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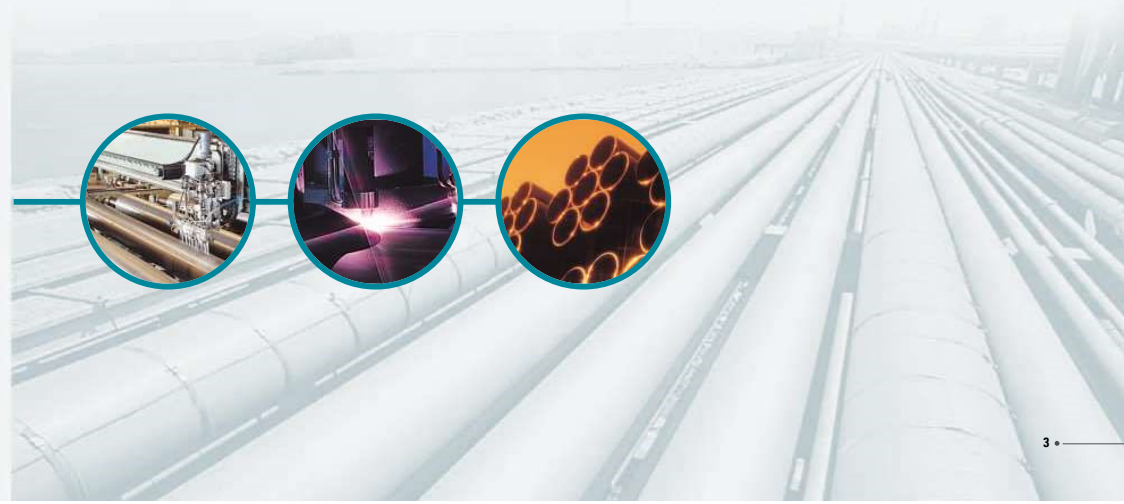
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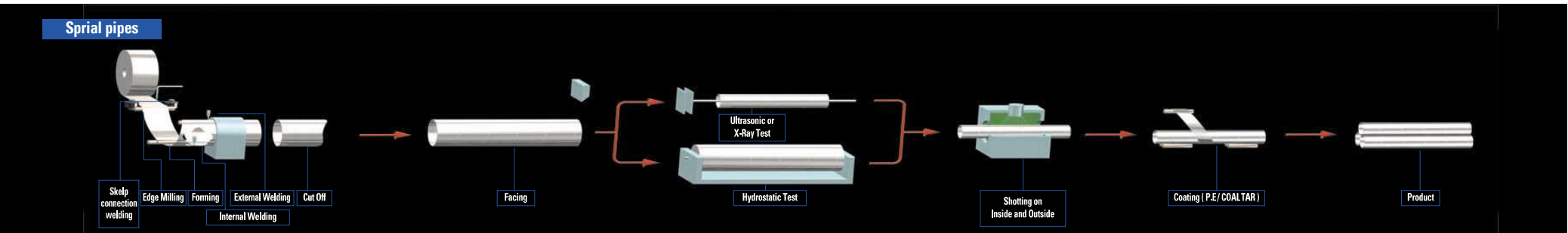
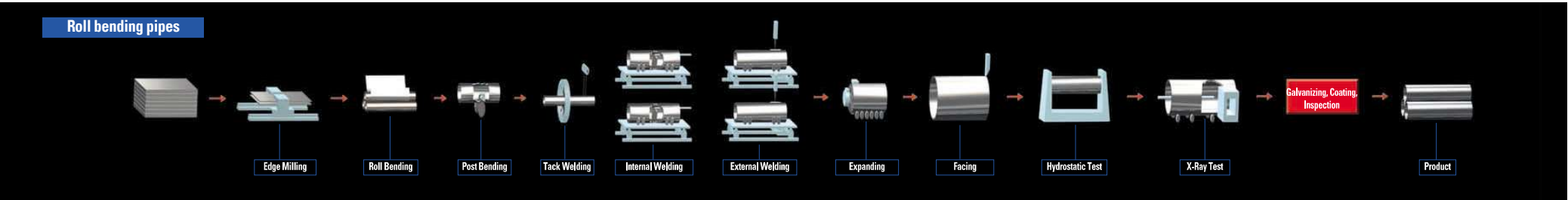
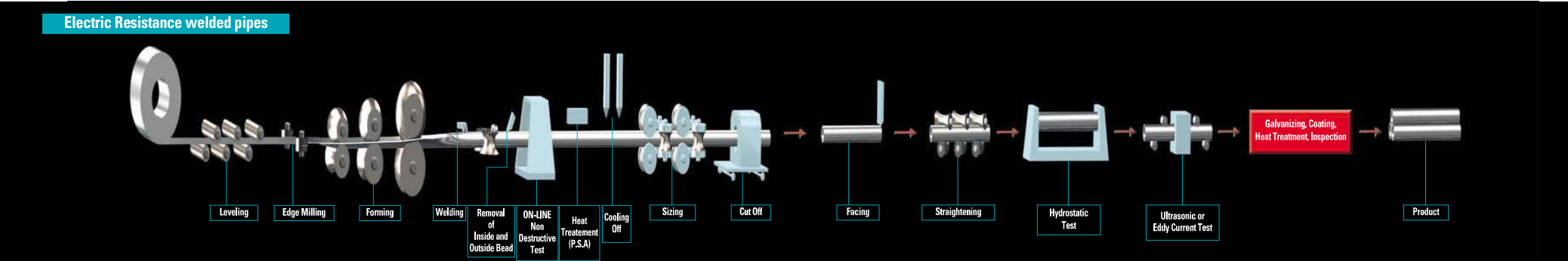
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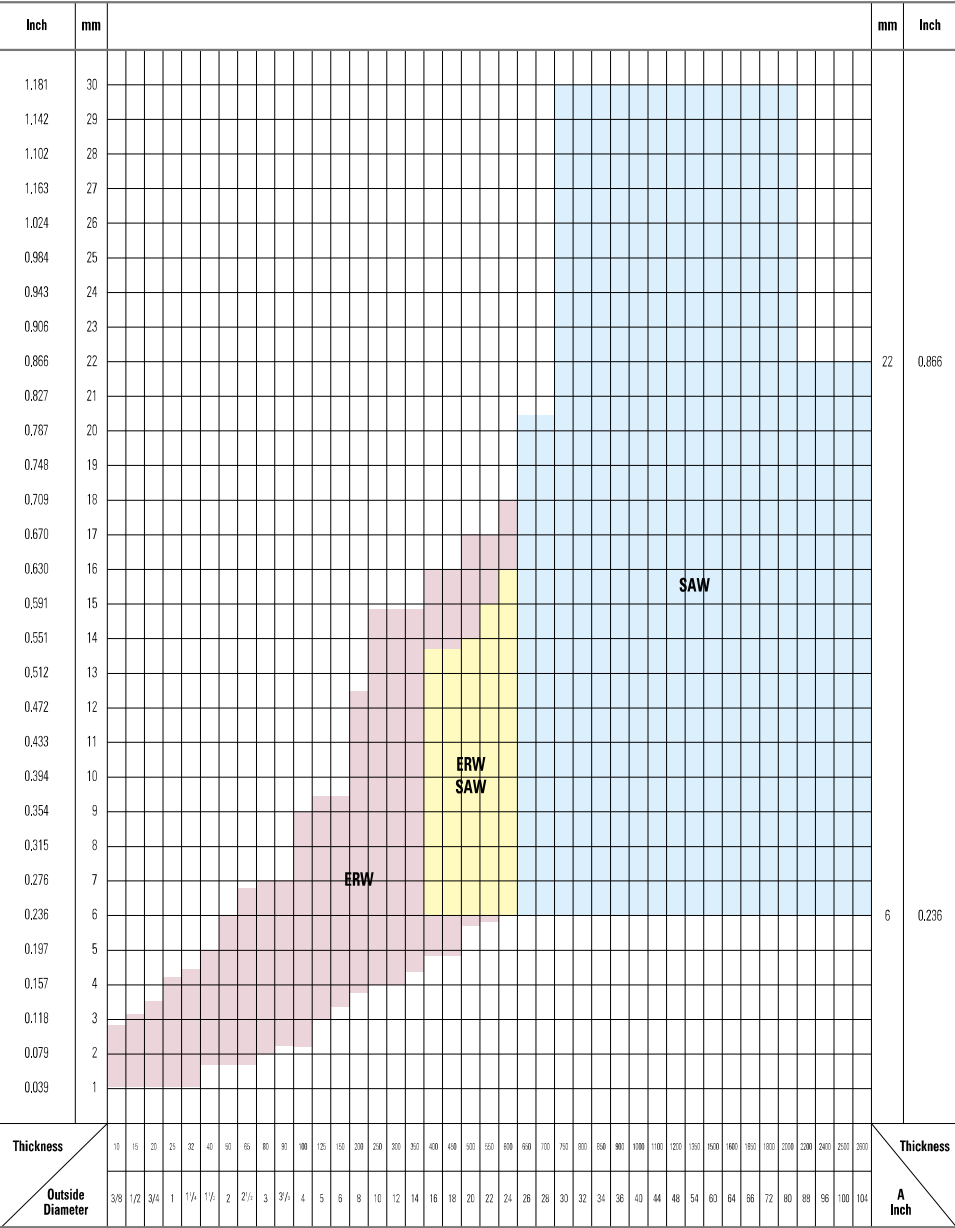
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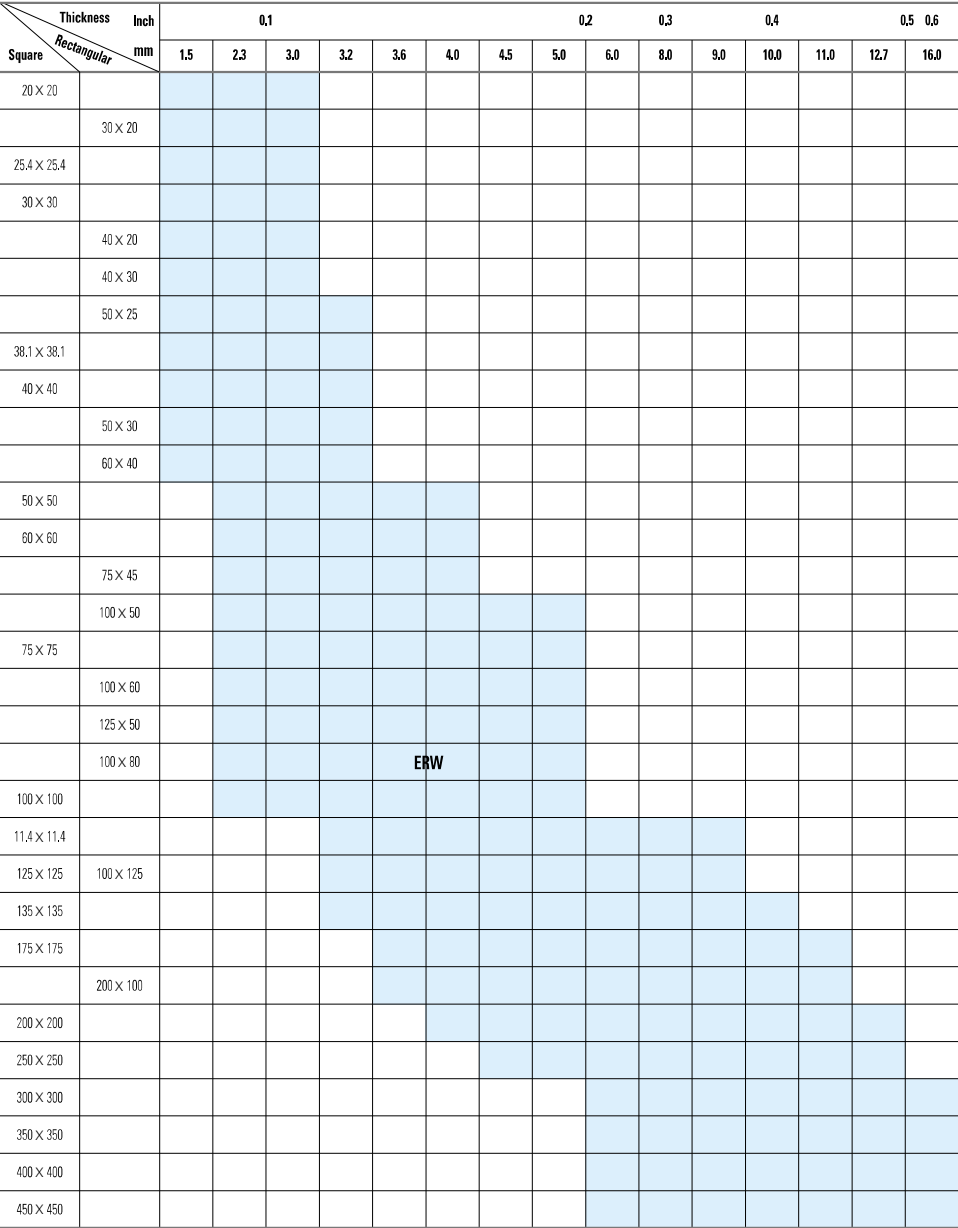


