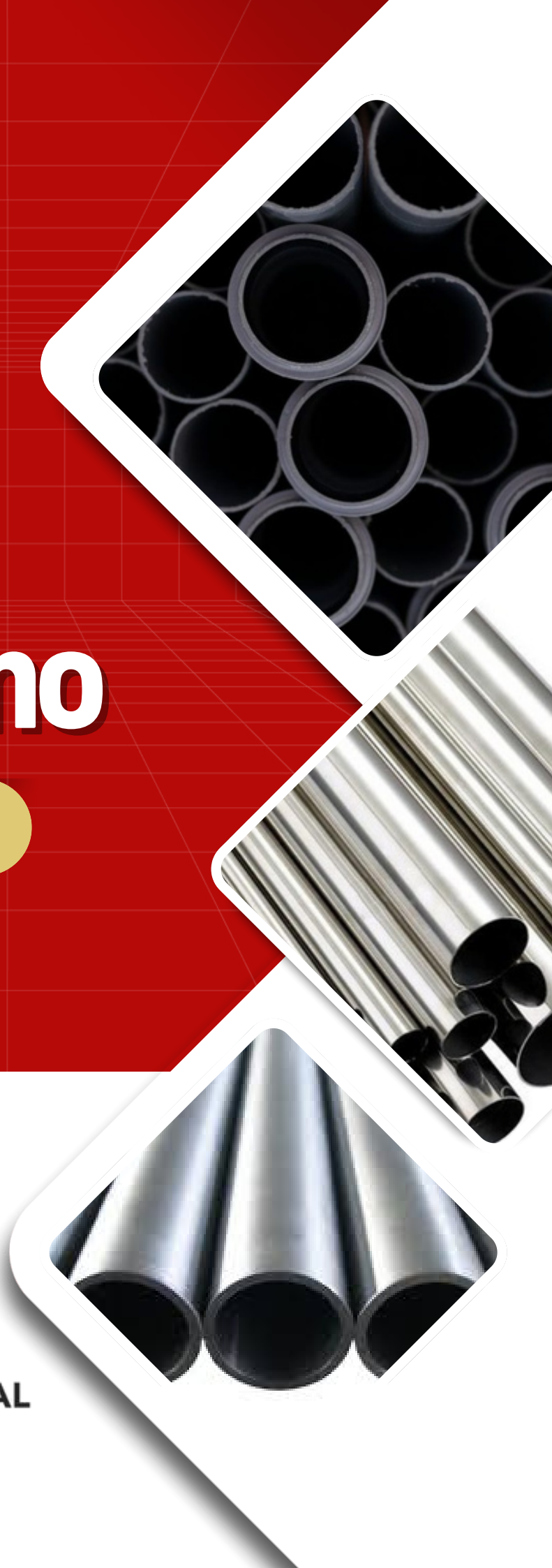


Nippon Steel & Sumitomo

Brochure



**NIPPON STEEL &
SUMITOMO METAL
CORPORATION**



APPLICABLE SPECIFICATION

1. Line Pipes (Carbon Steel)

API 5L	Line Pipe (Grade B, X42, X46, X52, X56, X60, X65, X70, X80, X90, X100)
ISO 3183	Petroleum and natural gas industries -Steel Pipe for Pipelines-
DNVGL-ST-F101	Submarine Pipeline Systems (Applicable Design Code)
ASTM A53	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Seamless
ASTM A106	Seamless Carbon Steel Pipe for High-Temperature Service
ASTM A333	Seamless Steel Pipe for Low-Temperature Service
CSA Z245.1	Steel Line Pipe
JIS G3454	Carbon Steel Pipes for Pressure Service (STPG)
JIS G3455	Carbon Steel Pipes for high Pressure Service (STS)

2. Line Pipes (Corrosion Resistant Alloy)

API 5LC	CRA Line Pipe
DNVGL-ST-F101	Submarine Pipeline Systems (Applicable Design Code)
ASTM A790	(S31803) Seamless Ferritic / Austenitic Stainless Steel Pipe
ASTM A790	(S31260) seamless Ferritic / Austenitic Stainless Steel Pipe

MATERIAL DESIGN TECHNOLOGY

1. NIPPON STEEL MATERIAL DESIGN CONCEPT FOR SOUR SERVICE

Performance

1.

High Strength
& Toughness

2.

