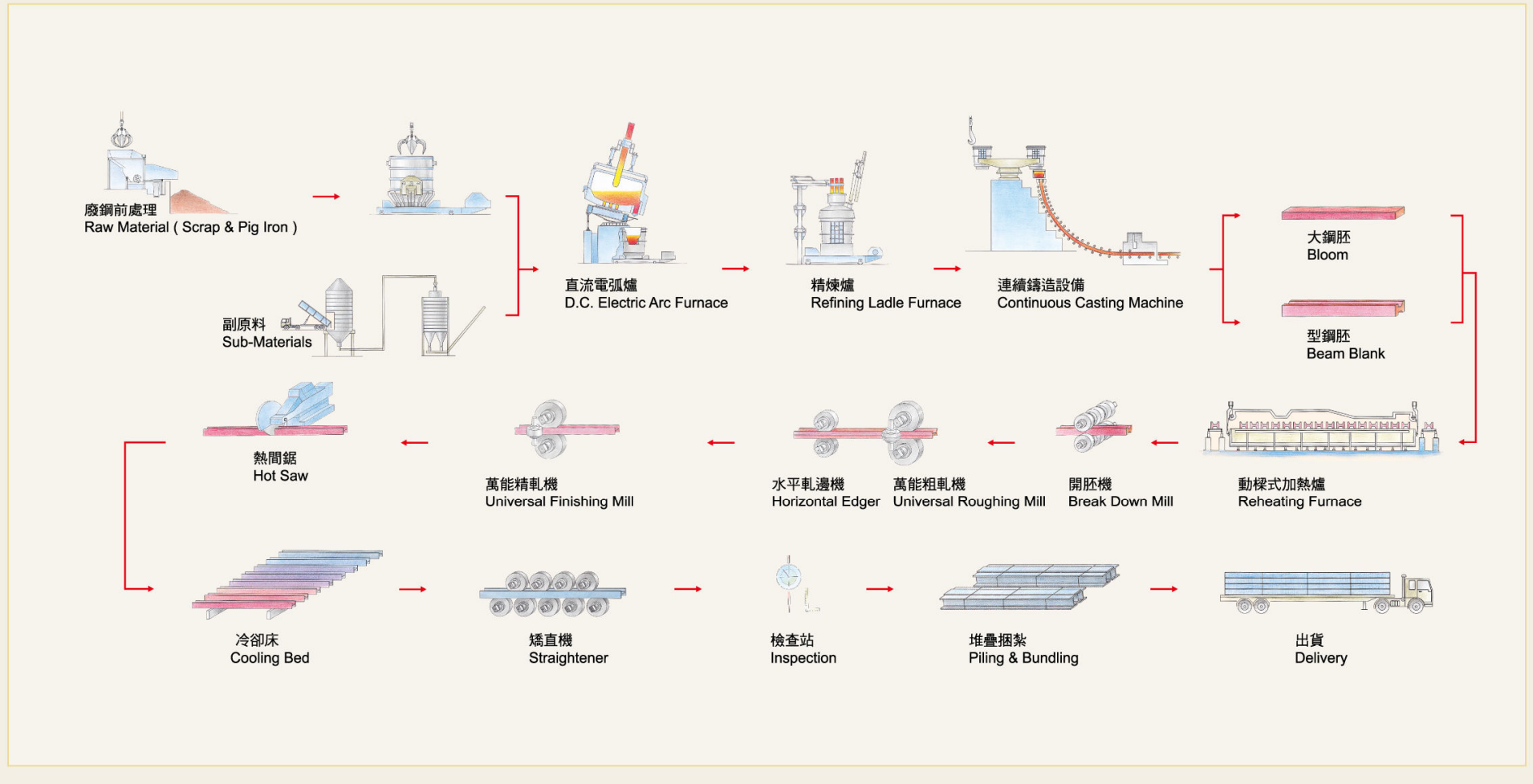


生產製程

1. 苗栗廠

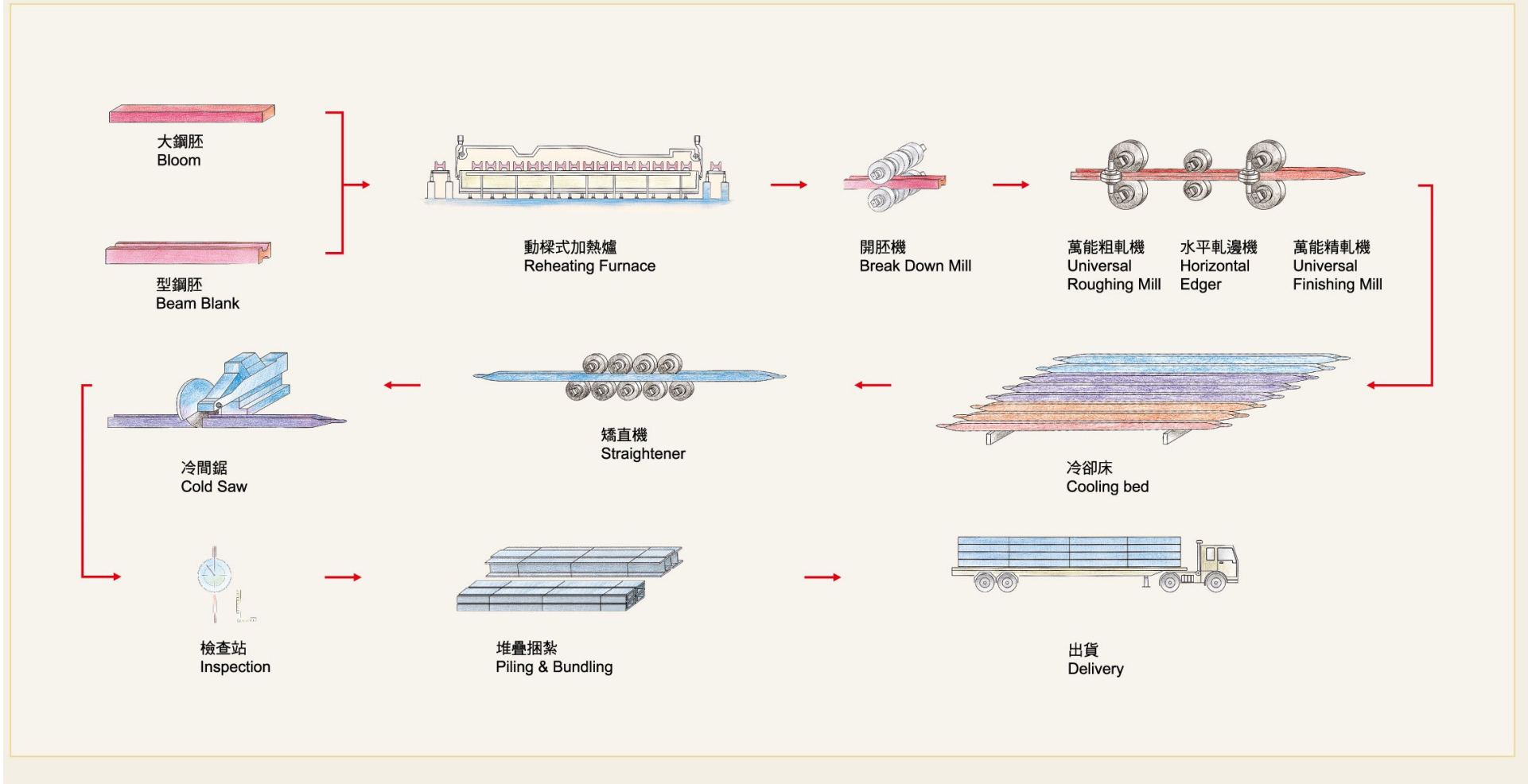
H-Beam manufacturing flow chart of Miaoli Works