PRODUCTION CAPACITY

1. Round pipe



2. Square / Rectangular pipes



MAJOR RPRODUCTION USAGE

Type of pipes		Similar specification				Application
Type	Manufacturing method	Korea	Japan	U.S.A	U.K	
Steel pipes for ordinary piping	ERW	Carbon steel pipes for ordinary piping (KS D 3507/SPF)	Carbon steel pipes for ordinary piping (JIS G 3452/SPF)	ASTM A53	BS 1387	Steel pipes for steam, air, water, oil and gas etc. with relatively low pressure
	ERW	Galvanized steel pipes for water service (KS D 3537/SPPW)	Galvanized steel pipes for water service (JIS G 3442/SPPW)	ASTM A53	BS 1387	Steel pipes for water supply wity 100m or less at water head
	ERW Spiral Roll bending	Coated steel pipes for water works(KS D 3585/STWW) Fittings of coated steel pipes for water works (KS D 3578)	-	AWWA C200, C203	-	Steel pipes for water works
	Spiral Roll bending	Arc welded carbon steel pipes (KS D 3583/SPW)	Arc welded carbon steel pipes (JIS G 3457/STPV)	ASTM A 134, A139 A671, A672	-	Steel pipes for steam, air, water, oil and gas etc. with relatively low pressure
Steel pipes for pressure service	ERW	Carbon steel pipes for pressure service (KS D 3562/SPPS)	Carbon steel pipes for pressure service (JIS G 3454/STPG)	ASTM A53 API 5L	BS 3601	Steel pipes for application at a temperature of 350°C or less
	Roll bending	Arc welded carbon steel pipes (KS D 3583/SPW)	Arc welded carbon steel pipes (JIS G 3457/STPV)	-	-	Piping for steam, water, gas, air of comparatively low working pressure.
Steel pipes for structural purposes	ERW	Carbon steel tubes for machine structural purposes (KS D 3517/STKM)	Carbon steel tubes for machine structural purposes (JIS G 3445/STKM)	ASTM A513	BS 980 BS 1717 BS 1775	Steel pipes for application for mechanical Parts such as machinery, automobiles, bicycles, furniture and fixtures etc.
	ERW Spiral Roll bending	Caron steel tubes for machine structural purposes (KS D 3566/STK)	Carbon steel tubes for general structural purposes (JIS G 3444/STK)	ASTM A500	BS 980 BS 1139 BS 4848	Steel pipes for application for structures such as civil works, architecture, steel tower, scaffolding, piles, veranda and fence and post etc.
	ERW	Carbon steel square pipes for general structural purposes(KS D 3568/SPSR)	Carbon steel square pipes for general structural purposes (JIS G 3466/STKR)	ASTM A500	BS 4848	Steel pipes for application to civil works, architecture and other structures
	ERW Spiral Roll bending	Steel pipe piles (KS F 4602)	Steel pipe piles (JIS A 5525/SKK)	ASTM A252	-	Steel pipes for foundation civil works, architectures etc.
	Spiral Roll bending	-	-	Fabrication of structural steel pipe (API 2B)	-	Offshore structure, Piping and main structural members
	-	-	-	-	-	-
Line pipe	ERW Roll bending	-	-	API 5L (GR. A, B, X42, X46, X52 X56, X60, X65, X70, X80)	-	Steel pipes for transportation petroleum and natural gas
OCTG	ERW	-	-	API 5CT (H40,J55,K55,N80)	-	Steel pipes for development for petroleum and natural gas
Conduits	ERW	Rigid steel conduits (KS C 8401)	Rigid steel conduits (JIS C 8305)	ANSI C80.1 UL6	BS 31	Steel pipes for protection of electric cable at electric distribution lines
Steel tubes for boiler & heat exchanger	ERW	Carbon steel boiler and heat exchanger tubes (KS D 3563/STBH)	Carbon steel boiler and heat exchanger tubes (JIS G 3461/STB)	ASTM A 178, A 214, A 226	BS 3059 BS 3606	Water pipes for boiler, connection pipe, overheat engine, air preheating pipe and heat exchange pipes, condenser
Coated steel pipes	ERW Spiral Roll bending	-	-	-	-	Coated steel pipes for protection of outside surface of steel pipe for underground burial.
Steel tubes for tower structural purposes	ERW Spiral Roll bending	-	-	-	-	High tensile steel pipes applicable to electric transmission tower

KS : Korean standards JIS : Japanese Industrial Standards BS : British Standard API : American Petroleum Institute UL : Underwriters Laboratories
AWWA : American Water Works Association ASTM : American Society for Testing and Materials UK : United Kingdom
* Please consult dimension of main pipes produced with market department.

CERTIFICATE STATUS

CERTIFICATE	CERTIFICATE NO.	CERTIFICATE NAME	Symbol	SCOPE	License No	Acquired Date	ISSUED BY
ISO	9007	ISO9007	-	MANUFACTURE OF MEPL PRE-INSULATED PIPES, COATED PIPES, WELDED PIPES AND TUBES	955818	96.11.5 (93.10.18)	LRQA
	14001	ISO14001	-	SITE ACTIVITIES ASSOCIATED WITH THE MANUFACTURE OF STEEL AND COATED PIPES	770165	97.4.30	LRQA
	C 8401	Rigid steel conduit	-	THICK RIBED STEEL CONDUITS (GALVANIZED) NOT MORE THAN 104	1838	79.10.29	K.S.A
	D 3507	Carbon steel pipes for ordinary piping	SPF	ORDINARY GALVANIZED 10A - 600A	1836	79.10.29	K.S.A
KS	D 3537	Galvanized steel pipes for water service	SPPW	10A - 500A	1837	79.10.29	K.S.A
	D 3562	Carbon steel pipes for pressure service	SPPS	SPPS36, SPPS 42 Sph60 15A - 300A Sph60 15A - 300A Sph60 15A - 200A	2475	79.10.29	K.S.A
	D 3563	Carbon steel pipes for boiler and heat exchanger	STBH	STBH 340 19.0mm - 114.3mm STBH 410 48.6mm - 139.8mm	2207	80.9.12	K.S.A
	D 3565	Coated steel pipes for water works	STWW	STWW 400, NOT MORE THAN 200(A) NOT MORE THAN 300(A,C,L)	2748	82.7.24	K.S.A
	D 3566	Carbon steel tubes for general structural purpose	STK	STK 280, 400, 480, 500 21.7mm - 636.6mm	2749	82.7.24	K.S.A
	D 3563	Carbon steel square pipes for general structural purpose	SPSR	SPSR 400, 450 28 x 20 - 150 x 150mm	2750	82.7.24	K.S.A
	D 3563	Arc welded carbon steel pipes	SPW	SPW400 650A - 2000A	5415	87.8.14	K.S.A
	D 3578	Pipe fittings of coated steel pipes for water service	-	F12, 15, 30 NOT MORE THAN 240(A) NOT MORE THAN 300(A,C,L)	10735	94.2.5	K.S.A
	D 3623	Corrosion resistance welded steel pipe for water service	SPCR	ORDINARY GALVANIZED 15A - 350A	10683	94.8.9	K.S.A
	D 3631	Carbon steel pipes for fuel gas piping	SPFG	15A - 600A	99-0635	96.5.31	K.S.A
JIS	D 3780	Galvanized steel pipes for vinyl housing	SPVH	15.8mm - 31.8mm	99-0939	98.10.28	K.S.A
	F 4602	Steel pipe piles	SFS	406.4 - 1016.0mm	2560	83.2.3	K.S.A
	M 3362	Polypropylene copolymer pipes	-	CLASS 1, CLASS 2	11728	95.2.26	K.S.A
	D 3626	Coated steel pipes for general water works	STWW	STWW400 C(L250A) - 2500(A)	98-0247	98.10.30	K.S.A
	D 3627	Pipe fittings of coated steel pipes for general water works	-	F12-C(L350A - 3000A)	98-0243	98.10.30	K.S.A
	F 4605	Steel sheet piles	SKY	SKY400500 - 1524(mm)	98-0191	98.9.29	K.S.A
	A 5675	Steel pipe piles	SKK	FULL SIZE	KR9433	94.8.13	Administration of economy & Industry
	A 5630	Steel sheet piles	SKY	FULL SIZE	KR9433	99.6.4	Administration of economy & Industry
	C 6305	Rigid steel conduit	-	FULL SIZE	KR8865	88.8.12	Administration of economy & Industry
	G 3444	Carbon steel pipes for general structural purpose	STK	FULL SIZE	KR8419	84.8.25	Administration of economy & Industry
API	G 3445	Carbon steel pipes for mechanical structural purpose	STKM	FULL SIZE	KR8419	96.2.6	Administration of economy & Industry
	G 3452	Carbon steel pipes for ordinary piping	SPF	FULL SIZE	KR8521	85.6.17	Administration of economy & Industry
	G 3454	Carbon steel pipes for pressure service	STPG	FULL SIZE	KR8521	85.6.17	Administration of economy & Industry
	G 3457	Arc welded carbon steel pipes	STPV	FULL SIZE	KR8521	90.3.23	Administration of economy & Industry
	G 3461	Carbon steel pipes for boiler and heat exchanger	STB	FULL SIZE	KR8522	85.6.17	Administration of economy & Industry
	G 3466	Carbon steel square pipes for general structural purpose	STKR	FULL SIZE	KR8419	84.8.25	Administration of economy & Industry
	5L	Line Pipe	5L	FULL SIZE	5L-0008	81.5.14	American Petroleum Institute
	5CT	Casing & Tubing	5CT	FULL SIZE	5CT-0030	81.5.14	American Petroleum Institute
	2B	Fabricated Structural Steel Pipe	2B	FULL SIZE	2B-0036	97.4.21	American Petroleum Institute
	-	Steel tubes & pipes - Steel pipes for pressure service - Steel pipes for boiler & heat exchanger	-	RST 138-E-C, 142-E-C, 338-E-C, 342-E-C RSTH 33-E-C, 35-E-C, 42-E-C	ULS 00783-ST001	80.4.30	Korea shipping class
Lloyd's register	-	Welded pipes & tubes in austenitic stainless steel	-	MAX 323mm(Outside Diameter), MAX 8mm(Thickness)	MD003/0735/0006/4	96.10.15	English shipping class
	-	Welded pipes & tubes in carbon and carbon - Manganese steel	-	MAX 610mm(Outside Diameter), MAX 13mm(Thickness)		80.5.1	
Det Norske Veritas	-	WELD PIPES & TUBES(SAW, PAW + FIB + ERW)	-	SAW Max. 2436.4mm x 25i PAW Max. 323.85mm x 7i TIG Max. 323.85mm x 3i ERW Max. 610mm x 18i	ANM - 449	82.8.29(SAW, PAW, TIG) 00.9.19(ERW)	Norway shipping class
Bureau Veritas	-	LONGITUDINALLY WELDED STEEL PIPES	-	ERW : MIN 0019.1mm x 1.4t MAX 02699.4mm x 12.6t SAW(RB) : MIN 02568.8mm x 6.0t MAX 00 0863.8mm x 25.0t	SMS 8 FSN 3327 1A0	97.10.15	French shipping class
Germanish Lloyd's	-	LONGITUDINALLY WELDED STEEL PIPES	STPG370	19.1mm - 636.6mm / 1.4mm - 12.6mm			
	-		STKR480	20mm - 400mm / 1.2mm - 16mm			
	-		STB340	20mm - 140mm / 1.2mm - 11mm			
	-		STPV400	558.8mm - 1656.8mm / 6.3mm - 25.0mm			
	-		SJ308 TP SUS304LT	MAX. 323.85mm / 0.5mm - 7.5mm			
RINA	-	STEEL TUBES AND PIPES	ERW	MAX. 610mm / max. 18.0mm	00/PM/TO/5256-1	00.04.11	Italian Shipping class
	-		SAW	MAX. 1524mm / max. 25.0mm	00/PM/TO/5256-1	00.04.11	Italian Shipping class
	-		TIG	MAX. 323.8mm / max. 8.0mm	00/PM/TO/5256-1	00.04.11	Italian Shipping class
American Bureau of Shipping	-	Welding Procedures Qualification Test Record	-	GMAW - SAW - Groove Joint Welding	ML 4 - 7	00.12.12	American Shipping class
UL	-	RIBED METAL CONDUIT	-	TYPE "L" 11/2" - 6"	E38167	94.6	Underwriters Laboratories Inc.
-	-	SPRINKLER	-	1 + 1/4" - 4" (Note: Thread applies to 1" - 2")	E36217	98.3	
AN	D 3566	CARBON STEEL PIPES FOR ORDINARY	STK580	1, 2, 3, 4, 5, 6M	-	95.1	KOREA OCCUPATIONAL SAFETY & HEALTH AGENCY
SASO	-	V402 STEEL AND IRON ALLOY PIPES	-	ASTM A333 Gr. B API 5L Gr.B, ASTM A571 API 5L, KS D3383/JIS G3457	R-301201 S2	07.6	SAUDI ARABIAN STANDARDS ORGANIZATION

SPECIFICATIONS

Specification Classification		KS D 3507 (JIS G 3452)	KS D 3537 (JIS G 3442)	KS D 3565			KS D 3583 (JIS G 3457)	KS D 3562 (JIS G 3454)		KS D 3569 (JIS G 3460)	KS D 3570 (JIS G 3456)		
		SPP (SGP)	SPPW (SGPW)	STWW 290 (300A below)	STWW 370 (300A below)	STWW 400 (350A below)	SPW 400 (STPY 400)	SPPS 38 (STPG 370)	SPPS 42 (STPG 410)	SPLT 39 (STPL 380)	SPHT 38 (STPT 370)	SPHT 42 (STPT 410)	
Name of specification		Carbon steel pipes for ordinary piping	Galvanized steel pipes for water service	Coated steel pipes for water works			Arc welded carbon steel pipes	Carbon steel pipes for pressure services		Steel pipes for low temperature service	Carbon steel pipes for high temperature service		
Chemical composition (%)	C(Max.)	-	-	-	0.25	0.25	0.25	0.25	0.30	0.25	0.25	0.30	
	Si(Max.)	-	-	-	-	-	-	0.35	0.35	0.35	0.10 - 0.35	0.10 - 0.35	
	Mn(Max.)	-	-	-	-	-	-	0.30 - 0.90	0.30 - 1.00	1.35	0.30 - 0.90	0.30 - 1.00	
	P(Max.)	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.035	0.035	0.035	
	S(Max.)	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.035	0.035	0.035	
	Others	-	-	-	-	-	-	-	-	-	-	-	
Mechanical properties	Tensile strength (Min.)	kg/mm ²	30	30	30	38	41	38	42	39	38	42	
		N/mm ²	294	294	294	373	402	400	373	472	382	373	412
	Yield point (Min.)	kg/mm ²	-	-	-	22	23	23	22	25	21	22	25
		N/mm ²	-	-	-	216	226	225	216	245	206	216	245
	Elongation (Min.) (%)	No.11 specimen No.12 Specimen	30	30	30	30	-	-	30	25	35	30	25
		No. 5 specimen	25	25	25	25	18	18	25	20	25	25	20
Flattening test	H : Distance between Flattening plates(mm) D : Outside diameter of the pipe(mm) t : Wall thickness of the pipe(mm)	H = 2/3D	H = 2/3D	H = 2/3D (Electric resistance welded pipe)			-	Welded part H = 2/3D Base metal H = 1/3D		H = $\frac{(4+e)t}{e+t/D}$	H = $\frac{(1+e)t}{e+t/D}$		
Bending test	Bending angle x Inside radius (D : Outside diameter of the pipe)	90° x 6D (pipes of 50A or below, substitute with flattening test)	90° x 8D (pipes of 50A or below)	-			-	90° x 6D (Pipes of 40A or below, substitute with flattening test)		90° x 6D (Pipes of 50mm or below, substitute with flattening test)	90° x 6D (Pipes of 50mm or below, substitute with flattening test)		
Hydrostatic test	Test pressure (kgf/cm ²)	25	25				25	Schedule No. Test pressure		Schedule No. Test pressure	Schedule No. Test pressure		
				Letter symbol of grade Test pressure		10 20		10 20	10 20				
				STWW 290 25		20 35		20 35	20 35				
				STWW 370 35		30 50		30 50	30 50				
				STWW 400 A 25 									

