

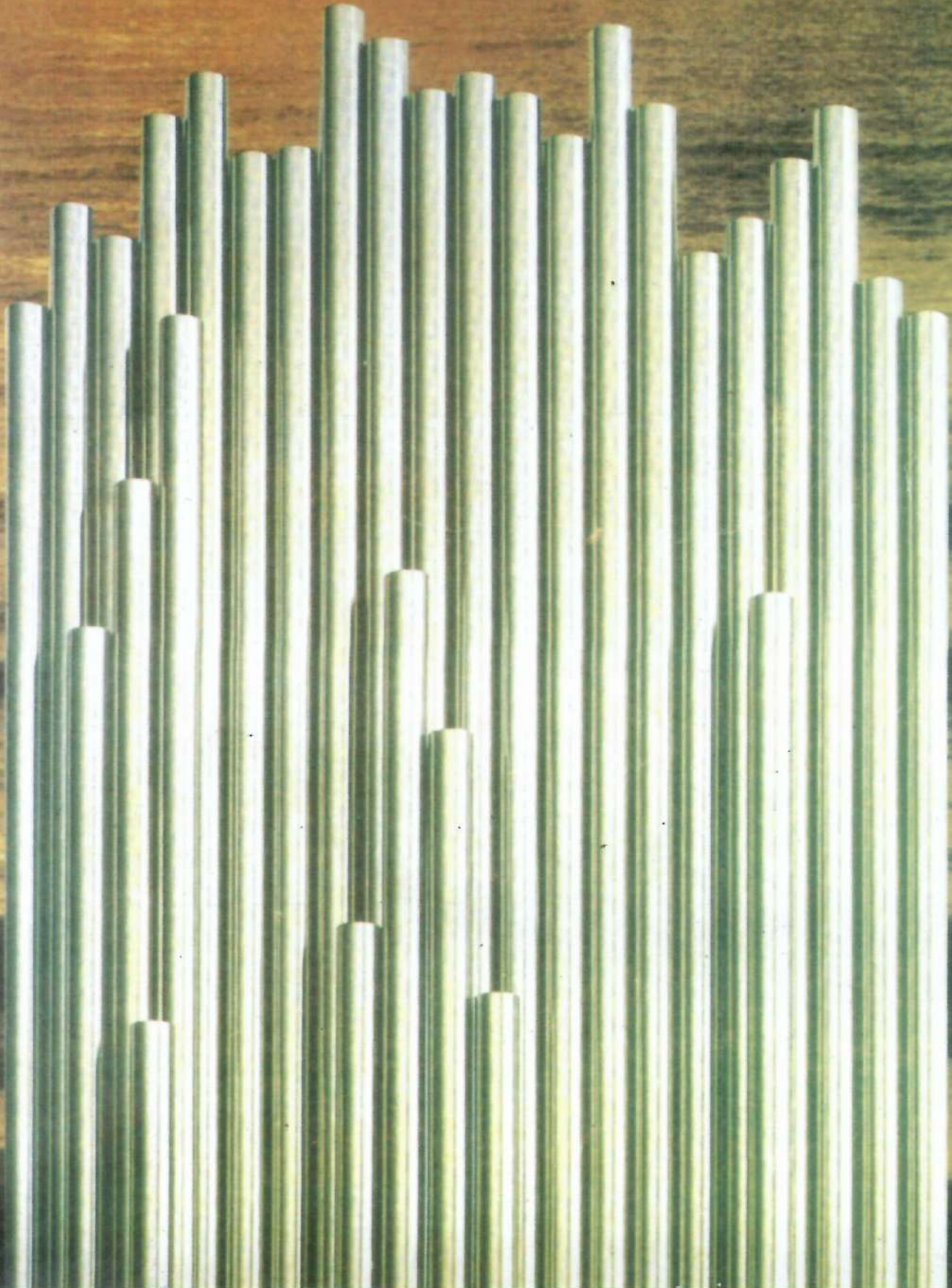


GRAPEX S.S. PIPE INDUSTRY (PVT) LTD.

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INTRODUCTION



INTRODUCTION

WE FEEL PLEASURE IN INTRODUCING OURSELVES AS A PIONEER STAINLESS STEEL WELDED PIPE & TUBE INDUSTRY IN KARACHI, PAKISTAN.