Excellent
Weldability

3.

Excellent
Corrosion
Resistance

Performance Requirements

Strength

Toughness

Weldability

HIC

Design Concept

Strength Control by
Q&T Heat Treatment

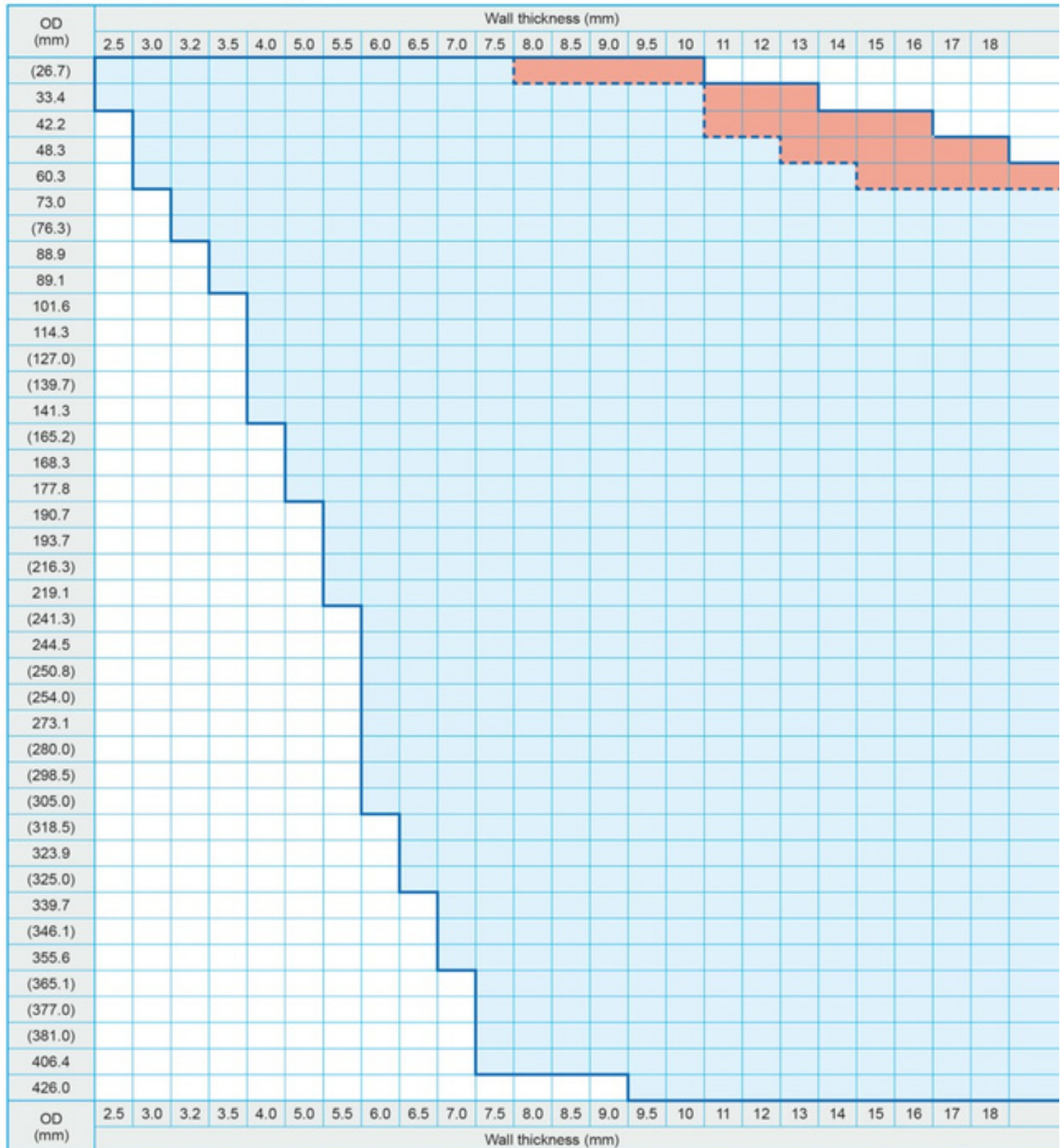
Clean steel

- Fully killed and fine grained
- Low P, S, N, O, H
- Inclusion shape control
- Low segregation

Pcm Control Weldability

Manufacturing Available Size Range (Carbon Steel Pipes)

