~3.2	3.2~4.0	≥4.0	bending angle	Inside radius	
SPHC	≥270	≥27	≥29	≥29	≥29	≥31	≥31	180°	Flat on itself	T x 0.5
SPHD	≥270	≥30	≥32	≥33	≥35	≥37	≥39	-	-	-
SPHE	≥270	≥31	≥33	≥35	≥37	≥39	≥41	-	-	-

Designation	Mpa Tensile strength	Elongation		blending test	
		≤5.0	5.0~16.0	bending angle	Inside radius
SS330	330~430	≥26	≥21	180°	T x 0.5
SS400	400~510	≥21	≥17	180°	T x 1.5
SS490	490~610	≥19	≥16	180°	T x 2.0
SS540	≥540	≥15	≥13	180°	T x 2.0
SM400A	400~510	≥23	≥18	180°	-
SM400B	400~510			180°	
SM400C	400~510			180°	
SM490A	490~610	≥22	≥17	180°	-
SM490B	490~610			180°	
SM490C	490~610			180°	
SM490YA	490~610	≥19	≥115	180°	-
SM490YB	490~610			180°	

Designation	Mpa Tensile strength	Elongation				blending test bending angle	Inside radius	
		<1.6	1.6~3.0	3.0~6.0	6.0~13.0		≤3.0	>6.0
SPTH1	≥270	≥30	≥32	≥35	≥37	180°	Flat on itself	T x 0.5
SPTH2	≥340	≥25	≥27	≥30	≥32	180°	T x 1.0	T x 1.5
SPTH3	≥410	≥20	≥22	≥25	≥27	180°	T x 1.5	T x 2.0
SPTH4	≥490	≥15	≥18	≥20	≥22	180°	T x 1.5	T x 2.0



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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

Designation	Mpa Tensile strength	Elongation		blending test		
		≤6.0	>6.0	bending angle	Inside radius	
		≥22	≥15		<6.0	>6.0
SPA-H	≥490	≥22	≥15	180°	T x 0.5	T x 1.5

Designation	Mpa Tensile strength	Elongation						blending test		
		1.6~2.0	2.0~2.5	2.5~3.15	3.15~4.0	4.0~6.3	≥6.3	bending angle	Inside radius	
		≥33	≥34	≥36	≥38	≥40	≥26		<2.0	≥2.0
SAPH310	≥310	≥33	≥34	≥36	≥38	≥40	≥26	180°	Flat on itself	T x 1.0
SAPH370	≥370	≥32	≥33	≥35	≥36	≥37	≥25	180°	T x 0.5	T x 1.0
SAPH400	≥400	≥31	≥31	≥34	≥35	≥36	≥24	180°	T x 1.0	T x 1.0
SAPA440	≥440	≥29	≥30	≥32	≥33	≥34	≥22	180°	T x 1.0	T x 1.5

Designation	Chemical Composition (WT%)				
	C	Si	Mn	P	S
SPHC	≤0.15	-	≤0.60	≤0.050	≤0.050
SPHD	≤0.10	-	≤0.50	≤0.040	≤0.040
SPHE	≤0.10	-	≤0.50	≤0.030	≤0.035
SS300	-	-	-	≤0.050	≤0.050
SS400	≤0.30	-	≤0.60	≤0.050	≤0.050
SS490	-	-	-	≤0.050	≤0.050
SS540	-	-	-	≤0.040	≤0.040
SM400A	≤0.23	≤0.35	≤1.40	≤0.035	≤0.035
SM400B	≤0.20	≤0.35	≤1.40	≤0.035	≤0.035
SM400C	≤0.18	≤0.35	≤1.40	≤0.035	≤0.035
SM490A	≤0.20	≤0.55	≤0.16	≤0.035	≤0.035
SM490B	≤0.18	≤0.55	≤0.16	≤0.035	≤0.035
SM490C	≤0.18	≤0.55	≤0.16	≤0.035	≤0.035
SM490YA	≤0.20	≤0.55	≤0.16	≤0.035	≤0.035
AM490YB	≤0.20	≤0.55	≤0.16	≤0.035	≤0.035
SPA-H	≤0.12	0.25~0.75	0.20~0.50	0.070~0.150	≤0.040
SPHT1	≤0.10	≤0.35	≤0.50	≤0.040	≤0.040
SPHT2	≤0.18	≤0.35	≤0.60	≤0.040	≤0.040
SPHT3	≤0.25	≤0.35	0.30~0.90	≤0.040	≤0.040
SPHT4	≤0.30	≤0.35	0.30~1.00	≤0.040	≤0.040
STKT540	≤0.23	≤0.55	≤0.15	≤0.040	≤0.040
STKT590	≤0.12	≤0.40	≤2.00	≤0.030	≤0.030
STK290	-	-	-	-	-
STK400	≤0.25	-	-	≤0.040	≤0.040
STK490	≤0.18	≤0.55	≤1.50	≤0.040	≤0.040
STK540	≤0.23	≤0.55	≤2.00	≤0.040	≤0.040
STKM11A	≤0.12	≤0.35	≤0.60	≤0.040	≤0.040
STKM12A	≤0.20	≤0.35	≤0.60	≤0.040	≤0.040
STKM13A	≤0.25	≤0.35	0.30~1.00	≤0.040	≤0.040
STKM13B	≤0.25	≤0.35	0.30~1.00	≤0.040	≤0.040



STEEL



**TAEMYUNG STEEL CORPORATION  
TSI METAL CORPORATION**

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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

Designation	Chemical Composition (WT%)				
	C	Si	Mn	P	S
API J55	-	-	-	≤0.030	≤0.030
STB340	≤0.18	-	0.30~0.60	-	-
STB410	≤0.32	≤0.35	0.30~0.80	≤0.030	-
STB510	≤0.25	-	1.00~1.50	-	-
API X42	≤0.29	-	≤1.25	≤0.030	≤0.030
API X46	≤0.31	-	≤1.35	≤0.030	≤0.030
API X 56	≤0.31	-	≤1.35	≤0.030	≤0.030
API X 52	≤0.26	-	≤1.35	≤0.030	≤0.030
API X 60	≤0.26	-	≤1.35	≤0.030	≤0.030
API X 65	≤0.26	-	≤1.40	≤0.030	≤0.030
SAE 1040	0.36~0.44	-	0.60~0.90	-	-
SAE 1045	0.42~0.50	-	0.60~0.90	-	-
SAE 1008	≤0.10	-	≤0.50	-	-
SAPH310	-	-	-	≤0.040	≤0.040
SAPH370	-	-	-	-	-
SAPH400	-	-	-	-	-
SAPH440	-	-	-	-	-
S10C	0.08~0.13	-	0.30~0.60	-	-
S12C	0.10~0.15	0.15~0.35	0.30~0.60	≤0.030	≤0.035
S40C	0.37~0.43	-	0.60~0.90	-	-
S45C	0.42~0.48	-	0.60~0.90	-	-
SG255	-	-	≤0.20	-	-
SG295	-	≤0.35	≤1.00	-	-
SG325	≤0.20	≤0.55	≤1.50	≤0.040	≤0.040
SG365	-	≤0.55	≤1.50	-	-

1) Shipbuilding and Marine Application Steel Plate

This Plate is using to build Shipbuilding and Marine (Vehicle of Ship) and Class Institution is having Insurance Quarantee.

"H" means High Tense and Grade A is normal material and AH and DH and EH and E grade is TMCP.

KR	KA,KB,KD,KE,KA32,KD32,KA36, KA40,KD40, KE40,KL24A, KL24B,KL33,KL37
NK	NV-A,NV-B,NV-C,NV-D, NV-A27, NV-D27, NV-E27,NV-A32, NV-D32, NV-E32,NV-AH36, NV-DH36, NV-E36,NV-A40, NV-D40,NV-E40
CR	CR-A,CR-B,CR-C,CR-D,CR-A32, CR-D32, CR-D32, CR-AH36, CR-DH36,CR-E36, CR-AH40, CR-DH40,CR-E40
BV	BV-A,BV-B,BV-C,BV-D, BV-A32,BV-D32, BV-E32, BV-A36, BV-D36, BV-E36, BV-A40,BV-D40,BV-E40
RINA	RINA-A,RINA-B,RINA-C,RINA-D,RINA-A24,RINA-D27, RINA-E27, RINA-A32, RINA-D32, RINA-E32,RINA-AH36,RINA-D36,RINA-E36,RINA-A40,RINA-D40,RINA-E40
LR	LR-AH32,LR-DH32,LR-EH32,LR-AH34,LR-DH34,LR-AH36,LR-DH36,LR-EH36,LR-AH40,LR-DH40,LR-EH40,LR-LT60-360,LR-LT60-410
GL	GL-AH32,GL-DH32, GL-E32, GL-AH36, GL-DH36,GL-AH40,GL-DH40, GL-E40, GL-490T, GL-500T.

2) Automobile Structural Application Steel Plate

SAPH 310,SAPH 370,SAPH 400,SAPH 440

3) General Structural Material Application is Offshore and Bridge and that Material can weldable

and can be used in all industrial Area.

ASTM	A283Gr.A/B/C.A36	A284Gr.A/B/C/D	A572Gr.42/50/60/65	A633Gr.A/B/C/D/E	A678Gr.B/C	A514 Gr.B/F	A573 Gr.58/65/70
JIS	SS330/400/490	SM400A/B/C	SM490A/B/C	SM490YA/YB	SM520B/C, SM520	SHY685N/NS	
BS	BS4360 Gr.40B/C/D/E	BS Gr.43A/B/C/D/E	BS Gr.50A/B/C/D/E	BS Gr.55 C/E/F			



STEEL

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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

4) Atmospheric Corrosion Resistant Steel (Climate / Weather and Corrosion Resistance Steel) added that Cu, CR, Ni for General Element Composition .

ASTM	A588-GR.A /B/C/D/E/F
JIS	SMA400/490/570

5) MACHINERY ABRASION RESISTANCE STEEL PLATE.

ASTM	S10C/S45C/S58C	SCM415~430
JIS	POSMOLD 1/2	

6) GAS, LPG TANK , PETROCHEMICAL , STORAGE TANK, POWER ENERGY, WIND POWER STEEL PLATE.

ASTM	A283 Gr.A/B/C	A516 Gr.55/60/65/70	A537CLASS1/2	A387 Gr.11/12/22	A202 Gr.A/B	A533Type A Class 1/2/3
JIS	SB410/450/480	SGV410/450/480	SPV235/315/450/490	SB450M/480M/SBV1		
DIN	DIN17155HI/HII/HIII/HIV	17Mn4/19Mn5	TTST41/TTST45	15Mo3/16Mo5		
BS	BS1501-240 1/4Mo	BS1501-260 1/4 Mo				

7) Low Pressure Vessel Application STEEL PLATE.

ASTM	A662 Gr.A/B/C	A203 Gr.A/B/C/D/E/F			
JIS	SLA235	SLA325 Gr.A/B		SLA360	SL3N255/400



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8) MARINE & OFFSHORE / PETROCHEMICAL TRANSPORTION API STEEL PLATE

API	APISL Gr.A/B	APISL X42/52/56/60/65/70	API2H Gr.42/50	API2W Gr.50T
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ROLLED STEEL PLATES FOR GENERAL STRUCTURE								
SYMBOL	PRODUCTS	MAXIMUM THICKNESS MM	Chemical Composition (%)					
			THICKNESS MM	C	SI	MN	P	S
SS330	Steel plates	-	-	-	-	-	0.050max.	0.050max.
SS400	Steel plates	-	-	-	-	-	0.050max.	0.050max.
SS490	Steel plates	-	-	-	-	-	0.050max.	0.050max.
SS540	Steel plates	40max.	-	0.30max.	-	1.60max.	0.040max.	0.040max.

ROLLED STEEL PLATES FOR GENERAL STRUCTURE								
THICKNESS MM	YIELD POINT N/MM <sup>2</sup>	TENSIL STRENGTH N/MM <sup>2</sup>	ELONGATION			BEND TEST		
			THICKNESS MM	TEST PIECE	MINIUM	OPTION	INSIDE RADIUS	TEST PIECE
t≤16 16<t≤40 40<t	205 ↑ 195 ↑ 175 ↑	330-460	t≤5	No.5	26	180°	Half of the Thickness	No.1
			5<t≤16	No.1A	21			
			16<t≤50	No.1A	26			
			40<t	No.4	28			
t≤16 16<t≤40 40<t	245 ↑ 235 ↑ 215 ↑	400-550	t≤5	No.5	21	180°	1.5 times the Thickness	No.1
			5<t≤16	No.1A	17			
			16<t≤50	No.1A	21			
			40<t	No.4	23			
t≤16 16<t≤40 40<t	285 ↑ 275 ↑ 255 ↑	490-650	t≤5	No.5	19	180°	2.0 times the Thickness	No.1
			5<t≤16	No.1A	15			
			16<t≤50	No.1A	19			
			40<t	No.4	21			
t≤16 16<t≤40	400 ↑ 390 ↑	540min	t≤5	No.5	16	180°	2.0 times the Thickness	No.1
			5<t≤16	No.1A	13			
			16<t≤40	No.1A	17			
			t≤25	No.2	13			
25<t≤40			t≤25	No.2	13	180°	2.0 times the Thickness	No.2
			25<t≤40	No.3	17			

ROLLED STEEL PLATES FOR WELDED STRUCTURE								
SYMBOL	PRODUCTS	MAXIMUM THICKNESS (MM)	Chemical Composition (%)					
			THICKNESS (MM)	C	SI	MN	P	S
SM 400	A	200	t≤50	0.23MAX	-	2.5 X C min	0.035MAX	0.035MAX
	B		50<t≤200	0.25MAX				
	C	100	t≤100	0.18MAX	0.35MAX	1.40MAX		
SM 490	A	200	t≤50	0.20MAX	0.55MAX	1.60MAX	0.035MAX	0.035MAX
	B		50<t≤200	0.22MAX				
	C	100	t≤100	0.18MAX				





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SM	A	PLATE /SECTION / FLAT BAR	100	t≤100	0.20MAX	0.55MAX	1.60MAX	0.035MAX	0.035MAX
490Y	B	PLATE /SECTION / FLAT BAR							
SM	B	PLATE /SECTION / FLAT BAR	100	t≤100	0.20MAX	0.55MAX	1.60MAX	0.035MAX	0.035MAX
520	C	PLATE /SECTION							
SM		PLATE /SECTION	100	t≤100	0.18MAX	0.55MAX	1.60MAX	0.035MAX	0.035MAX

**ROLLED STEEL PLATES FOR GENERAL STRUCTURE**

THICKNESS MM	YIELD POINT N/MM <sup>2</sup>	TENSIL STRENGTH N/MM <sup>2</sup>	ELONGATION			BEND TEST		
			THICKNESS MM	TEST PIECE	MINIUM	TEST PIECE	TEST TEMPERATUR E	CHARPY ABSORPTION -ENERGY
t≤16	245 ↑	400-510	t≤5	No.5	23	No.4 압연방향	-	-
16<t≤40	235 ↑		5<t≤16	No.1A	18		0°C	27min
40<t≤100	215 ↑		16<t≤50	No.1A	22		0°C	47min
100<t	205 ↑		40<t	No.4	24			
t≤16	325 ↑	490-610	t≤5	No.5	22	No.4 압연방향	-	-
16<t≤40	315 ↑		5<t≤16	No.1A	17		0°C	27min
40<t≤100	295 ↑		16<t≤50	No.1A	21		0°C	47min
100<t	285 ↑		40<t	No.4	23			
t≤16	365 ↑	490-610	t≤5	No.5	19	No.4 압연방향	-	-
16<t≤40	355 ↑		5<t≤16	No.1A	15		0°C	27min
40<t≤75	335 ↑		16<t≤50	No.1A	19		0°C	47min
75<t≤100	325 ↑		40<t	No.4	21			
t≤16	365 ↑	520-640	t≤5	No.5	19	No.4 압연방향	0°C	27min
16<t≤40	355 ↑		5<t≤16	No.1A	15		0°C	47min
40<t≤75	335 ↑		16<t≤40	No.1A	19			
75<t≤100	325 ↑		40<t	No.4	21			
t≤16	460 ↑	570-720	6<t≤16	No.5	19	No.4 압연방향	-5°C	47min
16<t≤40	450 ↑		16<t	No.5	26			
40<t≤75	430 ↑							
75<t≤100	420 ↑		20<t	No.4	20			



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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

CARBON STEEL PLATES FOR MACHINE STRUCTURAL USE (KS D 3752-1986)

SYMBOL	Chemical Composition (%)				
	C	SI	MN	P(MAX)	S(MAX)
SM 10C	0.08 - 0.13	0.15 - 0.35	0.30-0.60	0.03	0.035
SM 12C	0.10 - 0.15	0.15 - 0.35	0.30-0.60	0.03	0.035
SM 15C	0.13 - 0.18	0.15 - 0.35	0.30-0.60	0.03	0.035
SM 17C	0.15 - 0.20	0.15 - 0.35	0.30-0.60	0.03	0.035
SM 20C	0.18 - 0.23	0.15 - 0.35	0.30-0.60	0.03	0.035
SM 22C	0.20 - 0.25	0.15 - 0.35	0.30-0.60	0.03	0.035
SM 25C	0.22 - 0.28	0.15 - 0.35	0.30-0.60	0.03	0.035
SM 28C	0.25 - 0.31	0.15 - 0.35	0.60 - 0.90	0.03	0.035
SM 30C	0.27 - 0.33	0.15 - 0.35	0.60 - 0.90	0.03	0.035
SM 33C	0.30 - 0.36	0.15 - 0.35	0.60 - 0.90	0.03	0.035
SM 35C	0.32 - 0.38	0.15 - 0.35	0.60 - 0.90	0.03	0.035
SM 38C	0.35 - 0.41	0.15 - 0.35	0.60 - 0.90	0.03	0.035
SM 40C	0.37 - 0.43	0.15 - 0.35	0.60 - 0.90	0.03	0.035
SM 43C	0.40 - 0.46	0.15 - 0.35	0.60 - 0.90	0.03	0.035
SM 45C	0.42 - 0.48	0.15 - 0.35	0.60 - 0.90	0.03	0.035
SM 48C	0.45 - 0.51	0.15 - 0.35	0.60 - 0.90	0.03	0.035
SM 50C	0.47 - 0.53	0.15 - 0.35	0.60 - 0.90	0.03	0.035
SM 53C	0.50 - 0.56	0.15 - 0.35	0.60 - 0.90	0.03	0.035
SM 55C	0.52 - 0.58	0.15 - 0.35	0.60 - 0.90	0.03	0.035
SM 58C	0.55 - 0.61	0.15 - 0.35	0.60 - 0.90	0.03	0.035