OUR PRODUCTS HAVE BEEN USED IN WIDE CIRCLES, INCLUDING SUGAR MILLS, DISTILLARY, FURNITURE, TEXTILE CHEMICAL, PHARMACEUTICAL, FOOD & BEVERAGE INDUSTRIES, TO THE COMPLETE SATISFACTION OF ALL CUSTOMERS AND THE QUALITY OF OUR PRODUCTS HAS BEEN APPROVED BY ALL.

OUR SUCCESS DEPENDS UPON OUR ABILITY TO MEET YOUR NEEDS SPEEDILY & EFFICIENTLY.

MAJOR PRODUCTS & APPLICATIONS



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Small-Diameter Pipe for Piping Service

- Manufacturing method :
Tube mill
- Applications :
Petrochemical, synthetic chemical & chemical industries

Small-Diameter Pipe for Piping Service

- Manufacturing method :
UO press forming, TIG or MIG welding
- Applications :
Chemical, petrochemical, synthetic chemical and nuclear power industries

Tubing for Structural Purposes

- Manufacturing method :
Cold-drawing (high dimensional accuracy)
- Applications :
Automotive industry, chemical apparatuses

Piping for automotive Catalytic Converters and Mufflers

- Manufacturing method :
Thin-wall tube mill
- Applications :
Exhaust gas automotive converters and mufflers (ultra thin wall tube)

Large-Diameter Pipe for Piping Service

- Manufacturing method :
Three-roll forming TIG or MIG or plasma arc automatic welding
- Applications :
chemical and synthetic chemical industries

Tubing for Boilers and Heat Exchangers

- Manufacturing method :
Tube mill with or without cold-working
- Applications :
High temperature and high pressure service, synthetic chemical industry and boilers



AVAILABLE SPECIFICATION FOR ROUND TUBE



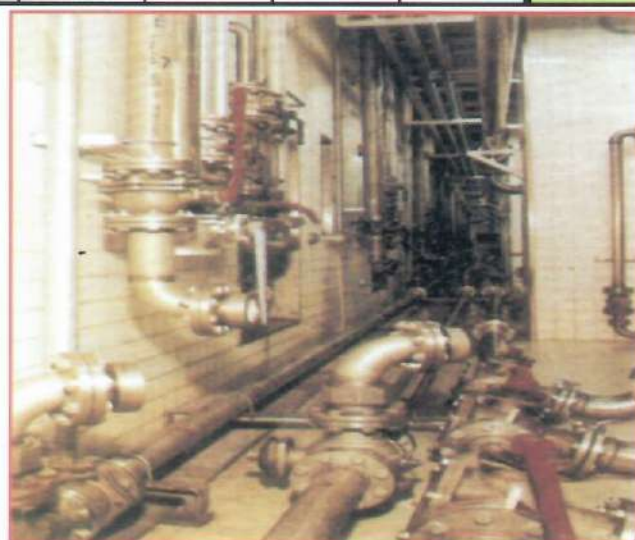
Stainless Steel Seamweld Tube

ASTM A249 JIS G3463 and ASTM A554 400/600 GRIT POLISH

Thick m/m		0.6	0.8	1.0	1.2	1.5	1.65	2.0	2.5	3.0
OD	m/m									
3/8"	9.5									
1/2"	12.7									
5/8"	15.9									
3/4"	19.0									
7/8"	22.2									
1"	25.4									
1 1/4"	31.8									
	35.0									
1 1/2"	38.1									
	40.0									
1 5/8"	41.3									
1 3/4"	44.4									
2"	50.8									
2 1/2"	63.5									
3"	76.2									
3 1/2"	88.9									
4"	101.6									
4 1/2"	114.3									



FOR THE PETRO-CHEMICAL INDUSTRY
FOR THE DISTILLERY INDUSTRY
FOR THE SUGAR MILL
FOR THE BEVARAGE INDUSTRY
FOR THE TEXTILE/DYEIES INDUSTRY ETC.
FOR THE FURNITURE/DECORATION ETC.