Specification		KS D 3517 (JIS G 3445)																							
		STKM 11A	STKM 12A	STKM 12B	STKM 12C	STKM 13A	STKM 13B	STKM 13C	STKM 14A	STKM 14B	STKM 14C	STKM 15A	STKM 15C	STKM 16A	STKM 16C	STKM 17A	STKM 17C	STKM 18A	STKM 18B	STKM 18C	STKM 19A	STKM 19C	STKM 20A		
Classification		Carbon steel Tubes for machine structural purposes																							
Name of specification																									
Chemical composition(%)	C(Max.)	0.12	0.20		0.25			0.30			0.25 - 0.35		0.35 - 0.45		0.45 - 0.55		0.18			0.25		0.25			
	Si(Max.)	0.35	0.35		0.35			0.35			0.35		0.40		0.40		0.55			0.55		0.55			
	Mn(Max.)	0.60	0.60		0.30 - 0.90			0.30 - 1.00			0.30 - 1.00		0.40 - 1.00		0.40 - 1.00		1.50			1.50		1.60			
	P(Max.)	0.040	0.040		0.040			0.040			0.040		0.040		0.040		0.040			0.040		0.040			
	S(Max.)	0.040	0.040		0.040			0.040			0.040		0.040		0.040		0.040			0.040		0.040			
	Others	-	-		-			-			-		-		-		-			-		No or V 0.15 below			
Mechanical properties	Tensile strength (Min.)	kg/mm ²	30	35	40	48	38	45	52	42	51	56	48	59	52	63	56	66	45	50	52	50	56	55	
		N/mm ²	290	340	390	470	370	440	510	410	500	550	470	580	510	620	550	650	440	490	510	490	550	540	
	Yield point (Min.)	kg/mm ²	-	18	28	36	22	31	39	25	36	42	28	44	33	47	35	49	28	32	39	32	42	40	
		N/mm ²	-	175	275	356	215	305	380	245	355	410	275	430	325	460	345	480	275	315	380	315	410	390	
	Elongation (Min.) (%)	No.11 specimen No.12 Specimen	35	35	25	20	30	20	15	25	15	15	22	12	20	12	20	10	25	23	15	23	15	23	
		No. 5 specimen	30	30	20	15	25	15	10	20	10	10	17	7	15	7	15	5	20	18	10	18	10	18	
Flattening test	H : Distance between Flattening plates(mm) D : Outside diameter of the pipe(mm) t : Wall thickness of the pipe(mm)	H = 1/2D	H = 2/3D	H = 2/3D	-	H = 2/3D	H = 3/4D	-	H = 3/4D	H = 7/8D	-	H = 3/4D	-	H = 7/8D	-	H = 7/8D	-	H = 7/8D	H = 7/8D	-	H = 7/8D	-	H = 7/8D		
Bending test	Bending angle X Inside radius (D : Outside diameter of the pipe) pipes of 50mm or below (Outside Diameter)	180° X 4D	90° X 6D	90° X 6D	-	90° X 6D	90° X 6D	-	90° X 6D	90° X 8D	-	90° X 6D	-	90° X 8D	-	90° X 8D	-	90° X 6D	90° X 8D	-	90° X 6D	-	90° X 6D		
Hydrostatic test	Hydrostatic test pressure (kg/cm2)	By agreement																							
Non-destructive Test	Ultrasonic test or eddy current test	By agreement																							
Others		-																							

SPECIFICATIONS

Specification Classification		KS D 3566 (JIS G 3444)					KS D 3568 (JIS G 3466)		KS F 4602 (JIS A 5525)		KS D 3780 (JIS G 3474)		
		STK 290 (STK 290)	STK 400 (STK 400)	STK 500 (STK 500)	STK 490 (STK 490)	STK 540 (STK 540)	SPSR 400 (STKR 400)	SPSR 490 (STKR 490)	SPS 400 (SKK 400)	SPS 490 (SKK 490)	STKT 540 (STKT 540)	STKT 590 (STKT 590)	
Name of specification		Carbon steel tubes for general structural purposes					Carbon steel square pipes for general structural purposes		Steel pipe piles		High tensile strength steel for tower structural purposes		
Chemical composition (%)	C(Max.)	-	0.25	0.24	0.18	0.23	0.25	0.18	0.25	0.18	0.23	0.12	
	Si(Max.)	-	-	0.35	0.55	0.55	-	0.55	-	0.55	0.55	0.40	
	Mn(Max.)	-	-	0.30-1.30	1.50	1.50	-	1.50	-	1.50	1.50	2.00	
	P(Max.)	0.050	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.030	
	S(Max.)	0.050	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.030	
Others		-	-	-	-	-	-	-	-	-	-	0.15 (Ni+V)	
Mechanical properties	Tensile strength (Min.)	kg/mm ²	30	41	51	50	55	41	50	41	50	55	60 - 70
		N/mm ²	290	400	500	490	540	400	490	400	490	540	590 - 740
	Yield point (Min.)	kg/mm ²	-	24	36	32	40	25	33	24	32	40	45
		N/mm ²	-	235	356	315	390	245	325	235	315	390	440
	Elongation (Min.) (%)	No.11 specimen No.12 Specimen	30	23	15	23	20	-	-	23	23	20	20
		No. 5 specimen	25	18	10	18	16	23	23	18	18	16	16
Flattening test	H : Distance between Flattening plates(mm) D : Outside diameter of the pipe(mm) t : Wall thickness of the pipe(mm)	H = 2/3D	H = 2/3D	H = 7/8D	H = 7/8D	H = 7/8D			H = 2/3D	H = 7/8D	H = 7/8D	H = 3/4D	
		Electric resistance welded pipe					-		Electric resistance welded pipe		Electric resistance welded pipe		
Bending test	Bending angle X Inside radius (D : Outside diameter of the pipe)	90° x 6D	90° x 6D	90° x 8D	90° x 8D	90° x 6D							
		Pipes of 50mm or below, substitute with flattening test					-				-		
Hydrostatic test	Hydrostatic test pressure (kgf/cm2)	By agreement					-		By agreement		By agreement		
Non-destructive Test	Ultrasonic test or eddy current test or radiographic test	By agreement					-		By agreement		By agreement		
Others		Tensile strength test for welded part (Arc welded steel pipes 350mm or above)					Bending test for welded part at the request of client		• Tensile strength test for welded part (Arc welded steel pipes)		• Tensile strength test for welded part (Arc welded steel pipes 350mm or above) • Impact test(STKT590) • 0.40% or less for carbon unit quantity		

Specification Classification		API 5L (PSL I / PSL II)											API 5CT													
		A25		A	B	X42	X46	X52	X56	X60	X65	X70	X80	H40	J55	K55	N80									
Application		Class 1	Class 2	Line pipe											Casing Tubing											
Chemical composition(%)	C(Max.)	0.21 -	0.21 -	0.22 -	0.26 0.22	0.26 0.22	0.26 0.22	0.26 0.22	0.26 0.22	0.26 0.22	0.26 0.22	0.26 0.22	0.26 0.22	-	-											
	Si(Max.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-											
	Mn(Max.)	0.60 -	0.60 -	0.90 -	1.20 1.20	1.30 1.30	1.40 1.40	1.40 1.40	1.40 1.40	1.40 1.40	1.45 1.40	1.65 1.45	1.65 1.65	-	-											
	P(Max.)	0.030 -	0.080 -	0.030 -	0.030 0.025	0.030 0.025	0.030 0.025	0.030 0.025	0.030 0.025	0.030 0.025	0.030 0.025	0.030 0.025	0.030 0.025	-	0.030											
	S(Max.)	0.030 -	0.030 -	0.030 0.015	0.030 0.015	0.030 0.015	0.030 0.015	0.030 0.015	0.030 0.015	0.030 0.015	0.030 0.015	0.030 0.015	0.030 0.015	-	0.030											
Others		-	-	-	-	-	-	-	-	-	-	-	-	-												
Mechanical properties	Tensile strength (Min.)	PSI		45,000 -	48,000 60,000 -110,000	60,000 60,000 -110,000	63,000 63,000 -110,000	66,000 66,000 -110,000	71,000 71,000 -110,000	75,000 75,000 -110,000	77,000 77,000 -110,000	82,000 82,000 -110,000	-	60000	75000	95000	10000									
		MPa		310 -	331 414 -759	414 414 -759	434 434 -759	455 455 -759	490 490 -759	517 517 -759	531 531 -759	565 565 -759	-	414	517	655	689									
		kgf/mm²		31.6 -	33.7 42.2 -77.3	42.2 42.2 -77.3	44.3 44.3 -77.3	46.4 46.4 -77.3	49.9 49.9 -77.3	52.7 52.7 -77.3	54.1 54.1 -77.3	57.7 57.7 -77.3	-	42.2	52.7	66.8	70.3									
	Yield point (Min.)	PSI		25,000 -	30,000 35,000 -69,000	42,000 42,000 -77,000	46,000 46,000 -77,000	52,000 52,000 -77,000	56,000 56,000 -77,000	60,000 60,000 -77,000	65,000 65,000 -77,000	70,000 70,000 -77,000	-	40000-80000	55000-80000	80000-110000										
		MPa		172 -	207 241 -448	290 290 -496	317 317 -524	358 358 -531	386 386 -541	414 414 -541	448 448 -560	483 483 -561	-	276-552	379-552	552-758										
		kgf/mm²		17.6 -	21.6 24.6 -45.7	29.5 29.5 -50.9	32.3 32.3 -53.4	36.6 36.6 -54.1	39.4 39.4 -54.1	42.2 42.2 -54.1	45.7 45.7 -57.7	49.2 49.2 -61.2	-	28.1-56.2	38.7-56.2	56.2-77.3										
Elongation (Min.) (%)		• U.S. Customary Equation e = 625,000(A ^{1/4} /U ^{3/4}) • Metric Equation e = 1.944(A ^{1/4} /U ^{3/4}) e : Minimum elongation in 2 in. (50.80mm) in percent rounded to nearest 1/2 percent A : Cross-sectional area of the tensile test specimen in sq. in. (mm) U : Specified minimum ultimate tensile strength, PSI (MPa)											e : Minimum elongation in 50.80mm in percent rounded to nearest 0.5% A : Cross-sectional area of the tensile test specimen in sq.mm U : Specified tensile strength in N/mm²													
Flattening	H : Distance between Flattening plates(mm) D : Outside diameter of the pipe(mm) t : Wall thickness of the pipe(mm)	Welded part H = 3/4D base metal H = 0.6D		• Flattening test Welded part H = 2/3D Base metal H = 1/3D											• Weld ductility test H = $\frac{0.07t}{0.07-3t/D}$ (Grades less than x 52) H = $\frac{3.05t}{0.05+3t/D}$ (Grades x 52 or higher)				D/12 ± 16 H = 0.5D 3.93 ≤ D/1 < 16 H=0.01,98-0.0306D/1 D/1 < 16 H=0.01,98-0.0306D/1				D/12 ± 16 H = 0.65D 3.93 ≤ D/1 < 16 H=0.01,98-0.0306D/1 D/1 < 16 H=0.01,98-0.0306D/1			
Bending test	Bending angle X Inside radius (D : Outside diameter of the pipe)	90° x 12D (Nominal size 2 or below)																								
Hydrostatic test	P : Test pressure, PSI (MPa) S : Fiber stress, PSI (MPa) t : Wall thickness, in. (mm) D : Outside diameter, in. (mm)	• U.S. Customary Formula $P = \frac{2St}{D}$		Grade A25 A X42-X80		Size Designation 5 1/8 2 1/4 over 2 1/2 over 5 1/8 below 5 1/8 - 8 1/2 8 1/2 - 20 20 over		Percent of specified minimum yield strength(%) STD 60 60 60 60 75 95 90				- 75 75 75 90 95		P = 2st/D F factor STD ALT												
NDT (Non-Destructive Test)				Electric resistance welded pipe : Ultrasonic Test or Electromagnetic Test(Eddy Current Test) submerged-arc weld pipe : Radiographic test											Ultrasonic Test or Electromagnetic Test											
Others		Residual Magnetism Measurement											-													

SPECIFICATIONS

Specification Classification		ASTM A135		ASTM A178			ASTM A252		
		A	B	A	C	D	A	B	C
Application		Sprinkler		Boiler & Heat exchanger			Steel Pipe Piles		
Chemical composition(%)	C(Max.)	0.25	0.30	0.60 - 0.18	0.35	0.27	-	-	-
	Si(Max.)	-	-	-	-	0.10	-	-	-
	Mn(Max.)	0.95	1.20	0.27 -0.63	0.80	1.00 -1.50	-	-	-
	P(Max.)	0.035	0.035	0.035	0.035	0.030	-	-	-
	S(Max.)	0.035	0.035	0.035	0.035	0.015	0.050	0.050	0.050
	Others	-	-	-	-	-	-	-	-
Mechanical properties	Tensile strength (Min.)	PSI	48000	60000	47000	60000	70000	50000	60000
		MPa	331	414	325	415	485	345	414
		kgf/mm²	33.8	42.2	33.1	42.2	49.3	35.2	42.2
	Yield point (Min.)	PSI	30000	35000	26000	37000	40000	30000	35000
		MPa	207	241	180	255	275	205	240
		kgf/mm²	21.1	26.7	18.3	26.1	28.2	21.1	24.7
	Elongation(min.)	E = 56t+17.50	E = 48t+15.00	35	30 (e = 48t+15.0)	30 (e = 48t+15.0)	30 (e = 48t+15.0)	25 (e = 40t+12.5)	20 (e = 32t+10.0)
Flattening test	H : Distance between Flattening plates H' : Inside distance between flattening plates D : Outside diameter of the pipe D' : Inside diameter of the pipe t : Wall thickness of the pipe	0°, 90°	0°, 90°	TEST	TEST	TEST	-	-	-
Bending test	Bending angle X Inside radius (D : Outside diameter t : Wall thickness)	-	-	-	-	-	-	-	-
Hydrostatic test	P : Test pressure S : Fiber stress, PSI(MPa) D : Outside diameter(mm) t : thickness(mm)	P = 2St/D	P = 2St/D	-	-	-	-	-	-
NDT (Non-Destructive Test)		Eddy Current Test & Ultrasonic Test (Substitute with Hydrostatic Test)		UT or ECT	UT or ECT	UT or ECT	-	-	-
Others		-	-	Flange Test, Crush Test, Reverse flattening Test	Flange Test, Reverse flattening Test	Flange Test, Reverse flattening Test	-	-	-