Available size range for seamless pipe



OD in parentheses : Please contact us in advance

— : Available size range for seamless pipe

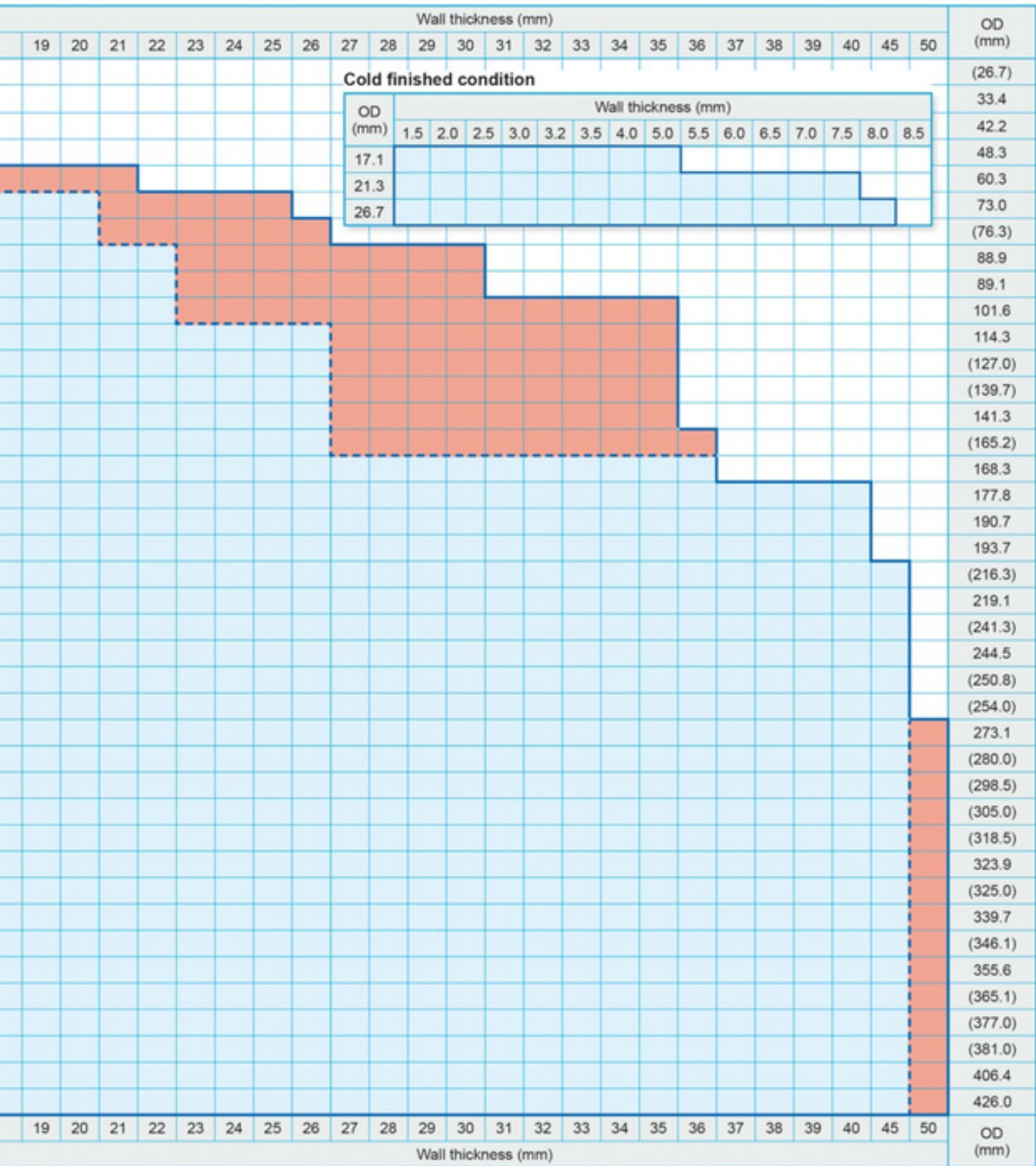
- - - : Permissible specified size range of API 5L



+63-939-913-0553,
+63-917-850-4147
Fax: +63(2)8244-1234
Tel.: +63(2)8244-7061 to 68

For Inquiries:
✉ sales10@upcc.com.ph
For Concerns:
✉ tiugregian@upcc1.com

📍 7th floor, Banawe Lifestyle
Center Building, 86 Banawe
St., Brgy. Sto. Domingo,
Quezon City, Philippines



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CARBON STEEL LINE PIPE

NIPPON STEEL has supplied Carbon Steel Line pipe with low carbon and low Pcm material. And we can provide tighter ID tolerance at pipe end.