JIS G3459			STAINLESS STEEL PIPES									
			SCH. 5S		SCH. 10S		SCH. 20S		SCH. 40S		SCH. 80S	
(A)	(B)	mm	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m
6	$\frac{1}{8}$	10.5	1.0	0.234	1.2	0.275	1.5	0.333	1.7	0.369	2.4	0.479
8	$\frac{1}{4}$	13.8	1.2	0.373	1.65	0.494	2.0	0.582	2.2	0.629	3.0	0.799
10	$\frac{3}{8}$	17.3	1.2	0.476	1.65	0.637	2.0	0.755	2.3	0.851	3.2	1.11
15	$\frac{1}{2}$	21.7	1.65	0.816	2.1	1.02	2.5	1.18	2.8	1.31	3.7	1.64
20	$\frac{3}{4}$	27.2	1.65	1.04	2.1	1.30	2.5	1.52	2.9	1.74	3.9	2.24
25	1	34.0	1.65	1.32	2.8	2.15	3.0	2.29	3.4	2.57	4.5	3.27
32	$1\frac{1}{4}$	42.7	1.65	1.67	2.8	2.76	3.0	2.94	3.6	3.47	4.9	4.57
40	$1\frac{1}{2}$	48.6	1.65	1.91	2.8	3.16	3.0	3.37	3.7	4.10	5.1	5.47
50	2	60.5	1.65	2.39	2.8	3.98	3.5	4.92	3.9	5.44	5.5	7.46
65	$2\frac{1}{2}$	76.3	2.1	3.84	3.0	5.42	3.5	6.28	5.2	9.12	7.0	12.0
80	3	89.1	2.1	4.51	3.0	6.37	4.0	8.39	5.5	11.3	7.6	15.3
90	$3\frac{1}{2}$	101.6	2.1	5.15	3.0	7.29	4.0	9.63	5.7	13.5	8.1	18.7
100	4	114.3	2.1	5.81	3.0	8.23	4.0	10.9	6.0	16.0	8.6	22.4
125	5	139.8	2.8	9.46	3.4	11.4	5.0	16.6	6.6	21.7	9.5	30.5
150	6	165.2	2.8	11.2	3.4	13.6	5.0	19.8	7.1	27.7	11.0	41.8
200	8	216.3	2.8	14.7	4.0	20.9	6.5	33.6	8.2	42.1	12.7	63.8
250	10	267.4	3.4	22.1	4.0	26.0	6.5	41.8	9.3	59.2	15.1	93.9
300	12	318.5	4.0	31.0	4.5	34.8	6.5	50.0	10.3	78.3	17.4	129

ASTM A312		SEAMLESS AND WELDED AUSTENITIC STAINLESS STEEL PIPES							
in	mm	SCH. 5S		SCH. 10S		SCH. 40S		SCH. 80S	
		mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m
$\frac{1}{8}$	10.29			1.24	0.28	1.73	0.37	2.41	0.47
$\frac{1}{4}$	13.72			1.65	0.49	2.24	0.63	3.02	0.80
$\frac{3}{8}$	17.15			1.65	0.63	2.31	0.85	3.20	1.10
$\frac{1}{2}$	21.34	1.65	0.80	2.11	1.00	2.77	1.27	3.73	1.62
$\frac{3}{4}$	26.67	1.65	1.02	2.11	1.28	2.87	1.69	3.91	2.20
1	33.40	1.65	1.29	2.77	2.09	3.38	2.50	4.55	3.24
$1\frac{1}{4}$	42.16	1.65	1.65	2.77	2.69	3.56	3.39	4.85	4.46
$1\frac{1}{2}$	48.26	1.65	1.90	2.77	3.11	3.68	4.05	5.08	5.41
2	60.33	1.65	2.39	2.77	3.93	3.91	5.44	5.54	7.49
$2\frac{1}{2}$	73.03	2.11	3.67	3.05	5.26	5.16	8.63	7.01	11.41
3	88.90	2.11	4.52	3.05	6.46	5.49	11.29	7.62	15.27
$3\frac{1}{2}$	101.60	2.11	5.18	3.05	7.41	5.74	13.57	8.08	18.63
4	114.30	2.11	5.84	3.05	8.37	6.02	16.07	8.56	22.32
5	141.30	2.77	9.46	3.40	11.56	6.55	21.77	9.52	30.97
6	168.28	2.77	13.31	3.40	13.83	7.11	28.26	10.97	42.56
8	219.08	2.77	14.78	3.76	19.97	8.18	42.55	12.70	64.65
10	273.05	3.40	22.61	4.19	27.78	9.27	60.30	12.70	81.54
12	323.85	3.96	31.24	4.57	35.98	9.52	73.87	12.70	97.45