AVAILABLE SIZES OF STEEL PLATES

Width (mm) Thick (mm)	LENGTH : M											
	1500≤ <2000	2000≤ <2200	2200≤ <2400	2400≤ <2600	2600≤ <2800	2800≤ <3000	3000≤ <3200	3200≤ <3500	3500≤ <3600	3600≤ <3800	3800≤ <3900	3900≤ <4000
6≤T <7	15	15	15	15	15	15	15					
7≤T <8	18	18	18	18	18	18	18					
8≤T <9	18	18	18	18	18	18	18					
9≤T <10	24	24	24	24	24	24	24	24	24			
10≤T <12	24	24	24	24	24	24	24	24	24	24		
12≤T <15	25	25	25	25	25	25	25	25	25	25	25	
15≤T <20	25	25	25	25	25	25	25	25	25	25	25	25
20≤T <25	25	25	25	25	25	25	25	25	25	24	22	21
25≤T <30	25	25	25	25	25	25	23	21.5	20	19	17.5	16.5
30≤T <35	25	25	25	24	22	20.5	19	18	16.5	16	14.5	13.5
35≤T <40	25	24	22.5	20.5	19	17.5	16.5	15.5	14.12	13.5	12.5	12
40≤T <45	23.5	21.5	19.5	18	16.5	15	14	13	12	12	11	10.5
45≤T <50	21	19	17	16	14.5	13.5	12.5	12	11	10.5	9.5	9
50≤T <55	17	15.5	14.5	13.5	12.5	11.5	11	10	10	9		
55≤T <60	15.5	14.5	13	12	11.5	10.5	10	9	9	8.5		
60≤T <65	14.5	13	12	11.5	10.5	10	9.5	8.5	8.5			
65≤T <70	13.5	12.5	11.5	10.5	10	9	8.5	8	8			
70≤T <75	12.5	11.5	10.5	10	9	8.5	8	7.5				
75≤T <80	11.5	11	10	9	8.5	8	7.5	7				
80≤T <85	11	10	9.5	8.5	8	7.5	7	6.5				
85≤T <90	10.5	9.5	9	8	7.5	7	6.5	6.5				
90≤T <95	10	9	8.5	8	7.5	7	6.5	6				
95≤T <100	9.5	8.5	8	7.5	7	6.5	6	5.5				
100≤T <105	9	8	7.5	7	6.5	6	6	5.5				
105≤T <110	8.5	8	7.5	7	6.5	6	5.5	5				



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110≤T <115	8.5	7.5	7	6.5	6	5.5	5.5	5				
115≤T <120	8	7.5	6.5	6	6	5.5	5	5				

HOT ROLLED  
EQUAL ANGLE

KS D 3503, 3515/3502

Nominal Size (mm)	Standard Sectional Dimension (mm)				Sectional Area (cm <sup>2</sup> )	Unit Weight (kg/m)	Center of Gravity (cm)	Moment of Inertia (cm <sup>4</sup> )				Radius of Gyration (cm)	
	A*B	t	r1	r2				A	W	Cx=Cy	Ix=Iy	max.lu	min lv
25*25	25*25	3	4	2	1.427	1.12	0.719	0.797	1.26	0.332	0.747	0.940	
30*30	30*30	3	4	2	1.727	1.36	0.844	1.42	2.26	0.590	0.908	1.14	
40*40	40*40	3	4.5	3	2.336	1.83	1.09	3.53	5.6	1.46	1.23	1.55	
	40*40	5	4.5	3	3.755	2.95	1.17	5.42	8.59	2.25	1.20	1.51	
45*45	45*45	4	6.5	3	3.492	2.74	1.24	6.50	10.3	2.69	1.36	1.72	
	45*45	5	6.5	3	4.302	3.38	1.28	7.91	12.5	3.29	1.36	1.71	
50*50	50*50	4	6.5	3	3.892	3.06	1.37	9.06	14.4	3.76	1.53	1.92	
	50*50	5	6.5	3	4.082	3.77	1.41	11.1	17.5	4.58	1.52	1.91	
	50*50	6	6.5	4.5	5.644	4.43	1.44	12.6	20.0	5.23	1.50	1.88	
60*60	60*60	4	6.5	3	4.692	3.68	1.61	16.0	25.4	6.62	1.85	2.33	
	60*60	5	6.5	3	5.802	4.55	1.66	19.6	31.2	8.09	1.84	2.32	
	60*60	6	6.5	4.5	6.844	5.37	1.69	22.6	35.9	9.3	1.82	2.29	
65*65	65*65	5	8.5	3	6.367	5.00	1.77	25.3	40.1	10.5	1.99	2.51	
	65*65	6	8.5	4	7.527	5.91	1.81	29.4	46.6	12.2	1.98	2.49	
	65*65	8	8.5	6	9.761	7.66	1.88	36.8	58.3	15.3	1.94	2.44	
70*70	70*70	6	8.5	4	8.127	6.38	1.93	37.1	58.9	15.3	2.14	2.69	
75*75	75*75	6	8.5	4	8.727	6.85	2.06	46.1	73.2	19.0	2.30	2.90	
	75*75	9	8.5	6	12.69	9.96	2.17	64.4	102	26.7	2.25	2.84	
	75*75	12	8.5	6	16.56	13.0	2.29	81.9	129	34.5	2.22	2.79	
80*80	80*80	6	8.5	4	9.327	7.32	2.18	56.4	89.6	23.2	2.46	3.10	
	80*80	7	8.5	4	10.80	8.48	2.23	64.2	102.4	26.8	2.44	3.08	
90*90	90*90	6	10	5	10.55	8.28	2.42	80.7	128	33.4	2.77	3.48	
	90*90	7	10	5	12.22	9.59	2.46	93	148	38.3	2.76	3.48	
	90*90	8	10	7	13.76	10.8	2.50	104	165	42.8	2.74	3.46	
	90*90	9	10	7	15.39	12.1	2.54	114	182	47.3	2.72	3.44	
	90*90	10	10	7	17.0	13.3	2.57	125	199	51.7	2.71	3.42	
	90*90	13	10	7	21.71	17.0	2.69	156	248	65.3	2.68	3.38	
100*100	100*100	7	10	5	13.62	10.7	2.71	129	205	53.2	3.08	3.88	
	100*100	8	10	5	15.36	12.1	2.75	144	229	59.4	3.06	3.86	
	100*100	10	10	7	19.00	14.9	2.82	175	278	72.0	3.04	3.83	
	100*100	13	10	7	24.31	19.1	2.94	220	348	91.1	3.00	3.78	
120*120	120*120	8	12	5	18.76	14.7	3.24	258	410	106	3.71	4.67	
130*130	130*130	9	12	6	22.74	17.9	3.53	366	583	150	4.01	5.06	
	130*130	10	12	6	25.16	19.7	3.57	403	641	165	4.0	5.05	
	130*130	12	12	8.5	29.76	23.4	3.64	467	743	192	3.96	5.0	
	130*130	15	12	8.5	36.75	28.8	3.76	568	902	234	3.93	4.95	
150*150	150*150	10	14	7	29.21	22.9	4.05	627	997	258	4.63	5.84	
	150*150	12	14	7	34.77	27.3	4.14	740	1180	304	4.61	5.82	
	150*150	15	14	10	42.74	33.6	4.24	888	1410	365	4.56	5.75	
	150*150	19	14	10	53.38	41.9	4.40	1090	1730	451	4.52	5.69	
175*175	175*175	12	15	11	40.52	31.8	4.73	1170	1860	480	5.38	6.78	
	175*175	15	15	11	50.21	39.4	4.85	1440	2290	589	5.35	6.75	
200*200	200*200	15	17	12	57.75	45.3	5.46	2180	3470	891	6.14	7.75	
	200*200	20	17	12	76.00	59.7	5.67	2820	4490	1160	6.09	7.68	
	200*200	25	17	12	93.75	73.6	5.86	3420	5420	1410	6.04	7.61	
250*250	250*250	25	24	12	119.4	93.7	7.10	6950	11100	2860	7.63	9.62	
	250*250	35	24	18	162.6	128	7.45	9110	14400	3790	7.49	9.42	



STEEL



**TAEMYUNG STEEL CORPORATION  
TSI METAL CORPORATION**

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Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine

HOT ROLLED  
UNEQUAL ANGLE

Nominal Size (mm)	Standard Sectional Dimension (mm)				Sectional Area (cm <sup>2</sup> )	Unit Weight (kg/m)	Center of Gravity (cm)	
	A*B	t	r1	r2			Cx	Cy
100*75	100*75	7	10	5	11.87	9.32	3.06	1.83
	100*75	10	10	7	16.50	13.0	3.17	1.94
125*75	125*75	7	10	5	13.62	10.7	4.10	1.64
	125*75	10	10	7	19.00	14.9	4.22	1.75
	125*75	13	10	7	24.31	19.1	4.35	1.87
150*90	150*90	9	12	6	20.94	16.4	4.95	1.99
	150*90	12	12	8.5	27.36	21.5	5.07	2.01

Nominal Size	A*B	Moment of				Radius of				tan a
		Ix	Iy	max.Iu	min.Iv	ix	Iy	max.Iu	min.Iv	
100*75	100*75	118	56.9	144	30.8	3.15	2.19	3.49	1.61	0.548
	100*75	159	76.1	194	41.3	3.11	2.15	3.43	1.58	0.543
125*75	125*75	219	60.4	243	36.4	4.01	2.11	4.23	1.64	0.362
	125*75	299	80.9	330	49.0	3.96	2.06	4.17	1.61	0.357
	125*75	376	101.0	415	61.9	3.93	2.04	4.13	1.60	0.352
150*90	150*90	485	133	537	80.4	4.81	2.52	5.06	1.96	0.361
	150*90	619	167	685	102	4.76	2.47	5.00	1.93	0.357

HOT ROLLED  
INVERTED ANGLE



STEEL



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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

Nominal Size (mm)	Standard Sectional Demension (mm)					Sectional Area (cm2)	Unit Weight (kg/m)	Center of Gravity (cm)	
	A*B	t1	t2	r1	r2			Cx	Cy
200*90	200*90	10	14	14	7	29.66	24.7	6.36	2.15
250*90	250*90	10	15	17	8.5	37.47	29.4	8.61	1.92
	250*90	12	16	17	8.5	42.95	33.7	8.99	1.89
300*90	300*90	11	16	19	9.5	46.22	36.3	11.0	1.76
	300*90	13	17	19	9.5	52.67	41.3	11.3	1.75
350*100	350*100	12	17	22	11	57.74	45.3	13.0	1.87
400*100	※400*100	13	18	24	12	68.59	53.8	15.4	1.77
450*125	※450*125	11.5	18	24	12	73.11	57.4	16.2	2.29

Nominal Size (mm)	A*B	Moment of Inertia (cm4)				Radius of Gyration (cm)			
		Ix	max.Ly	min.Iu	Iv	ix	max.iy	min.iu	iv
200*90	200*90	1210	200	1290	125	6.39	2.6	6.58	2.05
250*90	250*90	2440	223	2520	147	8.08	2.44	8.20	1.98
	250*90	2790	238	2870	160	8.07	2.35	8.18	1.93
300*90	300*90	4370	245	4440	168	9.72	2.30	9.80	1.90
	300*90	4940	259	5020	181	9.68	2.22	9.76	1.85
350*100	350*100	7440	362	7550	251	11.3	2.50	11.4	2.08
400*100	※400*100	11500	388	11600	277	12.9	2.38	13.0	2.01
450*125	※450*125	15700	768	16000	525	14.7	3.24	14.8	2.68

HOT ROLLED

KS D 3503, 3515/3502

Standard Sectional Dimension (mm)					Sectional Area (cm2)	Unit Weight (kg/m)
H*B	t1	t2	r1	r2	A	W
75*40	5	7	8	4	8.818	6.92
100*50	5	7.5	8	4	11.92	9.36
125*65	6	8	8	4	17.11	13.4





STEEL



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150*75	6.5	10	10	5	23.71	18.6
150*75	9	12.5	15	7.7	30.59	24.0
180*75	7	10.5	11	5.5	27.2	21.4
200*80	7.5	11	12	6	31.33	24.6
200*90	8	13.5	14	7	38.65	30.3
250*90	9	13	14	7	44.07	34.6
250*90	11	14.5	17	8.5	51.17	40.2
300*90	9	13	14	7	48.57	38.1
300*90	10	15.5	19	9.5	55.74	43.8
300*90	12	16	19	9.5	61.90	48.6
380*100	10.5	16	18	9	69.69	54.5
380*100	13	16.5	18	9	78.96	62.0
380*100	13	20	24	12	85.71	67.3

H*B	Center of Gravity (cm)	Moment of Inertia (cm <sup>4</sup> )		Radius of Gyration (cm)		Modulus of Section (cm <sup>3</sup> )	
	Cy	Ix	Iy	ix	iy	Sx	Sy
75*40	1.28	75.3	12.2	2.92	1.17	20.1	4.47
100*50	1.54	188	26.0	3.97	1.48	37.6	7.52
125*65	1.90	424	61.8	4.98	1.90	67.8	13.4
150*75	2.28	861	117	6.03	2.22	115	22.4
150*75	2.31	1050	147	5.86	2.19	140	28.3
180*75	2.13	1380	131	7.12	2.19	153	24.3
200*80	2.21	1950	168	7.88	2.32	195	29.1
200*90	2.74	2490	277	8.02	2.68	249	44.2
250*90	2.40	4180	294	9.74	2.58	334	44.5
250*90	2.40	4680	329	9.59	2.54	374	49.9
300*90	2.22	6440	309	11.5	2.52	429	45.7
300*90	2.34	7410	360	11.5	2.54	494	54.1
300*90	2.28	7870	379	11.3	2.48	525	56.4
380*100	2.41	14500	535	14.5	2.78	763	70.5
380*100	2.33	15600	565	14.1	2.67	823	73.6
380*100	2.54	17600	655	14.3	2.76	926	87.8



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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

HOT ROLLED  
I-BEAM

KS D 3503, 3515/3502

Standard Sectional Dimension (mm)					Sectional Area (cm <sup>2</sup> )	Unit Weight (kg/m)	Center of Gravity (cm)		Moment of Inertia (cm <sup>4</sup> )		Radius of Gyration (cm)	
H*B	t1	t2	r1	r2	A	W	Cx	Cy	Ix	Iy	ix	iy
100*75	5	8	7	3.5	16.34	12.9	0	0	281	47.3	4.14	1.70
125*75	5.5	9.5	9	4.5	20.45	16.1	0	0	538	57.5	5.13	1.68
150*75	5.5	9.5	9	4.5	21.83	17.1	0	0	819	57.5	6.12	1.62
150*125	8.5	14	13	6.5	46.15	36.2	0	0	1760	385	6.18	2.89
180*100	6	10	10	5	30.06	23.6	0	0	1670	138	7.45	2.14
200*100	7	10	10	5	33.06	26.0	0	0	2170	138	8.11	2.05
200*150	9	16	15	7.5	64.16	50.4	0	0	4460	753	8.34	3.43
250*125	7.5	12.5	12	6	48.79	38.3	0	0	5180	337	10.3	2.63
250*125	10	19	21	10.5	70.73	55.5	0	0	7310	538	10.2	2.76
300*150	8	13	12	6	61.58	48.3	0	0	9480	588	12.4	3.09
300*150	10	18.5	19	9.5	83.47	65.5	0	0	12700	886	12.3	3.26
300*150	11.5	22	23	11.5	97.88	76.8	0	0	14700	1080	12.2	3.32
350*150	9	15	13	6.5	74.58	58.5	0	0	15200	702	14.3	3.07
350*150	12	24	25	12.5	111.1	87.2	0	0	22400	1180	14.2	3.26
400*150	10	18	17	8.5	91.73	72.0	0	0	24100	864	16.2	3.07
400*150	12.5	25	27	13.5	122.1	95.8	0	0	31700	1240	16.1	3.18



**STEEL**



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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

450*175	11	20	19	9.5	116.8	91.7	0	0	39200	1510	18.3	3.60
450*175	13	26	27	13.5	146.1	115	0	0	48800	2020	18.3	3.72
600*190	13	25	25	12.5	169.4	133	0	0	98400	2460	24.1	3.81