生產製程

2. 高雄廠

Products manufacturing flow chart of Kaohsiung Works



型鋼成品鋼種

Steel Grades of Section

1. 常用鋼種 Commonly Produced

(1) CNS

SN400YB

2. 依訂單生產鋼種 Production By Order

(1)ASTM

(2)JIS

(3)BS

(4)EN

a.A36

a.SS400

a.4360 43A

a.S235JR

S275JR

S355JR

b.A572 G50

b.SM400 A/B

b.4360 50B

b.S235J0

A572 G42

SM490 A/B

S275J0

SM490 YA

S355J0

SM490 YB

c.A709 G36

c.SN400 A/B

c.4360 55C

A709 G50

SN490 B/C

型鋼成品標籤 Label

The image shows a rectangular steel product label with various technical specifications and company information. Callouts with lines pointing to specific parts of the label identify the following information:

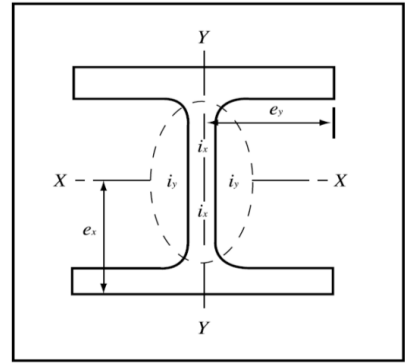
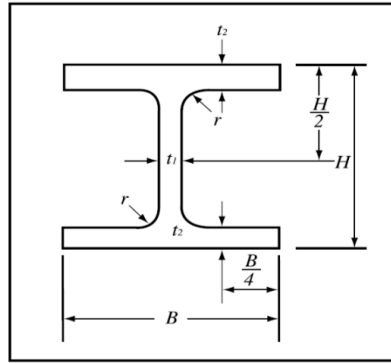
- 材質及規範 (Steel standard & Grade):** Points to the text **CNS 13812 SN490YC**.
- 截面尺寸 (Section dimension):** Points to the text **SIZE: H 300x300x10.0/15.0**.
- 爐號 (Heat No.):** Points to the text **HEAT NO: H91234**.
- 工令號 (Manufacturing No.):** Points to the text **MFG ORDER NO: 01234**.
- 公司名稱 (Producer):** Points to the company logo and name: **東和鋼鐵企業股份有限公司苗栗廠** and **TUNG HO STEEL ENTERPRISE CORPORATION**.
- 長度 (Length):** Points to the text **12.0 m**.
- CNS 國家標準規章 (Taiwan Mark):** Points to the CNS logo and the Taiwan map icon.

Additional text on the label includes: **台正字第 7164 號** (Taiwan Standard No. 7164), **MADE IN TAIWAN**, and the number **20121123**.

產品尺寸

H型鋼(CNS 1490 G1011/JIS G 3192)

H sections in accordance with CNS 1490 G1011/JIS G 3192



標準尺寸(Standard dimension)					參考資料(Reference)							
公稱尺寸 (mm)	截面尺寸(Section dimensions)		截面積 Section area (cm ²)	單重 Unit weight (kg/)	慣性矩 Moment of inertia(cm ⁴)		迴轉半徑 Radius of gyration(cm)		截面模數 Section modulus(cm ³)		塑性截面模數 Plastic section modulus(cm ³)	
	H x B x t1 x t2 (mm)	R			I _x	I _y	r _x	r _y	S _x	S _y	Z _x	Z _y
100x100	100 x 100 x 6 x 8	8	21.59	16.9	378	134	4.18	2.49	76	27	86	41
125x125	125 x 125 x 6.5 x 9	8	30.00	23.6	839	293	5.29	3.13	134	47	152	72
150x 75	150 x 75 x 5 x 7	8	17.85	14.0	666	50	6.11	1.66	89	13	102	21
150x100	148 x 100 x 6 x 9	8	26.35	20.7	1000	150	6.17	2.39	135	30	154	46
150x150	150 x 150 x 7 x 10	8	39.65	31.1	1620	563	6.40	3.77	216	75	243	114
175x 90	175 x 90 x 5 x 8	8	22.90	18.0	1210	98	7.26	2.06	138	22	156	34
175x175	175 x 175 x 7.5 x 11	13	51.42	40.4	2900	984	7.50	4.37	331	112	371	171
200x100	198 x 99 x 4.5 x 7	8	22.69	17.8	1540	113	8.25	2.24	156	23	176	35
	200 x 100 x 5.5 x 8	8	26.67	20.9	1810	134	8.23	2.24	181	27	205	42
200x150	194 x 150 x 6 x 9	8	38.11	29.9	2630	507	8.30	3.65	271	68	301	103
200x200	200 x 200 x 8 x 12	13	63.53	49.9	4720	1600	8.62	5.02	472	160	526	243
	*200 x 204 x 12 x 12	13	71.53	56.2	4980	1700	8.35	4.88	498	167	566	257
250x125	248 x 124 x 5 x 8	8	31.99	25.1	3450	255	10.4	2.82	278	41	312	63
	250 x 125 x 6 x 9	8	36.97	29.0	3960	294	10.4	2.82	317	47	358	73
250x175	244 x 175 x 7 x 11	13	55.49	43.6	6040	984	10.4	4.21	495	112	551	172
250x250	244 x 252 x 11 x 11	13	81.31	63.8	8700	2940	10.3	6.01	713	233	797	353
	250 x 250 x 9 x 14	13	91.43	71.8	10700	3650	10.8	6.32	860	292	953	443
	*250 x 255 x 14 x 14	13	103.9	81.6	11400	3880	10.5	6.11	912	304	1030	467
300x150	298 x 149 x 5.5 x 8	13	40.80	32.0	6320	442	12.4	3.29	424	59	475	91
	300 x 150 x 6.5 x 9	13	46.78	36.7	7210	508	12.4	3.29	481	68	543	105
300x200	294 x 200 x 8 x 12	13	71.05	55.8	11100	1600	12.5	4.75	756	160	842	245
	298 x 201 x 9 x 14	13	82.03	64.4	13087	1897	12.6	4.80	878	189	982	289
300x300	*294 x 302 x 12 x 12	13	106.3	83.4	16600	5510	12.5	7.20	1130	365	1260	558
	300 x 300 x 10 x 15	13	118.4	93.0	20200	6750	13.1	7.55	1350	450	1480	682
	*300 x 305 x 15 x 15	13	133.4	105	21300	7100	12.6	7.30	1420	466	1600	714
	*304 x 301 x 11 x 17	13	133.5	105	23200	7730	13.2	7.61	1520	514	1690	779
	*312 x 303 x 13 x 21	13	163.8	129	29400	9750	13.4	7.72	1880	644	2110	976
	*318 x 307 x 17 x 24	13	194.7	153	35000	11600	13.4	7.72	2200	756	2500	1150
	*326 x 310 x 20 x 28	13	229.1	180	42200	13900	13.6	7.80	2590	900	2970	1370
350x175	346 x 174 x 6 x 9	13	52.45	41.2	11000	791	14.5	3.88	638	91	713	140
	350 x 175 x 7 x 11	13	62.91	49.4	13500	984	14.6	3.96	771	112	865	173