Specification Classification		ASTM A249			
		TP304	TP304L	TP316	TP316L
Application		Boiler, Superheater, Heat Exchanger & Condenser Tubes			
Chemical composition(%)	C(Max.)	0.08	0.035	0.08	0.035
	Si(Max.)	0.75	0.75	0.75	0.75
	Mn(Max.)	2.0	2.0	2.0	2.0
	P(Max.)	0.04	0.04	0.04	0.04
	S(Max.)	0.03	0.03	0.03	0.03
	Others	Ni, Cr	Ni, Cr	Ni, Cr, Mo	Ni, Cr, Mo
Mechanical properties	Tensile strength (Min.)	PSI	75000	70000	75000
		MPa	515	485	515
		kgf/mm²	52.8	49.3	52.8
	Yield point (Min.)	PSI	30000	25000	30000
		MPa	205	170	205
		kgf/mm²	21.1	17.6	21.1
	Elongation(min.)	35	35	35	35
Flattening test	H : Distance between Flattening plates H' : Inside distance between flattening plates D : Outside diameter of the pipe D' : Inside diameter of the pipe t : Wall thickness of the pipe	$H = \frac{(1+e)t}{e+t/D}$ e : 0.07(C : 0.19% over)			
Bending test	Bending angle X Inside radius (D : Outside diameter t : Wall thickness)	-			
Hydrostatic test	P : Test pressure S : Fiber stress, PSI(MPa) D : Outside diameter(mm) t : thickness(mm)	-			
NDT (Non-Destructive Test)		Eddy Current Test (Substitute with Hydrostatic Test)			
Others		Flange Test, Reverse Bend Test Hardness Test			

SPECIFICATIONS

Specification		ASTM A671							
		CA55	CB60	CB65	CB70	CC60	CC65	CC70	
Application		-							
Chemical composition(%)	C(Max.)	0.28	0.24	0.28	0.31	0.21	0.24	0.27	
	Si(Max.)	-	0.15 - 0.40	0.15 - 0.40	0.15 - 0.40	0.15 - 0.40	0.15 - 0.40	0.15 - 0.40	
	Mn(Max.)	0.90	0.90	0.90	1.20	0.60 - 0.90	0.85 - 1.20	0.85 - 1.20	
	P(Max.)	0.035	0.035	0.035	0.035	0.035	0.035	0.035	
	S(Max.)	0.04	0.035	0.035	0.035	0.035	0.035	0.035	
	Others	-	-	-	-	-	-	-	
Mechanical properties	Tensile strength (min.)	PSI	-	-	-	-	-	-	
		MPa	380 -515	415 -550	450 -585	485 -620	415 -550	450 -585	485 -620
		kgf/mm²	33.8 -52.6	42.4 -56.1	45.9 -59.7	45.9 -63.3	42.4 -56.1	45.9 -59.7	49.5 -63.3
	Yield point (min.)	PSI	-	-	-	-	-	-	-
		MPa	205	220	240	260	220	240	260
		kgf/mm²	21.0	22.5	24.5	26.6	22.5	24.5	26.6
	Elongation(min.)	27	25	23	21	25	23	21	
Flattening test		-	-	-	-	-	-	-	
Bending test		-	-	-	-	-	-	-	
Hydrostatic test	Class 10		-		P = 2St/D				
	Class 11		-						
	Class 12		TEST						
	Class 13		TEST						
	Class 20		-						
	Class 21		-						
	Class 22		TEST						
	Class 23		TEST						
NDT (Non-Destructive Test)	Class 10		-						
	Class 11		TEST(RT)						
	Class 12		TEST(RT)						
	Class 13		-						
	Class 20		-						
	Class 21		TEST(RT)						
	Class 22		TEST(RT)						
	Class 23		-						
Others		-		-		-			

Specification		ASTM A672											
		A45	A50	A55	B55	B60	B65	B70	C55	C60	C65	C70	
Application		-											
Chemical composition(%)	C(Max.)	0.17	0.22	0.28	0.20	0.24	0.28	0.31	0.18	0.21	0.24	0.27	
	Si(Max.)	-	-	-	0.15 – 0.40	0.15 – 0.40	0.15 – 0.40	0.15 – 0.40	0.15 – 0.40	0.15 – 0.40	0.15 – 0.40	0.15 – 0.40	
	Mn(Max.)	0.90	0.90	0.90	0.90	0.90	0.90	1.20	0.60 – 0.90	0.60 – 0.90	0.85–1.20	0.85–1.20	
	P(Max.)	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	
	S(Max.)	0.04	0.04	0.04	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	
	Others	-	-	-	-	-	-	-	-	-	-	-	
Mechanical properties	Tensile strength (min.)	PSI	-	-	-	-	-	-	-	-	-	-	
		MPa	315 – 450	345 – 485	380 – 515	380 – 515	415 – 550	450 – 585	485 – 620	380 – 515	415 – 550	450 – 585	485 – 620
		kgf/mm²	32.2 – 45.9	35.2 – 49.5	38.8 – 52.6	38.8 – 52.6	42.4 – 56.1	45.9 – 59.7	49.5 – 63.3	38.8 – 52.6	42.2 – 56.1	45.9 – 59.7	49.5 – 63.3
	Yield point (min.)	PSI	-	-	-	-	-	-	-	-	-	-	-
		MPa	165	185	205	205	220	240	260	205	220	240	260
		kgf/mm²	16.9	18.9	21.0	21.0	22.5	24.5	26.6	21.0	22.5	24.6	26.6
Elongation(min.)		30	28	27	27	25	23	21	27	25	23	21	
Flattening test		-											
Bending test		-											
Hydrostatic test	Class 10		-		P = 2St/D								
	Class 11		-										
	Class 12		TEST										
	Class 13		TEST										
	Class 20		-										
	Class 21		-										
	Class 22		TEST										
	Class 23		TEST										
NDT (Non-Destructive Test)	Class 10		-										
	Class 11		TEST(RT)										
	Class 12		TEST(RT)										
	Class 13		-										
	Class 20		-										
	Class 21		TEST(RT)										
	Class 22		TEST(RT)										
	Class 23		-										
Others		-											

CARBON STEEL PIPES FOR ORDINARY PIPING

Carbon steel pipes for ordinary piping KS D 3507 SPP(JIS G 3452 SGP)

Nominal diameter		Outside diameter mm	tolerances on outside diameter		Wall thickness mm	Tolerances on wall thickness	Unit weight excluding socket kg/m
A	B		Taper threaded pipe	Others			
10	3/8	17.3	± 0.5mm(± 0.5mm)		2.35(2.3)	+Not specified -12.5%	0.869(0.851)
15	1/2	21.7	± 0.5mm(± 0.5mm)		2.65(2.8)		1.25(1.31)
20	3/4	27.2	± 0.5mm(± 0.5mm)		2.65(2.8)		1.60(1.68)
25	1	34.0	± 0.5mm(± 0.5mm)		3.25(3.2)		2.45(2.43)
32	1¼	42.7	± 0.5mm(± 0.5mm)		3.25(3.5)		3.16(3.38)
40	1½	48.6	± 0.5mm(± 0.5mm)		3.25(3.5)		3.63(3.88)
50	2	60.5	± 0.5mm(± 0.5mm)	± 1%(± 1%)	3.65(3.8)		5.12(5.31)
65	2½	76.3	± 0.7mm(± 0.7mm)	± 1%(± 1%)	3.65(4.2)		6.34(7.47)
80	3	89.1	± 0.8mm(± 0.8mm)	± 1%(± 1%)	4.05(4.2)		8.49(8.79)
90	3½	101.6	± 0.8mm(± 0.8mm)	± 1%(± 1%)	4.05(4.2)		9.74(10.1)
100	4	114.3	± 0.8mm(± 0.8mm)	± 1%(± 1%)	4.5(4.5)		12.2(12.2)
125	5	139.8	± 0.8mm(± 0.8mm)	± 1%(± 1%)	4.85(4.5)		16.1(15.0)
150	6	165.2	± 0.8mm(± 0.8mm)	± 1%(± 1.6mm)	4.85(5.0)		19.2(19.8)
175	7	190.7	± 0.9mm(± 0.9mm)	± 1%(± 1.6mm)	5.3(5.3)		24.2(24.2)
200	8	216.3	± 1.0mm(± 1.0mm)	± 1%(± 0.8%)	5.85(5.8)		30.4(30.1)
225	9	241.8	± 1.2mm(± 1.2mm)	± 1%(± 0.8%)	6.2(6.2)		36.0(36.0)
250	10	267.4	± 1.3mm(± 1.3mm)	± 1%(± 0.8%)	6.40(6.6)		41.2(42.4)
300	12	318.5	± 1.5mm(± 1.5mm)	± 1%(± 0.8%)	7.00(6.9)		53.9(53.0)
350	14	355.6	-(-)	± 1%(± 0.8%)	7.60(7.9)		65.2(67.7)
400	16	406.4	-(-)	± 1%(± 0.8%)	7.9(7.9)		77.6(77.6)
450	18	457.2	-(-)	± 1%(± 0.8%)	7.9(7.9)		87.5(87.5)
500	20	508.0	-(-)	± 1%(± 0.8%)	7.9(7.9)		97.4(97.4)
550	22	558.8	-	± 1%	7.9		107
600	24	609.6	-	± 1%	7.9		117

Arc welded carbon steel pipes KS D 3583 SPW400(JIS G 3457 STPY400)

(unit : kg/m)

Nominal diameter		Wall thickness (mm)	6.0	6.4	7.1	7.9	8.7	9.5	10.3	11.1	11.9	12.7	13.1	15.1	15.9
A	B														
650	26	660.4	96.8	103	114	127	140	152	165	178	190	203			
700	28	711.2	104	111	123	137	151	164	178	192	205	219			
750	30	762.0		119	132	147	162	176	191	206	220	235			
800	32	812.8		127	141	157	173	188	204	219	235	251	258	297	312
850	34	863.6				167	183	200	217	233	250	266	275	316	332
900	36	914.4				177	194	212	230	247	265	282	291	335	352
1000	40	1016.0				196	216	236	255	275	295	314	324	373	392
1100	44	1117.6						260	281	303	324	346	357	411	432
1200	48	1219.2						283	307	331	354	378	390	448	472
1350	54	1371.6									399	426	439	505	532
1500	60	1524.0									444	473	488	562	591
1600	64	1625.6											521	600	631
1800	72	1828.8											567	675	711
2000	80	2032.0												751	791

Coated steel pipes for water works KS D 3565 STWW

Nominal diameter	Outside diameter	STWW 40					
		Nominal wall thickness					
		A		B			
A	mm	Wall thickness mm	Weight kg/m	Test pressure kgf/cm²	Wall thickness mm	Weight kg/m	Test pressure kgf/cm²
350	355.6	6.0	51.7	25	-	-	-
400	406.4	6.0	59.2	25	-	-	-
450	457.2	6.0	66.8	25	-	-	-
500	508.0	6.0	74.3	25	-	-	-
600	609.6	6.0	89.3	25	-	-	-
700	711.2	7.0	122	25	6.0	104	20
800	812.8	8.0	159	25	7.0	139	20
900	914.4	8.0	179	25	7.0	157	20
1000	1016.0	9.0	223	25	8.0	199	20
1100	1117.6	10.0	273	25	8.0	219	20
1200	1219.2	11.0	328	25	9.0	268	20
1350	1371.6	12.0	402	25	10.0	366	20
1500	1524.0	14.0	521	25	11.0	410	20
1600	1625.6	15.0	596	25	12.0	477	20
1650	1676.4	15.0	615	25	12.0	493	20
1800	1828.8	16.0	715	25	13.0	582	20
1900	1930.4	17.0	802	25	14.0	662	20
2000	2032.0	18.0	894	25	15.0	746	20
2100	2133.6	19.0	991	25	16.0	836	20
2200	2235.2	20.0	1090	25	16.0	876	20
2300	2336.8	21.0	1200	25	17.0	973	20
2400	2438.4	22.0	1310	25	18.0	1070	20
2500	2540.0	23.0	1430	25	18.0	1120	20
2600	2641.6	24.0	1550	25	19.0	1230	20

CARBON STEEL TUBES FOR BOILER & HEAT EXCHANGER

HYUNDAI

Carbon steel boiler and heat exchanger tubes KS D 3563 STBH(JIS G 3461 STB)

(unit : kg/m)

Outside diameter (mm)	Thickness (mm)																			
		1.2	1.6	2.0	2.3	2.6	2.9	3.2	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	8.0	9.5	11.0	12.5
15.9		0.435	0.564	0.686	0.771	0.853	0.930													
19.0		0.527	0.687	0.838	0.947	1.05	1.15													
21.7		0.607	0.793	0.972	1.10	1.22	1.34	1.46												
25.4		0.716	0.939	1.15	1.31	1.46	1.61	1.75	1.89											
27.2		0.769	1.01	1.24	1.41	1.58	1.74	1.89	2.05	2.29										
31.8		0.906	1.19	1.47	1.67	1.87	2.07	2.26	2.44	2.74	3.03									
34.0			1.28	1.58	1.80	2.01	2.22	2.43	2.63	2.96	3.27	3.58								
38.1			1.44	1.78	2.03	2.28	2.52	2.75	2.99	3.36	3.73	4.08	4.42							
42.7				2.01	2.29	2.57	2.85	3.12	3.38	3.82	4.24	4.65	5.05	5.43						
45.0				2.12	2.42	2.27	3.01	3.30	3.58	4.04	4.49	4.93	5.36	5.77	6.17					
48.6				2.30	2.63	2.95	3.27	3.58	3.89	4.40	4.89	5.38	5.85	6.30	6.75	7.18				
50.8				2.41	2.75	3.09	3.43	3.76	4.08	4.62	5.14	5.65	6.14	6.63	7.10	7.56	8.44	9.68	10.8	11.8
54.0				2.56	2.93	3.30	3.65	4.01	4.36	4.93	5.49	6.04	6.58	7.10	7.61	8.11	9.07	10.4	11.7	12.8
57.1				2.72	3.11	3.49	3.88	4.25	4.63	5.24	5.84	6.42	7.00	7.56	8.11	8.65	9.69	11.2	12.5	13.7
60.3				2.88	3.29	3.70	4.10	4.51	4.90	5.55	6.19	6.82	7.43	8.03	8.62	9.20	10.3	11.9	13.4	14.7
63.5					3.47	3.90	4.33	4.76	5.18	5.87	6.55	7.21	7.87	8.51	9.14	9.75	10.9	12.7	14.2	15.7
65.0					3.56	4.00	4.44	4.88	5.31	6.02	6.71	7.40	8.07	8.73	9.38	10.0	11.2	13.0	14.6	16.2
70.0					3.84	4.32	4.80	5.27	5.74	6.51	7.27	8.01	8.75	9.47	10.2	10.9	12.2	14.2	16.0	17.7
76.2					4.19	4.72	5.24	5.76	6.27	7.12	7.96	8.78	9.59	10.4	11.2	11.9	13.5	15.6	17.7	19.6
82.6								6.27	6.83	7.75	8.67	9.57	10.5	11.3	12.2	13.1	14.7	17.1	19.4	21.6
88.9								6.76	7.37	8.37	9.37	10.3	11.3	12.3	13.2	14.1	16.0	18.6	21.1	23.6
101.6									8.47	9.63	10.8	11.9	13.0	14.1	15.2	16.3	18.5	21.8	24.6	27.5
114.3										10.9	12.2	13.5	14.8	16.0	17.3	18.5	21.0	24.6	28.0	31.4
127.0										12.1	13.6	15.0	16.5	17.9	19.3	20.7	23.5	27.5	31.5	35.3
139.8													18.2	19.8	21.4	22.9	26.0	30.5	34.9	39.2