NIPPON STEEL MATERIAL DESIGN CONCEPT FOR CARBON STEEL

- To Prevent HAZ Hardening in Field Girth Welding, our carbon steel is low carbon and low Pcm.

Table Chemical composition Nippon Steel compared to others

	Size (mm)	C	Si	Mn	P	S	Others	Ceq (IIW)	Pcm
Nippon Steel	355.6OD x 25.4WT	0.05/ 0.07	0.05/ 0.15	1.05/ 1.40	max. 0.015	max. 0.002	Cr, Mo, Ti, and V	0.39	0.17
	406.4OD x 25.4WT						Cr, Mo, Ti, and V	0.39	0.16
Others	355.6OD x 25.4WT	0.10/ 0.12	0.20/ 0.30	1.05/ 1.40	max. 0.015	max. 0.002	Cr, Mo, Ti, V and Nb	0.37	0.20
	406.4OD x 25.4WT						Cu, Ni, Cr, Mo and Nb	0.37	0.19

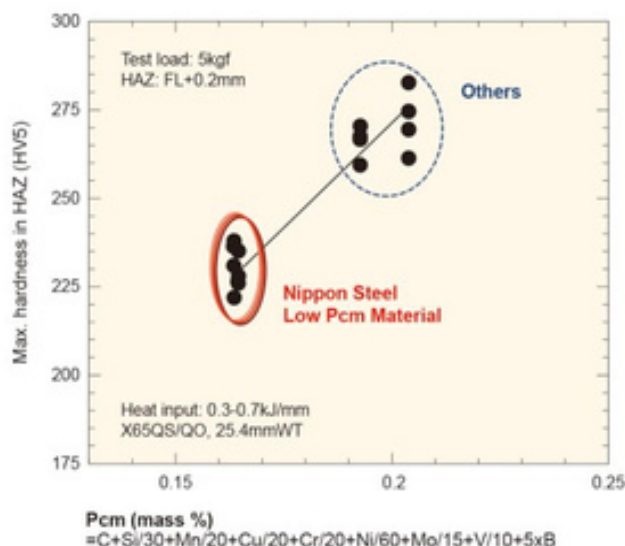
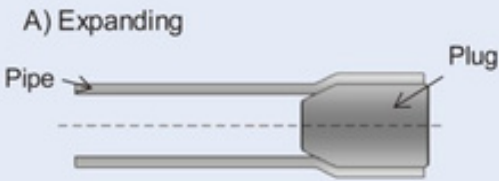
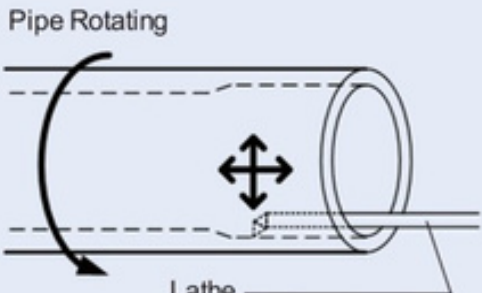


Fig. Hardness test results on typical field girth welds (Mechanized PGMAW)

Low Pcm material prevented HAZ hardening

NIPPON STEEL PIPE END AVAILABLE ID TOLERANCE

Table Available ID Tolerance and control method

Available ID tolerance	End Sizing +/- 1.0mm	End Machining +/- 0.25mm
ID control method	A) Expanding  B) Swaging & Expanding 	