註： *記號表示尺寸是按訂單生產

產品尺寸

H型鋼(CNS 1490 G1011/JIS G 3192)

H sections in accordance with CNS 1490 G1011/JIS G 3192

標準尺寸(Standard dimension)				參考資料(Reference)								
公稱 尺寸 (mm)	截面尺寸(Section dimensions)		截面積 Section area (cm ²)	單重 Unit weigh t(kg/	慣性矩		迴轉半徑		截面模數		塑性截面模數	
	H x B x t1 x t2				Ix	Iy	Radius of gyration(cm)		Section modulus(cm ³)		Plastic section modulus(cm ³)	
	(mm)						R	Rx	Ry	Sx	Sy	Zx
350x250	*336 x 249 x 8 x 12	13	86.17	67.6	18100	3090	14.5	5.99	1070	248	1190	378
	340 x 250 x 9 x 14	13	99.53	78.1	21200	3650	14.6	6.05	1250	292	1380	444
	*350 x 252 x 11 x 19	13	131.5	103	29400	5080	15.0	6.21	1680	403	1880	614
	*356 x 256 x 15 x 22	13	160.9	126	35600	6170	14.9	6.19	2000	482	2270	740
	*364 x 258 x 17 x 26	13	188.7	148	43000	7470	15.1	6.29	2370	579	2700	889
350x350	*338 x 351 x 13 x 13	13	133.3	105	27700	9380	14.40	8.39	1640	534	1820	815
	*344 x 348 x 10 x 16	13	144.0	113	32800	11200	15.10	8.84	1910	646	2090	977
	*344 x 354 x 16 x 16	13	164.7	129	34900	11800	14.60	8.48	2030	669	2270	1020
	350 x 350 x 12 x 19	13	171.9	135	39800	13600	15.20	8.89	2280	776	2520	1180
	*350 x 357 x 19 x 19	13	196.4	154	42300	14400	14.70	8.57	2420	808	2730	1240
	*360 x 354 x 16 x 24	13	221.3	174	52400	17800	15.39	8.96	2910	1000	3270	1530
	*368 x 356 x 18 x 28	13	257.0	202	62700	21100	15.61	9.06	3410	1190	3850	1800
	*378 x 358 x 20 x 33	13	300.1	236	75900	25300	15.91	9.18	4020	1410	4590	2150
400x200	396 x 199 x 7 x 11	13	71.41	56.1	19800	1450	16.60	4.50	999	145	1120	223
	400 x 200 x 8 x 13	13	83.37	65.4	23500	1740	16.80	4.56	1170	174	1310	267
400x300	*386 x 299 x 9 x 14	13	117.4	92.2	32900	6240	16.70	7.29	1700	417	1870	634
	390 x 300 x 10 x 16	13	133.2	105	37900	7200	16.90	7.35	1940	480	2140	730
	*400 x 304 x 14 x 21	13	179.3	141	51700	9850	16.99	7.41	2590	648	2890	989
	*410 x 308 x 18 x 26	13	226.1	177	66500	12700	17.15	7.49	3240	825	3680	1260
	*418 x 310 x 20 x 30	13	259.1	203	78300	14900	17.38	7.59	3740	964	4280	1480
400x400	*388 x 402 x 15 x 15	22	178.5	140	49000	16300	16.60	9.55	2520	809	2800	1240
	*394 x 398 x 11 x 18	22	186.8	147	56100	18900	17.30	10.10	2850	951	3120	1440
	*394 x 405 x 18 x 18	22	214.4	168	59700	20000	16.70	9.65	3030	985	3390	1510
	400 x 400 x 13 x 21	22	218.7	172	66600	22400	17.50	10.10	3330	1120	3680	1700
	400 x 408 x 21 x 21	22	250.7	197	70900	23800	16.80	9.75	3540	1170	4000	1790
	414 x 405 x 18 x 28	22	295.4	232	92800	31000	17.70	10.20	4480	1530	5030	2330
	428 x 407 x 20 x 35	22	360.7	283	119000	39400	18.20	10.40	5570	1930	6310	2910
450x200	446 x 199 x 8 x 12	13	82.97	65.1	28100	1580	18.40	4.36	1260	159	1420	245
	450 x 200 x 9 x 14	13	95.43	74.9	32900	1870	18.60	4.43	1460	187	1650	289
	*456 x 201 x 10 x 17	13	112.0	87.9	39900	2310	18.86	4.54	1750	230	1980	355
	*466 x 205 x 14 x 22	13	150.7	118	53900	3180	18.91	4.59	2310	310	2660	484
	*478 x 208 x 17 x 28	13	189.7	149	70300	4230	19.26	4.72	2940	407	3410	637
450x300	*434 x 299 x 10 x 15	13	131.6	103	45500	6690	18.60	7.13	2090	447	2320	681
	440 x 300 x 11 x 18	13	153.9	121	54700	8110	18.90	7.26	2490	540	2760	823
	*446 x 302 x 13 x 21	13	180.8	142	65100	9660	18.97	7.31	2920	640	3260	976
	*450 x 304 x 15 x 23	13	201.9	158	72600	10800	18.97	7.31	3230	710	3630	1090
	*458 x 306 x 17 x 27	13	235.4	185	86800	12900	19.20	7.41	3790	845	4280	1300
	*468 x 308 x 19 x 32	13	275.3	216	105000	15600	19.52	7.53	4480	1020	5100	1560

註： *記號表示尺寸是按訂單生產

產品尺寸

H型鋼(CNS 1490 G1011/JIS G 3192)

