

DELCORTE s.a.s
FORGED STEEL & STAINLESS STEEL
 Certified ISO9001 by TUV MS19 Q11118



17, Avenue du Corbeau - CS10597
 59605 MAUBEUGE CEDEX FRANCE
 Tél : +33 (0)327 691 414 Fax : +33 (0)327 642 569
 info@delcorte.com

CERTIFICAT DE RÉCEPTION - ACCEPTANCE CERTIFICATE EN 10204 3.1 (Ed. 2004)

Customer : **J.S.S PIPES&FITTINGS TRDG LLC**
 DUBAI INVESTMENT PARK 2,
 PLOT N° 597-595 ,PO BOX 182113
 DUBAI - UNITED ARAB EMIRATES

Order : **PO2-2024000026**

Item No 1 - 19CS

Certificate n° : **232409 / 4**

23/07/2024

Dispatch note **232409**

22/07/2024

Material specification **ASTM A105/A105M-23 ASME SA105/SA105M Sect II Part A Ed.2023**
 Heat Treatment **NORMALIZED T° 843°C-927°C COOLED IN STILL AIR**

DESCRIPTION

Item	Qty	Designation	Heat N°	Identification	Spec dimension	Localisation
19	5	RED TEE NPT 3000 3"X1"	23/40613	EAAX	ASME B16.11/21	01/24 46146
20	50	RED TEE NPT 3000 3"X1/2"	23/40613	EAAX	ASME B16.11/21	01/24 46146
21	20	RED CPLG NPT 3000 1"1/4X1"	B0003810	RVN	ASME B16.11/21	11/18 37895
22	150	RED CPLG NPT 3000 1"X1/2"	5009643	SDH	ASME B16.11/21	07/20 41361
24	20	RED CPLG NPT 3000 2"X3/4"	5017065	SKR	ASME B16.11/21	04/22 43963
25	100	RED CPLG NPT 3000 3/4"X1/2"	19/75031	RZG	ASME B16.11/21	07/19 39328
26	20	HEX NIPPLE NPT 3M-1"1/4	20/79450	79450	BS 3799/74	09/22 44496
30	20	HALF CPLG NPT 3000 1/4"	21/71758	SHP	ASME B16.11/21	07/21 42751
32	400	CPLG NPT 3000 1"	5019270	SNN	ASME B16.11/21	10/22 44780
33	1350	CPLG NPT 3000 2"	5017065	SSM	ASME B16.11/21	04/22 44888
34	100	TEE SW 3000 1"1/2	23/70386	EJ6	ASME B16.11/21	11/23 45860
35	100	TEE SW 3000 1"	23/78735	EJ3	ASME B16.11/21	11/23 45859

CHEMICAL ANALYSIS

Item	Identif.	C %	Si %	Mn %	P %	S %	Cr %	Mo %	V %	Ni %	Cu %	Cb %	Ce %	Cu+Ni+Cr+Mo+V
mini		0.100	0.600											
maxi		0.250	0.350	1.350	0.035	0.040	0.300	0.120	0.080	0.400	0.400		0.47	1.000
19	EAAX	0.180	0.220	1.000	0.011	0.005	0.170	0.010	0.002	0.050	0.170	0.002	0.40	0.402
20	EAAX	0.180	0.220	1.000	0.011	0.005	0.170	0.010	0.002	0.050	0.170	0.002	0.40	0.402
21	RVN	0.179	0.220	0.969	0.012	0.003	0.134	0.039	0.001	0.156	0.247	0.002	0.40	0.577
22	SDH	0.170	0.216	0.963	0.011	0.005	0.084	0.042	0.001	0.231	0.291	0.003	0.39	0.649
24	SKR	0.173	0.247	0.950	0.012	0.004	0.112	0.035	0.001	0.146	0.216	0.002	0.39	0.510
25	RZG	0.180	0.150	0.980	0.013	0.008	0.120	0.010	0.018	0.070	0.180	0.002	0.39	0.398
26	79450	0.180	0.200	0.970	0.009	0.005	0.120	0.010	0.001	0.050	0.190	0.001	0.38	0.371
30	SHP	0.195	0.230	0.860	0.011	0.010	0.100	0.010	0.014	0.060	0.160	0.001	0.38	0.344
32	SNN	0.160	0.236	1.164	0.014	0.004	0.093	0.050	0.001	0.207	0.323	0.003	0.42	0.674
33	SSM	0.173	0.247	0.950	0.012	0.004	0.112	0.035	0.001	0.146	0.216	0.002	0.39	0.510
34	EJ6	0.155	0.220	0.920	0.015	0.004	0.160	0.020	0.002	0.090	0.160	0.001	0.36	0.432
35	EJ3	0.150	0.210	0.930	0.011	0.004	0.110	0.020	0.002	0.070	0.150	0.001	0.35	0.352

