



TTU INDUSTRIAL CORP., LTD.

TTU Fittings

Head Office : 395/5 Silom Road, Bangrak, Bangkok 10500, Thailand. Tel: (662)-2377230-40 Fax : (662)-2366627, 2377241
Production Plant: 33/3 GP. 7, Soi Pon-Chareon, K.M. 18.5 Bangna-Trad Road, Bangplee, Samulprakan 10540, Thailand
website : www.ttu.co.th email address : sale001.ttu@ttugroup.com, chris.ws@ttugroup.com

MANUFACTURER'S CERTIFICATE

Purchaser	: PLESA ANAHUAC Y CIAS, SA DE C.V.	Certificate No	: 140075 Page 1/4
Product	: SEAMLESS STEEL WELDING FITTING	Order No	: PO. 17201
Specification	: ASTM A-234 WPB - 2011A	Date	: JANUARY 31, 2014
	: ASME SA234 WPB	L/C No	: T/T

Raw Material Standard	Inspection Standard	Visual Inspection	Dimensional Inspection	
PIPE : ASTM A106 B / A538 / API5LB PLATE : ASTM A516 Gr 50 / 60	ANSI B16.9 ANSI B16.28	PASS	PASS	
Product & Size (inch)	Heat ID.	Quantity	Heat NO.	Raw Material Maker
1 90 ELBOW LR SCH40 1"	41331	100	208-97	2554-331
2 90 ELBOW LR SCH40 3"	42805	150	321843	2554-805
3 90 ELBOW LR SCH40 4"	42882	250	11-1-1472	2554-882
4 90 ELBOW LR SCH40 6"	42884	395	11-1-1478	2554-884
5 90 ELBOW LR SCH40 8"	42814	100	1107015	2554-814
6 90 ELBOW LR STD 10"	42815	42	1107003	2554-815
7 90 ELBOW LR STD 12"	42807	41	671365	2554-807
8 45 ELBOW LR SCH40 20"	4249C	1	1030864	2554-49C
9 90 ELBOW SR SCH40 8"	41282	15	709A-106	2554-282
10 TEE SCH40 8"	42942	50	1037205	2554-942
11 RED TEE SCH40 5"x3"	42921	10	102549	2554-921

Standard	Chemical Composition %												Mechanical Test			Average Hardness	CE Long Formula
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Al	YS	TS	E		
	x	x	x	x	x	x	x	x	x	x	x	x	psi	psi	%	Hb	x 100
Min.	100	100	100	1000	1000	100	100	100	100	100	1000	1000	35,000	60,000	30	-	-
Max.	30	-	108	48	58	40	40	40	15	8	-	50	-	85,000	-	197	42
1	19	21	49	8	6	14	5	5	-	-	-	-	46100	66800	34	169	30
2	20	22	43	16	10	2	1	1	-	-	-	-	42500	72100	34	167	38
3	21	21	42	17	6	10	7	8	-	-	-	-	47500	70700	34	159	31
4	18	21	44	10	12	10	8	4	-	-	-	-	47500	70700	36	156	27
5	19	25	50	15	9	7	4	9	-	-	-	-	47500	70700	35	147	30
6	19	24	51	14	7	11	10	9	-	-	-	-	47100	69600	37	141	39
7	19	21	57	16	7	6	2	4	-	-	-	-	40400	65400	38	164	30
8	17	37	95	18	6	8	3	8	1	1	1	2	47900	68900	42	155	37
9	20	26	59	11	8	10	3	3	<1	<1	-	-	58000	83400	37	175	31
10	19	22	42	5	2	3	2	2	1	<1	1	2	49300	68200	47	101	27
11	19	23	60	11	9	10	3	4	1	1	-	-	47900	67900	36	143	31

COUNTRY OF EXPORT : THAILAND
COUNTRY OF ORIGIN : THAILAND

VALUE OF THE PO. 17201 - US\$39,858.73

- We hereby certify that the products described herein have been manufactured, inspected and conforms to standard as specified above.
- ALL FITTINGS ARE HEAT TREATED TO MEET NACE MR0175-03 STANDARD SPECIFICATION AT 850-850 C x 1.0 HR.
- CE = C + (Mn/8) + (Cr + Mo + V)/5 + (Ni+Cu)/15
- ALL TEES ARE TESTED BY MAGNETIC PARTICLE EXAMINATION (MT)

Chief of Quality Assurance Dept



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MANUFACTURER'S CERTIFICATE

(Mill Test Certificate) DIN 50049-3.1-B / EN 10204-3.1

Purchaser	: PLESA ANAHUAC Y CIAS, SA DE C.V.	Certificate No	: 140075 Page 2/4
Product	: SEAMLESS STEEL WELDING FITTING	Order No	: PO. 17201
Specification	: ASTM A-234 WPB - 2011A	Date	: JANUARY 31, 2014
	: ASME SA234 WPB	L/C No	: T/T

Raw Material Standard	Inspection Standard	Visual Inspection	Dimensional Inspection
PIPE : ASTM A106 B / A53B / API5L B PLATE : ASTM A516 Gr 50 / 60	ANSI B16.9 ANSI B16.28	PASS	PASS

Product & Size (Inch)	Heat ID.	Quantity	Heat NO.	Raw Material Maker	
1 RED TEE SCH40	6"x4"	42931	12	11102288	2554-931
2 RED TEE SCH40	10"x8"	42605	40	1130716	2554-605
3 RED TEE SCH40	10"x8"	39605	10	1130716	2554-605
4 RED TEE SCH40	10"x4"	42605	20	1130716	2554-605
5 RED TEE SCH40	12"x10"	42497	10	1031436	2554-497
6 CON RED STD	12"x10"	42497	15	1031436	2554-497
7 CON RED STD	14"x12"	4249A	5	1031434	2554-49A
8 CON RED STD	18"x16"	42871	5	710A-36	2554-871
9 CON RED STD	18"x14"	42871	5	710A-36	2554-871
10 CON RED STD	18"x12"	42871	3	710A-36	2554-871
11 CON RED STD	18"x10"	41871	2	710A-36	2554-871