CARBON STEEL PIPES FOR PRESSURE SERVICE

HYUNDAI

Carbon steel pipes for Pressure Service KS D 3562 SPPS(JIS G 3451 STPG)

Nominal diameter		Outside diameter	Nominal wall thickness																	
			Schedule 10			Schedule 20			Schedule 30			Schedule 40			Schedule 60			Schedule 80		
			Wall thick-ness	weight	Test pressure	Wall thick-ness	weight	Test pressure	Wall thick-ness	weight	Test pressure	Wall thick-ness	weight	Test pressure	Wall thick-ness	weight	Test pressure	Wall thick-ness	weight	Test pressure
A	B	mm	mm	kg/m	kgf/cm ² (MPa)	mm	kg/m	kgf/cm ² (MPa)	mm	kg/m	kgf/cm ² (MPa)	mm	kg/m	kgf/cm ² (MPa)	mm	kg/m	kgf/cm ² (MPa)	mm	kg/m	kgf/cm ² (MPa)
10	3/8	17.3	-	-	-	-	-	-	-	-	-	2.3	0.851	-	2.8	1.00	-	3.2	1.11	-
15	1/2	21.7	-	-	-	-	-	-	-	-	-	2.8	1.31	-	3.2	1.46	-	3.7	1.64	-
20	3/4	27.2	-	-	-	-	-	-	-	-	-	2.9	1.74	-	3.4	2.00	-	3.9	2.24	-
25	1	34.0	-	-	-	-	-	-	-	-	-	3.4	2.57	-	3.9	2.89	-	4.5	3.27	-
32	1 1/4	42.7	-	-	-	-	-	-	-	-	-	3.6	3.47	-	4.5	4.24	-	4.9	4.57	-
40	1 1/2	48.6	-	-	-	-	-	-	-	-	-	3.7	4.10	-	4.5	4.89	-	5.1	5.47	-
50	2	60.5	-	-	-	3.2	4.52	-	-	-	-	3.9	5.44	-	4.9	6.72	-	5.5	7.46	-
65	2 1/2	76.3	-	-	-	4.5	7.97	-	-	-	-	5.2	9.12	-	6.0	10.4	-	7.0	12.0	-
80	3	89.1	-	-	-	4.5	9.39	-	-	-	-	5.5	11.3	-	6.6	13.4	-	7.6	15.3	-
90	3 1/2	101.6	-	-	-	4.5	10.8	-	-	-	-	5.7	13.5	-	7.0	16.3	-	8.1	18.7	-
100	4	114.3	-	-	-	4.9	13.2	-	-	-	-	6.0	16.0	-	7.1	18.8	-	8.6	22.4	-
125	5	139.8	-	-	20	5.1	16.9	35	-	-	50	6.6	21.7	60	8.1	26.3	90	9.5	30.5	120
150	6	165.2	-	-	(2.0)	5.5	21.7	(3.5)	-	-	(5.0)	7.1	27.7	(6.0)	9.3	35.8	(9.0)	11.0	41.8	(12.0)
200	8	216.3	-	-	-	6.4	33.1	-	7.0	36.1	-	8.2	42.1	-	10.3	52.3	-	12.7	63.8	-
250	10	267.4	-	-	-	6.4	41.2	-	7.8	49.9	-	9.3	59.2	-	12.7	79.8	-	15.1	93.9	-
300	12	318.5	-	-	-	6.4	49.3	-	8.4	64.2	-	10.3	78.3	-	14.3	107	-	17.4	129	-
350	14	355.6	6.4	55.1	-	7.9	67.7	-	9.5	81.1	-	11.1	94.3	-	15.1	127	-	19.0	158	-
400	16	406.4	6.4	63.1	-	7.9	77.6	-	9.5	93.0	-	12.7	123	-	16.7	160	-	21.4	203	-
450	18	457.2	6.4	71.1	-	7.9	87.5	-	11.1	122	-	14.3	156	-	19.0	205	-	23.8	254	-
500	20	508.0	6.4	79.2	-	9.5	117	-	12.7	155	-	15.1	184	-	20.6	248	-	26.2	311	-
550	22	558.8	6.4	87.2	-	9.5	129	-	12.7	171	-	15.9	213	-	-	-	-	-	-	-
600	24	609.6	6.4	95.2	-	9.5	141	-	14.3	228(210)	-	-	-	-	-	-	-	-	-	-

STEEL PIPES FOR STRUCTURAL PURPOSES

Carbon steel tubes for general structural purposes KS D 3566 STK (JIS G 3444 STK)

Outside diameter	Wall thickness	weight	Cross-sectional area	Geometrical moment of inertia	Section modulus	Radius of gyration of area
mm	mm	kg/m	cm²	cm⁴	cm³	cm
21.7	2.0 (2.0)	0.972 (0.972)	1.238 (1.238)	0.607 (0.607)	0.560 (0.560)	0.700 (0.700)
27.2	2.0 (2.0)	1.24 (1.24)	1.583 (1.583)	1.26 (1.26)	0.930 (0.930)	0.890 (0.890)
	2.3 (2.3)	1.41 (1.41)	1.799 (1.799)	1.41 (1.41)	1.03 (1.03)	0.890 (0.890)
34.0	2.3 (2.3)	1.80 (1.80)	2.291 (2.291)	2.89 (2.89)	1.70 (1.70)	1.12 (1.12)
42.7	2.3 (2.3)	2.29 (2.29)	2.919 (2.919)	5.97 (5.97)	2.80 (2.80)	1.43 (1.43)
	2.5 (2.5)	2.49 (2.49)	3.157 (3.157)	6.40 (6.40)	3.00 (3.00)	1.42 (1.42)
	2.8	2.76	3.510	7.02	3.29	1.41 (1.41)
48.6	2.3 (2.3)	2.63 (2.63)	3.345 (3.345)	8.99 (8.99)	3.70 (3.70)	1.64 (1.64)
	2.5 (2.5)	2.84 (2.84)	3.621 (3.621)	9.65 (9.65)	3.97 (3.97)	1.63 (1.63)
	2.8 (2.8)	3.16 (3.16)	4.029 (4.029)	10.6 (10.6)	4.36 (4.36)	1.62 (1.62)
	3.2 (3.2)	3.58 (3.58)	4.564 (4.564)	11.8 (11.8)	4.86 (4.86)	1.61 (1.61)
60.5	2.3 (2.3)	3.30 (3.30)	4.205 (4.205)	17.8 (17.8)	5.90 (5.90)	2.06 (2.06)
	3.2 (3.2)	4.52 (4.52)	5.760 (5.760)	23.7 (23.7)	7.84 (7.84)	2.03 (2.03)
	4.0 (4.0)	5.57 (5.57)	7.100 (7.100)	28.5 (28.5)	9.41 (9.41)	2.00 (2.00)
76.3	2.8 (2.8)	5.08 (5.08)	6.465 (6.465)	43.7 (43.7)	11.5 (11.5)	2.60 (2.60)
	3.2 (3.2)	5.77 (5.77)	7.349 (7.349)	49.2 (49.2)	12.9 (12.9)	2.59 (2.59)
	4.0 (4.0)	7.13 (7.13)	9.085 (9.085)	59.5 (59.5)	15.6 (15.6)	2.56 (2.56)
89.1	2.8 (2.8)	5.96 (5.96)	7.591 (7.591)	70.7 (70.7)	15.9 (15.9)	3.05 (3.05)
	3.2 (3.2)	6.78 (6.78)	8.636 (8.636)	79.8 (79.8)	17.9 (17.9)	3.04 (3.04)
	4.0 (4.0)	8.39	10.69	97.0	21.8	3.01 (3.01)
101.6	3.2 (3.2)	7.76 (7.76)	9.892 (9.892)	120 (120)	23.6 (23.6)	3.48 (3.48)
	4.0 (4.0)	9.63 (9.63)	12.26 (12.26)	146 (146)	28.8 (28.8)	3.45 (3.45)
	5.0 (5.0)	11.9 (11.9)	15.17 (15.17)	177 (177)	34.9 (34.9)	3.42 (3.42)
114.3	3.2 (3.2)	8.77 (8.77)	11.17 (11.17)	172 (172)	30.2 (30.2)	3.93 (3.93)
	3.6 (3.6)	9.83 (9.83)	12.52 (12.52)	192 (192)	33.6 (33.6)	3.92 (3.92)
	4.5 (4.5)	12.2 (12.2)	15.52 (15.52)	234 (234)	41.0 (41.0)	3.89 (3.89)
	5.6	15.0	19.12	283	49.6	3.85 (3.85)
139.8	3.6 (3.6)	12.1 (12.1)	15.40 (15.40)	357 (357)	51.1 (51.1)	4.82 (4.82)
	4.0 (4.0)	13.4 (13.4)	17.07 (17.07)	394 (394)	56.3 (56.3)	4.80 (4.80)
	4.5 (4.5)	15.0 (15.0)	19.13 (19.13)	438 (438)	62.7 (62.7)	4.79 (4.79)
	6.0 (6.0)	19.8 (19.8)	25.22 (25.22)	566 (566)	80.9 (80.9)	4.74 (4.74)
165.2	4.5 (4.5)	17.8 (17.8)	22.72 (22.72)	734 (734)	88.9 (88.9)	5.68 (5.68)
	5.0 (5.0)	19.8 (19.8)	25.16 (25.16)	808 (808)	97.8 (97.8)	5.67 (5.67)
	6.0 (6.0)	23.6 (23.6)	30.01 (30.01)	952 (952)	115 (115)	5.63 (5.63)
	7.0 (7.0)	27.3 (27.3)	34.79 (34.79)	109 x 10 (109 x 10)	132 (132)	5.60 (5.60)
190.7	4.5 (4.5)	20.7 (20.7)	26.32 (26.32)	114 x 10 (114 x 10)	120 (120)	6.59 (6.59)
	5.0 (5.0)	22.9 (22.9)	29.17 (29.17)	126 x 10 (126 x 10)	132 (132)	6.57 (6.57)
	6.0 (6.0)	27.3 (27.3)	34.82 (34.82)	149 x 10 (149 x 10)	156 (156)	6.53 (6.53)
	7.0 (7.0)	31.7 (31.7)	40.40 (40.40)	171 x 10 (171 x 10)	179 (179)	6.50 (6.50)
	(8.2)	(36.9)	(47.01)	(196 x 10)	(206)	(6.46)
216.3	4.5 (4.5)	23.5 (23.5)	29.94 (29.94)	168 x 10 (168 x 10)	155 (155)	7.49 (7.49)
	(5.8)	(30.1)	(38.36)	(213 x 10)	(197)	(7.45)
	6.0 (6.0)	31.1 (31.1)	39.61 (39.61)	219 x 10 (219 x 10)	203 (203)	7.44 (7.44)
	7.0 (7.0)	36.1 (36.1)	46.03 (46.03)	252 x 10 (252 x 10)	233 (233)	7.40 (7.40)
	8.0 (8.0)	41.1 (41.1)	52.35 (52.35)	284 x 10 (284 x 10)	263 (263)	7.37 (7.37)
	(8.2)	(42.1)	(53.61)	(291 x 10)	(269)	(7.36)
267.4	6.0 (6.0)	38.7 (38.7)	49.27 (49.27)	421 x 10 (421 x 10)	315 (315)	9.24 (9.24)
	(6.6)	(42.4)	(54.08)	(480 x 10)	(344)	(9.22)
	7.0 (7.0)	45.0 (45.0)	57.27 (57.27)	486 x 10 (486 x 10)	363 (363)	9.21 (9.21)
	8.0 (8.0)	51.2 (51.2)	65.19 (65.19)	549 x 10 (549 x 10)	411 (411)	9.18 (9.18)
	9.0 (9.0)	57.4 (57.4)	73.06 (73.06)	611 x 10 (611 x 10)	457 (457)	9.14 (9.14)
	(9.3)	(59.2)	(75.41)	(629 x 10)	(470)	(9.13)