**C- CHANNEL**

Standard Sectional Dimension (mm)		Sectional Area (cm <sup>2</sup> )	Unit Weight (kg/m)	Center of Gravity (cm)		Moment of Inertia (cm <sup>4</sup> )		Radius of Gyration (cm)		Modulus of Section (cm <sup>3</sup> )	
A*B*C(mm)	T(mm)			A	W	Cx	Cy	Ix	Iy	ix	iy
60*30*10	1.6	2.072	1.63	0	1.06	11.6	2.56	2.37	1.11	3.88	1.32
60*30*10	2.0	2.537	1.99	0	1.06	24.0	3.01	2.35	1.09	4.65	1.55
60*30*10	2.3	2.872	2.25	0	1.06	15.6	3.32	2.33	1.07	5.20	1.71
75*45*15	1.6	2.952	2.32	0	1.72	27.1	8.71	3.03	1.72	7.24	3.13
75*45*15	2.0	3.637	2.86	0	1.72	33.0	10.5	3.01	1.70	8.79	3.76
75*45*15	2.3	4.137	3.25	0	1.72	37.1	11.8	3.00	1.69	9.90	4.24
90*45*20	1.6	3.352	2.63	0	1.73	42.6	10.5	3.56	1.77	9.46	3.80
90*45*20	2.0	4.137	3.25	0	1.73	50.8	11.1	3.55	1.76	11.3	4.12
90*45*20	2.3	4.712	3.70	0	1.73	58.6	14.2	3.53	1.74	13.0	5.14
90*45*20	3.2	6.367	5.00	0	1.72	76.9	18.3	3.48	1.69	17.1	6.57
90*50*20	3.2	6.687	5.25	0	1.94	82.9	23.6	3.42	1.88	18.4	7.71
100*50*20	1.6	3.672	2.88	0	1.87	58.4	14.0	3.99	1.92	11.7	4.47
100*50*20	2.0	4.537	3.56	0	1.86	71.4	16.9	3.97	1.93	14.3	5.40
100*50*20	2.3	5.172	4.06	0	1.86	80.7	19.0	3.95	1.92	16.1	6.06
100*50*20	3.2	7.007	5.50	0	1.86	107	24.5	3.90	1.87	21.3	7.81
125*50*20	2.3	5.747	4.51	0	1.69	137	20.6	4.88	1.89	21.9	6.22
125*50*20	3.2	7.807	6.13	0	1.68	181	26.6	4.82	1.85	29.0	8.02
125*50*20	4.0	9.548	7.50	0	1.68	217	33.1	4.77	1.81	34.7	9.38
150*50*20	2.3	6.322	4.96	0	1.55	210	21.9	5.77	1.86	28.0	6.33
150*50*20	3.2	8.607	6.76	0	1.54	280	28.3	5.71	1.81	37.4	8.19
150*50*20	4.5	11.72	9.20	0	1.54	368	35.7	5.60	1.75	49.0	10.5
150*65*20	2.3	7.012	5.50	0	2.12	248	41.1	5.94	2.42	33.0	9.37
150*65*20	3.2	9.567	7.51	0	2.11	332	53.8	5.89	2.37	44.3	12.2
150*65*20	4.0	11.75	9.22	0	2.11	401	63.7	5.84	2.33	43.5	14.5
150*70*20	3.2	10.21	8.01	0	2.51	366	76.4	5.99	2.74	48.9	15.3
150*75*25	3.2	10.53	8.27	0	2.66	375	83.6	5.97	2.82	50.0	17.3
150*75*25	4.0	12.95	10.2	0	2.65	455	99.8	5.93	2.78	60.6	20.6
150*75*25	4.5	14.42	11.3	0	2.65	501	109	5.90	2.75	66.9	22.5
200*75*20	3.2	11.81	9.27	0	2.19	716	84.1	7.79	2.67	71.6	15.8
200*75*20	4.0	14.55	11.4	0	2.19	871	100	7.74	2.62	87.1	18.9
200*75*20	4.5	16.22	12.7	0	2.19	963	109	7.71	2.60	96.3	20.6
200*75*25	3.2	12.13	9.52	0	2.33	736	92.3	7.70	2.76	73.6	17.8
200*75*25	4.0	14.95	11.7	0	2.32	895	110	7.74	2.72	89.5	21.3
200*75*25	4.5	16.67	13.1	0	2.32	990	121	7.61	2.69	99.0	23.3
250*75*25	4.5	18.92	14.9	0	2.07	1690	129	9.44	2.62	135	23.8

**DECK PLATE  
GRATING APPLICATION**

TYPE	SIZE		Unit Weight	Unit Weight	Furrow Interval	Furrow Depth
	t(mm)	W(mm)	(kg/m)	(kg/m <sup>2</sup> )		
GDP614	1.2	614	8.21	13.37	204.7	50
	1.6	614	10.9	17.75	207.7	50
GDP660	1.2	660	8.64	13.09	220	50
	1.6	660	11.5	17.42	220	50
GDP600	1.2	600	9.38	15.64	200	75



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GDP690	1.6	600	12.4	20.67	200	75
GDP690	1.2	690	10.2	14.78	230	75
	1.6	690	13.6	19.71	230	75



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**WIDE FLANGE BEAM  
(INCH BEAM)**

(1)Metric Series

Nominal Size (mm)	Standard Sectional Dimension (mm)				Sectional Area (cm <sup>2</sup> )	Unit Weight (kg/m)	Moment of Inertia (cm <sup>4</sup> )	
	H*B	t1	t2	r			Ix	Iy
100*100	100*100	6	8	10	21.9	17.2	383	134
125*125	125*125	6.5	9	10	30.31	23.8	847	293
150*75	150*75	5	7	8	17.85	14	666	49.5
150*100	148*100	6	9	11	26.84	21.1	1020	151
150*150	150*150	7	10	11	40.14	31.5	1640	563
175*175	175*175	7.5	11	13	51.42	40.4	2900	984
200*100	198*99	4.5	7	11	23.18	18.2	1580	114
	200*100	5.5	8	11	27.16	21.3	1840	134
200*150	194*150	6	9	13	39.01	30.6	2690	507
200*200	200*200	8	12	13	63.53	49.9	4720	1600
	200*204	12	12	13	71.53	56.2	4980	1700
	208*202	10	16	13	83.69	65.7	6530	2200
250*125	248*124	5	8	12	32.68	25.7	3540	225
	250*125	6	9	12	37.66	29.6	4050	294
250*175	244*175	7	11	16	56.24	44.1	6120	984
250*250	244*252	11	11	16	82.06	64.4	8790	2940
	248*249	8	13	16	84.70	66.5	9930	3350
	250*250	9	14	16	92.18	72.4	10800	3650
	250*255	14	14	16	104.70	82.2	11500	3880
300*150	298*149	5.5	8	13	40.80	32.0	6320	442
	300*150	6.58	9	13	46.78	36.7	7210	508
300*200	294*200	8	12	18	72.38	56.8	11300	1600
	298*201	9	14	18	83.36	65.4	13300	1900
300*300	294*302	12	12	18	107.70	84.5	16900	5520
	298*299	9	14	18	110.80	87.0	18800	6240
	300*300	10	15	18	119.80	94.0	20400	6750
	300*305	15	15	18	134.80	106	21500	7100
	304*301	11	17	18	134.80	106	23400	7730
	310*305	15	20	18	165.30	130	28200	9460
350*175	310*310	20	20	18	180.80	142	29400	9940
	346*174	6	9	14	52.68	41.4	11100	792
	350*175	7	11	14	63.14	49.6	13600	984
340*250	354*176	8	13	14	73.68	57.8	16100	1180
	336*249	8	12	20	88.15	69.2	18500	3090
350*350	340*250	9	14	20	101.50	79.7	21700	3650
	338*351	13	13	20	135.30	106	28200	9380
	344*348	10	16	20	146.00	115	33300	11200
	344*354	16	16	20	166.60	131	35300	11800
	350*350	12	19	20	173.90	137	40300	13600
400*200	350*357	19	19	20	191.40	156	42800	14400
	396*199	7	11	16	72.16	20000	1450	16.70
	400*200	8	13	16	84.12	23700	1740	16.80
	404*201	9	15	16	96.16	27500	2030	16.90
400*300	386*299	9	14	22	120.10	94.3	33700	6240
	390*300	10	16	22	136.00	107	38700	7210





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400*400	388*402	15	15	22	178.50	140	49000	16300
	394*398	11	18	22	186.80	147	56100	18900
	394*405	18	18	22	214.40	168	59700	20000
	400*400	13	21	22	218.70	172	66600	22400
	400*408	21	21	22	250.70	197	70900	23800
	406*403	16	24	22	254.90	200	78000	26200
	141*405	18	28	22	295.40	232	92800	31000
	428*407	20	35	22	360.70	283	119000	39400
	458*417	30	50	22	528.60	415	187000	60500
498*432	45	70	22	770.10	605	298000	94000	
450*200	446*199	8	12	18	84.30	66.2	28700	1580
	450*20	9	14	18	96.76	76.0	33500	1870
450*300	434*299	10	15	24	135.00	106	4680	6690
	440*300	11	18	24	157.40	124	56100	8110
500*200	496*199	9	14	20	101.30	79.5	41900	1840
	500*200	10	16	20	114.20	89.6	47800	2140
	506*201	11	19	20	131.30	103	56500	2580
500*300	482*300	11	15	26	145.50	114	60400	6760
	488*300	11	18	26	163.50	128	71000	8110
600*200	596*199	10	15	22	120.50	94.6	68700	1980
	600*200	11	17	22	134.40	106	77600	2280
	606*201	12	20	22	152.50	120	90400	2720
	612*202	13	23	22	170.70	134	103000	3180
600*300	582*300	12	17	28	174.50	137	103000	7670
	588*300	12	20	28	192.50	151	118000	9020
	594*302	14	23	28	222.40	175	137000	10600
700*300	692*300	13	20	28	211.50	166	172000	9020
	700*300	13	24	28	235.50	185	201000	10800
	708*302	15	28	28	273.60	215	237000	12900
800*300	792*300	14	22	28	243.40	191	254000	9930
	800*300	14	26	28	267.40	210	292000	11700
	808*302	16	30	28	307.60	241	339000	13800
900*300	※890*299	15	23	18	266.80	210	339000	10300
	※900*300	16	28	18	305.80	240	404000	12600
	※912*302	18	34	18	360.10	283	491000	15700
	※918*303	19	37	18	387.40	304	353000	17200



STEEL

**TAEMYUNG STEEL CORPORATION  
TSI METAL CORPORATION**



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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

Nominal Size (mm)	H*B	Radius of Gyration (cm)		Modulus of Section (cm <sup>3</sup> )		Flexible Properties (cm)(cm-1)		Plastic Modulus (cm <sup>3</sup> )	
		ix	iy	Sx	Sy	r <sub>r</sub>	H/Af	Zx	Zy
100*100	100*100	4.18	2.47	76.5	26.7	2.73	1250	87.6	41.2
125*125	125*125	5.29	3.11	136	47	3.43	1110	154	71.9
150*75	150*75	6.11	1.66	88.8	13.2	1.96	2860	102	20.8
150*100	148*100	6.17	2.37	138	30.1	2.68	1650	157	46.7
150*150	150*150	6.39	3.75	219	75.1	4.12	1000	246	115
175*175	175*175	7.5	4.37	331	112	4.8	4.36	370	172
200*100	198*99	8.26	2.21	160	23	2.57	2500	180	35.7
	200*100	8.24	2.22	184	26.8	2.6	2500	209	41.9
200*150	194*150	8.3	3.61	277	67.6	4.03	1440	309	104
	200*200	8.62	5.02	472	160	5.5	0.835	636	244
	200*204	8.35	4.88	498	167	5.53	0.817	565	257
	208*202	8.83	5.13	628	218	5.61	0.643	710	332
	248*124	10.40	2.79	285	41.1	3.23	2.500	319	63.6
	250*125	10.40	2.79	324	47	3.26	2.220	366	73.1
	244*175	10.4	4.18	502	113	4.68	1.27	558	173
	244*252	10.30	5.98	720	233	6.76	0.880	805	358
	248*249	10.80	3.29	801	269	6.84	0.766	883	408
	250*250	10.80	6.29	867	292	6.87	0.715	960	444
	250*255	10.50	6.09	919	304	6.9	0.700	1040	468
	298*149	12.40	3.29	424	59.3	3.84	2.500	475	91.8
	300*150	12.40	3.29	481	67.7	3.87	2.220	542	105
	294*200	12.50	4.71	771	160	5.32	1.220	859	247
	298*201	12.60	4.77	893	189	5.38	1.060	1000	291
	294*302	12.50	7.16	1150	365	8.09	0.812	1280	560
	298*299	13.00	7.50	1270	417	8.19	0.712	1390	634
	300*300	13.10	7.51	1360	450	8.23	0.666	1500	684
	300*305	12.60	7.26	1440	466	8.23	0.656	1610	716
	304*301	13.20	7.57	1540	514	8.29	0.593	1710	781
	310*305	13.20	7.60	1810	620	8.39	0.508	2080	949
	310*310	12.80	7.50	1890	642	8.44	0.500	2200	992
	346*174	14.50	3.88	641	91	4.51	2.210	716	140
	350*175	14.70	3.95	775	112	4.58	1.820	868	174
	354*176	14.80	4.01	909	134	4.65	1.550	1020	208
	336*249	14.50	5.92	1100	248	6.63	1.130	1220	380
	340*250	14.60	6.00	1280	292	6.71	0.972	1410	447
	338*351	14.40	8.33	1670	534	9.42	0.740	1850	872
	344*348	15.10	8.78	1940	646	9.56	0.618	2120	980
	344*354	14.60	8.43	2050	669	9.54	0.608	2250	1020
	350*350	15.20	8.84	2300	776	9.65	0.526	2550	1180
	350*357	14.70	8.53	2450	809	9.68	0.515	2760	1240
	396*199	4.48	10.10	145	5.19	1.810	1810	1130	224
	400*200	4.54	1190	174	5.26	1.540	1540	1330	268
	404*201	4.60	1360	202	5.32	1.340	1340	1530	312
	386*299	16.70	7.81	1740	418	8.02	0.923	1920	637
	390*300	16.90	7.28	1980	481	8.09	0.813	2190	733
	388*402	16.60	9.54	2520	809	10.8	0.643	2800	1240
	394*398	17.30	10.10	2850	951	10.9	0.552	3120	1440
	394*405	16.70	9.65	3030	985	11	0.536	3390	1510
	400*400	17.50	10.10	3330	1120	11.1	0.473	3670	1700
	400*408	16.80	9.75	3540	1170	11.1	0.465	3990	1790
	406*403	17.50	10.10	3840	1300	11.2	0.417	4280	1980
	141*405	17.70	10.20	4480	1530	11.4	0.360	5030	2330
	428*407	18.20	10.40	5570	1930	11.8	0.290	6310	2940
	458*417	18.80	10.70	8170	2900	11.8	0.219	6540	4440
	498*432	19.70	11.10	13000	4370	12.3	0.165	14500	6720



STEEL



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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

450*200	446*199	18.50	4.33	1290	159	5.11	1.870	1450	247
	450*20	18.60	4.40	1490	187	5.18	1.610	1680	291
450*300	434*299	18.60	7.04	2160	448	7.94	0.967	2380	686
	440*300	18.90	7.18	2550	541	8.05	0.815	2820	828
500*200	496*199	20.30	4.27	1690	185	5.08	1.780	1910	290
	500*200	20.50	4.33	1910	214	5.14	1.560	2180	335
	506*201	20.70	4.43	2230	254	5.23	1.330	2540	401
500*300	482*300	20.40	6.82	2500	451	7.83	1.070	2790	695
	488*300	20.80	7.04	2910	541	7.97	0.903	3230	830
600*200	596*199	23.90	4.05	2310	199	4.95	2.000	2650	315
	600*200	24.00	4.12	2590	228	5.01	1.770	2980	361
	606*201	24.30	4.22	2980	271	5.11	1.510	3430	429
	612*202	24.60	4.31	3380	314	5.19	1.320	3890	498
600*300	582*300	24.30	6.63	3530	511	7.74	1.140	3960	793
	588*300	24.80	6.85	4020	601	7.87	0.980	4490	928
	594*302	24.90	6.90	4620	701	7.96	0.856	5200	1080
700*300	692*300	28.60	6.53	4980	602	7.71	1.150	5630	936
	700*300	29.30	6.78	5760	722	7.86	0.973	6460	1120
	708*302	29.40	6.86	6700	853	7.97	0.837	7560	1320
800*300	792*300	32.30	6.39	6410	662	7.65	1.200	7290	1040
	800*300	33.00	6.62	7290	782	7.8	1.030	8240	1220
	808*302	33.20	6.70	8400	915	7.89	0.892	9530	1430
900*300	※890*299	35.60	6.20	7610	687	7.51	1.290	8910	1080
	※900*300	36.40	6.43	8990	842	7.68	1.070	10500	1320
	※912*302	36.90	6.56	10800	1040	7.84	0.888	12500	1630
	※918*303	37.20	6.67	11700	1140	7.8	0.819	13400	1780



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**Prethrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

**II WIDE BEAM  
INCH BEAM**

Nominal Size (mm)	Standard Sectional Dimension (mm)				Sectional Area (cm <sup>2</sup> )	Unit Weight (kg/m)		Moment of Inertia (cm <sup>4</sup> )	
	H*B	t1	t2	r		lbs/ft	kg/m	Ix	Iy
W4 4*4	105.7*103.1	7.11	8.76	6.4	24.71	13	19.4	470	161
W5 5*5	127.3*127.0 130.8*127*8	6.10 6.86	9.14 10.92	7.6 7.6	30.39 35.87	16 19	23.8 28.3	891 1090	313 380
W6 6*4	149.9*100.1 153.2*101.6 159.5*102.4	4.32 5.84 6.60	5.46 7.11 10.29	6.4 6.4 6.4	17.29 22.90 30.58	9 12 16	13.4 17.9 23.8	683 900 1340	91.6 124 184
W6 6*6	152.1*152.1 157.5*125.9 162.1*154.4	5.81 6.60 8.13	6.60 9.27 11.56	6.4 6.4 6.4	28.58 38.87 47.35	15 20 25	22.3 29.8 37.2	1210 1720 2220	388 554 712
W8 8*4	200.4*100.1 202.9*101.6 206.0*102.0	4.32 5.84 6.22	5.21 6.48 8.00	7.6 7.6 7.6	19.10 24.77 28.65	10 13 15	14.9 19.4 22.3	1280 1650 2000	87 114 142
W8 8*5 1/4	206.8*133.4 210.3*133.9	5.84 6.35	8.38 10.16	7.6 7.6	33.94 39.74	18 21	26.8 31.3	2580 3130	332 407
W8 8*6 1/2	201.4*165.0 204.7*166.0	6.22 7.24	10.16 11.81	10.2 10.2	45.68 53.23	24 28	35.7 41.7	3450 4080	762 903
W8 8*8	203.2*203.1 206.2*203.7 209.6*205.0 215.9*206.0 222.2*208.8 228.6*210.3	7.24 7.87 9.14 10.16 12.95 14.48	11.05 12.57 14.22 17.40 20.57 23.75	10.2 10.2 10.2 10.2 10.2 10.2	58.90 66.45 75.48 90.97 110.30 127.10	31 35 40 48 58 67	46.1 52.1 59.5 71.4 86.3 99.7	4580 5290 6080 7660 9490 11300	1540 1770 2040 2530 3130 3690
W10 10*4	250.7*100.6 253.7*101.6 256.8*101.9 260.1*102.1	4.83 5.84 6.10 6.35	5.33 6.86 8.38 10.03	7.6 7.6 7.6 7.6	22.84 28.45 32.19 36.26	12 15 17 19	17.9 22.3 25.3 28.3	2240 2870 3410 4010	90.7 120 148 179
W10 10*5 3/4	258.3*146.0 262.4*146.6 265.9*147.6	6.10 6.60 7.62	9.14 11.18 12.95	7.6 7.6 7.6	41.87 49.10 57.03	22 26 30	32.7 38.7 44.6	4910 5990 7080	475 587 695
W10 10*8	247.1*202.2 252.0*202.8 256.5*203.7	7.37 8.00 8.89	11.05 13.46 15.75	12.7 12.7 12.7	62.64 74.19 85.81	33 39 45	49.1 58.0 67.0	7080 8700 10300	1520 1870 2220
W10 10*10	253.5*254.0 256.3*254.8 259.6*256.0 264.2*257.3 269.2*258.8 275.3*260.7 281.9*262.6	8.64 9.40 10.67 11.94 13.46 15.37 17.27	14.22 15.62 17.27 19.56 22.10 25.15 28.45	12.7 12.7 12.7 12.7 12.7 12.7 12.7	92.90 101.90 113.50 129.00 145.80 167.10 189.70	49 54 60 68 77 88 100	72.9 80.4 89.3 101.2 114.6 131.0 148.8	11300 12600 14200 16400 18900 22200 25900	3890 4290 4830 5580 6410 7450 8620
W12 12*4	302.5*100.8 304.5*101.3 308.9*101.7 312.7*102.4	5.08 5.59 5.97 6.60	5.72 6.73 8.89 10.80	7.6 7.6 7.6 7.6	26.84 30.39 35.94 41.81	14 16 19 22	20.8 23.8 28.3 32.7	3690 4290 5410 6490	98.2 117 157 194