H sections in accordance with CNS 1490 G1011/JIS G 3192

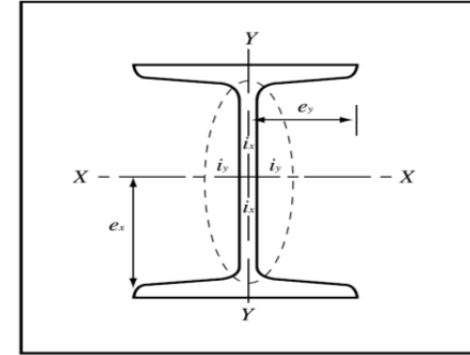
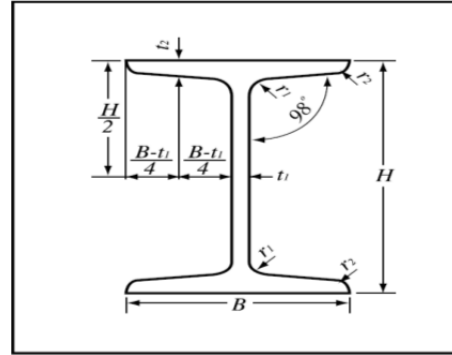
標準尺寸(Standard dimension)					參考資料(Reference)							
公稱 尺寸 (mm)	截面尺寸(Section dimensions)		截面積 Section area (cm ²)	單重 Unit weigh t(kg/	慣性矩 Moment of inertia(cm ⁴)		迴轉半徑 Radius of gyration(cm)		截面模數 Section modulus(cm ³)		塑性截面模數 Plastic section modulus(cm ³)	
	H x B x t1 x t2	R			Ix	Iy	rx	ry	Sx	Sy	Zx	Zy
	(mm)											
500x200	496 x 199 x 9 x 14	13	99.29	77.9	40800	1840	20.30	4.31	1650	185	1870	287
	500 x 200 x 10 x 16	13	112.2	88.2	46800	2140	20.40	4.36	1870	214	2130	332
	506 x 201 x 11 x 19	13	129.3	102	55500	2580	20.70	4.46	2190	256	2500	399
	*512 x 202 x 12 x 22	13	146.5	115	64400	3040	20.97	4.55	2520	301	2870	467
	*518 x 205 x 15 x 25	13	174.2	137	75900	3620	20.88	4.56	2930	353	3380	553
	*528 x 208 x 18 x 30	13	210.5	165	93600	4540	21.09	4.64	3550	437	4130	688
	*536 x 210 x 20 x 34	13	237.9	187	108000	5300	21.31	4.72	4030	505	4710	798
	*548 x 215 x 25 x 40	13	290.5	228	133000	6720	21.43	4.81	4870	625	5770	999
500x300	482 x 300 x 11 x 15	13	141.2	111	58300	6760	20.30	6.92	2420	450	2700	689
	488 x 300 x 11 x 18	13	159.2	125	68900	8110	20.80	7.14	2820	540	3130	824
	*494 x 302 x 13 x 21	13	187.1	147	81700	9660	20.90	7.19	3310	640	3700	978
	*500 x 304 x 15 x 24	13	215.2	169	95000	11300	21.01	7.24	3800	741	4270	1140
	*510 x 306 x 17 x 29	13	255.8	201	117000	13900	21.35	7.37	4570	907	5170	1390
	*518 x 310 x 21 x 33	13	301.0	236	137000	16400	21.37	7.39	5310	1060	6070	1640
	*532 x 314 x 25 x 40	13	365.7	287	172000	20700	21.71	7.53	6480	1320	7490	2040
600x200	596 x 199 x 10 x 15	13	117.8	92.5	66600	1980	23.80	4.10	2240	199	2580	312
	600 x 200 x 11 x 17	13	131.7	103	75600	2270	24.00	4.16	2520	227	2900	358
	606 x 201 x 12 x 20	13	149.8	118	88300	2720	24.30	4.26	2910	270	3360	425
	*612 x 202 x 13 x 23	13	168.0	132	101000	3180	24.58	4.35	3320	315	3820	494
	*618 x 205 x 16 x 26	13	198.6	156	119000	3770	24.46	4.36	3850	368	4480	584
	*626 x 207 x 18 x 30	13	227.5	179	139000	4480	24.69	4.44	4430	433	5180	690
	*634 x 209 x 20 x 34	13	256.8	202	159000	5230	24.92	4.51	5030	501	5910	801
	*646 x 214 x 25 x 40	13	314.2	247	196000	6640	25.00	4.60	6080	621	7230	1010
600x300	582 x 300 x 12 x 17	13	169.2	133	98900	7660	24.20	6.73	3400	511	3820	786
	588 x 300 x 12 x 20	13	187.2	147	114000	9010	24.70	6.94	3890	601	4350	921
	594 x 302 x 14 x 23	13	217.1	170	134000	10600	24.80	6.98	4500	700	5060	1080
	*600 x 304 x 16 x 26	13	247.2	194	153000	12200	24.90	7.03	5110	803	5780	1240
	*608 x 306 x 18 x 30	13	283.7	223	179000	14400	25.14	7.12	5900	939	6700	1450
	*616 x 308 x 20 x 34	13	320.5	252	206000	16600	25.36	7.20	6690	1080	7640	1670
	*628 x 312 x 24 x 40	13	382.6	300	250000	20300	25.57	7.29	7960	1300	9180	2030
700x300	692 x 300 x 13 x 20	18	207.5	163	168000	9020	28.50	6.59	4870	601	5500	929
	700 x 300 x 13 x 24	18	231.5	182	197000	10800	29.20	6.83	5640	721	6340	1110
	708 x 302 x 15 x 28	18	269.7	212	233000	12900	29.40	6.91	6590	853	7440	1320
	*712 x 306 x 19 x 30	18	310.3	244	260000	14400	28.97	6.81	7320	941	8370	1470
	*718 x 308 x 21 x 33	18	343.0	269	290000	16200	29.08	6.87	8080	1050	9290	1640
	*732 x 311 x 24 x 40	18	408.1	320	357000	20200	29.56	7.03	9740	1300	11300	2030
800x300	792 x 300 x 14 x 22	18	239.5	188	248000	9920	32.20	6.44	6270	661	7140	1030
	800 x 300 x 14 x 26	18	263.5	207	286000	11700	33.00	6.67	7160	781	8100	1210
	808 x 302 x 16 x 30	18	303.7	238	334000	13800	33.20	6.74	8270	914	9390	1420
	*816 x 306 x 20 x 34	18	360.5	283	392000	16300	32.98	6.73	9610	1070	11000	1670

註： *記號表示尺寸是按訂單生產

產品尺寸

I型鋼(CNS 1490 G1011/JIS G 3192)

I sections in accordance with CNS 1490 G1011/JIS G 3192

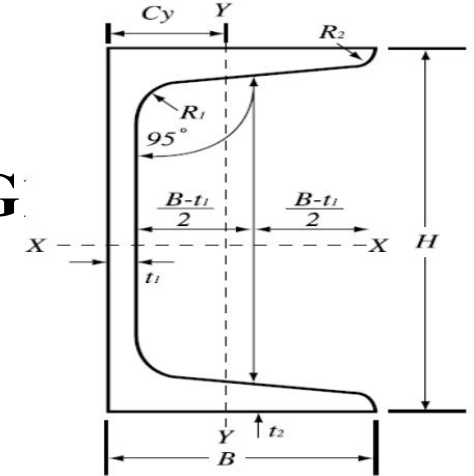


標準尺寸(Standard dimension)						參考資料(Reference)							
公稱 尺寸 (mm)	截面尺寸(Section dimensions)			截面積 Section area (cm ²)	單重 Unit weight(kg/m)	慣性矩 Moment of inertia(cm ⁴)		迴轉半徑 Radius of gyration(cm)		截面模數 Section modulus(cm ³)		塑性截面模數 Plastic section modulus(cm ³)	
	H x B x t1 x t2	R ₁	R ₂			I _x	I _y	r _x	r _y	S _x	S _y	Z _x	Z _y
	(mm)												
200x100	200 x 100 x 7 x 10	10	5	33.1	26.0	2120	138	8.1	2.05	217	27.7	244	52
250x125	250 x 125 x 7.5 x 12.5	12	6	48.8	38.3	5180	337	10.3	2.63	414	53.9	466	101
	250 x 125 x 10 x 19	21	10.5	70.7	55.5	7310	538	10.2	2.76	585	86.0	661	154
300x150	300 x 150 x 8 x 13	12	6	61.6	48.3	9480	588	12.4	3.09	632	78.4	710	151
	300 x 150 x 10 x 18.5	19	9.5	83.5	65.5	12700	886	12.3	3.26	849	118	954	215
	300 x 150 x 11.5 x 22	23	11.5	97.9	76.8	14700	1080	12.2	3.32	978	143	1110	256