Outside diameter	Wall thickness	weight	Cross-sectional area	Geometrical moment of inertia	Section modulus	Radius of gyration of area
mm	mm	kg/m	cm²	cm⁴	cm³	cm
318.5	6.0 (6.0)	46.2 (46.2)	58.91 (58.91)	719 x 10 (719 x 10)	452 (452)	11.1 (11.1)
	7.0 (6.9)	53.8 (53.8)	68.50 (68.50)	813 x 10 (820 x 10)	552 (552)	11.0 (11.0)
	8.0 (8.0)	61.3 (61.3)	78.04 (78.04)	941 x 10 (941 x 10)	591 (591)	11.0 (11.0)
	9.0 (9.0)	68.7 (68.7)	87.51 (87.51)	105 x 10² (105 x 10²)	659 (659)	10.9 (10.9)
	(10.3)	(78.3)	(99.73)	(119 x 10²)	(744)	(10.9)
355.6	6.3 (6.4)	54.3 (54.3)	69.13 (69.13)	105 x 10² (107 x 10²)	593 (602)	12.4 (12.4)
	8.0 (7.9)	68.6 (68.6)	87.36 (87.36)	132 x 10² (130 x 10²)	742 (734)	12.3 (12.3)
	9.0 (9.0)	76.9 (76.9)	98.00 (98.00)	147 x 10² (147 x 10²)	828 (828)	12.3 (12.3)
	(9.5)	(81.1)	(103.3)	(155 x 10²)	(871)	(12.2)
	12.0 (12.0)	102 (102)	129.5 (129.5)	191 x 10² (191 x 10²)	108 x 10 (108 x 10)	12.2 (12.2)
	(12.7)	(107)	(136.8)	(201 x 10²)	(113 x 10)	(12.1)
406.4	(7.9)	(77.6)	(98.90)	(196 x 10²)	(967)	(14.1)
	9.0 (9.0)	88.2 (88.2)	112.4 (112.4)	222 x 10² (222 x 10²)	109 x 10 (109 x 10)	14.1 (14.1)
	(9.5)	(93.0)	(118.5)	(223 x 10²)	(115 x 10)	(14.0)
	12.0 (12.0)	117 (117)	148.7 (148.7)	289 x 10² (289 x 10²)	142 x 10 (142 x 10)	14.0 (14.0)
	(12.7)	(123)	(157.1)	(305 x 10²)	(150 x 10)	(13.9)
	16.0 (16.0)	154 (154)	196.2 (196.2)	374 x 10² (374 x 10²)	184 x 10 (184 x 10)	13.8 (13.8)
	19.0 (19.0)	182 (182)	231.2 (231.2)	435 x 10² (435 x 10²)	214 x 10 (214 x 10)	13.7 (13.7)
457.2	9.0 (9.0)	99.5 (99.5)	126.7 (126.7)	318 x 10² (318 x 10²)	140 x 10 (140 x 10)	15.8 (15.8)
	(9.5)	(105)	(133.6)	(335 x 10²)	(147 x 10)	(15.8)
	12.0 (12.0)	132 (132)	167.8 (167.8)	416 x 10² (416 x 10²)	182 x 10 (182 x 10)	15.7 (15.7)
	(12.7)	(139)	(177.3)	(438 x 10²)	(192 x 10)	(15.7)
	16.0 (16.0)	174 (174)	221.8 (221.8)	540 x 10² (540 x 10²)	236 x 10 (236 x 10)	15.6 (15.6)
	19.0 (19.0)	205 (205)	261.6 (261.6)	629 x 10² (629 x 10²)	275 x 10 (275 x 10)	15.5 (15.5)
500	9.0 (9.0)	109 (109)	138.8 (138.8)	418 x 10² (418 x 10²)	167 x 10 (167 x 10)	17.4 (17.4)
	12.0 (12.0)	144 (144)	184.0 (184.0)	548 x 10² (548 x 10²)	219 x 10 (219 x 10)	17.3 (17.3)
	14.0 (14.0)	168 (168)	213.8 (213.8)	632 x 10² (632 x 10²)	253 x 10 (253 x 10)	17.2 (17.2)
508.0	(7.9)	(97.4)	(124.1)	(388 x 10²)	(153 x 10)	(17.7)
	9.0 (9.0)	111 (111)	141.1 (141.1)	439 x 10² (439 x 10²)	173 x 10 (173 x 10)	17.6 (17.6)
	(9.5)	(117)	(148.8)	(462 x 10²)	(182 x 10)	(17.6)
	12.0 (12.0)	147 (147)	187.0 (187.0)	575 x 10² (575 x 10²)	226 x 10 (227 x 10)	17.5 (17.5)
	(12.7)	(155)	(197.6)	(606 x 10²)	(239 x 10)	(17.5)
	14.0 (14.0)	171 (171)	217.3 (217.3)	663 x 10² (663 x 10²)	261 x 10 (261 x 10)	17.5 (17.5)
	16.0 (16.0)	194 (194)	247.3 (247.3)	749 x 10² (749 x 10²)	295 x 10 (295 x 10)	17.4 (17.4)
	19.0 (19.0)	229 (229)	291.9 (291.9)	874 x 10² (874 x 10²)	344 x 10 (344 x 10)	17.3 (17.3)
	22.0 (22.0)	264 (264)	335.9 (335.9)	994 x 10² (994 x 10²)	391 x 10 (391 x 10)	17.2 (17.2)
558.8	9.0 (9.0)	122 (122)	155.5 (155.5)	588 x 10² (588 x 10²)	210 x 10 (210 x 10)	19.4 (19.4)
	12.0 (12.0)	162 (162)	206.1 (206.1)	771 x 10² (771 x 10²)	276 x 10 (276 x 10)	19.3 (19.3)
	16.0 (16.0)	214 (214)	272.8 (272.8)	101 x 10² (101 x 10²)	360 x 10 (360 x 10)	19.2 (19.2)
	19.0 (19.0)	253 (253)	322.2 (322.2)	118 x 10² (118 x 10²)	421 x 10 (421 x 10)	19.1 (19.1)
	22.0 (22.0)	291 (291)	371.0 (371.0)	134 x 10² (134 x 10²)	479 x 10 (479 x 10)	19.0 (19.0)
600	9.0 (9.0)	131 (131)	167.1 (167.1)	730 x 10² (730 x 10²)	243 x 10 (243 x 10)	20.9 (20.9)
	12.0 (12.0)	174 (174)	221.7 (221.7)	958 x 10² (958 x 10²)	320 x 10 (320 x 10)	20.8 (20.8)
	14.0 (14.0)	202 (202)	257.7 (257.7)	111 x 10² (111 x 10²)	369 x 10 (369 x 10)	20.7 (20.7)
	16.0 (16.0)	230 (230)	293.6 (293.6)	125 x 10² (125 x 10²)	418 x 10 (418 x 10)	20.7 (20.7)
609.6	9.0 (9.0)	133 (133)	169.8 (169.8)	766 x 10² (766 x 10²)	251 x 10 (251 x 10)	21.2 (21.2)
	(9.5)	(141)	(179.1)	(806 x 10²)	(265 x 10)	(21.2)
	12.0 (12.0)	177 (177)	225.3 (225.3)	101 x 10² (101 x 10²)	330 x 10 (330 x 10)	21.1 (21.1)
	(12.7)	(187)	(238.2)	(106 x 10²)	(348 x 10)	(21.2)
	14.0 (14.0)	206 (206)	262.0 (262.0)	116 x 10² (116 x 10²)	381 x 10 (381 x 10)	21.1 (21.1)
	16.0 (16.0)	234 (234)	298.4 (298.4)	132 x 10² (132 x 10²)	432 x 10 (432 x 10)	21.0 (21.0)
	19.0 (19.0)	277 (277)	352.5 (352.5)	154 x 10² (154 x 10²)	505 x 10 (505 x 10)	20.9 (20.9)
	22.0 (22.0)	319 (319)	406.1 (406.1)	176 x 10² (176 x 10²)	576 x 10 (576 x 10)	20.8 (20.8)

STEEL PIPES FOR STRUCTURAL PURPOSES

Steel pipe piles KS F 4602(TABLE.1) / JIS A 5525

Outside diameter	Wall thickness	Cross-sectional area	Unit weight	Geometrical moment of inertia	Modulus of section	Radius of gyration of area	Outside surface area
mm	mm	cm²	kg/m	cm⁴	cm³	cm	m²/m
				I	Z	i	
400	9	110.6	86.8	211 × 10³	106 × 10	13.8	1.26
	10	122.5	96.2	233 × 10³	117 × 10	13.8	1.26
	11	134.4	106	254 × 10³	127 × 10	13.8	1.26
	12	146.3	115	276 × 10³	138 × 10	13.7	1.26
500	9	138.8	108	418 × 10³	167 × 10	17.4	1.57
	10	153.9	121	462 × 10³	185 × 10	17.3	1.57
	11	169.0	133	505 × 10³	202 × 10	17.3	1.57
	12	184.0	144	548 × 10³	219 × 10	17.3	1.57
	13	198.9	156	590 × 10³	236 × 10	17.2	1.57
	14	213.8	168	632 × 10³	253 × 10	17.2	1.57
600	9	167.1	131	730 × 10³	243 × 10	20.9	1.88
	10	185.4	145	807 × 10³	269 × 10	20.9	1.88
	11	203.5	160	883 × 10³	294 × 10	20.8	1.88
	12	221.7	174	958 × 10³	319 × 10	20.8	1.88
	13	239.7	188	103 × 10³	344 × 10	20.8	1.88
	14	257.7	202	111 × 10³	369 × 10	20.7	1.88
	15	275.7	216	118 × 10³	393 × 10	20.7	1.88
	16	293.6	230	125 × 10³	467 × 10	20.7	1.88
700	9	195.4	153	117 × 10³	333 × 10	24.4	2.20
	10	216.8	170	129 × 10³	369 × 10	24.4	2.20
	11	238.1	187	141 × 10³	404 × 10	24.4	2.20
	12	259.4	204	154 × 10³	439 × 10	24.3	2.20
	13	280.6	220	166 × 10³	473 × 10	24.3	2.20
	14	301.7	237	178 × 10³	507 × 10	24.3	2.20
	15	322.8	253	189 × 10³	541 × 10	24.2	2.20
	16	343.8	270	201 × 10³	575 × 10	24.2	2.20

Steel pipe piles KS F 4602(TABLE.2) / JIS A 5525

Outside diameter	Wall thickness	Cross-sectional area	Unit weight	Geometrical moment of inertia	Modulus of section	Radius of gyration of area	Outside surface area
mm	mm	cm²	kg/m	cm⁴	cm³	cm	m²/m
				I	Z	i	
406.4	9	112.4	88.2	222 × 10³	109 × 10	14.0	1.28
	10	124.5	97.8	245 × 10³	120 × 10	14.0	1.28
	11	136.6	107.0	267 × 10³	132 × 10	14.0	1.28
	12	148.7	117	289 × 10³	142 × 10	14.0	1.28
508.0	9	141.1	111	439 × 10³	173 × 10	17.6	1.60
	10	156.4	123	485 × 10³	191 × 10	17.6	1.60
	11	171.8	135	531 × 10³	209 × 10	17.6	1.60
	12	187.0	147	575 × 10³	227 × 10	17.5	1.60
	13	202.2	159	620 × 10³	244 × 10	17.5	1.60
	14	217.3	171	663 × 10³	261 × 10	17.5	1.60
609.6	9	169.8	133	766 × 10³	251 × 10	21.2	1.92
	10	188.4	148	847 × 10³	278 × 10	21.2	1.92
	11	206.9	162	927 × 10³	304 × 10	21.2	1.92
	12	225.3	177	101 × 10³	330 × 10	21.2	1.92
	13	243.6	191	108 × 10³	356 × 10	21.2	1.92
	14	262.0	206	116 × 10³	381 × 10	21.2	1.92
	15	280.2	220	124 × 10³	407 × 10	21.0	1.92
	16	298.4	234	132 × 10³	431 × 10	21.0	1.92
711.2	9	198.5	156	122 × 10³	344 × 10	24.8	2.23
	10	220.3	173	135 × 10³	381 × 10	24.8	2.23
	11	242.0	190	148 × 10³	417 × 10	24.8	2.23
	12	263.6	207	161 × 10³	453 × 10	24.7	2.23
	13	285.1	224	174 × 10³	489 × 10	24.7	2.23
	14	306.6	241	186 × 10³	524 × 10	24.7	2.23
	15	328.1	258	199 × 10³	559 × 10	24.6	2.23
	16	349.4	274	211 × 10³	594 × 10	24.6	2.23
812.8	9	227.3	178	184 × 10³	452 × 10	28.4	2.55
	10	252.2	198	203 × 10³	500 × 10	28.4	2.55
	11	277.1	217	223 × 10³	548 × 10	28.4	2.55
	12	301.9	237	242 × 10³	596 × 10	28.3	2.55
	13	326.6	256	261 × 10³	643 × 10	28.3	2.55
	14	351.3	276	280 × 10³	690 × 10	28.2	2.55
	15	376.0	295	299 × 10³	736 × 10	28.2	2.55
	16	400.5	314	318 × 10³	782 × 10	28.2	2.55
914.4	12	340.2	267	346 × 10³	758 × 10	31.9	2.87
	13	368.1	289	374 × 10³	818 × 10	31.9	2.87
	14	396.0	311	401 × 10³	878 × 10	31.8	2.87
	15	423.8	333	429 × 10³	928 × 10	31.8	2.87
	16	451.6	354	456 × 10³	997 × 10	31.8	2.87
	17	479.3	376	483 × 10³	106 × 10³	31.7	2.87
	18	506.9	398	509 × 10³	111 × 10³	31.7	2.87
1016.0	19	534.5	420	536 × 10³	117 × 10³	31.7	2.87
	12	378.5	297	477 × 10³	939 × 10³	35.5	3.19
	13	409.6	322	515 × 10³	101 × 10³	35.5	3.19
	14	440.7	346	553 × 10³	109 × 10³	35.4	3.19
	15	471.7	370	591 × 10³	116 × 10³	35.4	3.19
	16	502.6	395	628 × 10³	124 × 10³	35.4	3.19
	17	533.5	419	666 × 10³	131 × 10³	35.3	3.19
	18	564.4	443	703 × 10³	138 × 10³	35.3	3.19
	19	595.1	467	740 × 10³	146 × 10³	35.2	3.19