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W12 12*61/2	310.4*164.8	5.84	9.65	7.6	49.35	26	38.7	8400	720
	313.4*165.6	6.60	11.18	7.6	56.71	30	44.6	9910	845
	317.5*166.6	7.62	13.21	7.6	66.45	35	52.1	11900	1020
W12 12*8	303.3*203.3	7.49	13.08	15.2	76.13	40	59.5	12900	1840
	306.3*204.3	8.51	14.60	15.2	85.16	45	67.0	14600	2080
	309.6*205.2	9.40	16.26	15.2	94.84	50	74.4	16400	2340
W12 12*10	306.3*253.9	8.76	14.60	15.2	100.60	53	78.9	17700	3990
	309.6*254.3	9.14	16.26	15.2	109.70	58	86.3	19800	4450
	307.8*304.8	9.91	15.37	15.2	123.20	65	96.7	22200	7240
W12 12*12	311.2*305.8	10.92	17.02	15.2	136.10	72	107.1	24800	8120
	314.5*306.8	11.94	18.67	15.2	149.70	79	114.6	27600	8990
	318.3*308.0	13.08	20.57	15.2	165.20	87	129.5	30800	10000
	322.8*308.9	13.97	22.86	15.2	181.90	96	142.39	34700	11200
	327.4*310.4	15.49	25.15	15.2	201.30	106	157.7	38800	12500
	333.2*312.9	18.03	28.07	15.2	227.70	120	178.6	44500	14400
W14 14*5	349.0*127.0	5.84	8.51	10.2	41.87	22	32.7	8280	291
	353.3*127.6	6.48	10.67	10.2	49.61	26	38.7	10200	371
W14 14*63/4	351.5*170.9	6.84	9.78	10.2	57.10	30	44.6	12100	816
	355.1*171.9	7.24	11.56	10.2	64.52	34	50.6	14200	970
	358.1*172.0	7.87	13.08	10.2	72.26	38	56.6	16000	1110
W14 14*8	347.0*203.1	7.75	13.46	15.2	81.26	43	64.0	17800	1880
	350.3*204.0	8.64	15.11	15.2	90.97	48	71.4	20200	2140
	353.6*204.7	9.40	16.76	15.2	100.60	53	78.9	22500	2400





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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

Nominal Size (mm)	H*B	Radius of Gyration (cm)		Modulus of Section (cm <sup>3</sup> )		Flexible Properties (cm)(cm-1)		Plastic Modulus (cm <sup>3</sup> )	
		ix	iy	Sx	Sy	r <sub>r</sub>	H/Af	Zx	Zy
W4 4*4	105.7*103.1	4.37	2.54	89.5	31.1	2.79	1.17	102.9	47.9
W5 5*5	127.3*127.0	5.41	3.20	140	49.2	3.48	1.09	157.2	74.9
	130.8*127*8	5.51	3.25	167	59.5	3.51	0.94	190.1	90.6
W6 6*4	149.9*100.1	6.27	2.30	91.1	18.2	2.62	2.74	102.1	28.2
	153.2*101.6	6.32	2.33	120	24.6	2.67	2.12	136.0	38.0
	159.5*102.4	6.60	2.46	167	36.1	2.74	1.52	191.7	55.6
W6 6*6	152.1*152.1	6.50	3.68	159	51	4.09	1.52	177.0	77.8
	157.5*125.9	6.76	3.81	220	72.3	4.17	1.11	244.2	110.1
	162.1*154.4	6.86	3.86	274	91.9	4.22	0.91	309.7	140.3
W8 8*4	200.4*100.1	8.18	2.14	128	17.4	2.51	3.85	145.4	27.2
	202.9*101.6	8.15	2.14	162	22.5	2.57	3.08	186.8	35.2
	206.0*102.0	8.36	2.23	193	27.9	2.62	2.52	222.9	43.8
W8 8*5 1/4	206.8*133.4	8.71	3.12	249	49.8	3.53	1.85	278.6	76.4
	210.3*133.9	8.86	3.20	298	60.8	3.58	1.55	334.3	93.2
W8 8*6 1/2	201.4*165.0	8.69	4.09	342	92.3	4.47	1.20	380.2	140.4
	204.7*166.0	8.76	4.11	398	109	4.50	1.04	445.7	165.5
W8 8*8	203.2*203.1	8.81	5.13	451	152	5.54	0.91	498.2	231.1
	206.2*203.7	8.92	5.16	511	174	5.59	0.81	568.6	263.8
	209.6*205.0	8.97	5.18	582	200	5.61	0.72	652.2	303.2
	215.9*206.0	9.17	5.28	710	246	5.66	0.60	803.0	375.3
	222.2*208.8	9.27	5.33	852	300	5.74	0.52	919.9	457.2
228.6*210.3	9.45	5.38	990	351	5.79	0.46	1150.4	535.9	
W10 10*4	250.7*100.6	9.91	1.99	179	18	2.44	4.69	206.5	28.5
	253.7*101.6	10.00	2.06	226	23.8	2.51	3.64	262.2	37.7
	256.8*101.9	10.30	2.15	265	29.2	2.57	3.00	306.4	45.9
	260.1*102.1	10.50	2.22	308	35.1	2.62	2.54	354.0	54.9
W10 10*5 3/4	258.3*146.0	10.80	3.38	380	65.1	3.84	1.93	426.1	100.0
	262.4*146.6	11.00	3.45	457	80.1	3.91	1.60	512.9	122.9
	265.9*147.6	11.10	3.48	531	94.2	3.94	1.39	599.8	144.9
W10 10*8	247.1*202.2	10.60	4.93	574	151	5.44	1.11	635.8	229.4
	252.0*202.8	10.80	5.03	690	185	5.49	0.92	766.9	281.9
	256.5*203.7	11.00	5.11	805	218	5.54	0.80	899.6	332.7
	253.5*254.0	11.00	6.45	895	306	6.96	0.70	989.8	463.8
W10 10*10	256.3*254.8	11.10	6.50	983	338	6.99	0.65	1091.4	512.9
	259.6*256.0	11.20	6.53	1090	37	7.04	0.59	1222.4	573.5
	264.2*257.3	11.30	6.58	1240	433	7.09	0.52	1397.8	657.1
	269.2*258.8	11.40	6.60	1410	493	7.11	0.47	1599.4	752.2
	275.3*260.7	11.50	6.68	1610	570	7.19	0.42	1851.7	870.2
	281.9*262.6	11.70	6.73	1840	655	7.24	0.38	2130.3	999.6
W12 12*4	302.5*100.8	11.70	1.91	244	19.5	2.41	5.24	285.1	31.1
	304.5*101.3	11.90	1.96	280	23.1	2.44	4.45	329.4	37.0
	308.9*101.7	12.20	2.09	349	30.8	2.54	3.41	404.8	48.8
	312.7*102.4	12.50	2.15	416	37.9	2.59	2.83	480.1	60.0
W12 12*6 1/2	310.4*164.8	13.10	3.84	547	87.5	4.37	1.95	609.6	133.9
	313.4*165.6	13.20	3.86	633	102	4.40	1.69	706.3	156.7
	317.5*166.6	13.30	3.91	747	122	4.42	1.44	839.0	188.5
W12 12*8	303.3*203.3	13.00	4.90	850	180	5.44	1.14	942.3	275.3
	306.3*204.3	13.10	4.93	952	203	5.46	1.03	1060.2	311.4
	309.6*205.2	13.20	4.98	1060	228	5.51	0.93	1186.4	350.7
W12 12*10	306.3*253.9	13.30	6.30	1160	315	6.88	0.83	1276.6	476.9
	309.6*254.3	13.40	6.38	1280	351	6.91	0.75	1415.8	532.6



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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

W12 12*12	307.8*304.8	13.40	7.67	1440	477	8.33	0.66	1586.3	722.7
	311.2*305.8	13.50	7.72	1600	531	8.36	0.60	1769.8	806.2
	314.5*306.8	13.60	7.75	1750	587	8.41	0.55	1950.1	889.8
	318.3*308.0	13.70	7.80	1930	651	8.43	0.50	2163.1	989.8
	322.8*308.9	13.80	7.85	2150	728	8.48	0.46	2408.9	1106.1
W14 14*5	327.4*310.4	13.90	7.90	2380	808	8.53	0.42	2687.5	1230.7
	333.2*312.9	14.00	7.95	2670	918	8.59	0.38	3048.0	1399.5
	349.0*127.0	14.10	2.64	475	45.9	3.18	3.23	544.1	71.9
W14 14*63/4	353.3*127.6	14.40	2.74	578	58	3.25	2.59	658.8	90.8
	351.5*170.9	14.60	3.78	688	95.4	4.42	2.10	775.1	147.3
W14 14*8	355.1*171.9	14.80	3.89	796	113	4.47	1.80	894.7	173.7
	358.1*172.0	14.90	3.94	895	129	4.50	1.59	1007.8	198.3
	347.0*203.1	14.80	4.80	1030	185	5.38	1.27	1140.5	283.5
W14 14*8	350.3*204.0	14.90	4.85	1150	210	5.41	1.14	1284.7	321.2
	353.6*204.7	15.00	4.88	1270	234	5.50	1.03	1427.3	360.5



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Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine

**STRUCTURAL TEES  
CUT TEES**

Nominal Size (mm)	Standard Sectional Dimension (mm)				Sectional Area (cm <sup>2</sup> )	Unit Weight (kg/m)	Center of Gravity(cm)
	H*B	t1	t2	r			
50*100	50*100	6	8	10	10.95	8.6	1
62.5*125	62.5*125	6.5	9	10	15.16	11.9	1.19
75*75	75*75	5	7	8	8.925	7.01	1.79
75*100	75*100	6	9	11	13.42	10.5	1.55
75*150	75*150	7	10	11	20.07	15.8	1.37
100*100	100*100	5.5	8	11	13.58	10.7	2.29
100*150	97*150	6	9	13	19.51	15.3	1.79
	100*200	8	12	13	31.77	24.9	1.73
100*200	100*204	12	12	13	35.77	28.1	2.09
	104*202	10	16	13	41.85	32.8	1.91
125*125	124*124	5	8	12	16.34	12.8	2.63
	125*125	6	9	12	18.83	14.8	2.78
125*175	122*175	7	11	16	28.12	22.1	2.27
	122*252	11	11	16	41.03	32.2	2.39
125*250	124*249	8	13	16	42.35	33.2	1.98
	125*250	9	14	16	46.06	36.2	2.08
	125*255	14	14	16	52.34	41.1	2.58
150*150	149*149	5.5	8	13	20.40	16.0	3.26
	150*150	6.5	9	13	23.39	18.4	3.41
150*200	147*200	8	12	18	36.19	28.4	2.83
	149*201	9	14	18	41.68	32.7	2.91
	147*302	12	12	18	53.83	42.3	2.84
150*300	149*299	9	14	18	55.40	43.5	2.36
	150*300	10	15	18	59.89	47.	2.47
	150*305	15	15	18	67.39	52.9	3.03
	152*302	11	17	18	67.41	52.9	2.55
175*175	173*174	6	9	14	26.34	20.7	3.71
	175*175	7	11	14	31.57	24.8	3.75
175*250	168*249	8	12	20	44.08	34.6	3.02
	170*250	9	14	20	50.76	39.8	3.09
	172*348	10	16	20	73.00	57.3	2.67
175*350	172*354	16	16	20	83.32	65.4	3.40
	175*350	12	19	20	86.94	68.2	2.86
	175*357	19	19	20	99.19	77.9	3.59
	169*351	13	13	20	67.63	53.1	3.21
200*200	198*199	7	11	16	36.08	28.3	4.17
	200*200	8	13	16	42.06	33.3	4.23
200*300	193*299	9	14	22	60.05	47.1	3.33
	195*300	10	16	22	67.98	53.4	3.41
	194*402	15	15	22	89.23	70	3.7
200*400	197*398	11	18	22	93.41	73.3	3.01
	197*405	18	18	22	107.2	84.1	3.89
	200*400	13	21	22	109.3	85.8	3.21
	200*408	21	21	22	125.3	98.4	4.07
	203*403	16	24	22	127.4	100	3.51
	207*405	18	28	22	147.7	116	3.68
	214*407	20	35	22	180.3	142	3.9
	229*417	30	50	22	264.3	207	4.85
	249*432	45	70	22	385	302	6.13
225*300	239*199	8	12	18	42.15	33.1	5.1



STEEL



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225 200	225*200	9	14	18	43.38	38	5.15
225*300	217*299	10	15	24	67.52	53	4.04
	220*300	11	18	24	78.69	61.8	4.05
250*200	248*199	9	14	20	50.64	39.7	5.9
	250*200	10	16	20	57.12	44.8	5.96
	253*201	11	19	20	65.65	51.5	5.95
250*300	241*300	11	15	26	72.76	57.1	4.92
	244*300	11	18	26	81.76	64.2	4.66
300*200	298*199	10	15	22	60.23	47.3	7.79
	300*200	11	17	22	27.21	52.8	7.84
	303*201	12	20	22	76.24	59.8	7.79
	306*202	13	23	22	85.33	67	7.79
300*300	291*300	12	17	28	87.24	68	6.39
	294*900	12	20	28	96.24	75.6	6.08
	297*302	14	23	28	111.2	87.3	6.33
350*300	346*300	13	20	28	105.7	83	7.9
	350*300	13	24	28	117.7	92.4	7.55
	354*302	15	28	28	136.8	107	7.78
400*300	396*300	14	22	28	121.7	95.6	9.66
	400*300	14	26	28	133.7	105	9.18



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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

404*302	16	30	28	153.8	121	9.41
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Nominal Size (mm)	H*B	Moment of Inertia (cm <sup>4</sup> )		Radius of Gyration (cm)		Modulus of Section (cm <sup>3</sup> )	
		Ix	Iy	ix	iy	Sx	Sy
50*100	50*100	16.1	66.9	1.21	2.47	4.03	13.4
62.5*125	62.5*125	35.0	147	1.52	3.11	6.91	23.5
75*75	75*75	42.6	24.7	2.18	1.6	7.46	6.59
75*100	75*100	51.7	75.3	1.96	2.37	8.84	15.1
75*150	75*150	66.4	282	1.82	3.75	10.8	37.6
100*100	100*100	114	67	2.9	2.22	14.8	13.4
100*150	97*150	125	254	2.53	3.61	15.8	33.8
100*200	100*200	184	801	2.41	5.02	22.3	80.1
	100*204	256	851	2.67	4.88	32.4	83.4
	104*202	251	1100	2.45	5.13	29.5	109
125*125	124*124	208	127	3.57	2.79	21.3	20.5
	125*125	248	147	3.63	2.79	25.6	23.5
125*175	122*175	289	492	3.20	4.18	29.1	56.3
125*250	122*252	445	1470	3.29	5.98	45.3	117
	124*249	364	1670	2.93	6.29	34.9	134
	125*250	412	1820	2.99	6.29	39.5	146
	125*255	589	1940	3.36	6.09	59.4	152
150*150	149*149	393	221	4.39	3.29	33.8	29.7
	150*150	464	254	4.45	3.29	40.0	33.8
150*200	147*200	572	802	3.97	4.71	48.2	80.2
	149*201	662	949	3.99	4.71	55.2	94.4
150*300	147*302	858	2760	3.99	7.16	72.3	183
	149*299	715	3120	3.59	7.51	57.0	209
	150*300	798	3380	3.65	7.51	63.7	225
	150*305	1110	3550	4.05	7.26	92.5	233
	152*302	903	3870	3.66	7.57	71.4	257
175*175	173*174	679	396	5.08	3.88	50.0	45.5
	175*175	815	492	5.08	3.95	59.3	56.2
175*250	168*249	881	1540	4.47	5.92	64.0	124
	170*250	1020	1830	4.48	6.00	73.1	146
175*350	172*348	1230	5620	4.11	8.78	84.7	323
	172*354	1800	5920	4.65	8.43	131.0	335
	175*350	1520	6790	4.18	8.84	104.0	388
	175*357	2200	7220	4.71	8.53	158.0	404
200*200	169*351	1420	4690	4.59	8.33	104.0	267
	198*199	1190	723	5.76	4.48	76.4	72.7
200*300	200*200	1400	868	5.76	4.54	88.6	86.8
	193*299	1530	3120	5.04	7.21	95.5	209
	195*300	1730	3600	5.05	7.28	108	240
200*400	194*402	24780	8130	5.27	9.54	158	404
	197*398	2050	9460	4.68	10.1	123	475
	197*405	3050	9980	5.34	9.65	193	493
	200*400	2480	11200	4.76	10.1	147	560
	200*408	3650	11900	5.4	9.75	29	584
	203*403	3090	13100	4.92	10.1	184	650
	207*405	3360	15500	4.95	10.2	213	766
	214*407	4380	19700	4.93	10.4	250	967
	229*417	7470	30200	5.32	10.7	414	1.45
	249*432	13200	47100	5.87	11.1	706	2.18



STEEL



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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

225*200	239*199	1880	490	6.67	4.33	109	79.4
	225*200	2160	936	6.68	4.4	124	93.6
225*300	217*299	2350	3350	5.89	7.04	133	224
	220*300	2680	4060	5.84	7.68	149	270
250*200	248*199	2840	922	7.49	4.27	150	92.6
	250*200	3210	1070	7.5	4.33	169	107
	253*201	3670	1290	7.48	4.43	190	128
250*300	241*300	3420	3380	6.85	6.82	178	225
	244*300	3620	4060	6.66	7.07	184	270
300*200	298*199	5190	989	9.29	4.05	236	99.4
	300*200	5810	1140	9.3	4.12	262	114
	303*201	6570	1360	9.28	4.22	292	135
	306*202	7340	1590	9.27	4.31	322	157
300*300	291*300	6360	3830	8.54	6.63	280	256
	294*300	6170	4510	8.3	6.85	288	301
	297*302	7920	5290	8.44	6.9	339	350
350*300	346*300	11300	4510	10.3	6.53	425	301
	350*300	12000	5410	10.1	6.78	438	361
	354*302	142000	6440	10.2	6.86	513	426
400*300	396*300	17700	4960	12.1	6.38	593	331
	400*300	18800	6860	11.9	6.62	610	391
	404*302	21900	6900	11.9	6.70	705	457





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ALLOY SPECIFICATION  
ALL NI MOLY VARIETY ALLOY  
INCONEL , BRASS, COPPER, ALUMINIUM

CLASSIFICATION OF TITANIUM (ASTM SPEC.)