產品尺寸

翼板厚度漸變槽鋼(CNS 1409 G1101/JIS G 3192)

Tapered flange channels in accordance with CNS 1409 G G 3192

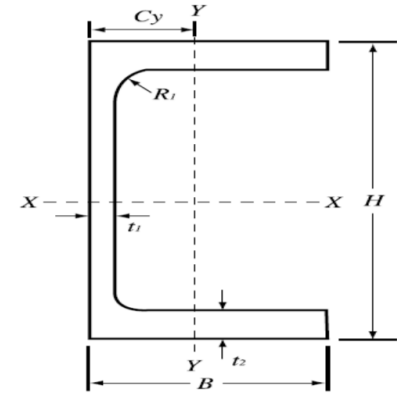


標準尺寸(Standard dimension)					參考資料(Reference)							
公稱 尺寸 (mm)	截面尺寸(Section dimensions)			截面積 Section area (cm ²)	單重 Unit weight(kg/m)	重心位置 Distance of Cy (cm)	慣性矩 Moment of inertia (cm ⁴)		迴轉半徑 Radius of gyration (cm)		截面模數 Section modulus (cm ³)	
	H x B x t1 x t2	R ₁	R ₂				Ix	Iy	rx	ry	Sx	Sy
	(mm)											
150x75	150 x 75 x 6.5 x 10	10	5	30.59	18.6	2.28	861	117	6.03	2.22	115	22.4
180x75	180 x 75 x 7 x 10.5	11	5.5	27.2	21.4	2.13	1380	131	7.12	2.19	153	24.3
200x80	200 x 80 x 7.5 x 11	12	6	31.3	24.6	2.21	1950	168	7.88	2.32	195	29.1
200x90	200 x 90 x 8 x 13.5	14	7	38.7	30.3	2.74	2490	277	8.02	2.68	249	44.2
250x90	250 x 90 x 9 x 13	14	7	44.1	34.6	2.40	4180	294	9.74	2.58	334	44.5
	250 x 90 x 11 x 14.5	17	8.5	51.2	40.2	2.40	4680	329	9.56	2.54	374	49.9
300x90	300 x 90 x 9 x 13	14	7	48.6	38.1	2.22	6440	309	11.5	2.52	429	45.7
	300 x 90 x 10 x 15.5	19	9.5	55.7	43.8	2.34	7410	360	11.5	2.54	494	54.1
	300 x 90 x 12 x 16	19	9.5	61.9	48.6	2.28	7870	379	11.3	2.48	525	56.4
380x100	380 x 100 x 10.5 x 16	18	9	69.4	54.5	2.41	14500	535	14.5	2.78	763	70.5
	380 x 100 x 13 x 16.5	18	9	79.0	62.0	2.33	15600	565	14.1	2.67	823	73.6
	380 x 100 x 13 x 20	24	12	85.7	67.3	2.54	17600	655	14.3	2.76	926	87.8

產品尺寸

翼板等厚度槽鋼(AS/NZS 3679.1)

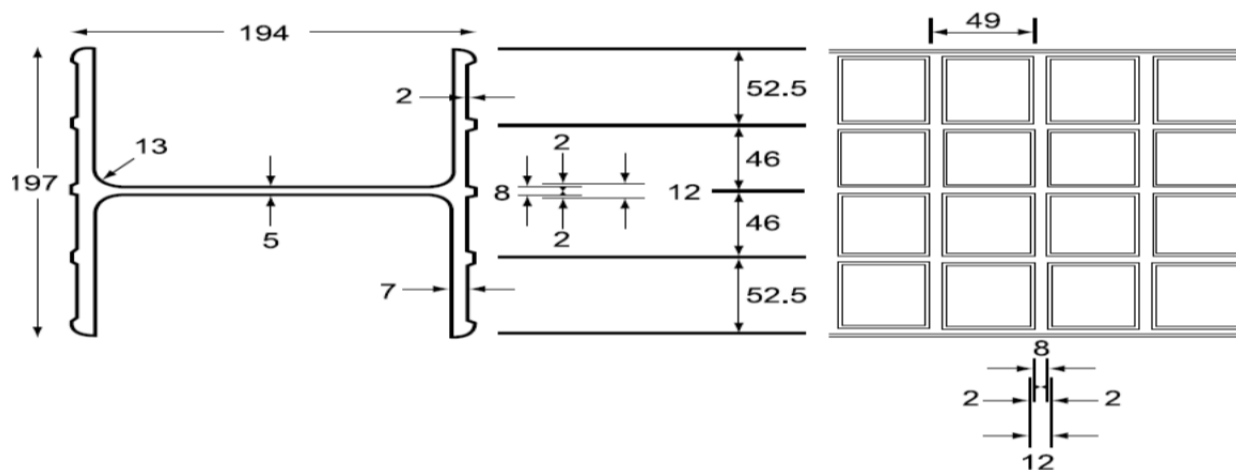
Parallel flange channels in accordance with AS/NZS 3679.1



標準尺寸(Standard dimension)				截面尺寸(Section dimensions)					參考資料(Reference)								
系列尺寸 Serial size(mm)	稱號(Designation)	截面積 Section area (cm ²)	單重 Unit weight (kg/m)	型鋼深度 Depth of section(d) (mm)	翼板(Flange)		腹板厚度 Web thickness (tw) (mm)	R角 Root radius (r) (mm)	重心位置 Distance of Cy (cm)	慣性矩 Moment of inertia (cm ⁴)		迴轉半徑 Radius of gyration (cm)		截面模數 Section modulus (cm ³)		塑性截面模數 Plastic section modulus (cm ³)	
					寬width (bf) (mm)	厚thickness (tf) (mm)				Ix	Iy	rx	ry	Sx	Sy	Zx	Zy
380 PFC	380 x 100 x 55.2	70.3	55.2	380.0	100.0	17.5	10.0	14.0		2.75	15200	648	14.7	3.04	798	89.4	946
300 PFC	300 x 90 x 40.1	51.1	40.1	300.0	90.0	16.0	8.0	14.0	2.72	7240	404	11.9	2.81	483	64.4	564	117
250 PFC	250 x 90 x 35.5	45.2	35.5	250.0	90.0	15.0	8.0	12.0	2.86	4510	364	9.99	2.84	361	59.3	421	107
230 PFC	230 x 75 x 25.1	32.0	25.1	230.0	75.0	12.0	6.5	12.0	2.26	2677	176	9.14	2.35	233	46.9	271	61
200 PFC	200 x 75 x 22.9	29.2	22.9	200.0	75.0	12.0	6.0	12.0	2.44	1910	165	8.09	2.38	191	32.7	221	58.9
180 PFC	180 x 75 x 20.9	26.6	20.9	180.0	75.0	11.0	6.0	12.0	2.45	1410	151	7.29	2.38	157	29.9	182	53.8
150 PFC	150 x 75 x 17.7	22.5	17.7	150.0	75.0	9.5	6.0	10.0	2.49	834	129	6.08	2.39	111	25.7	129	46.0

