

# Product Specifications

(Structural Steel and Sheet Pile)

Type of Product	Classifications		Mechanical Properties								
			Yield Point N/mm <sup>2</sup> (min.)		Tensile Strength N/mm <sup>2</sup>	Yield Ratio % (max)	Elongation % (min)			Impact Thickness t > 12	
			Thickness				Thickness t ≥ 12	Thickness		Temp °C	Energy J (min)
			t ≤ 16	16 ≤ t ≤ 40		t ≤ 5		5 < t ≤ 15	t > 16		
Structural steel	JIS G 3101 : 2004 <sup>A</sup>	SS400	245	235	400-510	-	21	17	21	-	-
		SS490	285	275	490-610	-	19	15	19	-	-
		SS540	400	390	540 min	-	16	13	17	-	-
	JIS G 3106 : 2004	SM400 A	245	235	400-510	-	23	18	22	-	-
		SM400 B	245	235	400-510	-	23	18	22	0	27
		SM490 A	325	315	490-610	-	22	17	21	-	-
		SM490 B	325	315	490-610	-	22	17	21	0	27
		SM490 YA	365	355	490-610	-	19	15	19	-	-
		SM490 YB	365	355	490-610	-	19	15	19	0	27
		SM520 B	365	355	520-640	-	19	15	19	0	27
		SM520 C	365	355	520-640	-	19	15	19	0	47
	JIS G 3136 : 2005	SN400 A	235	235	400-510	-	17	17	21	-	-
		SN400 B	235-355 <sup>B</sup>	235	400-510	80°	18	18	22	0	27
		SN490 B	325-445 <sup>B</sup>	235-355	490-610	80 <sup>C</sup>	17	17	21	0	27
	BS 4360 : 1986	43A	275	265	430-580	-	20			-	-
		43B	275	265	430-580	-	20			20	27G
		43C	275	265	430-580	-	20			0	27
		43D	275	265	430-580	-	20			-20	27
		50A	355	345	490-640	-	18			-	-
		50B	355	345	490-640	-	18			20	27G
		50C	355	345	490-640	-	18			0	27
		50D	355	345	490-640	-	18			-20	27
	BS EN 10025 : 1993/2004	S275JR	275	265	410-560	-	23			20	27G
		S275JO	275	265	410-560	-	23			0	27
		S275J2	275	265	410-560	-	23			-20	27
		S275J2G3E	275	265	410-560	-	23			-20	27
		S355JR	355	345	490 <sup>F</sup> -630	-	22			20	27G
		S355JO	355	345	490 <sup>F</sup> -630	-	22			0	27
S355J2		355	345	490 <sup>F</sup> -630	-	22			20	27	
S355J2G3E		355	345	470-630	-	22			20	27	
ASTM : 2003	A36	250		400-550	-	20			-	-	
	A 572 Gr.42	290		415 min	-	20			-	-	
	A 572 Gr.50	345		450 min <sup>D</sup>	-	18			-	-	
	A 992	345-450		450 min	85	18			-	-	
DIN 17100	St-33	185	175	290	-	16			-	-	
	St 37-2	235	225	340-470	-	24			-	-	
	St 44-2	275	265	410-540	-	20			-	-	
	St 50-2	295	285	470-610	-	18			-	-	
	St 52-3	355	345	490-630	-	20			-	-	
AS/NZS 3679.1 : 1996		t < 12	12 < t ≤ 40								
	250	260	250	410 min	-	22			-	-	
	250L0	260	250	410 min	-	22			-	-	
	350	360	340	480 min	-	20			-	-	
	350L0	360	340	480 min	-	20			-	-	
		t < 11	11 ≤ t ≤ 17	t < 17							
	300	320	300	280	440 min	-	22			-	-
300L0	320	300	280	440 min	-	22			-	-	
Sheet Pile	JIS A 5528 : 2000	SY295	295		490 min	-	17			-	-
		SY390	390		540 min	-	15			-	-

## Remark

A: Bend test on material grades SS400, SS490, SS540.

B: For the H section, when the t1 is 9 mm or less, the upper limit of the yield point or proof stress shall not be applied.

C: For the H section, when the t1 is 9 mm or less, the upper limit of the yield ratio shall be 85%.

D: For grades 50 steel of thickness 20 mm and under, the tensile strength shall be a minimum of 485 N/mm<sup>2</sup>.

E: Only in 1993 version.

F: For 2004 version, the specified tensile strength is 470-630 N/mm<sup>2</sup>.

G: Verified only when specified at the time of the order.

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			Thickness				Thickness t ≥ 12	Thickness		Temp °C	Energy J (min)
			t ≤ 16	16 ≤ t ≤ 40	t ≤ 5	5 < t ≤ 15		t > 16			
Structural steel	JIS G 3101 : 2004 <sup>A</sup>	SS400	245	235	400-510	-	21	17	21	-	-
		SS490	285	275	490-610	-	19	15	19	-	-
		SS540	400	390	540 min	-	16	13	17	-	-
	JIS G 3106 : 2004	SM400 A	245	235	400-510	-	23	18	22	-	-
		SM400 B	245	235	400-510	-	23	18	22	0	27
		SM490 A	325	315	490-610	-	22	17	21	-	-
		SM490 B	325	315	490-610	-	22	17	21	0	27
		SM490 YA	365	355	490-610	-	19	15	19	-	-
		SM490 YB	365	355	490-610	-	19	15	19	0	27
		SM520 B	365	355	520-640	-	19	15	19	0	27
		SM520 C	365	355	520-640	-	19	15	19	0	47
	JIS G 3136 : 2005	SN400 A	235	235	400-510	-	17	17	21	-	-
		SN400 B	235-355 <sup>B</sup>	235	400-510	80°	18	18	22	0	27
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		43B	275	265	430-580	-	20			20	27G
		43C	275	265	430-580	-	20			0	27
		43D	275	265	430-580	-	20			-20	27
		50A	355	345	490-640	-	18			-	-
		50B	355	345	490-640	-	18			20	27G
		50C	355	345	490-640	-	18			0	27
		50D	355	345	490-640	-	18			-20	27
	BS EN 10025 : 1993/2004	S275JR	275	265	410-560	-	23			20	27G
		S275JO	275	265	410-560	-	23			0	27
		S275J2	275	265	410-560	-	23			-20	27
		S275J2G3E	275	265	410-560	-	23			-20	27
		S355JR	355	345	490 <sup>F</sup> -630	-	22			20	27G
S355JO		355	345	490 <sup>F</sup> -630	-	22			0	27	
S355J2		355	345	490 <sup>F</sup> -630	-	22			20	27	
S355J2G3E		355	345	470-630	-	22			20	27	
ASTM : 2003	A36		250	400-550	-	20			-	-	
	A 572 Gr.42		290	415 min	-	20			-	-	
	A 572 Gr.50		345	450 min <sup>D</sup>	-	18			-	-	
	A 992		345-450	450 min	85	18			-	-	
DIN 17100	St-33	185	175	290	-	16			-	-	
	St 37-2	235	225	340-470	-	24			-	-	
	St 44-2	275	265	410-540	-	20			-	-	
	St 50-2	295	285	470-610	-	18			-	-	
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		t < 11	11 ≤ t ≤ 17	t < 17							
	300	320	300	280	440 min	-	22			-	-
300L0	320	300	280	440 min	-	22			-	-	
Sheet Pile	JIS A 5528 : 2000	SY295	295		490 min	-		17		-	-
		SY390	390		540 min	-		15		-	-

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