SPECIFICATION	GRADE	CHEMICAL COMPOSITION								MECHANICAL PROPERTY			
		H MAX	O MAX	N MAX	Fe MAX	C MAX	Pd	Others	Ti	Tensile Strength Mpa(N/mm2)	0.2% Yield Strength Mpa(N/mm2)	Elongation %	
■ Pure Titanium													
ASTM	Grade 1	0.015	0.180	0.030	0.200	0.080				Bal.	>=240	170~310	>=24
ASTM	Grade 2	0.015	0.250	0.030	0.300	0.080				Bal.	>=345	275~450	>=20
ASTM	Grade 3	0.015	0.350	0.050	0.300	0.080				Bal.	>=450	380~550	>=18
ASTM	Grade 4	0.015	0.400	0.050	0.500	0.080				Bal.	>=550	483~655	>=15
■ Corrosion Resistant Alloy													
ASTM	Grade 7	0.015	0.250	0.030	0.300	0.080	0.12~0.25			Bal.	>=345	275~450	>=20
ASTM	Grade 11	0.015	0.180	0.030	0.200	0.080				Bal.	>=240	170~310	>=24
■ a+b Alloy													
3Al-2.5V	ASTM Gr.9	0.015	0.115	0.030	0.250	0.080		Al:2.5~3.5 V:2.0~3.0		Bal.	>=620	>=483	15
6Al-4V	ASTM Gr.5	0.015	0.200	0.050	0.400	0.080		Al:5.5~6.75 V:3.5~4.5		Bal.	>=895	>=828	10~
6Al-4V ELI	ASTM Gr.23	0.0125	0.130	0.030	0.250	0.080		Al:5.5~6.5 V:3.5~4.5		Bal.	>=828	>=759	
■ b Alloy													
15V-3Cr-3Sn-3Al		0.015	0.130	0.050	0.250	0.050				Bal.	745~945 (1000~)	690~835 (965~1170)	12~ (7~)

CLASSIFICATION OF TITANIUM (JIS SPEC.)

SPECIFICATION	GRADE	CHEMICAL COMPOSITION								MECHANICAL PROPERTY			
		H MAX	O MAX	N MAX	Fe MAX	C MAX	Pd	Others	Ti	Tensile Strength Mpa(N/mm2)	0.2% Yield Strength Mpa(N/mm2)	Elongation %	
■ Pure Titanium													
JIS	1종	0.013	0.150	0.030	0.200	0.080				Bal.	270~410	>=165	>=27
JIS	2종	0.013	0.200	0.030	0.250	0.080				Bal.	340~510	>=215	>=23
JIS	3종	0.013	0.300	0.050	0.300	0.080				Bal.	480~620	>=345	>=18
JIS	4종	0.013	0.400	0.050	0.500	0.080				Bal.	550~750	>=486	>=15
■ Corrosion Resistant Alloy													
JIS	11종	0.013	0.150	0.030	0.200	0.080	0.12~0.25			Bal.	270~410	>=165	>=27
JIS	12종	0.013	0.200	0.030	0.250	0.080	0.12~0.25			Bal.	340~510	>=215	>=23
■ a+b Alloy													
JIS	60종	0.015	0.200	0.050	0.400	0.080		Al:5.5~6.75 V:3.5~4.5		Bal.	>=895	>=825	>=10
JIS	60E종	0.013	0.130	0.030	0.250	0.080		Al:5.5~6.5 V:3.5~4.5		Bal.	>=825	>=755	>=10
JIS	61종	0.015	0.150	0.030	0.250	0.080		Al:2.5~3.5 V:2.0~3.0		Bal.	>=620	>=485	>=15
JIS	61F종	0.015	0.200	0.050	0.300	0.100		Al:2.7~3.5 V:1.6~3.4		Bal.	>=650	>=600	>=10

TYPICAL TITANIUM ALLOY

SPECIFICATION	NOMINAL COMPOSITION	CHEMICAL COMPOSITION								MECHANICAL PROPERTY			
		H MAX	O MAX	N MAX	Fe MAX	C MAX	Pd	Others	Ti	Tensile Strength Mpa(N/mm2)	0.2% Yield Strength Mpa(N/mm2)	Elongation %	
ASTM	Gr.5	0.020	0.200	0.050	0.400	0.080		Al5.5/6.75 V 3.5/4.5		Bal.	>=895	>=828	>=10
ASTM	Gr.7	0.015	0.250	0.030	0.300	0.080	0.12/0.25			Bal.	>=345	>=275-450	>=20



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ASTM	Gr.9	0.015	0.150	0.030	0.250	0.080		Al2.5/3.5 V 2.0/3.0	Bal.	>=620	>=483	>=15
ASTM	Gr.11	0.015	0.180	0.030	0.200	0.080	0.12/0.25		Bal.	>=240	>=170-310	>=24
ASTM	Gr.12	0.015	0.250	0.030	0.300	0.080		Mo0.2/0.4 Ni0.6/0.9	Bal.	>=483	>=345	>=18
AMS	Gr.14	0.015	0.130	0.050	0.250	0.050		V14.0/16.0 Cr2.5/3.5 Sn2.5/3.5 Al2.5/3.5	Bal.	>=1241	>=1172	>=5

**TITANIUM & TITANIUM ALLOY FOR MEDICAL APPLICATIONS**

SPECIFICATION	GRADE	CHEMICAL COMPOSITION								MECHANICAL PROPERTY			
		H MAX	O MAX	N MAX	Fe MAX	C MAX	Pd	Others	Ti	Tensile Strength Mpa(N/mm2)	0.2% Yield Strength Mpa(N/mm2)	Elongation %	
■ Pure Titanium													
ASTM F67	GRADE3	0.015	0.350	0.030	0.200	0.080				Bal.	>=450	>=380	>=18
ASTM F67	GRADE4	0.015	0.400	0.030	0.500	0.080				Bal.	>=550	>=483	>=15
■ a+b Alloy													
ASTM F136	Grade 5ELI	0.012	0.130	0.050	0.250	0.080	0.12~0.25	Al:5.5~6.5 V:3.5~4.5	Bal.	>=860	>=795	>=10	
ASTM F1295	6Al-7Nb	0.015	0.180	0.030	0.200	0.080	0.12~0.25	Al:5.5~6.5	Bal.	>=900	>=800	>=10	

**COMPARISON DATA WITH TITANIUM AND OTHER MATERIALS**

	Commercially pure Titanium	Titanium-alloy Ti-6Al-4V	SUS304	Aluminum	Hastelloy C	Zirconium
Atomic Number	22	-	-	13	-	40
Atomic Weight	47.9	-	-	27.0	-	91.2
Crystalline Weight	HCP<885°C<BCC	FCC<approx.990°C<BCC	FCC	FCC	FCC	HCP<863°C<BCC
Specific Gravity	4.51	4.42	8.0	2.7	8.9	6.5
Melting Point(°C)	1668		660		1305	1852
Young's Modulus Gpa	106	113	199	69	205	89
Poisson's Ratio	0.34	0.29		0.33	-	0.33
Electric resistance	47~55	171	72	2.7	130	40~54
Electric Conductivity t	3.1	1.1	2.4	64.0	1.3	3.1
Thermal conductivity(t)	17	7.5	16	203	12	17
Thermal Expansion coefficient (X10 <sup>-6</sup> /°C) [ 0~100°C ]	8.4	8.8	17	23	12	6
Specific Heat(J/Kg-K)	520	520	500	880	1050	290



STEEL



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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

Heat Capacity(J/m <sup>3</sup> -K)	2.4 X 10 <sup>6</sup>	2.3 X 10 <sup>6</sup>	4.0 X 10 <sup>6</sup>	2.4 X 10 <sup>6</sup>	3.5 X 10 <sup>6</sup>	1.9 X 10 <sup>6</sup>
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Table of Nickel & Ni-Alloy

MATERIAL	ALLOY NAME	CHEMICAL COMPOSITION(%)	MECHANICAL PROPERT				DENSITY (g/cm <sup>3</sup> )	UNS No.
			HEAT-TREATMENT CONDITION	TENSILE STRENGTH 1000Psi (Mpa)	YIELD STRENGTH 1000Psi (Mpa)at 0.2%offset	HARDNESS BRINELL (ROCKWELL)		
HASTELLOY B	B	-	Annealed			9.22	N10001	
HASTELLOY B-2	B-2	Ni BAL,Cr1.0 Mo1.0 Fe2.0,Si 0.10 Co1.0,CO 0.02	Annealed	132.5 (914)	57.5 (396)	228 (B-98)	9.22	N10665
HASTELLOY C-4	C-4	Ni BAL,Cr1.0 Cr16 Mn1.0 Mo 15.5 Ti0.7 Fe3.0,C 0.01	Annealed	116.2 (801)	61.0 (421)	194 (B-92)	8.64	N06455
HASTELLOY C-276	C-276	Ni,15Cr,16Mo,4W,5	Annealed	114.9 (792)	51.6 (356)	184 (B-90)	8.89	N10276
HASTELLOY C-22	C-22	Ni BAL Cr20-22.5 Mo 12.5-14.5 W 2.5-3.5 Co2.5, C 0.01	Annealed	116.3 (802)	58.5 (403)	184 (B-90)	8.69	N06022
HASTELLOY G	G	Ni BAL,Co2.5 Cr22 Cb+Ta 2 Fe 19.5,Cu2 Mo6.5,Mn1.5 W1,Si 1	Annealed	102.0 (703)	46.2 (319)	161 (B-84)	8.3	N06007
HASTELLOY G-3	G-3	Ni BAL,Co 1.5 Cr21-23.5,Cu 1.5-2.5 Fe18-21,W1.5 Mo6-8,Si1 Mn1, CO.015	Annealed	99.0 (683)	44.0 (303)	158 (B-83)	8.3	N06985
HASTELLOY X	X	Ni BAL,Co 1.5 Cr22.5,Si1 Mn1 Fe18.5 CO1 Al 0.5,Mo 9 W0.6 Ti 0.15	Annealed	109.5 (755)	55.9 (385)	194 (B-92)	8.22	N06002
Ni200	200	Ni 99.6 C 0.15 MAX	Annealed	55-80 (380-550)	15-30 (100-210)	90-120	8.89	N02200
Ni201	201	Ni 99.6 C 0.02 MAX	Annealed	55-80 (380-550)	15-30 (100-210)	90-120	8.89	N02201
Alloy 20 (Carpenter20)	20	Ni 35,Mo 2.5 Fe 37, Cr 20 Cu 3.5	Annealed	90 (620)	45 (310)	183 (B-90)	8.00	N08020
Monel 400	400	Ni 63 min.,Cu 28~34	Annealed	70-90 (480-620)	25-5 (170-340)	110-149	8.83	N04400
Monel R-405	R-405	Ni 66.5,Cu 31.6 S 0.04	Annealed	70-85 (480-590)	25-40 (170-280)	110-140	8.80	N04405
Monel 450	450	Cu 66,Ni 30,Fe 0.7	Annealed	56 (385)	24 (165)	90		C71500
Monel K-500	K-500	Ni 63 min.,Cu 27~33,Al2.7,Ti 0.6	Annealed	140-190 (970-1310)	110-150 (760-1030)	265-346	8.44	N05500
Inconel 600	600	Ni 72 Min.,Cr 15.5,Fe 8	Annealed	80-100 (550-690)	30-50 (210-240)	120-170	8.47	N06600
Inconel 601	601	Ni 60.5, Cr 23 Fe 14,Al 1.4	Annealed	80-115 (550-790)	30-60 (210-340)	110-150	8.11	N06601



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Inconel 617	617	Ni 44.5 min.,Mo 9,Cr 22,Al 1.2,Co 12.5	Annealed	110 (760)	51 (350)	173	8.36	N06617
Inconel 625	625	Ni 58 min.,Cr 21.5,Mo 9,Nb+Ta 3.6	Annealed	135 (930)	75 (520)	180	8.44	N06625
Inconel 690	690	Ni 58 MIN.,Cr 30,Fe 9.5	Annealed	100 (690)	55 (379)	184	8.19	N06690
Inconel 718	718	Ni 52.5,Mo 3,Cr 19,Fe18.5,Nb+Ta 5.1	Aged	196 (1350)	171 (1180)	382	8.19	N07718
Inconel X-750	X-750	Ni 70 min.,Ti 2.5,Cr 15.5,Fe 7,Nb+Ta 1.0	Annealed	162-193 (1120-1330)	115-142 (790-980)	300-390	8.28	N07750
Incoloy 800	800	Ni 32.5,Fe 46,Cr 21	Annealed	75-100 (520-690)	30-60 (210-410)	120-184	7.95	N08800
Incoloy 800H	800H	Ni 32.5,Fe 39.5 min., Cr 21,Al+Ti 0.3~1.2	Annealed				7.95	N08810
Incoloy 800HT	800HT	Ni 81 Min.,Cr 9,Fe 6	Annealed	65-95 (450-660)	25-50 (140-340)	100-184	7.95	N08811
Incoloy 825	825	Ni 42,Cu2.2,Fe 30,Cr 21.5,Mo 3	Annealed				8.14	N08825
254MO	254SMO	18Ni,6Mo,0.8Cu,0.2 N	Annealed	(>=655)	(>=310)	~223	7.8	S31254
NAS 254NM	AL6XN	21Cr,24Ni,6Mo,0.2 N	Annealed	(>=655)	(>=310)	~240	8.06	N08367
904L	AL940L	20Cr,24Ni,4.3Mo,1.5Cu	Annealed	(>=490)	(>=215)	~187	7.9	N08904
DUPLEX 2205	2205	22Cr,5.3Ni,3.2Mo,0.16N	Annealed	(>=620)	(>=450)	~302	7.88	S32205
SUS329J4L	SUS329J4L	25Cr,6.5Ni,3.3Mo,0.17N	Annealed	(>=620)	(>=450)	~302		S32506



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SHEET & PLATE	STRIP	ROD	BAR	WIRE	FORGING	AUTOMATIC(WELDING)		WELDED PIPE	SEAMLESS PIPE&TUBE	MAJOR APPLICATION
						WELDED PIPE	WELDED TUBE			
B333	B333	B335	B335			B619	B626		B622	
B333	B333	B335	B335		B462	B619	B626		B622	
B575	B575	B574	B574			B619	B626	B775	B622	
B575	B575	B574	B574		B564	B619	B626	B775	B622	
B575	B575	B574	B574		B564	B619	B626	B775	B622	
B582	B582	B581				B619	B626	B775	B622	
B582	B582	B581	B581			B619	B626	B775	B622	
B435	B435	B572	B572			B619	B626	B775	B622	
B162	B162	B160	B160			B725	B730	B775	B161	
B162	B162	B160	B160			B725	B730	B775	B161	
B463	B463	B473	B473		B462	B464	B468		B729	
B127	B127	B164	B164	B164	B564	B725	B730	B775	B165	
			B164	B164						
B171	B171					B467			B466	
B168	B168	B166	B166	B166	B564	B517	B516	B775	B167	
C.C.1500	C.C.1500	C.C.1500			C.C.1500	C.C.1500	C.C.1500			
B168	B168	B166	B166		B564				B167	
B443	B443	B446	B446		B564	B705	B704	B775	B444	
B168	B168	B166	B166						B167	
B409	B409	B408	B408		B564	B514	B515	B775	B407	
B409	B409	B408	B408		B564	B514	B515	B775	B407	
B409	B409	B408	B408		B564	B514	B515	B775	B407	
B424	B424	B425	B425		B564	B705	B704	B775	B423	
A240	B409									
B688	B688	B691	B691		B564	B675	B676		B690	
B625	B625	B649	B649			B673	B674		B677	
A240	B424									
A240	B409									



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ASME Specifications

MATERIAL	UNS No.	STRIP,SHEET &PIPE	ROD& BAR	FORGING	WELDED PIPE	WELDED TUBE	SEAMLESS PIPE	SEAMLESS TUBE
HASTELLOY B	N10001	SB333	SB335		SB619	SB626	SB622	SB622
HASTELLOY B-2	N10665	SB333	SB335	SB462	SB619	SB626	SB622	SB622
HASTELLOY C-4	N06455	SB575	SB574		SB619	SB626		
HASTELLOY C-276	N10276	SB575	SB574	SB564	SB619	SB626	SB622	SB622
HASTELLOY C-22	N06022	SB575	SB574	SB564	SB619	SB626	SB622	SB622
HASTELLOY G	N06007	SB582	SB581		SB619	SB626	SB622	SB622
HASTELLOY G-3	N06985	SB582	SB581		SB619	SB626	SB622	SB622
HASTELLOY X	N06002	SB435	SB572	SB572	SB619	SB626	SB622	SB622
Ni200	N02200	SB162	SB160			SB730	SB161	SB161
Ni201	N02201	SB162	SB160			SB730	SB161	SB161
Alloy 20 (Carpenter20)	N08020	SB463	SB473	SB462	SB464	SB468	SB729	SB729
Monel 400	N04400	SB127	SB164	SB564		SB730	SB165	SB163
Monel R-405	N04405		SB164					
Monel 450	C71500	SB171			SB467		SB466	SB466
Monel K-500	N05500							
Inconel 600	N06600	SB168	SB166	SB564	SB517	SB516	SB167	SB167
Inconel 601	N06601							
Inconel 617	N06617	SB168	SB166	SB564			SB167	SB167
Inconel 625	N06625	SB443	SB446	SB564	SB705	SB704	SB444	SB444
Inconel 690	N06690	SB168	SB166				SB167	SB167
Inconel 718	N07718							
Inconel X-750	N07750		SB637	SB637				
Incoloy 800	N08800	B409	B408	B564	SB514	SB515	SB407	SB407
Incoloy 800H	N08810	SB409	SB408	SB564	SB514	SB515	SB407	SB407
Incoloy 800HT	N08811	SB409	SB408	SB564	SB514	SB515	SB407	SB407
Incoloy 825	N08825	SB424	SB425	SB564	SB705	SB704	SB423	SB423
254SMO	S31254	SA240						
NAS 254MM	N08367	SB688	SB691	SB564	SB675	SB676	SB690	SB690
904L	N08904	SB625	SB649		SB673	SB674	SB677	SB677
DUPLEX 2205	S32205	SA240						
SUS329J4L	S32506	SA240						