Square Tube

OD	Thick m/m	0.6	0.8	1.0	1.2	1.5	2.0	3.0
"	m/m							
3/8"	9.5							
1/2"	12.7							
5/8"	15.9							
3/4"	19.0							
7/8"	22.2							
1"	25.4							
1 1/4"	31.8							
1 1/2"	35.0							
2"	38.1							
2 1/2"	40.0							
3"	41.3							
3 1/2"	44.4							
4"	50.8							

Rectangular Tube

OD	Thick m/m	0.8	1.0	1.2	1.5	2.0	3.0	4.0
"	m/m							
1/2" x 1"	13x26							
1/2" x 1 1/4"	14x31							
3/4" x 1 1/2"	20x40							
1" x 2"	26x52							
	30x60							
	40x80							
	45x75							
	45x95							

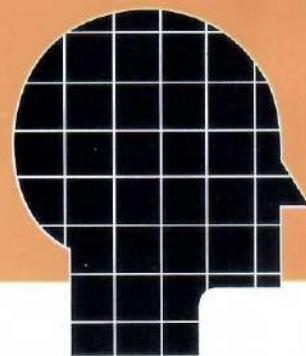
TABLE OF THE CHEMICAL COMPOSITION OF STAINLESS STEEL PIPES AND TUBES

JIS	ASTM	C	Si	Mn	P	S	Ni	Cr	Mo	Others
SUS304	(TP304)	≤ 0.08	≤ 1.00 (≤ 0.75)	≤ 2.00	≤ 0.040	≤ 0.030	8.00 - 11.00	18.00 - 20.00		
SUS304L	(TP304L)	≤ 0.030 (≤ 0.035)	≤ 1.00 (≤ 0.75)	≤ 2.00	≤ 0.040	≤ 0.030	9.00 - 13.00 (8.00 - 13.00)	18.00 - 20.00		
SUS316	(TP316)	≤ 0.08	≤ 1.00 (≤ 0.75)	≤ 2.00	≤ 0.040	≤ 0.030	10.00 - 14.00 (11.00 - 14.00)	16.00 - 18.00	2.00 - 3.00	
SUS316L	(TP316L)	≤ 0.030 (≤ 0.035)	≤ 1.00 (≤ 0.75)	≤ 2.00	≤ 0.040	≤ 0.030	12.00 - 16.00 (10.00 - 15.00)	16.00 - 18.00	2.00 - 3.00	
SUS309S	(TP309)	≤ 0.15	≤ 1.00 (≤ 0.75)	≤ 2.00	≤ 0.040	≤ 0.030	12.00 - 15.00	22.00 - 24.00		
SUS310S	(TP310)	≤ 0.15	≤ 1.50 (≤ 0.75)	≤ 2.00	≤ 0.040	≤ 0.030	19.00 - 22.00	24.00 - 26.00		
SUS321	(TP321)	≤ 0.08	≤ 1.00 (≤ 0.75)	≤ 2.00	≤ 0.040	≤ 0.030	9.00 - 13.00	17.00 - 19.00		Ti5 x C% (5xC% - 0.60)
SUS321H	(TP321H)	0.04 -0.10	≤ 0.75	≤ 2.00	≤ 0.030 ≤ 0.040	≤ 0.030	9.00 - 13.00	17.00 - 20.00		Ti4 x C% - 0.60
NSS430M3		≤ 0.08	≤ 1.00	≤ 1.00	≤ 0.040	≤ 0.030		16.00 - 18.00	0.20 - 0.05	Ti10 x C% - 1.0

HEAT TREATMENT

JIS	ASTM	
(C)	(C)	(C)
SUS321	920	
SUS304		
SUS304L		
SUS316		
SUS316L		
SUS309S		
SUS310S		
SUS321H		

TOLERANCE LIST



STAINLESS STEEL PIPES.