PIPE DIMENSIONS AND WEIGHTS

NOMINAL PIPE SIZE	OD	SCHEDULE DESIGNATIONS	WALL THICKNESS		WEIGHT		ID	
			INCH	MM	LBS/ FOOT	KG/ METER	INCH	MM
1/8	0.405	STD	XS	40	0.068	1.73	0.24	0.37
6	10.3	XS	80	0.095	2.41	0.31	0.47	0.215
1/4	0.540	10			0.065	1.65	0.33	0.49
8	13.7	STD	40	0.088	2.24	0.43	0.63	0.364
		XS	80	0.119	3.02	0.54	0.80	0.302
3/8	0.675	STD	XS	40	0.091	2.31	0.57	0.84
10	17.1	XS	80	0.126	3.20	0.74	1.10	0.423
1/2	0.840	10			0.083	2.11	0.67	1.00
15	21.3	STD	40	0.109	2.77	0.85	1.27	0.622
		XS	80	0.147	3.73	1.09	1.62	0.546
		160		0.188	4.78	1.31	1.95	0.464
		XX		0.294	7.47	1.72	2.55	0.252
3/4	1.050	10			0.083	2.11	0.86	1.28
20	26.7	STD	40	0.113	2.87	1.13	1.69	0.824
		XS	80	0.154	3.91	1.48	2.20	0.742
		160		0.219	5.56	1.95	2.90	0.612
		XX		0.308	7.82	2.44	3.64	0.434
1	1.315	10			0.109	2.77	1.41	2.09
25	33.4	STD	40	0.133	3.38	1.68	2.50	1.049
		XS	80	0.179	4.55	2.17	3.24	0.957
		160		0.250	6.35	2.85	4.24	0.815
		XX		0.358	9.09	3.66	5.45	0.599
1-1/4	1.660	10			0.109	2.77	1.81	2.68
32	42.2	STD	40	0.140	3.56	2.27	3.39	1.380
		XS	80	0.191	4.85	3.00	4.47	1.278
		160		0.250	6.35	3.77	5.61	1.160
		XX		0.382	9.70	5.22	7.77	0.896
1-1/2	1.900	10			0.109	2.77	2.09	3.11
40	48.3	STD	40	0.145	3.68	2.72	4.05	1.610
		XS	80	0.200	5.08	3.63	5.41	1.500
		160		0.281	7.14	4.86	7.25	1.338
		XX		0.400	10.15	6.41	9.55	1.100
2	2.375	10			0.109	2.77	2.64	3.93
50	60.3	STD	40	0.154	3.91	3.66	5.44	2.067
		XS	80	0.218	5.54	5.03	7.48	1.939
		160		0.344	8.74	7.47	11.11	1.687
		XX		0.436	11.07	9.04	13.44	1.503
2-1/2	2.875	10			0.120	3.05	3.53	5.26
65	73.0	STD	40	0.203	5.16	5.80	8.63	2.469
		XS	80	0.276	7.01	7.67	11.41	2.323
		160		0.375	9.53	10.02	14.92	2.125
		XX		0.552	14.02	13.71	20.39	1.771
3	3.500	10			0.120	3.05	4.34	6.46
80	88.9	STD	40	0.216	5.49	7.58	11.29	3.068
		XS	80	0.300	7.62	10.26	15.27	2.900
		160		0.438	11.13	14.34	21.35	2.624
		XX		0.600	15.24	18.60	27.68	2.300
4	4.500	10			0.120	3.05	5.62	8.37
100	114.3	STD	40	0.237	6.02	10.80	16.08	4.026
		XS	80	0.337	8.56	15.00	22.32	3.826
		120		0.438	11.13	19.02	28.32	3.624
		160		0.531	13.49	22.53	33.54	3.438
		XX		0.674	17.12	27.57	41.03	3.152
5	5.563	10			0.134	3.40	7.78	11.56
125	141.3	STD	40	0.258	6.55	14.63	21.77	5.047
		XS	80	0.375	9.53	20.80	30.97	4.813
		120		0.500	12.70	27.06	40.28	4.563
		160		0.625	15.88	32.99	49.12	4.313
		XX		0.750	19.05	38.59	57.43	4.063
6	6.625	10			0.134	3.40	9.30	13.83
150	168.3	STD	40	0.188	4.78	12.94	19.28	6.249
		XS	80	0.280	7.11	18.99	28.26	6.065
		120		0.432	10.97	28.60	42.56	5.761
		160		0.562	14.27	36.43	54.21	5.501
		XX		0.719	18.26	45.39	67.57	5.187
				0.864	21.95	53.21	79.22	4.897