Welding Products

AWS CLASS	ASME/AWS	UNS No.	MAJOR USES
Coated-Electrodes	Eni-1	F41	W82141 Ni200,Ni201,Ni alloy
	EniCu-7	F42	W84190 Monel alloy 400, Copper, Copper-Nickel alloy
	ECuNi	F34	W60715 Alloy400,450,70/30,80/20,90/10 Copper-Nickel alloy(cast)
	ENiCrFe-1	F34	W86132 Inconel alloy 600, inco alloy 330
	ENiCrFe-3	F43	W86182 Inconel alloy 600, 601, Nickel alloy
	ENiCrMo-3	F43	N06625 Inconel alloy 625, 601, Nickel alloy
	ENiCrCoMo-1		W86117 Inconel alloy 617, Inconel alloy 800HT
	ENiCrMo-4	F44	W80276 Inconel alloy C-276
	ENiCrFe-2	F43	W86133 Inconel alloy 800, 800HT, 9% Nickel, Nickel
ENiCrFe-4	F43	W86134 Cryogenic Steel With Alternating current	

AWS CLASS	ASME/AWS	UNS No.	MAJOR USES
	ErNi-1	F41	N02061 Ni200,Ni201
	ErNiCu-7	F42	N04060 Ni200,Ni201
	ErCuNi	F34	C71580 Monel alloy 400,r-405, k-500
	ErNiCrFe-5	F43	N06062 Monel alloy 450, 70/30, 80-20, 90-10 Copper Nickel alloy
	ErNiCr-3	F43	N06082 Inconel alloy 600
	ErNiCrGe-6	F43	N07092 Inconel alloy 600, 601, incoloy 800, 800HT,





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Filler Metals	ErNiCrCoMo-1		N06617	Steel + Nickel alloy
	ErNiCrMo-3	F43	N06625	Inconel alloy 617 , Incoloy alloy 800HT
	ErNiFeCr-2		N07718	Inconel alloy 625, 601 , Nickel alloy
	ErNiFeCr-1	F45	N08065	Inconel alloy 825
	ErNiCrMo-4	F44	N10276	Inconel Alloy C-276
	ErNiCrMo-2	F43	N06002	Inconel alloy HX
	ErTi-1	A5.16 ErTi-1	R50250	Titanium Gr. 1
	ErTi-2	A5.16 ErTi-2	R50400	Titanium Gr. 2
	ErTi-3	A5.16 ErTi-3	R50550	Titanium Gr. 2,3
	ErTi-0.2Pd	A5.16 ErTi-0.2Pd	R52250	Titanium Gr. 11
	ErTi-6Al-4V	A5.16 ErTi-6Al-4V	R56400	Titanium Gr. 5

**A WEIGHT CALCULATION  
DENSITY OF MATERIAL**

Material	Density
201	7.93
202	7.93
301	7.93
302	7.93
304(L)	7.93
305	7.93
309S	7.93
310S	7.98
316(L)	7.98
316J1	7.98
317(L)	7.98
321	7.93
329J1	7.8
347	7.98
403	7.75
405	7.75
410	7.75
410S	7.75
420J1	7.7
420J2	7.7
429	7.7
430	7.7
434	7.7
440A	7.7
444	7.7

2. KINDS OF PRODUCTS 'S WEIGHT CALCULATION FORMULA

1. STEEL PLATE	T × W × L × DENSITY/1,000,000= KG/SH	
2. STEEL PIPE	304(L)	(OD-T)×T×0.02491×L
	316(L)	(OD-T)×T×0.02507×L
	410	(OD-T)×T×0.02435×L
	430	(OD-T)×T×0.02419×L
3. ROUND BAR	304(L)	OD×OD×0.00623×L
	316(L)	OD×OD×0.00626×L
4. SQUARE BAR	304(L)	SQ×SQ×0.00793×L
	316(L)	SQ×SQ×0.00798×L
5. HEXAGONAL BAR	304(L)	SQ×SQ×0.007×L



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	316(L)	SQ×SQ×0.0072×L
6. ANGLE BAR	304(L)	SQ+SQ-T×0.00793×L
	316(L)	SQ+SQ-T×0.00798×L
7. FLAT BAR	T × W × L × DENSITY/1,000,000= KG/SH	

ELBOW  
(LONG AND SHORT TYPE)



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◇ LONG RADIUS ELBOWS

SIZE		O. D	Wall Thickness (T)		A	B	Approx Weight (Kg)	
INCH	mm		SPP	S40			SPP	S40
1/2	15	21.7	2.8	2.8	38.1	15.8	0.08	0.08
3/4	20	27.2	2.8	2.9	38.1	15.8	0.1	0.1
1	25	34	3.2	3.4	38.1	15.8	0.15	0.15
1 1/4	32	42.7	3.5	3.6	47.6	19.7	0.25	0.26
1 1/2	40	48.6	3.5	3.7	57.2	23.7	0.35	0.37
2	50	60.5	3.8	3.9	76.2	31.6	0.64	0.65
2 1/2	65	76.3	4.2	5.2	95.3	39.5	1.12	1.36
3	80	89.1	4.2	5.5	114.3	47.3	1.58	2.03
4	100	114.3	4.5	6	152.4	63.1	2.91	3.83
5	125	139.8	4.5	6.6	190.5	78.9	4.49	6.48
6	150	165.2	5	7.1	228.6	94.7	7.09	9.93
8	200	216.3	5.8	8.2	304.8	126.3	14.4	20.1
10	250	267.4	6.6	9.3	381	157.8	25.4	35.4
12	300	318.5	6.9	10.3	457.2	189.4	38	56.2
14	350	355.6	7.9	11.1	533.4	220.9	56.7	73.9
16	400	406.4	7.9	12.7	609.6	252.5	74.3	118
18	450	457.2	7.9	14.3	685.8	284.4	94.2	168
20	500	508	7.9	15.1	762	315.6	116	219

◇ SHORT RADIUS ELBOWS

SIZE		O. D	Wall Thickness (T)		A	B	Approx Weight (Kg)	
INCH	mm		SPP	S40			SPP	S40
1/2	15	21.7	-	-	-	-	-	-
3/4	20	27.2	-	-	-	-	-	-
1	25	34	3.2	3.4	25.4		0.1	0.1
1 1/4	32	42.7	3.5	3.6	31.8	13.2	0.17	0.17
1 1/2	40	48.6	3.5	3.7	38.1	15.8	0.23	0.25
2	50	60.5	3.8	3.9	50.8	21	0.42	0.43
2 1/2	65	76.3	4.2	5.2	63.5	26.3	0.74	0.91
3	80	89.1	4.2	5.5	76.2	31.6	1.05	1.36
4	100	114.3	4.5	6	101.6	42.1	1.94	2.55
5	125	139.8	4.5	6.6	127	52.6	2.99	4.32
6	150	165.2	5	7.1	152.4	63.1	4.72	6.62
8	200	216.3	5.8	8.2	203.2	84.2	9.6	13.4
10	250	267.4	6.6	9.3	254	105.2	16.9	23.6
12	300	318.5	6.9	10.3	304.8	126.2	25.4	37.4
14	350	355.6	7.9	11.1	355.6	147.3	37.8	52.6
16	400	406.4	7.9	12.7	406.4	168.3	49.5	78.6
18	450	457.2	7.9	14.3	457.2	189.4	62.8	112



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20	500	508	7.9	15.1	508	210.4	77.7	146
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SIZE(MM)	WEIGHT (kg/m)	구분	DEFORMED BAR									
			LENGTH (m)									
			6	6.5	7	7.5	8	9	10	11	12	
D10	0.56	1PC/KG	3.36	3.64	3.92	4.2	4.48	5.04	5.6	6.16	6.72	
		TOTAL WEIGHT	300	270	270	240	210	210	180	150	150	
		WEIGHT	1,008	983	10,528	1,008	941	1,058	1,008	924	1,008	
		TOTAL LENGTH	1,800	1,755	1,890	1,800	1,680	1,890	1,800	1,650	1,800	
D13	0.995	1PC/KG	5.97	6.47	6.97	7.46	7.96	8.96	9.95	10.95	11.94	
		TOTAL WEIGHT	160	160	140	140	120	120	100	100	80	
		WEIGHT	955	1,035	976	1,044	955	1,075	995	1,095	955	
		TOTAL LENGTH	690	1,040	980	1,050	960	1,080	1,000	1,100	960	
D16	1.56	1PC/KG	9.36	10.14	10.92	11.7	12.48	14.04	15.6	17.16	18.72	
		TOTAL WEIGHT	105	105	90	90	75	75	60	60	60	
		WEIGHT	983	1,065	983	1,053	936	1,053	936	1,030	1,123	
		TOTAL LENGTH	630	682.5	630	675	600	675	600	660	720	
D19	2.25	1PC/KG	13.5	14.63	15.75	16.88	18	20.25	22.5	24.75	27	
		TOTAL WEIGHT	74	68	63	59	56	49	44	40	37	
		WEIGHT	999	995	992	669	1,008	992	990	990	999	
		TOTAL LENGTH	444	442	440	442.5	448	441	440	440	444	
D22	3.04	1PC/KG	18.24	19.76	21.26	22.8	24.32	27.36	30.4	33.44	36.48	
		TOTAL WEIGHT	55	51	47	44	41	37	33	30	27	
		WEIGHT	1,003	1,008	1,000	1,003	997	1,012	1,003	1,003	985	
		TOTAL LENGTH	330	331.5	329	330	328	333	330	330	324	
D25	3.98	1PC/KG	23.88	25.87	27.86	29.85	31.84	35.82	39.8	43.78	47.76	
		TOTAL WEIGHT	42	39	36	33	32	28	25	23	21	
		WEIGHT	1,003	1,009	1,003	985	1,019	1,003	995	1,007	1,003	
		TOTAL LENGTH	252	253.5	252	247.5	256	252	250	253	252	
D29	5.04	1PC/KG	30.24	32.76	35.28	37.8	40.32	45.36	50.4	55.44	60.48	
		TOTAL WEIGHT	33	31	28	26	25	22	20	18	17	
		WEIGHT	998	1,016	988	983	1,008	998	1,008	998	1,028	
		TOTAL LENGTH	198	201.5	196	195	200	198	200	198	204	
D32	6.23	1PC/KG	37.38	40.5	43.61	46.73	49.84	56.07	62.3	68.53	74.76	
		TOTAL WEIGHT	27	25	23	21	20	18	16	15	13	
		WEIGHT	1,009	1,013	1,003	981	997	1,009	997	1,028	972	
		TOTAL LENGTH	162	162.5	161	157.5	160	162	160	165	156	
D35	7.51	1PC/KG	45.06	48.82	52.57	56.33	60.08	67.59	75.1	82.61	90.12	
		TOTAL WEIGHT	22	20	19	18	17	15	13	12	11	
		WEIGHT	991	976	999	1,014	1,021	1,014	976	991	991	
		TOTAL LENGTH	132	130	133	135	136	135	130	132	132	
D38	8.95	1PC/KG	53.7	58.18	62.65	67.13	71.6	80.55	89.5	98.45	107.4	
		TOTAL WEIGHT	19	17	16	15	14	12	11	10	9	
		WEIGHT	1,020	989	1,002	1,007	1,002	967	985	985	967	
		TOTAL LENGTH	114	110.5	112	112.5	112	108	110	110	108	
D41	10.5	1PC/KG	63	68.25	73.5	78.75	84	94.5	105	115.5	126	
		TOTAL WEIGHT	16	15	14	13	2	11	9	8		
		WEIGHT	1,008	1,024	1,029	1,024	1,008	1,040	1,050	1,040	1,008	
		TOTAL LENGTH	96	97.5	98	97.5	96	99	100	99	96	
D51	15.9	1PC/KG	95.4	103.35	111.3	119.25	127.2	143.1	159	174.9	190	
		TOTAL WEIGHT	11	10	9	8	8	7	6	6	5	
		WEIGHT	1,049	1,034	1,002	954	1,018	1,002	954	1,049	954	



STEEL



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TSI METAL CORPORATION**

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WWW.TAEMYUNGSTEEL.COM;WWW.TSIMETAL.COM

**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

TOTAL LENGTH	66	65	63	60	64	63	60	66	60
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STEEL



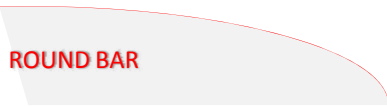
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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

KS D 3504, JIS G 3112										ASTM A 615		
호칭명	단위 무게	호칭치수			마디 및 리브의 치수					호칭명	단위무게	
Designation	Unit weight	Nominal Dimensions			Deformation Requirements					Bar Designation No.	Nominal Weight	
		직경	단면적	둘레	마디의 평균 간격 최대치	마디 높이의 평균 최소치	마디높이의최 대치	마디톱의 합 계의 최대치				
		Dia-meter mm	Sectional Area cm <sup>2</sup>	Peri-meter cm	Max. Average cm	Min. Average mm	Max. Height mm	Max. Gap mm	lb/ft		kg/m	
D10	0.56	9.53	0.7133	3	6.7	0.4	0.8	7.5	3	0.376	0.56	
D13	0.995	12.7	1.267	4	8.9	0.5	1	10	4	0.668	0.994	
D16	1.56	15.9	1.956	5	11.1	0.7	1.4	12.5	5	1.043	1.552	
D19	2.25	19.1	2.865	6	13.4	1	2	15	6	1.502	2.235	
D22	3.04	22.2	3.871	7	15.5	1.1	2.2	17.5	7	2.044	3.042	
D25	3.98	25.4	5.067	8	17.8	1.3	2.6	20	8	2.67	3.973	
D29	5.04	28.6	6.424	9	20	1.4	2.8	22.5	9	3.4	5.06	
D32	6.23	31.8	7.942	10	22.3	1.6	3.2	25	10	4.303	6.403	
D35	7.51	34.9	9.566	11	24.4	1.7	3.4	27.5	11	5.313	7.906	
D38	8.95	38.1	11.4	12	26.7	1.9	3.8	30	-	-	-	
D41	10.5	41.3	13.4	13	28.9	2.1	4.2	32.5	14	7.65	11.38	
D51	15.9	50.8	20.27	16	35.6	2.5	5	40	-	-	-	
D57	-	-	-	-	-	-	-	-	18	13.6	20.24	



Diameter	Sectional Area	Unit Weight
mm	(cm <sup>2</sup> )	(kg/m)
6	0.2827	0.222
7	0.3848	0.302
8	0.5027	0.395
9	0.6362	0.499
10	0.7854	0.617
11	0.9503	0.746
12	1.131	0.888
13	1.327	1.04
16	2.011	1.57
19	2.835	2.23
20	3.142	2.47
22	3.801	2.98
24	4.524	3.55
25	4.909	3.85
28	6.158	4.83
30	7.069	5.55
32	8.042	6.31
36	10.18	7.99
38	11.34	8.9
42	13.85	10.9
45	15.9	12.5
46	16.62	13
48	18.1	14.2
50	19.64	15.4
52	21.24	16.7

Diameter	Sectional Area	Unit Weight
mm	(cm <sup>2</sup> )	(kg/m)
56	24.63	19.3
60	28.27	22.2
64	32.17	25.6
65	33.18	26
70	38.48	30.2
75	44.18	34.7
80	50.27	39.5
85	56.75	44.5
90	63.62	49.9
95	70.88	55.6
100	78.54	61.7
110	95.03	74.6
120	113.1	88.8
130	132.7	104
140	153.9	121
150	176.7	139
160	201.1	158
170	227	178
180	254.5	200
190	283.5	223
200	314.2	247
210	346.4	272
220	380.1	298
230	415.5	326
240	452.4	355





STEEL

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TSI METAL CORPORATION**



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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

55	23.76	18.7	250	490.9	385
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Standard	Sectional Area	Unit Weight
Sectional	cm <sup>2</sup>	kg/m
Dimension		
A(mm)		
8	0.64	0.502
9	0.81	0.636
12	1.44	1.13
13	1.69	1.33
16	2.56	2.01
19	3.61	2.83
22	4.84	3.8
25	6.25	4.91
28	7.84	6.15
32	10.24	8.04
38	14.44	11.3
44	19.36	15.2
50	25	19.6
55	30.25	23.7
65	42.25	33.2
75	56.25	44.2
90	81	63.6
100	100	78.5
110	121	95
120	144	113
130	169	133
140	196	154

SQUARE BAR



STEEL



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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

150	225	177
160	256	201

FLAT BAR

Standard Sectional Dimension (mm)		Sectional Area (cm <sup>2</sup> )	Unit Weight (kg/m)	Standard Sectional Dimension (mm)		Sectional Area (cm <sup>2</sup> )	Unit Weight (kg/m)
t	B			t	B		
3	19	0.57	0.447	9	125	11.25	8.83
3	22	0.66	0.518	9	150	13.5	10.6
3	25	0.75	0.589	9	160	14.4	11.3
3	32	0.96	0.754	9	165	14.85	11.66
3	38	1.14	0.895	9	170	15.3	12.01
3	44	1.32	1.04	9	175	15.75	12.36
3	50	1.5	1.18	9	180	16.2	12.72
4.5	19	0.855	0.671	9	190	17.1	13.42
4.5	25	1.125	0.88	9	200	18	14.13
4.5	32	1.44	1.13	9	250	22.5	17.66
4.5	38	1.71	1.34	9	300	27	21.2
4.5	44	1.98	1.55	10	50	5	3.93
4.5	50	2.25	1.77	10	80	8	6.28
4.5	60	2.7	2.12	10	90	9	7.07
4.5	65	2.925	2.3	10	100	10	7.85
4.5	70	3.15	2.47	10	125	12.5	9.81
4.5	75	3.375	2.65	10	150	15	11.78
4.5	80	3.6	2.83	11	125	13.75	10.79
4.5	90	4.05	3.18	12	25	3	2.36
4.5	100	4.5	3.53	12	32	3.84	3.01
6	25	1.5	1.18	12	38	4.56	3.58
6	32	1.92	1.51	12	44	5.28	4.14
6	38	2.28	1.79	12	50	6	4.71
6	44	2.64	2.07	12	60	7.2	5.65
6	50	3.6	2.36	12	65	7.8	6.12
6	60	3.9	2.83	12	70	8.4	6.59
6	65	4.2	3.06	12	75	9	7.07
6	70	4.5	3.3	12	80	9.6	7.54
6	75	4.8	3.53	12	90	10.8	8.48
6	80	5.4	3.77	12	100	12	9.42
6	90	6	4.24	12	110	13.2	10.36
6	100	6.6	4.71	12	125	15	11.78
6	110	7.5	5.18	12	150	18	14.13
6	125	9	5.89	12	160	19.2	15.07
6	150	2.25	7.07	12	165	19.8	15.54
9	25	2.88	1.77	12	170	20.4	16.01
9	32	3.42	2.26	12	175	21	16.49
9	38	3.96	2.68	12	180	21.6	16.96
9	44	4.5	3.11	12	190	22.8	17.9
9	50	5.4	3.53	12	200	24	18.86
9	60	5.85	4.24	12	250	30	23.56
9	65	6.3	4.59	12	300	36	28.26
9	70	6.75	4.95	12	350	42	32.97
9	75	7.2	5.3	12	400	48	37.68
9	80	8.1	5.65	14	150	21	16.49
9	90	9	6.36	16	25	4	3.14
9	100	9.9	7.07	16	32	5.12	4.02
9	110	9.9	7.77	16	38	6.08	4.77