API 5L

Nominal size	Outside diameter		Wall thickness			Weight			Test pressure							
									A				B			
									STD		ALT		STD		ALT	
in.	in.	mm	Grade	in.	mm	lb/ft	kg/ft	kg/m	psi	kpa × 100	psi	kpa × 100	psi	kpa × 100	psi	kpa × 100
34	34,000	864,0	STD	0.250	6,4	90,11	41,25	135,35	260	18	330	23	310	21	390	27
				0.281	7,1	101,19	45,73	150,03	300	21	370	25	350	24	430	30
				0.312	7,9	112,25	50,83	166,78	330	23	410	28	390	27	480	33
				0.344	8,7	123,65	55,93	183,50	360	-	460	-	420	-	530	-
				0.375	9,5	134,67	61,01	200,18	400	28	500	34	460	32	580	40
				0.406	10,3	145,67	66,09	216,84	430	-	540	-	500	-	630	-
				0.438	11,1	157,00	71,16	233,46	460	32	580	40	540	37	680	47
				0.469	11,9	167,95	76,22	250,05	500	-	620	-	580	-	720	-
			XS	0.500	12,7	178,89	81,26	266,61	530	37	660	45	620	43	770	53
				0.562	14,3	200,70	91,33	299,64	600	41	740	51	690	48	870	60
				0.625	15,9	222,78	101,36	332,53	660	45	830	57	770	53	970	67
				0.688	17,5	244,77	111,35	365,31	730	50	910	63	850	59	1060	73
				0.750	19,1	266,33	121,30	397,95	790	54	990	68	930	64	1160	80
				0.812	20,6	287,81	130,59	428,44	860	59	1070	74	1000	69	1250	86
				0.875	22,2	309,55	140,47	460,85	930	64	1160	80	1080	74	1350	93
				0.938	23,8	331,21	150,30	493,12	990	68	1240	85	1160	80	1450	100
				1.000	25,4	352,44	160,10	525,27	1060	73	1320	91	1240	85	1540	106
				1.062	27,0	373,59	169,86	557,29	1120	77	1410	97	1310	90	1640	113
				1.125	28,6	394,99	179,59	589,19	1190	82	1490	103	1390	96	1740	120
				1.188	30,2	416,31	187,27	620,96	1260	87	1570	108	1470	101	1830	126
				1.250	31,8	437,21	198,91	652,60	1320	91	1650	114	1540	106	1930	133
36	36,000	914,0	STD	0.250	6,4	95,45	43,66	143,24	250	17	310	21	290	20	360	25
				0.281	7,1	107,20	48,40	158,79	280	19	350	24	330	23	410	28
				0.312	7,9	118,92	53,80	176,52	310	21	390	27	360	25	450	31
				0.344	8,7	131,00	59,20	194,22	340	-	430	-	400	-	500	-
				0.375	9,5	142,68	64,59	211,90	380	26	470	32	440	30	550	38
				0.406	10,3	154,34	69,92	219,54	410	-	510	-	470	-	590	-
				0.438	11,1	166,35	75,33	247,15	440	30	550	38	510	35	640	44
				0.469	11,9	177,97	80,69	264,72	770	-	590	-	550	-	680	-
			XS	0.500	12,7	189,57	86,04	282,27	500	34	620	43	580	40	730	50
				0.562	14,3	212,70	96,70	317,27	560	39	700	48	660	45	820	56
				0.625	15,9	236,13	107,33	352,14	620	43	780	54	730	50	910	63
				0.688	17,5	259,47	117,92	386,88	690	48	860	59	800	55	1000	69
				0.750	19,1	282,35	128,47	421,50	750	52	940	65	880	61	1090	75
				0.812	20,6	305,16	138,33	453,84	810	56	1020	70	950	65	1180	81
				0.875	22,2	328,24	148,81	488,22	880	71	1090	75	1020	70	1280	88
				0.938	23,8	351,25	159,25	522,47	940	65	1170	81	1090	75	1370	94
				1.000	25,4	373,80	169,65	556,59	1000	69	1250	86	1170	81	1460	101
				1.062	27,0	396,27	180,01	590,58	1060	73	1330	92	1240	85	1550	107
				1.125	28,6	419,02	190,33	624,45	1130	78	1410	97	1310	90	1640	113
				1.188	30,2	441,69	200,62	658,19	1190	82	1490	102	1390	96	1730	119
				1.250	31,8	463,91	210,86	691,81	1250	86	1560	107	1460	101	1820	125

Test pressure							
X42	X46	X52	X56	X60	X65	X70	X80
psi	psi	psi	psi	psi	psi	psi	psi
560	610	690	740	790	860	930	1060
620	680	770	830	890	970	1040	1190
690	760	860	920	990	1070	1160	1320
760	840	950	1020	1090	1180	1270	1460
830	910	1030	1110	1190	1290	1390	1590
900	990	1120	1200	1290	1400	1500	1720
970	1070	1210	1300	1390	1510	1620	1860
1040	1140	1290	1390	1490	1610	1740	1990
1110	1220	1380	1480	1590	1720	1850	2120
1250	1370	1550	1670	1790	1930	2080	2380
1390	1520	1720	1850	1990	2150	2320	2650
1530	1680	1890	2040	2190	2370	2550	2910
1670	1830	2060	2220	2380	2580	2780	3000
1810	1980	2240	2410	2580	2790	3000	3000
1950	2130	2410	2590	2780	3000	3000	3000
2090	2280	2580	2780	2980	3000	3000	3000
2220	2440	2750	2960	3000	3000	3000	3000
2360	2590	2920	3000	3000	3000	3000	3000
2500	2740	3000	3000	3000	3000	3000	3000
2640	2890	3000	3000	3000	3000	3000	3000
2780	3000	3000	3000	3000	3000	3000	3000
520	580	650	700	750	810	880	1000
590	650	730	790	840	910	980	1120
660	720	810	870	940	1010	1090	1250
720	790	890	960	1030	1120	1200	1380
790	860	980	1050	1120	1220	1310	1500
850	930	1060	1140	1220	1320	1420	1620
920	1010	1140	1230	1310	1420	1530	1750
980	1080	1220	1310	1410	1520	1640	1880
1050	1150	1300	1400	1500	1620	1750	2000
1180	1290	1460	1570	1690	1820	1970	2250
1310	1440	1620	1750	1880	2030	2190	2500
1440	1580	1790	1930	2080	2240	2410	2750
1580	1720	1950	2100	2250	2440	2630	3000
1710	1870	2110	2270	2440	2640	2840	3000
1840	2010	2280	2450	2620	2840	3000	3000
1970	2160	2440	2630	2810	3000	3000	3000
2100	2300	2600	2800	3000	3000	3000	3000
2230	2440	2760	2970	3000	3000	3000	3000
2360	2590	2930	3000	3000	3000	3000	3000
2490	2730	3000	3000	3000	3000	3000	3000
2630	2870	3000	3000	3000	3000	3000	3000

API 5L

Nominal size	Outside diameter		Wall thickness			Weight			Test pressure							
									A				B			
									STD		ALT		STD		ALT	
in.	in.	mm	Grade	in.	mm	lb/ft	kg/ft	kg/m	psi	kpa × 100	psi	kpa × 100	psi	kpa × 100	psi	kpa × 100
72	72.000	1829.0		0.500	12.7	381.81	173.38	568.83	250	17	310	21	290	20	360	25
				0.562	14.3	428.78	195.05	639.93	280	19	350	24	330	23	410	28
				0.625	15.9	476.43	216.69	710.91	310	21	390	27	360	25	460	32
				0.688	17.5	523.99	238.28	781.75	340	23	430	30	400	28	500	34
				0.750	19.1	570.71	259.83	852.47	380	26	470	32	440	30	550	38
				0.812	20.6	617.35	280.01	918.66	410	28	510	35	470	32	580	41
				0.875	22.2	664.66	301.49	989.14	440	30	550	38	510	35	640	44
				0.938	23.8	711.89	322.93	1059.49	470	32	590	41	550	38	680	47
				1.000	25.4	758.28	344.33	1129.69	500	34	630	43	580	40	730	50
				1.062	27.0	804.59	365.70	1199.81	530	37	660	45	620	43	770	53
				1.125	28.6	851.56	387.03	1269.78	560	39	700	48	660	45	820	56
				1.188	30.2	898.45	408.32	1339.62	590	41	740	51	690	48	870	60
				1.250	31.8	944.51	429.57	1409.34	630	43	780	54	730	50	910	63
76	76.000	1930.0		0.500	12.7	403.17	183.02	600.46	240	17	300	21	280	19	350	24
				0.562	14.3	452.79	205.91	675.55	270	19	330	23	310	21	390	27
				0.625	15.9	503.13	228.76	750.51	300	21	370	25	350	24	430	30
				0.688	17.5	553.38	251.56	825.34	330	23	410	28	380	26	480	33
				0.750	19.1	602.75	274.34	900.05	360	25	440	30	410	28	520	36
				0.812	20.6	652.04	295.65	969.97	380	26	480	33	450	31	560	39
				0.875	22.2	702.04	318.34	1044.43	410	28	520	36	480	33	600	41
				0.938	23.8	751.96	341.00	1118.76	440	30	560	39	520	36	650	45
				1.000	25.4	801.00	363.62	1192.97	470	32	590	41	550	38	690	48
				1.062	27.0	849.96	386.20	1267.06	500	34	630	43	590	41	730	50
				1.125	28.6	899.62	408.74	1341.02	530	37	670	46	620	43	780	54
				1.188	30.2	949.20	431.24	1414.84	560	39	700	48	660	45	820	56
				1.250	31.8	997.91	453.71	1488.55	590	41	740	51	690	48	860	59
80	80.000	2032.0		0.562	14.3	476.80	216.87	711.52	250	17	320	22	300	21	370	25
				0.625	15.9	529.83	240.94	790.50	280	19	350	24	330	23	410	28
				0.688	17.5	582.77	264.98	869.36	310	21	390	27	360	25	450	31
				0.750	19.1	634.79	288.98	948.09	340	23	420	29	390	27	490	34
				0.812	20.6	686.73	311.44	1021.78	370	25	460	32	430	30	530	37
				0.875	22.2	739.42	335.36	1100.27	390	27	490	34	460	32	570	39
				0.938	23.8	792.03	359.25	1178.63	420	29	530	37	490	34	620	43
				1.000	25.4	843.72	383.09	1256.86	450	31	560	39	530	37	660	45
				1.062	27.0	895.33	406.90	1334.97	480	33	600	41	560	39	700	48
				1.125	28.6	947.68	430.67	1412.95	510	35	630	43	590	41	740	51
				1.188	30.2	999.95	454.40	1490.80	530	37	670	46	620	43	780	54
				1.250	31.8	1051.31	478.09	1568.53	560	39	700	48	660	45	820	56

Test pressure							
X42	X46	X52	X56	X60	X65	X70	X80
psi	psi	psi	psi	psi	psi	psi	psi
530	570	650	700	750	810	880	1000
590	650	730	790	840	910	980	1120
660	720	810	870	940	1020	1090	1250
720	790	890	960	1030	1120	1200	1380
790	860	980	1050	1130	1220	1310	1500
850	930	1060	1140	1220	1320	1420	1620
920	1010	1140	1220	1310	1420	1530	1750
980	1080	1220	1310	1410	1520	1640	1880
1050	1150	1300	1400	1500	1630	1750	2000
1120	1220	1380	1490	1590	1730	1860	2120
1180	1290	1460	1570	1690	1830	1970	2250
1250	1370	1540	1660	1780	1930	2080	2380
1310	1440	1630	1750	1880	2030	2190	2500
500	540	620	660	710	770	830	950
560	610	690	750	800	870	930	1060
620	680	770	830	890	960	1040	1180
680	750	850	910	980	1060	1140	1300
750	820	920	990	1070	1150	1240	1420
810	880	1000	1080	1160	1250	1350	1540
870	950	1080	1160	1240	1350	1450	1660
930	1020	1160	1240	1330	1440	1560	1780
990	1090	1230	1330	1420	1540	1660	1890
1050	1160	1310	1410	1510	1630	1760	2010
1120	1230	1390	1490	1600	1730	1870	2130
1180	1290	1460	1580	1690	1830	1970	2250
1240	1360	1540	1660	1780	1920	2070	2370
530	580	660	710	760	820	890	1010
590	650	730	790	840	910	980	1130
650	710	800	870	930	1010	1080	1240
710	780	880	940	1010	1100	1180	1350
770	840	950	1020	1100	1190	1280	1460
830	910	1020	1100	1180	1280	1380	1580
890	970	1100	1180	1270	1370	1480	1680
950	1030	1170	1260	1350	1460	1580	1800
1000	1100	1240	1340	1430	1550	1670	1910
1060	1160	1320	1420	1520	1650	1770	2030
1120	1230	1390	1500	1600	1740	1870	2140
1180	1290	1460	1570	1690	1830	1970	2250

BS 1387

Classification	Nominal Bore		Outside diameter(black pipes)				Wall thickness		Nominal weight(black pipes)					
			Max.		Min.				Plain end			Screwed & socketed		
	in.	mm	in.	mm	in.	mm	in.	mm	lb/ft	kg/ft	kg/m	lb/ft	kg/ft	kg/m
Light weight pipes (L)	3/8	10	0.673	17.1	0.657	16.7	0.071	1.8	0.450	0.204	0.670	0.454	0.206	0.676
	1/2	15	0.843	21.4	0.827	21.0	0.079	2.0	0.636	0.289	0.947	0.642	0.291	0.956
	3/4	20	1.059	26.9	1.039	26.4	0.091	2.3	0.927	0.421	1.38	0.934	0.424	1.39
	1	25	1.331	33.8	1.307	33.2	0.102	2.6	1.331	0.604	1.98	1.344	0.610	2.00
	1 1/4	32	1.673	42.5	1.650	41.9	0.102	2.6	1.707	0.774	2.54	1.727	0.793	2.57
	1 1/2	40	1.906	48.4	1.882	47.8	0.114	2.9	2.170	0.985	3.23	2.197	0.997	3.27
	2	50	2.370	60.2	2.346	59.6	0.114	2.9	2.742	1.244	4.08	2.789	1.265	4.15
	2 1/2	65	2.992	76.0	2.961	75.2	0.126	3.2	3.837	1.740	5.71	3.918	1.777	5.83
	3	80	3.492	88.7	3.461	87.9	0.126	3.2	4.516	2.048	6.72	4.630	2.100	6.89
	4	100	4.484	113.9	4.449	113.0	0.142	3.6	6.552	2.972	9.75	6.720	3.048	10.0
Medium weight pipes (M)	3/8	10	0.685	17.4	0.661	16.8	0.091	2.3	0.564	0.256	0.839	0.568	0.258	0.845
	1/2	15	0.854	21.7	0.831	21.1	0.102	2.6	0.813	0.369	1.21	0.820	0.372	1.22
	3/4	20	1.071	27.2	1.047	26.6	0.102	2.6	1.048	0.475	1.56	1.055	0.479	1.57
	1	25	1.346	34.2	1.315	33.4	0.126	3.2	1.619	0.735	2.41	1.633	0.741	2.43
	1 1/4	32	1.689	42.9	1.657	42.1	0.126	3.2	2.083	0.945	3.10	2.103	0.954	3.13
	1 1/2	40	1.921	48.8	1.890	48.0	0.126	3.2	2.399	1.088	3.57	2.426	1.100	3.61
	2	50	2.394	60.8	2.354	59.8	0.142	3.6	3.380	1.533	5.03	3.427	1.554	5.10
	2 1/2	65	3.016	76.6	2.969	75.4	0.142	3.6	4.321	1.960	6.43	4.401	1.996	6.55
	3	80	3.524	89.5	3.469	88.1	0.157	4.0	5.624	2.551	8.37	5.739	2.603	8.54
	4	100	4.524	114.9	4.461	113.3	0.177	4.5	8.198	3.719	12.2	8.400	3.810	12.5
	5	125	5.535	140.6	5.461	138.7	0.197	5.0	11.155	5.060	16.6	11.491	5.212	17.1
	6	150	6.539	166.1	6.461	164.1	0.197	5.0	13.238	6.005	19.7	13.641	6.187	20.3
Heavy weight pipes (H)	3/8	10	0.685	17.4	0.661	16.8	0.114	2.9	0.685	0.311	1.02	0.692	0.314	1.03
	1/2	15	0.854	21.7	0.831	21.1	0.126	3.2	0.968	0.439	1.44	0.974	0.442	1.45
	3/4	20	1.071	27.2	1.047	26.6	0.126	3.2	1.257	0.570	1.87	1.263	0.573	1.88
	1	25	1.346	34.2	1.315	33.4	0.157	4.0	1.976	0.896	2.94	1.989	0.902	2.96
	1 1/4	32	1.689	42.9	1.657	42.1	0.157	4.0	2.553	1.158	3.80	2.574	1.167	3.83
	1 1/2	40	1.921	48.8	1.890	48.0	0.157	4.0	2.943	1.335	4.38	2.970	1.347	4.42
	2	50	2.394	60.8	2.354	59.8	0.177	4.5	4.160	1.887	6.19	4.207	1.908	6.26
	2 1/2	65	3.016	76.6	2.969	75.4	0.177	4.5	5.329	2.417	7.93	5.409	2.454	8.05
	3	80	3.524	89.5	3.469	88.1	0.197	5.0	6.920	3.139	10.3	7.056	3.200	10.5
	4	100	4.524	114.9	4.461	113.3	0.213	5.4	9.744	4.420	14.5	9.945	4.511	14.8
	5	125	5.535	140.6	5.461	138.7	0.213	5.4	12.028	5.456	17.9	12.364	5.608	18.4
	6	150	6.539	166.1	6.461	164.1	0.213	5.4	14.312	6.492	21.3	14.716	6.675	21.9