NOMINAL PIPE SIZE	OD	SCHEDULE DESIGNATIONS	WALL THICKNESS		WEIGHT		ID	
			INCH	MM	LBS/ FOOT	KG/ METER	INCH	MM
8	8.625	10			0.148	3.76	13.41	19.97
200	219.1	20			0.250	6.35	22.38	33.32
		30			0.277	7.04	24.72	36.82
		STD	40		0.322	8.18	28.58	42.55
		60			0.406	10.31	35.67	53.09
		XS	80		0.500	12.70	43.43	64.64
		100			0.594	15.09	51.00	75.92
		120			0.719	18.26	60.77	90.44
		140			0.812	20.62	67.82	100.93
		XX			0.875	22.23	72.49	107.93
		160			0.906	23.01	74.76	111.27
10	10.750	20			0.188	4.78	21.23	31.62
250	273.0	30			0.250	6.35	28.06	41.76
		STD	40		0.307	7.80	34.27	51.01
		XS	60		0.365	9.27	40.52	60.29
		80			0.500	12.70	54.79	81.53
		100			0.594	15.09	64.49	95.98
		120			0.719	18.26	77.10	114.71
		140			0.844	21.44	89.38	133.01
		160			1.000	25.40	104.23	155.10
					1.125	28.58	115.75	172.27
12	12.750	20			0.188	4.78	25.25	37.61
300	323.8	30			0.250	6.35	33.41	49.71
		STD	40		0.330	8.38	43.81	65.19
		40			0.375	9.53	49.61	73.86
		XS			0.406	10.31	53.57	79.71
		60			0.500	12.70	65.48	97.44
		80			0.562	14.27	73.22	108.93
		100			0.688	17.48	88.71	132.05
		120			0.844	21.44	107.42	158.87
		140			1.000	25.40	125.61	186.92
		160			1.125	28.58	139.81	208.08
					1.312	33.32	160.42	238.69
14	14.000	10			0.250	6.35	36.75	54.69
350	355.6	20			0.312	7.92	45.65	67.91
		STD	30		0.375	9.53	54.62	81.33
		40			0.438	11.13	63.50	94.55
		XS			0.500	12.70	72.16	107.40
		60			0.594	15.09	85.13	126.72
		80			0.750	19.05	106.23	158.11
		100			0.938	23.83	130.98	194.98
		120			1.094	27.79	150.93	224.66
		140			1.250	31.75	170.37	253.58
		160			1.406	35.71	189.29	281.72
16	16.000	10			0.250	6.35	42.09	62.65
400	406.4	20			0.312	7.92	52.32	77.83
		STD	30		0.375	9.53	62.64	93.27
		XS	40		0.500	12.70	82.85	123.31
		60			0.656	16.66	107.60	160.13
		80			0.844	21.44	136.74	203.54
		120			1.219	30.96	192.61	286.66
		160			1.594	40.49	245.48	365.38
18	18.000	10			0.250	6.35	47.44	70.57
450	457	20			0.312	7.92	58.99	87.71
		STD	30		0.375	9.53	70.65	105.17
		40			0.438	11.13	82.23	122.38
		XS			0.500	12.70	93.54	139.16
		60			0.562	14.27	104.76	155.81
		80			0.750	19.05	138.30	205.75
		100			0.938	23.83	171.08	254.57
		120			1.375	34.93	244.37	363.58
		160			1.781	45.24	308.79	459.39
20	20.000	10			0.250	6.35	52.78	78.56
500	508	20			0.375	9.53	78.67	117.15
		STD	30		0.500	12.70	104.23	155.13
		40			0.594	15.09	123.23	183.43
		60			0.812	20.62	166.56	247.84
		80			1.031	26.19	209.06	311.19
		120			1.500	38.10	296.65	441.52
		160			1.969	50.01	379.53	564.85

*PLEASE NOTE AS PER ASME ALL PIPES HAVE A TOLERANCE OF $\pm 12.5\%$

SPECIFICATIONS:

STANDARDS:

ASTM A53/A106 GRADE B, ASME, API,
AND ANSI B 36.10

- Wall Thickness: $\pm 12.5\%$
- Size: 1/4" - 48"
- Thickness: Schedule: 10 - 160
- All Items will have an accompanying Mill Test Certificate upon request

APPLICATIONS:

- Industrial
- Residential
- Petrochemical Plants
- Oil & Gas
- Refineries
- Sugar Mills
- Energy
- Construction & Infrastructure
- Chemicals
- Machineries
- Boilers
- Food & Beverage
- Shipping
- Desalination Plant
- Automotive & Transport
- High-Pressure Vessel
- Power Plants





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