STEEL

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Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine



STEEL



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Standard Sectional		Sectional	Unit	Standard Sectional		Sectional	Unit
Dimension		Area	Weight	Dimension		Area	Weight
(mm)		(cm <sup>2</sup> )	(kg/m)	(mm)		(cm <sup>2</sup> )	(kg/m)
t	B			t	B		
16	44	7.04	5.53	19	350	66.5	52.2
16	50	8	6.28	19	400	76	59.66
16	60	9.6	7.54	22	160	35.2	27.63
16	65	10.4	8.16	22	165	36.3	28.5
16	70	11.2	8.79	22	170	37.4	29.36
16	75	12	9.42	22	175	38.5	30.22
16	80	12.8	10.05	22	180	39.6	31.09
16	90	14.4	11.3	22	190	41.8	32.81
16	100	16	12.56	22	200	44	34.54
16	110	17.6	13.82	22	250	55	43.18
16	125	20	15.7	22	300	66	51.81
16	150	24	18.84	22	350	77	60.45
16	160	25.6	20.1	22	400	88	69.08
16	165	26.4	20.72	25	160	40	31.4
16	170	27.2	21.35	25	165	41.25	32.38
16	175	28	21.98	25	170	42.85	33.36
16	180	28.8	22.61	25	175	43.75	34.34
16	190	30.4	23.86	25	180	45	35.33
16	200	3	25.12	25	190	47.5	37.29
16	250	40	31.4	25	200	50	39.25
16	300	48	37.68	25	250	62.5	49.06
16	350	25	43.96	25	300	75	58.88
16	400	64	50.24	25	350	87.5	68.69
19	32	6.08	4.77	25	40	100	78.5
19	38	7.22	5.67	28	160	44.8	35.17
19	44	8.36	6.56	28	165	46.2	36.27
19	50	9.5	7.46	28	170	47.6	39.37
19	60	11.4	8.95	28	175	49	38.47
19	65	12.35	9.69	28	180	50.4	39.56
19	70	13.3	10.44	28	190	53.2	41.76
19	75	14.25	11.19	28	200	56	43.96
19	80	15.2	11.93	28	250	70	54.95
19	90	17.1	13.42	28	300	84	65.94
19	100	19	14.92	28	350	98	76.93
19	110	20.9	16.41	28	400	112	87.92
19	125	23.75	18.64	32	160	51.2	49.19
19	150	28.5	22.37	32	165	52.8	41.45
19	160	30.4	23.86	32	170	54.4	42.7
19	165	31.35	24.61	32	175	56	43.96
19	170	32.3	25.36	32	180	57.6	45.22
19	175	33.25	26.1	32	190	60.8	47.73
19	180	34.2	26.85	32	200	64	50.24
19	190	36.1	28.34	32	250	80	62.8
19	200	38	29.83	32	300	96	75.36
19	250	47.5	37.29	32	350	112	87.92



STEEL

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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

19	300	57	44.75	32	400	128	100.48
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STAINLESS STEEL SHEET AND COIL

Type	Thickness		Width		Length		Finish
	Range	Regular	Range	Regular	Range	Regular	
SHEET	0.3mm~	0.3	500mm~	914mm : 3feet	1,000mm	2,000mm : 2M	No.1
	4.0mm	0.4	1,300mm	1,000mm : 1M	7,500mm	2,438mm : 8feet	
		0.5		1,219mm : 4feet		3,000mm : 3M	No.2D
		0.6				3,048mm : 10feet	
		0.7				4,000mm : 4M	No.2B
		0.8					
		0.9					No.4
		1					
		1.2					No.8
		1.5					
		1.8					HL
		2					
		2.2					L-HL
		2.5					
COIL		3					SM
		3.5					
		4	45mm~	No regulations	COIL UNIT WEIGHT		
			1,300mm		: AVERAGE 1M/T ~ 4MT		
					(MAX 20M/T)		
					COIL ID : 508mm, 610mm		
			COIL OD : MAX 2,000mm				
			2,200mm should accompany every				

KS	ASTM /KS /JIS	Standards	Symbol	Chemical Composition (wt%)					Cr
				C	Si	Mn	P	S	
304		KS	STS 304	0.08	1	2	0.045	0.03	18.00~20.00
		JIS	SUS 304	0.08	1	2	0.045	0.03	18.00~20.00
		AISI	AISI 304	0.08	1	2	0.045	0.03	18.00~20.00
		DIN	1.4301	0.07	1	2	0.045	0.03	17.00~19.00
304M		KS	STS 300M4	0.1	1	5.50~7.50	0.045	0.015	17.00~18.00
304L		KS	STS 304L	0.03	1	2	0.045	0.03	18.00~20.00
		JIS	SUS 304L	0.03	1	2	0.045	0.03	18.00~20.00
		SAISI	AISI 304L	0.03	1	2	0.045	0.03	18.00~20.00
		DIN	1.4301	0.03	1	2	0.045	0.03	18.00~20.00
316		KS	STS 316	0.08	1	2	0.045	0.03	16.00~18.00
		JIS	SUS 316	0.08	1	2	0.045	0.03	16.00~18.00
		AISI	AISI 316	0.08	1	2	0.045	0.03	16.00~18.00
		DIN	1.4401	0.07	1	2	0.045	0.015	16.50~18.50
316L		KS	STS 316L	0.03	1	2	0.045	0.03	16.00~18.00
		JIS	SUS 316L	0.03	1	2	0.045	0.03	16.00~18.00
		AISI	AISI 316L	0.03	1	2	0.045	0.03	16.00~18.00
		DIN	1.4404	0.03	1	2	0.045	0.015	16.50~18.50
409L		KS	STS 409L	0.03	1	1	0.04	0.03	10.50~11.75
		JIS	SUS 409L	0.03	1	1	0.04	0.03	10.50~11.75
		KS	STS 410	0.15	1	1	0.04	0.03	11.50~13.50





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410	JIS	SUS 410	0.15	1	1	0.04	0.03	11.50~13.50
	AISI	AISI 410	0.15	1	1	0.04	0.03	11.50~13.50
	DIN	1.4006	0.08~0.12	1	1	0.045	0.03	12.00~14.00
410L	KS	STS 410L	0.03	1	1	0.04	0.03	11.00~13.50
	JIS	SUS 410L	0.03	1	1	0.04	0.03	11.00~13.50
430	KS	STS 430	0.12	0.75	1	0.04	0.03	16.00~18.00
	JIS	SUS 430	0.12	0.75	1	0.04	0.03	16.00~18.00
	AISI	AISI 430	0.12	1	1	0.04	0.03	16.00~18.00
436L	DIN	1.4016	0.08	1	1	0.045	0.03	15.50~17.50
	KS	SUS 436L	0.025	1	1	0.04	0.03	16.00~19.00
	JIS	SUS 436L	0.025	1	1	0.04	0.03	16.00~19.00
304J1	KS	STS 304J1	0.08	1.7	3	0.045	0.03	15.00~18.00
	JIS	SUS 304J1	0.08	1.7	3	0.045	0.03	15.00~18.00



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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

Chemical Composition (wt%)		Mechanical Properties					
Ni	Mo	Tensile Test (mm)			Hardness Test (Max)		
		Y/S kgf/mm <sup>2</sup>	T/S kgf/mm <sup>2</sup>	EL (%)	HB	HRB	Hv
8.00~10.50	-	21	53	40	187	90	200
8.00~10.50	-	21	53	40	187	90	200
8.00~10.50	-	21	53	40	202	92	-
8.00~10.50	-	21	56~76	35	-	-	-
3.50~5.50	-	36	69	47	-	-	180
9.00~13.00	-	18	49	40	187	90	200
9.00~13.00	-	18	49	40	187	90	200
8.00~12.00	-	17.5	49	40	183	88	-
10.00~12.00	-	22	53~68	35	-	-	-
10.00~14.00	2.00~3.00	21	53	40	187	90	200
10.00~14.00	2.00~3.00	21	53	40	187	90	200
10.00~14.00	2.00~3.00	21	53	40	217	95	-
10.00~13.00	2.00~2.50	24	51~71	35	-	-	-
12.00~15.00	2.00~3.00	18	49	40	187	90	200
12.00~15.00	2.00~3.00	18	49	40	187	90	200
10.00~14.00	2.00~3.00	17.5	49	40	217	95	-
10.00~13.00	2.00~2.50	24	51~71	35	-	-	-
-	-	18	37	25	162	80	175
-	-	18	37	25	162	80	175
-	-	21	45	20	183	88	200
-	-	21	45	20	183	88	200
-	-	21	45.5	20	217	95	-
-	-	-	56~71	13	200	-	-
-	-	20	37	22	183	88	200
-	-	20	37	22	183	88	20
-	-	21	46	22	183	-	-
-	-	21	49	22	-	-	-
-	-	21	45.5	22	183	-	-
-	-	25	46~61	18	-	-	-
-	0.75~1.25	25	42	20	217	96	230
-	0.75~1.25	25	42	20	217	96	230
6.0~9.0	cu1.0~3.00	16	46	40	187	90	200
6.0~9.0	cu1.0~3.00	16	46	40	187	90	200



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Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine

Width	Tolerance of Thickness	
	W < 1250	1240 ≤ W ≤ 1300
Thickness		
0.30 ≤ t < 0.60	± 0.05	± 0.08
0.60 ≤ t < 0.80	± 0.07	± 0.09
0.80 ≤ t < 1.00	± 0.09	± 0.10
1.00 ≤ t < 1.25	± 0.10	± 0.12
1.25 ≤ t < 1.60	± 0.12	± 0.15
1.60 ≤ t < 2.00	± 0.15	± 0.17
2.00 ≤ t < 2.50	± 0.17	± 0.20
2.50 ≤ t < 3.15	± 0.22	± 0.25
3.15 ≤ t < 4.00	± 0.25	± 0.30
4.00 ≤ t < 5.00	± 0.35	± 0.40

STAINLESS STEEL COIL TOLERANCE

Width	Tolerance of Thickness					
	W < 160	160 ≤ W < 250	250 ≤ W < 400	400 ≤ W < 630	630 ≤ W < 1000	1000 ≤ W < 1250
Thickness						
0.30 ≤ t < 0.40	± 0.025	± 0.030	± 0.035	± 0.035	± 0.038	± 0.038
0.40 ≤ t < 0.60	± 0.035	± 0.040	± 0.040	± 0.040	± 0.040	± 0.040
0.60 ≤ t < 0.80	± 0.040	± 0.045	± 0.045	± 0.045	± 0.05	± 0.05
0.80 ≤ t < 1.00	± 0.040	± 0.05	± 0.05	± 0.05	± 0.05	± 0.06
1.00 ≤ t < 1.25	± 0.05	± 0.05	± 0.05	± 0.06	± 0.06	± 0.07
1.25 ≤ t < 1.60	± 0.05	± 0.06	± 0.06	± 0.06	± 0.07	± 0.08
1.60 ≤ t < 2.00	± 0.06	± 0.07	± 0.08	± 0.08	± 0.09	± 0.10
2.00 ≤ t < 2.50	± 0.07	± 0.08	± 0.09	± 0.09	± 0.10	± 0.11
2.50 ≤ t < 3.15	± 0.08	± 0.09	± 0.09	± 0.10	± 0.11	± 0.12
3.15 ≤ t < 4.00	± 0.09	± 0.10	± 0.10	± 0.11	± 0.12	± 0.13

Width	Tolerance of Width			
	W < 400	400 ≤ w ≤ 630	630 ≤ w ≤ 1000	1000 ≤ w ≤ 1300
Edge				
Mill Edge	10	20	25	30
Cut Edge	0	0	0	0
	5	5	5	5
	0	0	0	0

Length	Tolerance of Width
L ≤ 3500	10
3500 < L ≤ 6000	15
6000 < L	20

Length	≤ 3500	3500 < L ≤ 6000	6000 <
Tolerance of Length	10	15	30
	0	0	0

Width	Tolerance of Thickness				
	W < 160	160 ≤ W < 250	250 ≤ W < 400	400 ≤ W < 630	630 ≤ W < 1000
Thickness					
t < 0.60	± 0.15	± 0.20	± 0.25	± 0.30	± 0.50
0.60 ≤ t < 1.00	± 0.20	± 0.25	± 0.25	± 0.30	± 0.50



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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

$1.00 \leq t < 1.60$	$\pm 0.20$	$\pm 0.30$	$\pm 0.30$	$\pm 0.40$	$\pm 0.60$
$1.60 \leq t < 2.50$	$\pm 0.25$	$\pm 0.35$	$\pm 0.35$	$\pm 0.50$	$\pm 0.70$
$2.50 \leq t < 4.00$	$\pm 0.30$	$\pm 0.40$	$\pm 0.40$	$\pm 0.50$	$\pm 0.80$



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Steel grades for Dish heads  
Cones

ITEMS	Standard	Steel grade	ITEMS	Standard	Steel grade
Non alloyed and alloyed creep resistant steels	EN 10028-2	P235, 265, 295, 355GH	Unalloyed structural steels	EN 10025-2	S235 JR+AR, JR+N, J0+AR, S275 JR+AR, JR+N, J0+AR, J0+N, J2+AR, J2+N
		16Mo3, 20MnMoNi4-5			S355 JR+AR, JR+N, J0+AR, K2+AR, K2+N
		13CrMo4-5, 10CrMo9-10			S275N, NL
		13CrMoV9-10			S355N, NL
Fine grain steels	EN 10028-3	P275 NH, NL1, NL2 P355 NH, NL1, NL2 P460 NH, NL1, NL2	Fine-grain steels, normalizing rolled, normalized (furnace)	EN 10025-3	S420N, NL S460N, NL
Pressure vessels	EN 10028-4	12Ni14	Structural steels	ASTM/ASME	(S)A 36
Ni-alloyed steels		X12Ni5			(S)A 283 Grade C
		X7Ni9			(S)A 572 Grade 50 Type 1
		X8Ni9			(S)A 588 Grade A
Steels for pressure vessels	ASTM / ASME	(S)A 203 Grade D, E	Weather resistant	ASTM/ASME	(S)A 588 Grade A
		(S)A 387 Grade11 Class2			
		(S)A 387 Grade12 Class2			
		(S)A 387 Grade22 Class2			
		(S)A 516 Grade60, 65, 70			
		(S)A 537 Class1, 2			
		(S)A 553 Type 1			
(S)A 738 Grade A, B					



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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

Equivalent Table

Europe	UNI	Germany	France	U.K.	Canada	U.S.A	International
EN 10155	EU 155	WBL 087 WSt 37.2	NFA 35502 E 24W 2	BS 4360	CSA G 4021	ASTM	ISO 4952 Fe 235W
S 235 JOW	Fe 360 CK1		E 24 W 3				
S 235 J2W	Fe 360 DK1	W St 37.3	E 24 W 4				
S 355 JOW	Fe 510 C2K1		E 36 WB 3	WR 50 B	gr 350 -A AT	A242 gr1	Fe 355 W
S 355 J2G 1W	Fe 510 D2K1	W St 52.3	E 36 WB 4	WR 50 C	gr 400-A AT	A 600 A,B,C	
S 355 J2G2W							
S 355 K2G1W							
S 366K2G2W							

Equivalent Table

Europe	Germany	France	Italy	Sweden	Japan	U.K.	U.S.A
EN 10028-2	DIN 17155	AFNOR 36206	UNI 5869	MNC830E	JIS 3103	BS 1501 part 2	ASTM
16 Mo 3	16 Mo 3	15 D 3	16 Mo 3				
		18 MD 4.05	16 Mo 6	22.16.04	450M	271	A202 gr. A,B
		15 MDV 4.05		22.18.04	490 M		A 204 gr.A,B,C
		15 CD 2.05					
14 Cr Mo 45	13 Cr Mo 44	15 CD 4.05	14 Cr Mo 46			620	
						gr.27,31	A 302 gr.A,B
							A 387 gr.2,11,12
						621 gr. A,B	
						622 gr.31	

Equivalent Table

Europe	Belgium	Germany	France	Sweden	International	Italy	Japan	
EN 10025(93)	EN 10025 (90)	NBNA21201	DIN 17100	NFA35501	MNC 850 E	ISO 1052	UNI 7070	JISG
		A 330-1,2						
		A-360 1,2,3						
		A-410 1,2,3						
E 295	Fe 490-2	A 490-1,2	St 50-2	A 60-2	SIS 15,50,00	Fe E 490	Fe 490	SS 500
					SIS 15,50,01	5		
E 335	Fe 590-2	A 590-1,2	St 60-2	A 60-2	SIS 16,50,00	Fe E 690	Fe 590	
					SIS 16,50,01			
E 360	Fe 690-2	A 690-1,2	St 70-2	A 70-2	SIS 16,55,00	Fe E 690	Fe 690	