(SPECIFICATION) ASTM A 312 JIS-G-3459

	(O.D) mm	TOLERANCE	THICKNESS mm	TOLERANCE
	50 (DOWN)	±0.5mm	4.0 (DOWN)	±0.5mm
SEAMLESS	50 (UP)	±1%	4.0 (UP)	±12.5%
	50 (DOWN)	±0.3mm	2.0 (DOWN)	±0.2mm
WELDING	50 (UP)	±1%	2.0 (UP)	±10%

STAINLESS STEEL TUBES.

(SPECIFICATION) ASTM A249 JIS G3463 and A554

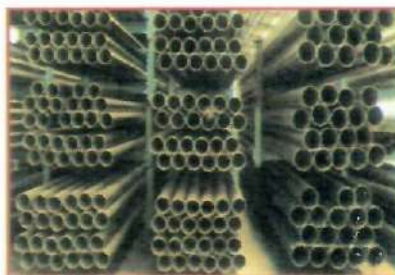
	(O.D) mm	TOLERANCE
NO. 1	50 DOWN	±0.50mm
	50 UP	±1.00%
NO. 2	50 DOWN	±0.25mm
	50 UP	±0.50%
NO. 3	25 DOWN	±0.12mm
	25-40 (EXCL)	±0.15%
	40-50 (EXCL)	±0.18mm
	50-60 (EXCL)	±0.20%
	60-70 (EXCL)	±0.23mm
	70-80 (EXCL)	±0.25%
	80-90 (EXCL)	±0.30mm
	90-100 (EXCL)	±0.40%
	100 (UP)	±0.50mm
NO. 4	13 (DOWN)	±0.25%
	13-25 (EXCL)	±0.40mm
	25-40 (EXCL)	±0.60%
	40-65 (EXCL)	±0.80mm
	65-90 (EXCL)	±1.00%
	90-140 (EXCL)	±1.20mm
	140 (UP)	ACCORDING P.O.

	(THICKNESS) mm	TOLERANCE
NO.1	4mm DOWN	±0.6mm ±0.5mm
	4mm UP	±15% ±12.5%
NO.2	3mm DOWN	±0.3mm
	3mm UP	±10%
NO.3	2mm DOWN	±0.15mm
	2mm UP	±8%

LENGTH

	TOLERANCE
ALL SIZES	+50 mm -0

1. THE TOLERANCES ON OUTSIDE DIAMETER FOR HOT FINISHED SEAMLESS STEEL TUBES SHALL APPLY CLASS 1.
2. THE TOLERANCES ON OUTSIDE DIAMETER FOR ELECTRIC RESISTANCE WELDED OR AUTOMATIC ARC WELDED STEEL TUBES OTHER THAN COLD FINISHED, AS A RULE, SHALL APPLY CLASS 1.
3. THE TOLERANCES ON OUTSIDE DIAMETER FOR SOLUTION HEAT TREATED TUBES, AS A RULE, SHALL APPLY CLASS 4.



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PRODUCTION EQUIPMENT



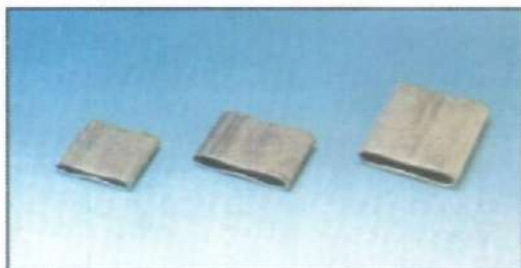
(FORMING)

(WELDING)