BS 1387-Commercial Steel Tubes

Nominal Bore		Outside diameter(black pipes)				Wall thickness		Nominal weight(black pipes)			
		Max.		Min.				Plain end		Screwed & socketed	
in.	mm	in.	mm	in.	mm	in.	mm	lb/ft	kg/m	lb/ft	kg/m
1/2	15	0.841	21.4	0.825	21.0	0.075	1.9	0.607	0.904	0.614	0.914
3/4	20	1.059	26.9	1.041	26.4	0.083	2.1	0.854	1.272	0.866	1.284
1	25	1.328	33.8	1.309	33.2	0.091	2.3	1.19	1.77	1.21	1.787
1 1/4	32	1.670	42.5	1.650	41.9	0.091	2.3	1.52	2.26	1.54	2.280
1 1/2	40	1.903	48.4	1.882	47.8	0.099	2.5	1.89	2.81	1.92	2.830
2	50	2.370	60.2	2.347	59.6	0.103	2.6	2.46	3.67	2.51	3.693
2 1/2	65	2.991	76.0	2.960	75.2	0.114	2.9	3.49	5.20	3.56	5.228
3	80	3.491	88.7	3.460	87.9	0.114	2.9	4.10	6.11	4.21	6.136
4	100	4.481	113.9	4.450	113.0	0.126	3.2	5.84	8.70	6.00	8.736
5	125	5.534	140.6	5.459	138.7	0.177	4.5	10.07	15.00	10.38	15.103
6	150	6.359	166.1	6.459	164.1	0.177	4.5	11.96	17.82	12.38	17.933

OFFSHORE STRUCTURAL PIPE

API 2B

- » API 2B pipe is suitable for use in connection of welded offshore structures.
- » The purchaser shall specify the grade and quality of plate steel to be used.
- » Dimension (Outside diameter, thickness, length) are specified by purchaser.
- » Tolerance on roundness, straightness, circumference are determined by purchaser and API 2B requirements.
- » produces API 2B pipe in accordance with API 2B and purchase requirements.

CONDUITS

Rigid steel conduits KS C8401 (JIS C8305)
Heavy gauge

Size designation	Outside diameter	Tolerances on outside diameter	Wall thickness	weight	Effective length of threads(mm)	
	mm	mm	mm	kg/m	Max.	Min.
G16	21.0	± 0.3	2.3	1.06	19	16
G22	26.5	± 0.3	2.3	1.37	22	19
G28	33.3	± 0.3	2.5	1.90	25	22
G36	41.9	± 0.3	2.5	2.43	28	25
G42	47.8	± 0.3	2.5	2.79	28	25
G54	59.6	± 0.3	2.8	3.92	32	28
G70	75.2	± 0.3	2.8	5.00	36	32
G82	87.9	± 0.3	2.8	5.88	40	36
G92	100.7	± 0.4	3.5	8.39	42	36
G104	113.4	± 0.4	3.5	9.48	45	39

Light gauge

Size designation	Outside diameter	Tolerances on outside diameter	Wall thickness	weight	Effective length of threads(mm)	
	mm	mm	mm	kg/m	Max.	Min.
C19	19.1	± 0.2	1.6	0.690	14	12
C25	25.4	± 0.2	1.6	0.939	17	15
C31	31.8	± 0.2	1.6	1.19	19	17
C39	38.1	± 0.2	1.6	1.44	21	19
C51	50.8	± 0.2	1.6	1.94	24	22
C63	63.5	± 0.35	2.0	3.03	27	25
C75	76.2	± 0.35	2.0	3.66	30	28

Threadless conduits

Size designation	Outside diameter	Tolerances on outside diameter	Wall thickness	weight
	mm	mm	mm	kg/m
E19	19.1	± 0.15	1.2	0.530
E25	25.4	± 0.15	1.2	0.716
E31	31.8	± 0.15	1.4	1.05
E39	38.1	± 0.15	1.4	1.27
E51	50.8	± 0.15	1.4	1.71
E63	63.5	± 0.25	1.6	2.44
E75	76.2	± 0.25	1.8	3.30

CONDUITS

UL 6-Rigid metal conduits

Size designation	Inside diameter		Outside diameter		Wall thickness		Length without socket		Minimum weight of 10 units with coupling	
	in.	mm	in.	mm	in.	mm	ft & in.	mm	PE	TC
3/8	0.493	12.52	0.675	17.15	0.091	2.31	9-11 1/2	3035	0.258	0.258
1/2	0.632	16.05	0.840	21.34	0.104	2.64	9-11 1/4	3030	0.371	0.376
3/4	0.836	21.23	1.050	26.67	0.107	2.72	9-11 1/4	3030	0.490	0.499
1	1.063	27.00	1.315	33.40	0.126	3.20	9-11	3025	0.726	0.739
1 1/4	1.394	35.41	1.660	42.16	0.133	3.38	9-11	3025	0.985	1.000
1 1/2	1.624	41.25	1.900	48.26	0.138	3.51	9-11	3025	1.181	1.200
2	2.083	52.91	2.375	60.33	0.146	3.71	9-11	3025	1.579	1.610
2 1/2	2.489	63.22	2.875	73.03	0.193	4.90	9-10 1/2	3010	2.059	2.590
3	3.090	78.49	3.500	88.90	0.205	5.21	9-10 1/2	3010	3.277	3.370
3 1/2	3.570	90.68	4.000	101.60	0.215	5.46	9-10 1/4	3005	3.946	4.100
4	4.050	102.87	4.500	114.30	0.225	5.72	9-10 1/4	3005	4.668	4.790
5	5.073	128.85	5.563	141.30	0.245	6.22	9-10	2995	6.315	6.510
6	6.093	154.76	6.625	168.28	0.266	6.76	9-10	2995	8.207	8.520

ANSI C80.1-Rigid steel conduits

Size designation	Inside diameter		Outside diameter		Wall thickness		Length without socket		Minimum weight of 10 units with coupling	
	in.	mm	in.	mm	in.	mm	ft & in.	m	lb	kg
3/8	0.493	12.5	0.675	17.1	0.091	2.31	9-11 1/2	3.04	51.5	23.36
1/2	0.632	16.1	0.840	21.3	0.104	2.64	9-11 1/4	3.03	79.0	35.83
3/4	0.836	21.2	1.050	26.7	0.107	2.72	9-11 1/4	3.03	105.0	47.63
1	1.063	27.0	1.315	33.4	0.126	3.20	9-11	3.02	153.0	69.40
1 1/4	1.394	35.4	1.660	42.2	0.133	3.38	9-11	3.02	201.0	91.17
1 1/2	1.624	41.2	1.900	48.3	0.138	3.51	9-11	3.02	249.0	112.95
2	2.083	52.9	2.375	60.3	0.146	3.71	9-11	3.02	332.0	150.59
2 1/2	2.489	63.2	2.875	73.0	0.193	4.90	9-10 1/2	3.01	527.0	239.04
3	3.090	78.5	3.500	88.9	0.205	5.21	9-10 1/2	3.01	682.6	309.63
3 1/2	3.570	90.7	4.000	101.6	0.215	5.46	9-10 1/4	3.00	831.0	376.94
4	4.050	102.9	4.500	114.3	0.225	5.72	9-10 1/4	3.00	972.3	441.04
5	5.073	128.9	5.563	141.3	0.245	6.22	9-10	3.00	1313.6	595.85
6	6.093	154.8	6.625	168.3	0.266	6.76	9-10	3.00	1745.3	791.67

Fence Tubings

Size	Outside diameter		Wall thickness		Weight of Plain Ends		
	mm	in.	mm	in.	lb/ft	kg/ft	kg/m
0.840	21.34	0.840	2.03	1.080	0.65	0.30	0.97
0.854	21.69	0.854	1.91	0.075	0.62	0.28	0.93
1.050	26.67	1.050	2.34	0.092	0.94	0.43	1.40
1.315	33.40	1.315	1.19	0.047	0.64	0.29	0.95
			1.40	0.055	0.74	0.34	1.10
			1.65	0.065	0.87	0.39	1.29
			1.75	0.069	0.92	0.42	1.37
			1.83	0.072	0.96	0.43	1.42
			20.1	0.079	1.04	0.47	1.55
			2.31	0.091	1.19	0.54	1.77
			2.39	0.094	1.23	0.56	1.83
			2.64	0.104	1.36	0.62	2.02
			2.85	0.116	1.91	0.87	2.85
1.660	42.16	1.660	1.19	0.047	0.84	0.37	1.20
			1.40	0.055	0.94	0.43	1.41
			1.65	0.065	1.11	0.50	1.65
			1.75	0.069	1.17	0.53	1.74
			1.83	0.072	1.22	0.55	1.82
			2.01	0.079	1.33	0.60	1.99
			2.39	0.094	1.57	0.71	2.34
			2.64	0.104	1.73	0.78	2.57
			2.85	0.116	1.91	0.87	2.85
			2.95	0.116	2.21	1.00	3.29
1.900	48.26	1.900	1.40	0.055	1.08	0.49	1.61
			1.65	0.065	1.27	0.58	1.89
			1.75	0.069	1.35	0.61	2.01
			1.83	0.072	1.41	0.64	2.10
			2.01	0.079	1.54	0.70	2.29
			2.39	0.094	1.81	0.82	2.70
			2.64	0.104	1.99	0.90	2.97
			2.85	0.116	2.21	1.00	3.29
			2.95	0.116	2.80	1.27	4.17
			3.16	0.125	3.16	1.44	4.74
2.375	60.33	2.375	1.40	0.055	1.36	0.62	2.03
			1.65	0.065	1.60	0.73	2.39
2.875	73.03	2.875	1.75	0.069	1.70	0.77	2.53
			1.83	0.072	1.77	0.80	2.64
2.975	75.56	2.975	2.01	0.079	1.94	0.88	2.89
			2.39	0.094	2.29	1.04	3.41
3.000	76.2	3.000	2.64	0.104	2.52	1.14	3.76
			2.95	0.116	2.80	1.27	4.17
3.475	88.27	3.475	2.95	0.116	3.42	1.55	5.09
			3.16	0.125	3.79	1.72	5.69
3.500	88.90	3.500	3.25	0.128	3.89	1.76	5.77
			3.25	0.128	4.33	1.96	6.43
4.000	101.6	4.000	3.25	0.128	4.61	2.09	6.86
			3.40	0.134	5.53	2.51	8.23
			3.68	0.145	5.97	2.71	8.89
			5.74	0.226	9.11	4.13	13.55

BOILER TUBE

Boiler Tube(ASM A178/ASME SA178 Gr.A, Gr.C, Gr.D)

Outside diameter	Wall Thickness	in.	0,095	0,100	0,105	0,110	0,115	0,120	0,125	0,130	0,135	0,140	0,145	0,150	0,165	0,175
		mm	2,41	2,54	2,67	2,79	2,92	3,05	3,18	3,30	3,43	3,56	3,68	3,81	4,19	4,45
1¼	31,8	0,581	0,608	0,638	0,663	0,690	0,718	0,744	0,769	0,794	0,821	0,845	0,870	0,942	0,991	
1½	38,1	0,706	0,740	0,777	0,808	0,842	0,877	0,910	0,940	0,973	1,01	1,04	1,07	1,16	1,22	
1¾	44,5	0,834	0,875	0,918	0,956	0,996	1,04	1,08	1,12	1,15	1,20	1,23	1,27	1,38	1,46	
2	50,8	0,959	1,01	1,06	1,10	1,15	1,20	1,24	1,29	1,33	1,38	1,42	1,47	1,60	1,69	
2½	63,5	1,21	1,27	1,34	1,39	1,45	1,52	1,58	1,63	1,69	1,76	1,81	1,87	2,04	2,16	
3	76,2	1,46	1,54	1,62	1,69	1,76	1,84	1,91	1,98	2,05	2,13	2,20	2,27	2,48	2,63	
3¼	82,6	1,59	1,67	1,76	1,84	1,92	2,00	2,08	2,15	2,23	2,32	2,39	2,47	2,70	2,86	
3½	88,9	1,72	1,81	1,90	1,98	2,07	2,16	2,25	2,33	2,41	2,50	2,58	2,67	2,92	3,09	
4	101,6	1,97	2,07	2,18	2,27	2,37	2,48	2,58	2,67	2,77	2,88	2,97	3,07	3,36	3,56	

CONVERSION METHOD

1. Unit Weight Calculation Method

W = 0.02466(D-t)t

W : Weight per unit length(kg/m)

t : Thickness of steel pipes(mm)

D : Outside diameter of steel pipes(mm)

W = 10.68(D-t)t

W : Weight per unit length(lb/ft.)

t : thickness of steel pipes(in.)

D : Outside diameter of steel pipes(in.)

2. Conversion of unit

Items		Unit
Length	1,00000	mm
	1,00000 x 10 ³	m
	3,93701 x 10 ²	in.
	3,28084 x 10 ²	ft
Weight per unit length	1,00000	kg/m
	3,04800 x 10 ³	kg/ft
	6,71971 x 10 ³	lb/ft
Force per unit area	1,00000	N/mm ² (MPa)
	1,01972 x 10 ³	kgf/mm ²
	1,01972 x 10	kgf/cm ²
	1,45038 x 10 ³	lbf/in ²
Temperature	32+9/5°C	F