Equivalent Table

Europe	Germany	Japan	U.K	USA
EN 10028-2	DIN 17135	JIS G 3115	BS 1501	ASTM
P235 GH	DIN17165	JIS G 3103	151	A 285
	DIN17102	SPV 235	gr.360,400,430	gr.A,B,C
		SB 410	161	A441
			gr.360,400,430	A442
			0	gr.55,60
P 295 GH	HII		154	A455
P 275 N			gr.360A,400A	
P 275 NH			,430A	
P 275 NL 1				
P 275 NL 2				





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**Prethrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

Equivalent Table

Europe			Germany			Japan		U.K	USA
EN 10028-2	EN 10028-3	EU 113	DIN 17135	DIN17165	DIN17102	JIS G 3115	JIS G 3103	BS 1501	ASTM
		Fe E315							
P296 GH			A St 45	17 Mn 4	St E 315	SPV 315	SB450	164	A515
		KG,KW,KT			W St E 315			gr.360,400	gr.55,60,65,70
					T St E 315			223	A 516
					E St E 315			gr.460,490	gr.55,60,65,70
		Fe E 355							
P 355 GH	P 355 N		A St 52	19 Mn 8	St E 355	SPV 355	SB 480	224	A 537
	P 355 NH	KG,KW,KT			W St E 355			gr.400,430,460,490	class 1
	P 355 NL1				T St E 355			225	A 612
	P 355 NL2				E St E 355			grade 490	A 622

Equivalent Table

LR	DNV	GL	BV	ABS	USSR	N.K
A	A	A	A	A	A	A
B	B	B	B	B	B	B
D	D	D	D	SS	D	D
E	E	E	E	E	E	E
				CD/DS		
	NV A 27 S					
	NV D 27 S					
	NV E 27 S					
AH 32	NV A 32	A 32	AH32	AH 32	A32	
DH 32	NV 32	D 32	DH 32	DH 32	D 32	
EH 32	NV E 32	E 32	EH 32	EH 32	E 32	
AH 34 S						
DH 34 S						
EH 34 S						
AH 35	NV A 36	A 36	AH 36	AH 36	A 36	
DH 36	NV D 36	D 36	DH 36	DH 36	D 36	
EH 36	NV E 36	E 36	EH 36	EH 36	E 36	
	NVA 40					
	NVD 40					
	NVE 40					
	NVA 420					
	NVD 420					
	NVE 420					

Equivalent Table

Material #	EN 10111	DIN 1614/2	NFA 36-301	UNI 5867	BS 1449	UNE 36.093	ASTM - SAE	JIS G3131
1.0332	DD11	StW 22	1 C	FeP 11	HR 3	AP 11	A 621 CQ - SAE 1010	SPHD
1.0398	DD12	RRStW 23					A 621 DQ - SAE 1008	SPHE
1.0335	DD13	StW 24	3 C	FeP 13	HR 1	AP 13	A 622 DQ - SAE 1006 AK	SPHE AK
1.0389	DD14		3 CT					



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Equivalent Table

1.049	S275N	StE 285		Fe E 275 KGN			A 572 Gr. 42	
1.0491	S275NL	TStE 285		Fe E 275 KTN	43 EE		A 633 Gr. A	
1.0545	S355N	StE 355	E 355 R	Fe E 355 KGN	50 E	AE 355 KG	A 572 Gr. 50	
1.0546	S355NL	TStE 355	E 355 FP	Fe E 355 KTN	50 EE	AE 355 KT	A 633 Gr. C, D / A 537 CL 1	
1.8902	S420N	StE 420	E 420 R	Fe E 420 KGN		AE 420 KG	A 255 Gr. D	SM 490 A
1.8912	S420NL	TStE 420	E 420 FP		50 F		A 633 Gr. E / A 572 Gr. 60 / A 738 Gr. C	

Equivalent Table

Material #	EN 10149-2	SEW 092	NFA 36-231	UNI 8890	BS 1449	UNE	A 517 / A 607 / J 1392
1.0972	S315MC		E 315 D		HR 43F35		045 XLK
1.0974		QStE 340 TM					Gr. 50 / Gr. 50
1.0976	S355MC		E 355 D	Fe E 355 TM			050 XLK
1.0978		QStE 380 TM					Gr. 55
1.098	S420MC	QStE 420 TM	E 420 D	Fe E 420 TM	HR 50F45		Gr. 60 / Gr. 60 / 060 XLK
1.0982	S460MC	QStE 460 TM					Gr. 65
1.0984	S500MC	QStE 500 TM	E 490 D	Fe E 490 TM			Gr. 70 / Gr. 70 / 070 XLK
1.0986	S550MC	QStE 550 TM	E 560 D	Fe E 560 TM			/ Gr. 80 / 080 XLK
1.8969	S600MC		E 620 D		HR 68F62		
1.8976	S650MC						
1.8974	S700MC	QStE 690 TM	E 690 D				ASTM A514

Equivalent Table

Material #	EN 10149-3	SEW 092	BS 1149
1.0971	S260NC	QStE 260 N	
			HR 40/30
1.0973	S315NC		
			HR 43/35
1.0977	S355NC		
			HR 46/40
1.0981	S420NC	QStE 420 N	

Equivalent Table

Material #	EN 10155	SEW 087	NFA 35-502	UNI	BS 4360	ASTM	JIS G3114
1.8961	S235J2W	WTSt 37-3	E 24 W 4	Fe 360 DK 1			
1.8945	S355J0WP		E 36 WA 3	Fe 510 C1K1	WR 50 A		
1.8946	S355J2WP		E 36 WA 4	Fe 510 D1K1		A 242 Type 1	
1.8959	S355J0W		E 36 WB 3	Fe 510 C2K1	WR 50 B	A 588 - A 242 Gr. 1	SMA 50 AW
1.8963	S355J2G1W	WTSt 52-3		Fe 510 D2K1	WR 50 C	A 588 Gr. A	to
1.8965	S355J2G2W						SMA 50 CP
1.8966	S355K2G1W		E 36 WB 4			A 709 Gr. 50 W	
1.8967	S355K2G2W						



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Equivalent Table

Material #	EN 10025	DIN 17100	NFA 35-501	UNI 7070	BS 4360	UNE 36.080	ASTM	JIS G3101
1.0035	S185	St 33	A 33	Fe 320		A 310-0	A 283 B - A 569 CQ	SS 330
1.0037	S235JR	St 37-2	E 24-2	Fe 360 B	40 A		A 283 C - A 570 Gr. 33	
1.0038	S235JRG2	RSt 37-2	E 24-2 NE		40 B	AE 235 B-FN		
1.0116	S235J2G3	St 37-3 N	E 24-4	Fe 360 D	40 D	AE 235 D		
1.0117	S235J2G4							
1.0044	S275JR	St 44-2	E 28-2	Fe 430 B	43 B	AE 275 B	A 283 D - A 36	SS 400
1.0143	S275JO	St 44-3 U	E 28-3	Fe 430 C	43 C	AE 275 C	A 578 Gr. 70	
1.0144	S275J2G3	St 44-3 N	E 28-4	Fe 430 D	43 D	AE 275 D	A 633 Gr. A	
1.0145	S275J2G4							
1.0045	S355JR		E 36-2	Fe 510 B	50 B	AE 355 B	A 572 Gr. 50 - A 678 Gr. A	SS 490
1.0553	S355JO	St 52-3 U	E 36-3	Fe 510 C	50 C	AE 355 C	A 441	
1.057	S355J2G3	St 52-3 N		Fe 510 D	50 D	AE 355 D		
1.0577	S355J2G4							
1.0595	S355K2G3		E 36-4		50 DD			
1.0596	S355K2G4							
1.005	E295	St 50-2	A 50-2	Fe 490		A 490		SS 500
1.006	E335	St 60-2	A 60-2	Fe 590		A 590		
1.007	E360	St 70-2	A 70-2	Fe 690		A 690		

Equivalent Table

Material #	EN 10113-3	SEW 083	NFA 36-201	UNI 7382	BS 4360	UNE	ASTM
1.8818	S275M	StE 275 TM		Fe E 275 KGTM			
1.8819	S275ML	TStE 275 TM		Fe E 275 KTTM			
1.8823	S355M	StE 355 TM	E 355 R	Fe E 355 KGTM			A 572 Gr. C
1.8834	S355ML	TStE 355 TM	E 355 FP	Fe E 355 KTTM	50 EE		A 633 Gr. C
1.8825	S420M	StE 420 TM	E 420 R				A 572 Gr. 60
1.8836	S420ML	TStE 420 TM	E 420 FP				A 633 Gr. E
1.8827	S460M	StE 460 TM	E 460 R	Fe E 460 KGTM			A 572 Gr. 65
1.8838	S460ML	TStE 460 TM	E 460 FP	Fe E 460 KGTM	55 EE		A 572 Gr. 65

Equivalent Table

Material #	EN 10028-2	DIN 17155	NFA 36-205	UNI 5869	BS 1501	UNE 36087	ASTM	JIS G3115
1.0345	P235GH	HI	A 37 CP	Fe 360 - 1KW	161 Gr. 360 / 164 Gr. 360	A 37 RCI	A 285 Gr. C - A 414 Gr. C / A 516 Gr. 55	SPV 24
1.0425	P265GH	HI	A 42 CP	Fe 410 - 1KW	161 Gr. 400 / 164 Gr. 400 / 224 Gr. 400	A 42 RCI	A 414 Gr. E / A 516 Gr. 60	
1.0481	P295GH	17 Mn 4	A 48 CP	Fe 460 - 1KW	224 Gr. 490	A 47 RCI	A 414 Gr. F / A 516 Gr. 65	SPV 32
1.0473	P355GH	19 Mn 6	A 52 CP	Fe 510 - 1KW		A 52 RCI	A 414 Gr. G	SPV 36
1.5415	16Mo3	15 Mo 3	15 D3	15 Mo 3	1503 - 243 B	16 Mo 3	A 204 Gr. B	
1.7335	13CrMo4-5	13CrMo 4 4	15 CD 4-05	14 CrMo 4.5	620 Gr. 27	14 CrMo 4.5	A 387 Gr. 12	
1.738	10CrMo9-10	10CrMo 9 10	10 CD 9.10		622 Gr. 31		A 387 Gr. 22	
1.7383	11CrMo9-10			12 CrMo 9.10		12 CrMo 9.10		



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Equivalent Table

Material #	EN 10028-3	DIN 17102	NFA 36-207	UNI 7382	BS 1501	UNE 36081	ASTM
1.0486	P275N	StE 285			224 Gr. 400		
1.0487	P275NH	WStE 285			224 Gr. 430		A 516 Gr. 60
1.0488	P275NL1	TStE 285					A 662 Gr. A
1.1104	P275NL2	ESStE 285					
1.0562	P355N	StE 355	A 510 AP	Fe E 355 KG	223 Gr. 490	AE 355 KG	A 537 CL 1
1.0565	P355NH	WStE 355	A 510 AP	Fe E 355-2	224 Gr. 490		A 662 Gr. C
1.0566	P355NL1	TStE 355	A 510 FP 1	Fe E 355-3	224 Gr. 490		A 737 Gr. B
1.1106	P355NL2	ESStE 355					

Equivalent Table

Material #	EN 10207	DIN EN 10207	NFA 36-205	UNI 5869	BS 1501	UNE 36080
1.0112	P235S	SPH 235	A 37 AP	Fe 360-2KW	164-360B LT20	AE 235 C
1.013	P265S	SPH 265	A 42 AP	Fe 410-2KW	164-400B LT20	SPH 265
1.11	P275SL	SPH 275				

Equivalent Table

Material #	EN 10120	DIN 17155	NFA 36-211	UNI 7355	BS 5045	UNE 36129	JIS G3116
1.0111	P245NB	H I	BS 1	Fe E 24 KR	Type A	AE 235 KR	SG 255
1.0243	P265NB	H II	BS 2	Fe E 27 KR	Type B	AE 265 KR	SG 295
1.0437	P310NB	17 Mn 4	BS 3	Fe E 31 KR	Type C	AE 345 KR	SG 325
1.0557	P355NB	19 Mn 6	BS 4	Fe E 35 KR	Type E		SG 365

Equivalent Table

Material #	EN 10208-2	DIN 17172	API 5L
1.0457	L 245NB	StE 240.7	Gr. B
1.0484	L 290NB	StE 290.7	X 42
1.0582	L 360NB	StE 360.7	X 52
1.8972	L 415NB	StE 415.7	X 60
1.0418	L 245MB	StE 240.7 TM	Gr. B
1.0429	L 290MB	StE 290.7 TM	X 42
1.0578	L 360MB	StE 360.7 TM	X 52
1.8973	L 415MB	StE 415.7 TM	X 60
1.8975	L 450MB	StE 445.7 TM	X 65
1.8977	L 485MB	StE 480.7 TM	X 70
1.8978	L 555MB		X 80

Equivalent Table

Material #	EN 10083-2	DIN 17200	NFA 33-101	UNI 7846	BS 970	UNE 36011	SAE J 403-AISI	JIS G 4051
1.0501	C35	C 35	AF55-C35	C 35	070 M 36	C 35 k	1035	S 35 C
1.0511	C40	C 40	AF60-C45	C 40	070 M 40		1038 / 1040	S 40 C
1.0503	C45	C 45	AF65-C45	C 45	070 M 46	C 45 k	1042 / 1045	S 45 C
1.054	C50	C 50			070 M 50		1049 / 1050	S 50 C
1.0535	C55	C 55	AF70-C55	C 55	070 M 55	C 55 k	1055	S 55 C
1.0601	C60	C 60			070 M 60		1060	S 58 C
1.0603	1 C 67	C 67	XC 68	C 67	080A67		1070	



STEEL

**TAEMYUNG STEEL CORPORATION  
TSI METAL CORPORATION**



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**Petrochemical / Crude Oil and Gas/ Natural PipeLines , Water Supply Lines, Industrial PipeLine**

1.0605	1 C 75	C 75	XC 75	C 75	080A72		1074
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Equivalent Table

AISI	EN / DIN	ASTM/UNS	EN	AFNOR	Reg.TM	Forging	
410S	1. 4000	S41008	X6Cr13	Z8C12			Ferrite
410	1. 4006	S41000	X12Cr13	Z10C13		A182 F410	Martensite
430	1. 4016	S43000	X6Cr17	Z8C17			Ferrite
420	1. 4021	S42000	X20Cr13	Z20C13			Martensite
420	1. 4028	J91153	X30Cr13	Z33C13			Martensite
	1. 4162	S32101			LDX 2101		Duplex
304	1. 4301	S30400	X5CrNi18.10	Z6CN18.09		A182 F304	Austenite
304L	1. 4306	S30403	X2CrNi19.11			A182 F304L	Austenite
304L	1. 4307					A182 F304L	Austenite
	1. 4362	S32304/S 39230	X2CrNiN23.4	Z3CN23.04Az	SAF 2304		Superduplex
316	1. 4401	S31600	X5CrNiMo17.12.2	Z7CND17.11.02		A182 F316	Austenite
316L	1. 4404	S31603	X2CrNiMo17.13.2	Z3CND18.12.02		A182 F316L	Austenite
	1. 4410	S32750	X2CrNiMoN25.7.4	Z3CND25.07Az	SAF 2507	A182 F53	Superduplex
316L (Mo+)	1. 4435	S31609	X2CrNiMo18.14.3	Z3CND18.14.03			Austenite
316 (Mo+)	1. 4436		X5CrNiMo17.13.3	Z6CND18.12.03			Austenite
317L	1. 4438	S31703	X2CrNiMo18.16.4	Z3CND19.15.04		A182 F317L	Austenite
	1. 4462	S31803/S32205	X2CrNiMoN22.5.3	Z3CND22.05Az	SAF 2205	A182 F51	Duplex
	1. 4501	S32760	X2CrNiMoCuWN 25.7.4		Zeron 100	A 182 F55	Duplex
409	1. 4512						Ferrite
904L	1. 4539	N 08904	X1NiCrMoCu25.2.0.5	Z2NCDU25.20	Uranus B6/2 RK 65	625 N08904	Austenite
321	1. 4541	S32100	X6CrNiTi18.10	Z6CNT18.10	Uranus 65 / SS25L	A182 F321	Austenite
630	1. 4542	S17400	X5CrNiCunB17.4	Z7CNU17.04	17.4 PH	A564 630	
	1. 4547	S31254			254Smo	A182 F44	Austenite
347 (H)	1. 4550	S34700	X6CrNiTi18.10	Z6CNNb18.10		A182 F347	Austenite
316Ti	1. 4571	S31635	X6CrNiMoTi17.12.2	Z6CNDT17.12		A182 F316Ti	Austenite
	1. 4652	S32654			654Smo		Austenite
	1. 4662	S82441			LDX 2404		Duplex
	1. 4713		X10CrAlSi7	Z8Ca7	Sicromal 8		Ferrite
	1. 4724		X10CrAlSi13	Z13C13	Sicromal 9		Ferrite
442	1. 4742	S44200	X10CrAlSi18	Z12CAS18	Sicromal 10		Ferrite
	1. 4762		X10CrAlSi24	Z12CAS25	Sicromal 12		Ferrite
	1. 4818	S30415			153 MA		Austenite
302 B							
309	1. 4828	S30215/30900	X15CrNiSi20-12			A182 F309	Austenite
309S	1. 4833	S30908	X6CrNi22.13	Z15CN24.13			Austenite
	1. 4835	S30815	X9CrNiSiN21-11-2		253 MA		Austenite
310	1. 4841	S31000/31400	X15CrNiSi25.20	Z15CNS25.20			Austenite
310S	1. 4845	S31008	X12CrNi25.21	Z8CN25.20		A182 F310S	Austenite
321H	1. 4878	S32109	X12CrNiTi18.9	Z6CNT18.12			Austenite



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316H	1. 4919	S31609	X6CrNiMo17.13	Z6CND17.12	S31609	Austenite
304H	1. 4948	S30409	X6CrNi18.11	Z6CN18.11	S30409	Austenite

TAEMYUNG STEEL GIVE YOU MORE GOOD IMPRESSION AS YOUR BUSINESS PARTNER

**We Do, Finding , and Effort and Think and Act. (FED-Taemyung Act)**

WE, ARE EXPORTING OF VARIETY OF STEEL PRODUCT , AS FURANCE ,  
**WE WILL RUN FOR YOUR REQUIREMENT , PRODUCE FROM MILL , SOURCE OF STOCK**  
**, THAT LOG IS SYMBOLIZING OF COMMERCIAL VESSEL (BULK) OR CONTAINER VESSEL , WE WILL SERVE AS**  
**WE WILL MAKE EFFOTS FOR YOUR JOB ALWAYS.**



HOT ROLLED COIL AND PLATE



















































































































