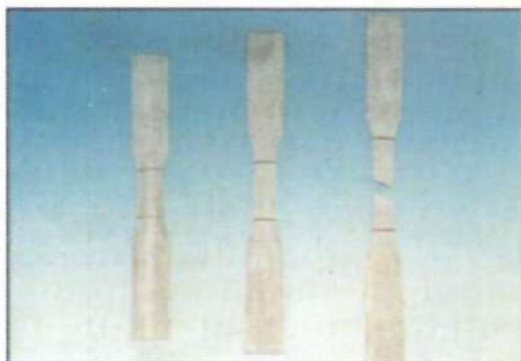
RESULT OF MECHANICAL TESTS



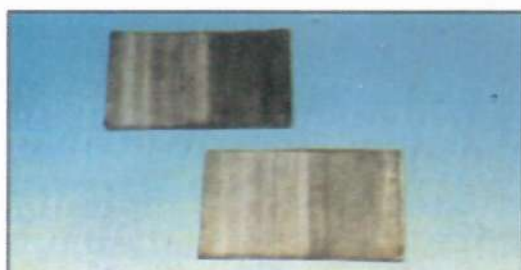
EXPANDING OF END OF THE PIPE 1.2 FOLD OF OUTSIDE DIAMETER IN PROPORTION TO CHECK WHETHER THERE IS IMPERFECTION OR CRACKS.



FLATTENING THE PIPE TO THE SPECIFIED H VALUE WHILE INSPECT ITS WALL TO CHECK WHETHER THERE IS CRACKS OR IMPERFECTION.