產品尺寸

棋盤式花紋H型鋼(Checkered H sections)



標準尺寸(Standard dimension)				參考資料(Reference)						
公稱 尺寸 (mm)	截面尺寸(Section dimensions)		截面積 Section area (cm ²)	單重 Unit weight (kg/m)	慣性矩 Moment of inertia(cm ⁴)		迴轉半徑 Radius of gyration(cm)		截面模數 Section modulus(cm ³)	
	H x B x t1 x t2 (mm)	R			Ix	Iy	rx	ry	Sx	Sy
194x197	194 x 197 x 5 x 7	13	41.8	32.6	3009	1020	8.5	4.94	313	104.0

產品公差

熱軋H型鋼形狀及尺寸公差

Hot Rolled H-Beam Shape And Dimension Tolerance

單位:mm

尺寸要求 Division and dimension		JIS G3192 (2008) 許可差 Tolerance		示意圖 Remarks
邊寬 (B) Width	$B \leq 400$	± 2.0		
	$B > 400$	± 3.0		
高度 (H) Depth	$H < 800$	$B \leq 400$	± 2.0	
		$B > 400$	± 3.0	
	$H \geq 800$	± 3.0		
翼板厚度 (t_2) Flange Thickness		G3136 (2005) SN鋼材	G3192 (2008) 非SN鋼材	
	$t_2 < 16$	-0.3~+1.7	± 1.0	
	$16 \leq t_2 < 25$	-0.7~+2.3	± 1.5	
	$25 \leq t_2 < 40$		± 1.7	
$40 \leq t_2$	-1.5~+2.5	± 2.0		
腹板厚度 (t_1) Web Thickness	$t_1 < 16$	± 0.7		
	$16 \leq t_1 < 25$	± 1.0		
	$25 \leq t_1 < 40$	± 1.5		
	$40 \leq t_1$	± 2.0		
長度 (L) Length	$L \leq 7M$	+40 -0		
	$L > 7M$	+ (L-7)x5+40 L=integer -0		
直角度 (T) Out-of-square	$H \leq 300$	$\leq B \times 1.0\%$, Min=1.5		
	$H > 300$	$\leq B \times 1.2\%$, Min=1.5		
彎度 (C) Bend	$H \leq 300$	$C \leq L \times 0.15\%$		Camper and Sweep
	$H > 300$	$C \leq L \times 0.10\%$		
偏心率 (S) Eccentricity	$B < 400$	± 2.0		
	$B \geq 400$	± 3.5		
腹板拱形 (w) Concavity of web	$H < 350$	≤ 2.0		
	$350 \leq H < 550$	≤ 2.5		
	$H \geq 550$	≤ 3.0		
翼板八字變形 (F) Flange deformation	$B \leq 400$	$\leq B \times 1.5\%$, Max=1.5		
剖面直角度 (e) Sectional squareness		$\leq B$ or $H \times 1.6\%$, Min=3.0		

產品公差

熱軋I型鋼&槽鋼形狀及尺寸公差

Hot Rolled I-Beam & Channels Shape And Dimension Tolerance

單位:mm

尺寸要求 Division and dimension		JIS G3192 (2008) 許可差 Tolerance	示意圖 Remarks	
邊寬 (B) Leg length	$B < 50$	± 1.5	<p>The diagrams illustrate the dimensions and tolerances for I-beams and channels. The top diagram shows an I-beam with width B, height H, and leg thickness t1. The bottom diagram shows a channel with width B, height H, and leg thickness t2. The diagrams also show the tolerances for the dimensions.</p>	
	$50 \leq B < 100$	± 2.0		
	$100 \leq B < 200$	± 3.0		
	$200 \leq B$	± 4.0		
高度 (H) Depth	$H < 100$	± 1.5		
	$100 \leq H < 200$	± 2.0		
	$200 \leq H < 400$	± 3.0		
	$400 \leq H$	± 4.0		
厚度 Thickness	t_2	$t_1 < 6.3$		± 0.6
		$6.3 \leq t_1 < 10$		± 0.7
		$10 \leq t_1 < 16$	± 0.8	
		$16 \leq t_1$	± 1.0	
	t_1	$t_2 < 6.3$	± 0.7	
		$6.3 \leq t_2 < 10$	± 0.8	
		$10 \leq t_2 < 16$	± 1.0	
		$16 \leq t_2 < 25$	± 1.2	
	$25 \leq t_2$	± 1.5		
長度 (L) Length	$L \leq 7M$	+40 -0		
	$L > 7M$	+ (L-7)x5+40 L=integer -0		
直角度 (T) Out-of-square	I型鋼 (I section)	$\leq B \times 2.0\%$		
	槽鋼 (Channels)	$\leq B \times 2.5\%$		
彎度 (C) Bend	I型鋼 (I section)	$\leq L \times 0.2\%$	Camper and Sweep	
	槽鋼 (Channels)	$\leq L \times 0.3\%$		