Standard	Chemical Composition %													Mechanical Test			Average Hardness	CE Long Formula
	C	SI	Mn	P	S	Cu	NI	Cr	Mo	V	Nb	Al	YS	TS	E			
	x	x	x	x	x	x	x	x	x	x	x	x	x	psi	psi	%	Hb	x 100
Min.	-	10	29	-	-	-	-	-	-	-	-	-	-	35,000	80,000	30	-	-
Max.	30	-	106	48	58	40	40	40	15	8	-	50	-	-	85,000	-	197	42
1	20	22	51	13	6	6	2	3	1	1	-	-	46400	67100	35	140	30	
2	23	25	88	12	8	8	3	7	1	<1	1	3	57300	81200	44	147	40	
3	23	25	88	12	8	8	3	7	1	<1	1	3	57300	81200	44	147	40	
4	23	25	88	12	8	8	3	7	1	<1	1	3	57300	81200	44	147	40	
5	14	37	96	18	3	5	2	3	1	1	1	4	47900	63800	48	140	33	
6	14	37	96	18	3	5	2	3	1	1	1	4	47900	63800	48	140	33	
7	17	40	95	15	3	8	2	3	1	1	1	3	53700	76900	40	150	36	
8	18	25	50	8	6	11	5	5	<1	<1	-	-	48200	69300	34	171	28	
9	18	25	50	8	6	11	5	5	<1	<1	-	-	48200	69300	34	171	28	
10	18	25	50	8	6	11	5	5	<1	<1	-	-	48200	69300	34	171	28	
11	18	25	50	8	6	11	5	5	<1	<1	-	-	48200	69300	34	171	28	

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	: ASME SA234 WPB	L/C No	: T/T

Raw Material Standard	Inspection Standard	Visual Inspection		Dimensional Inspection
PIPE : ASTM A106 B / A53B / API5L B PLATE : ASTM A516 Gr 50 / 50	ANSI B16.9 ANSI B16.28	PASS		PASS
Product & Size (inch)	Heat ID.	Quantity	Heat NO.	Raw Material Maker
1 ECC RED SCH40 8"x4"	42942	20	1037205	2554-942
2 ECC RED SCH40 10"x6"	42605	10	1130716	2554-605
3 ECC RED SCH40 14"x10"	4249A	8	1031434	2554-49A
4 ECC RED SCH40 14"x10"	4149A	2	1031434	2554-49A
5 90 ELBOW LR XH 4"	42811	100	11-701	2554-811
6 90 ELBOW LR SCH80 8"	41816	20	1107010	2554-816
7 45 ELBOW LR SCH80 8"	41816	15	1107010	2554-816
8 45 ELBOW LR SCH80 12"	42161	1	1-81430	2554-161
9 TEE SCH80 10"	41511	3	1036925	2554-511

Standard	Chemical Composition %												Mechanical Test			Average	CE Long
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Al	YS	TS	E	Hardness	Formula
	x	x	x	x	x	x	x	x	x	x	x	x	psi	psi	%	Hb	x 100
Min.	-	10	29	-	-	-	-	-	-	-	-	-	35,000	60,000	30	-	-
Max.	30	-	106	48	58	40	40	40	15	8	-	50	-	85,000	-	197	42
1	19	22	42	5	2	3	2	2	1	<1	1	2	48300	68200	47	101	27
2	23	25	88	12	8	8	3	7	1	<1	1	3	57300	81200	44	147	40
3	17	40	95	15	3	8	2	3	1	1	1	3	53700	76900	40	150	36
4	17	40	95	15	3	8	2	3	1	1	1	3	53700	76900	40	150	36
5	19	23	47	15	17	8	9	6	-	-	-	-	48200	70400	35	157	39
6	20	24	50	10	8	9	7	7	-	-	-	-	46100	70000	37	152	31
7	20	24	50	10	8	9	7	7	-	-	-	-	46100	70000	37	152	31
8	15	26	78	17	14	<1	1	3	<1	2	-	-	49500	71200	40	145	30
9	22	21	40	10	3	5	3	3	1	<1	2	1	40600	65300	44	165	30

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PIPE : ASTM A106 B / A53B / APISLB PLATE : ASTM A516 Gr 50 / 60	ANSI B16.9 ANSI B16.28	PASS	PASS	
Product & Size (Inch)	Heat ID.	Quantity	Heat NO.	Raw Material Maker
1 CAP STD 14"	41442	10	232442	050696
2 CAP STD 16"	42442	17	232442	050696
3 CAP STD 20"	41442	20	232442	050696

Standard	Chemical Composition %												Mechanical Test			Average Hardness	CE Long Formula
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Al	YS	TS	E		
	x	x	x	x	x	x	x	x	x	x	x	x	psi	psi	%		
Min.	-	10	29	-	-	-	-	-	-	-	-	-	35,000	60,000	TRANSVERSE 17		
Max.	30	-	106	48	58	40	40	40	15	8	-	50	-	85,000		197	42
1	18	19	80	16	11	0	0	0	0	0	-	-	49300	71700	27	162	31
2	18	19	80	16	11	0	0	0	0	0	-	-	49300	71700	27	162	31
3	18	19	80	16	11	0	0	0	0	0	-	-	49300	71700	27	162	31

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