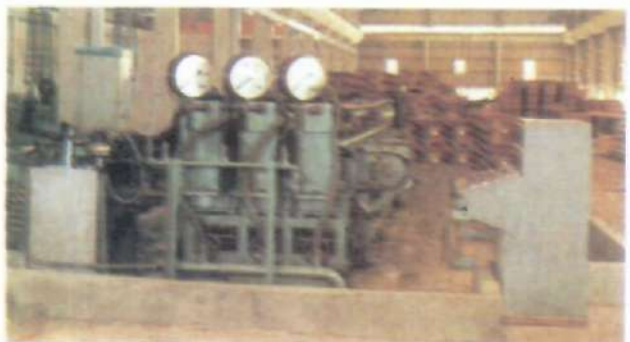
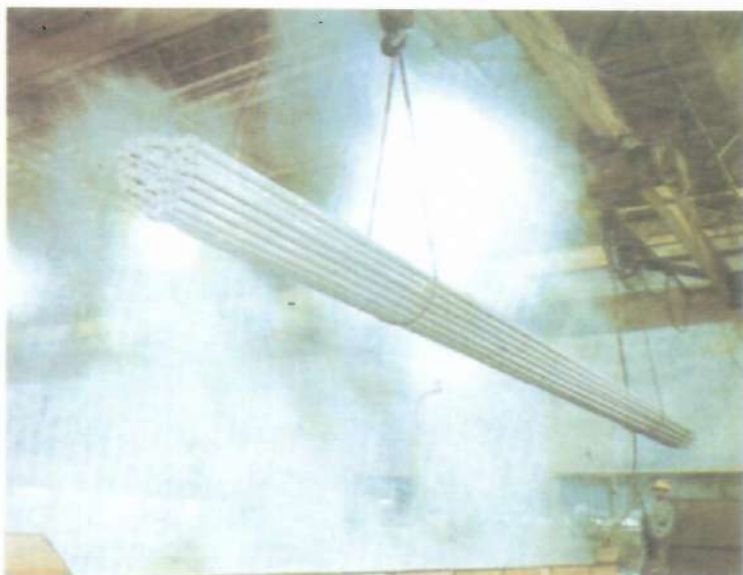
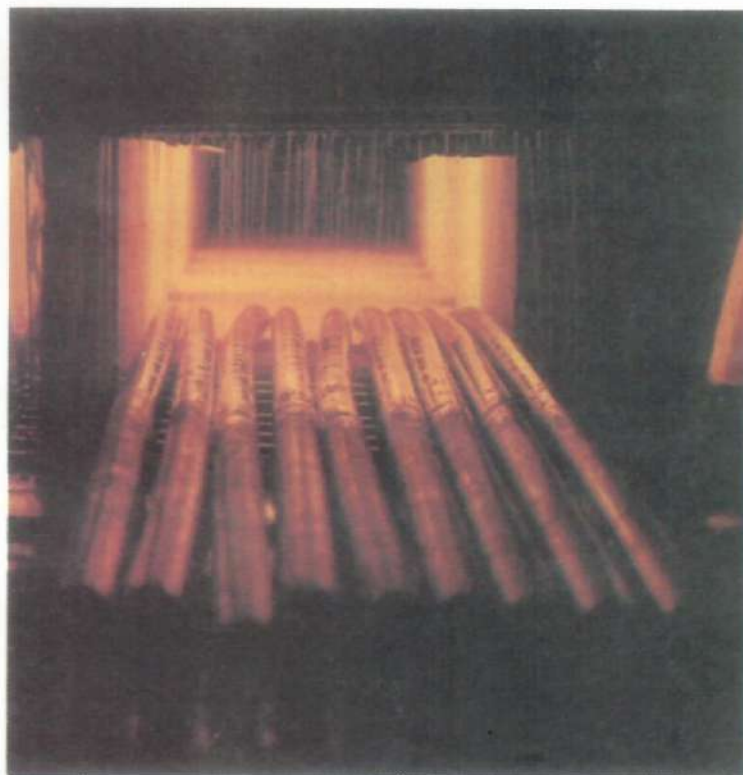
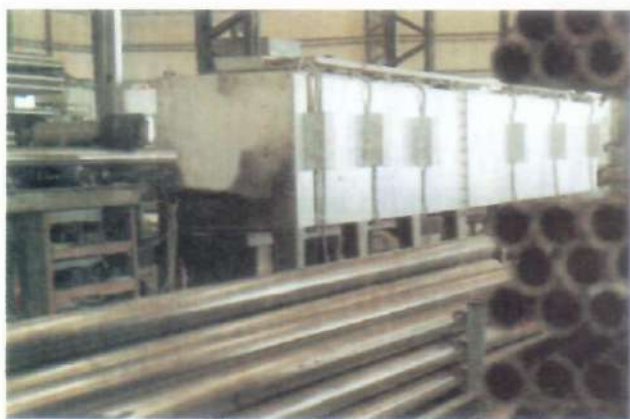
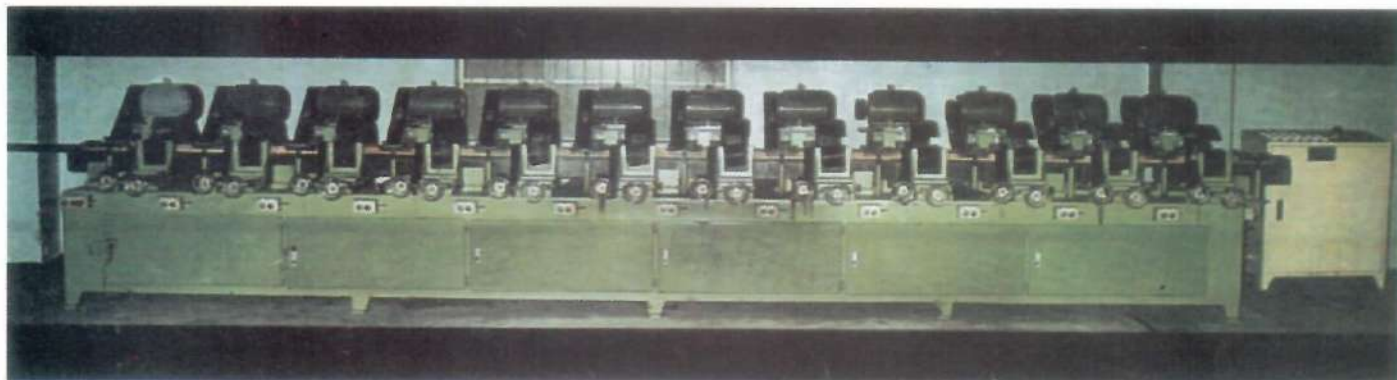
CUTTING THE PIPE FOR TENSILE TESTING WHILE INSPECT THE TENSILE STRENGTH AND ELONGATION TO SEE WHETHER THEY MEET THE EACH CORRESPONDING STANDARD.



UNFOLDING THE PIPE AND FLATTENING IT WHILE INSPECT THE WELD SEAM TO CHECK WHETHER THERE IS DEFECTIVE PARTS, CRACKS OR OTHER CRITICAL IMPERFECTION.

PRODUCTION EQUIPMENT

Straghtenigs, hydrostatic Testing Anneling & Pickling







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