化學特性

^(a)CNS、JIS&ASTM結構用材質規範-化學性質

^(a)CNS、JIS&ASTM Structural Steel Specifications-Chemical Property

規格 Standard	材質代號 Steel Grade	厚度 thickness (mm)	化學成分 Chemical Composition (%) max.					化學成分 Chemical Composition (%) max.										^(d) 碳當量 Ceq/Cev (%)max.	^(e) 銲接破裂 敏感性組成 Pcm(%)	
			碳C	矽Si	錳Mn	磷P	硫S	銅Cu ^(b)	鎳Ni	鉻Cr	鉬Mo	鈮V	鉕Nb	錫Sn	鈦Ti	氮N				
型鋼結構用鋼 Specification for structural steel shapes (ASTM A992-11)	A992		0.23	0.40	0.50~1.60	0.035	0.045	-	0.60	0.45	0.35	0.15	0.15 ^(f)	0.05 ^(f)	0.02	-	0.012	0.45	-	
橋樑結構用鋼 Specification for structural steel for Bridges (ASTM A709-11)	A709G36 ^(b)		0.26	0.40	-	0.040	0.050	-	-	-	-	-	-	-	-	-	-	-	-	
	A709G50	type1	0.23	0.40	1.35 ^(g,h)	0.040	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-
		type2						-												
type3	-																			
加錳錳高強度 低合金結構用鋼 High-strength low-alloy Columbium-Vanadium structural steel (ASTM A572-07)	A572G50	type1	0.23	0.40	1.35 ^(g,h)	0.040	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-
		type2						-												
		type3						-												
碳素結構用鋼 Carbon structural steel (ASTM A36-08)	A36 ^(b)		0.26	0.40	-	0.040	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-
建築結構用鋼 Rolled steels for building structure ^(c) (CNS 13812 G3262-103) (JIS G3136-2012)	SN400A		0.24	-	-	0.050	0.050	0.0008	-	-	-	-	-	-	-	-	-	-	-	-
	SN400B		0.20	0.35	0.60~1.50	0.030	0.015	0.0008	-	-	-	-	-	-	-	-	-	0.36	0.26	
	SN490B	t≤40	0.18	0.55	1.65	0.030	0.015	0.0008	-	-	-	-	-	-	-	-	-	0.44	0.29	
40<t≤50		0.18	0.55	1.65	0.030	0.015	0.0008	-	-	-	-	-	-	-	-	-	0.46	0.29		
(CNS 13812 G3262-103 附錄A)	SN400YB		0.20	0.35	0.60~1.50	0.030	0.015	0.0008	-	-	-	-	-	-	-	-	-	-	-	
	SN490YB	t≤40	0.18	0.55	1.65	0.030	0.015	0.0008	-	-	-	-	-	-	-	-	-	0.44	0.29	
		40<t≤50	0.18	0.55	1.65	0.030	0.015	0.0008	-	-	-	-	-	-	-	-	-	0.46	0.29	
銲接結構用鋼 Rolled steels for welded structure ^(c) (CNS 2947 G3057-103) (JIS G3106-2008)	SM400A		0.23	-	≥2.5C ⁽ⁱ⁾	0.035	0.035	0.0008	-	-	-	-	-	-	-	-	-	-	-	
	SM400B		0.20	0.35	0.60~1.50	0.035	0.035	0.0008	-	-	-	-	-	-	-	-	-	-	-	
	SM490A		0.20	0.55	1.65	0.035	0.035	0.0008	-	-	-	-	-	-	-	-	-	-	-	
	SM490B		0.18	0.55	1.65	0.035	0.035	0.0008	-	-	-	-	-	-	-	-	-	-	-	
	SM490YA	t≤40	0.20	0.55	1.65	0.035	0.035	0.0008	-	-	-	-	-	-	-	-	-	-	-	
		40<t≤50	0.20	0.55	1.65	0.035	0.035	0.0008	-	-	-	-	-	-	-	-	-	-	-	
	SM490YB		0.20	0.55	1.65	0.035	0.035	0.0008	-	-	-	-	-	-	-	-	-	-	-	
(CNS 2947 G3057-103 附錄C)	SM400A-A		t≤50	0.23	0.35	≥2.5C ⁽ⁱ⁾	0.035	0.035	0.0008	-	-	-	-	-	-	-	-	-	-	
	SM400B-A		t≤50	0.20	0.35	0.60~1.35	0.035	0.035	0.0008	-	-	-	-	-	-	-	-	-	-	
	SM490A-A		t≤50	0.20	0.40	0.80~1.50 ^(k)	0.035	0.035	0.0008	-	-	-	-	-	-	-	-	0.38	0.24	
	SM490B-A		t≤50	0.20	0.40	0.80~1.50 ^(k)	0.035	0.035	0.0008	-	-	-	-	-	-	-	-	0.38	0.24	
一般結構用鋼 Rolled steels for general structure ^(c) (CNS 2473 G3039-103) (JIS G3101-2010)	SS400		-	-	-	0.050	0.050	0.0008	-	-	-	-	-	-	-	-	-	-	-	
熱軋結構用鋼 Hot rolled products of structural steels (BS EN 10025-2:2004)	S235JR	t≤40	0.17	-	1.40	0.035	0.035	-	0.55	-	-	-	-	-	-	-	0.012	0.35	-	
		40<t≤50	0.20	-	1.40	0.035	0.035	-	0.55	-	-	-	-	-	-	-	0.012	0.38	-	
	S235J0	t≤40	0.17	-	1.40	0.030	0.030	-	0.55	-	-	-	-	-	-	-	0.012	0.35	-	
		40<t≤50	0.17	-	1.40	0.030	0.030	-	0.55	-	-	-	-	-	-	-	0.012	0.38	-	
	S275JR	t≤40	0.21	-	1.50	0.035	0.035	-	0.55	-	-	-	-	-	-	-	0.012	0.40	-	
		40<t≤50	0.22	-	1.50	0.035	0.035	-	0.55	-	-	-	-	-	-	-	0.012	0.42	-	
	S275J0	t≤40	0.18	-	1.50	0.030	0.030	-	0.55	-	-	-	-	-	-	-	0.012	0.40	-	
		40<t≤50	0.18	-	1.50	0.030	0.030	-	0.55	-	-	-	-	-	-	-	0.012	0.42	-	
	S355JR	t≤30	0.24	0.55	1.60	0.035	0.035	-	0.55	-	-	-	-	-	-	-	0.012	0.45	-	
		30<t≤50	0.24	0.55	1.60	0.035	0.035	-	0.55	-	-	-	-	-	-	-	0.012	0.47	-	
	S355J0	t≤30	0.20	0.55	1.60	0.030	0.030	-	0.55	-	-	-	-	-	-	-	0.012	0.45	-	
		30<t≤40	0.20	0.55	1.60	0.030	0.030	-	0.55	-	-	-	-	-	-	0.012	0.47	-		
40<t≤50		0.22	0.55	1.60	0.030	0.030	-	0.55	-	-	-	-	-	0.012	0.47	-				
S450J0	t≤30	0.20	0.55	1.70	0.030	0.030	-	0.55	-	-	-	0.13	0.05	-	0.05	0.025	0.47	-		
	30<t≤40	0.20	0.55	1.70	0.030	0.030	-	0.55	-	-	-	0.13	0.05	-	0.05	0.025	0.49	-		
	40<t≤50	0.22	0.55	1.70	0.030	0.030	-	0.55	-	-	-	0.13	0.05	-	0.05	0.025	0.49	-		

(a)本表所列以CNS、JIS、BS EN&ASTM型鋼相關材質規範為主，成品依鋼板厚度為6~40mm。

(b)指定添加銅時，銅含量鋼液分析值不得低於0.20%。

(c)JIS SS、SM&SN必要時可添加表列以外之元素。

(d)JIS SN Ceq=C+Mn/6+Si/24+Ni/40+Cr/5+Mo/4+V/14。

ASTM A992 Ceq=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15。BS EN Cev=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15。

(e)銲接破裂感敏性組成 Pcm=C+Si/30+Mn/20+Cu/20+Ni/60+Cr/20+Mo/15+V/10+5B。

(f)A992 V+Nb≤0.15%。

(g)G50 Mn/C比值必須≥2。

(h)G50 當碳當量規格最大值每減少0.01%時，錳含量上限值可增加0.06%，但是錳含量規格最大限不可超過1.60%。

(i)碳含量依鋼液分析之含量。

(j)G50 type3 0.02%≤V+Nb≤0.15%。

(k)當鋼料厚度小於10mm時，Mn含量為0.50%~1.50%。

(l)中華民國國家標準CNS 鋼種化學成分增列欄(B)含量須未滿0.0008%。

物理特性

(a) CNS、JIS&ASTM結構用材質規範-物理性質

(a) CNS、JIS&ASTM Structural Steel Specifications-Physical Property

規格 Standard	材質代號 Steel Grade	拉力試驗 Tensile Test				拉力試驗 Tensile Test				彎曲試驗 Bending Test		(e)衝擊試驗 Impact Test		
		降伏強度 YS:Yield Stress(N/mm ²) Fy:Force of Yield(kg/cm ²)				抗拉強度 TS:Tensile Stress(N/mm ²) Fu:Force of Ultimate(kg/cm ²)	降伏比(%) Yield Ratio(%)		伸長率(%) Elongation(%)		彎曲角度 Bending Angle	彎曲半徑 Radius of Inside Diameter	試驗溫度 ℃ Test Temp.	吸收能量 J Absorption Energy
		厚度thickness(mm)					厚度thickness(mm)		厚度thickness(mm)					
		t ₁ ≥6 t ₁ <12	t ₂ ≥12 t ₂ <16	t ₃ ≥16	t ₄ >16 t ₄ ≤40	t ₁ ≥6 t ₁ <12	t ₂ ≥12 t ₂ <16	t ₃ ≥16 t ₃ ≤40	t ₄ ≥6 t ₄ >16 t ₄ ≤40	t ₁ ≥6 t ₁ <12	t ₂ ≥12 t ₂ <16	t ₃ ≥16 t ₃ ≤40	t ₄ ≥6 t ₄ >16 t ₄ ≤40	
型鋼結構用鋼 Specification for structural steel shapes (ASTM A992-11)	A992	YS:345-450 Fy:3520-4592				TS:≥450 Fu:≥4592	≥85		≥18 ^(d)		-	-	-	-
橋樑結構用鋼 Specification for structural steel for Bridges (ASTM A709-11)	A709G36	YS:≥250 Fy:≥2551				TS:≥400-550 Fu:≥4082-5612	-		≥20 ^(d)		-	-	-	-
	A709G50	YS:≥345 Fy:≥3520				TS:≥450 Fu:≥4592	-		≥18 ^(d)		-	-	-	-
加錳鉍高強度 低合金結構用鋼 High-strength low-alloy Columbium-Vanadium structural steel (ASTM A572-07)	A572G50	YS:≥345 Fy:≥3520				TS:≥450 Fu:≥4592	-		≥18 ^(d)		-	-	-	-
結構用碳鋼 Carbon structural steel (ASTM A36-08)	A36	YS:≥250 Fy:≥2551				TS:400-550 Fu:4082-5612	-		≥20 ^(d)		-	-	-	-
建築結構用鋼 Rolled steels for building structure (CNS 13812 G3262-103) (JIS G3136-2012)	SN400A	YS:≥235 Fy:≥2398				TS:400-510 Fu:4082-5204	-		≥17	≥21	-	-	-	-
	SN400B	YS:≥235 Fy:≥2398	YS:235-355 ^(b) Fy:2398-3622 ^(b)			TS:400-510 Fu:4082-5204	-		≥18	≥22	-	-	-	-
	SN490B	YS:≥325 Fy:≥3316	YS:325-445 ^(b) Fy:3316-4541 ^(b)			TS:490-610 Fu:5000-6224	-		≥17	≥21	-	-	0	≥27
(CNS 13812 G3262-103 附錄A)	SN400YB	YS:≥250	YS:250-355 ^(b) Fy:2551-3622 ^(b)			TS:400-510 Fu:4082-5204	-		≥20	≥22	-	-	-	-
	SN490YB	YS:325-445(b) Fy:3316-4541(b)				TS:490-610 Fu:5000-6224	-		≥17	≥21	-	-	-	-
銲接結構用鋼 Rolled steels for welded structure (CNS 2947 G3057-103) (JIS G3106-2008)	SM400A	YS:≥245 Fy:≥2500		YS:≥235 Fy:≥2398	TS:400-510 Fu:4082-5204	-		≥18	≥22	-	-	-	-	
	SM400B	YS:≥325 Fy:≥3316		YS:≥315 Fy:≥3214	TS:490-610 Fu:5000-6224	-		≥17	≥21	-	-	-	-	
	SM490A	YS:≥365 Fy:≥3724		YS:≥355 Fy:≥3622	TS:490-610 Fu:5000-6224	-		≥15	≥19	-	-	-	-	
	SM490YA	YS:≥365 Fy:≥3724		YS:≥355 Fy:≥3622	TS:490-610 Fu:5000-6224	-		≥15	≥19	-	-	-	-	
	SM490YB	YS:≥365 Fy:≥3724		YS:≥355 Fy:≥3622	TS:490-610 Fu:5000-6224	-		≥15	≥19	-	-	-	-	
(CNS 2947 G3057-103 附錄C)	SM400A-A	YS:≥250 Fy:≥2551				TS:400-510 Fu:4082-5204	-		≥18	≥22	-	-	-	-
	SM400B-A	YS:≥345 Fy:≥3520				TS:490-610 Fu:5000-6224	-		≥17	≥21	-	-	-	-
	SM490A-A	YS:345-450 Fy:3520-4592				TS:400-510 Fu:4082-5204	-		≥17	≥21	-	-	-	-
	SM490B-A	YS:345-450 Fy:3520-4592				TS:400-510 Fu:4082-5204	-		≥17	≥21	-	-	-	-
一般結構用鋼 Rolled steels for general structure (CNS 2473 G3039-103) (JIS G3101-2010)	SS400	YS:≥245 Fy:≥2500		YS:≥235 Fy:≥2398	TS:400-510 Fu:4082-5204	-		≥17	≥21	180°	厚度1.5倍 (1.5 times of thickness)	-	-	
熱軋結構用鋼 Hot rolled products of structural steels (BS EN 10025-2:2004)	S235JR	YS:≥235 Fy:≥2398		YS:≥225 Fy:≥2296	TS:360-510 Fu:3673-5204	-		≥26		-	-	20	≥27	
	S235J0	YS:≥235 Fy:≥2398		YS:≥225 Fy:≥2296	TS:360-510 Fu:3673-5204	-		≥26		-	-	0	≥27	
	S275JR	YS:≥275 Fy:≥2806		YS:≥265 Fy:≥2704	TS:410-560 Fu:4183-5714	-		≥23		-	-	20	≥27	
	S275J0	YS:≥275 Fy:≥2806		YS:≥265 Fy:≥2704	TS:410-560 Fu:4183-5714	-		≥23		-	-	0	≥27	
	S355JR	YS:≥355 Fy:≥3622		YS:≥345 Fy:≥3520	TS:470-630 Fu:4796-6428	-		≥22		-	-	20	≥27	
	S355J0	YS:≥355 Fy:≥3622		YS:≥345 Fy:≥3520	TS:470-630 Fu:4796-6428	-		≥22		-	-	0	≥27	
	S450J0	YS:≥450 Fy:≥4592		YS:≥430 Fy:≥4388	TS:550-720 Fu:5612-7347	-		≥17		-	-	0	≥27	

(a) 本表所列以CNS、JIS、BS EN&ASTM型鋼相關材質規範為主，成品依覆板厚度為6-40mm。

(b) 腹板厚度9mm以下之H型鋼，降伏強度上限值不適用。

(c) 腹板厚度9mm以下之H型鋼，降伏強度上限值不適用。降伏比上限定為0.85。

(d) 1.ASTM上述伸長率之規定僅適用於試片平行部長度200mm之試片，平行部長度為50mm之試片一般實驗室較少使用，請另行查閱規範。

2.ASTM鋼料厚度低於8mm時，伸長率依ASTM A6之規定遞減。

(e) JIS衝擊試驗適用於超過12mm之