MECHANICAL TESTS

Item	Identification	Re 0.2% N/mm²	Rm N/mm²	A %	Z %	HB
mini		250.0	485.0	22.0	30.00	
maxi						187.0
19	EAAX	338.0	495.0	30.1	58.10	165 - 168
20	EAAX	338.0	495.0	30.1	58.10	165 - 168
21	RVN	376.0	522.0	32.0	59.30	169 - 169
22	SDH	382.0	535.0	32.0	62.00	158 - 158
24	SKR	380.0	531.0	33.0	67.00	152 - 152
25	RZG	318.0	513.0	32.6	56.90	147 - 147
26	79450	323.0	512.0	33.0	58.00	156 - 158
30	SHP	324.0	507.0	28.9	61.40	153 - 153
32	SNN	395.0	552.0	33.0	65.00	165 - 165
33	SSM	380.0	531.0	33.0	67.00	152 - 152
34	EJ6	308.0	493.0	33.5	59.70	155 - 158
35	EJ3	304.0	485.0	33.9	60.10	159 - 162

Others

CONFORMITY NACE MR 0175-20 ISO15156 - NACE MR 0103-16

GRAIN SIZE 7 OR FINER ACC TO ASTM E112

STEEL FULLY KILLED TO FINE GRAIN PRACTICE
 STEEL MAKING PROCESS : ELECTRIC FURNACE

TENSILE TEST SPECIMEN SIZE GAUGE LENGTH 2" & ORIENTATION LONG.

Nous certifions que les produits énumérés ci-dessous sont conformes aux prescriptions de la commande et des spécifications et ont subi, sans objection, les contrôles d'aspect et de dimensions.
 We hereby certify that above mentioned products are in accordance with the requirements of the order and specifications and have been checked without objection for surface and dimensionnel control.

Quality département
 Quality Dept

Registration DELCORS000 MI 27 04 14 71



#106
109

Steel No 106 28-5, 28-5

CERTIFICATO DI COLLAUDO / TEST CERTIFICATE

M 8.6_1 Rev 0



RACCOMANDA FORGIATA E DEVIATIONI
FORGED STEEL FITTINGS AND OUTLETS

Client/Customer JSS PIPES & FITTINGS TRADING L.L.C.
Ordine cliente/Customer order n. PO2-2022000014 DTD 25/02/22
Documento di trasporto/Delivery note 216/E dtd 21/06/2022

Certific. N. 2022/CERT/1034
Data/Date 08/07/2022

Item	Quantity	Heat code	Heat Number	Description	Type and mat. specific./year date	Steel mill	Steel mill cert. - forgermaster cert.
184	20	20/76555	20/76555	ANALISI CHIMICA DI ACCIAIERIA STEEL MILL CHEMICAL ANALYSIS CARATTERISTICHE MECCANICHE MECHANICAL PROPERTIES	BW-OUTLETS 36-1X3/4 SCH STD/40 C% Mn% P% S% Si% Cr% Ni% Mo% Ti% Cu% Nb% Co% V% N% CE% Al% B% Z% 0,165 1,000 0,014 0,0080 0,220 0,160 0,060 0,010 0,017 0,160 0,001 0,000 0,010 0,000 0,380 0,024 0,000 0,000 Sieramento Yield str. Tens.St. Red. Corf. Hardness Impact test Resilienza Prova Idraulica N/mm(2) N/mm(2) N/mm(2) N/mm(2) HBW 151 150 150 56,5 58,5 59,6 -46°C valJ/cm(2) H-Test B-Test 325,000 504,000 34,100 61,010 61,010 61,010 151 150 150 56,5 58,5 59,6 -46°C valJ/cm(2) H-Test B-Test	RYMA ACCIAIO S.p.A. 1663 - 93	Visual and dimensional check **OK**
RACCORDI SECONDO / FITTINGS IN ACC. TO							

Item	Quantity	Heat code	Heat Number	Description	Type and mat. specific./year date	Steel mill	Steel mill cert. - forgermaster cert.
185	500	261123	261123	ANALISI CHIMICA DI ACCIAIERIA STEEL MILL CHEMICAL ANALYSIS CARATTERISTICHE MECCANICHE MECHANICAL PROPERTIES	BW-OUTLETS 48-1X3/4 SCH160 C% Mn% P% S% Si% Cr% Ni% Mo% Ti% Cu% Nb% Co% V% N% CE% Al% B% Z% 0,156 1,001 0,009 0,0030 0,241 0,140 0,165 0,045 0,015 0,174 0,001 0,000 0,005 0,009 0,380 0,000 0,0003 0,000 Sieramento Yield str. Tens.St. Red. Corf. Hardness Impact test Resilienza Prova Idraulica N/mm(2) N/mm(2) N/mm(2) N/mm(2) HBW 127 182 182 79 80 95 -46°C valJ/cm(2) H-Test B-Test 303,000 555,000 33,900 65,900 65,900 65,900 127 182 182 79 80 95 -46°C valJ/cm(2) H-Test B-Test	ACC. VENETE SPA 375573 - 220205	Visual and dimensional check **OK**
RACCORDI SECONDO / FITTINGS IN ACC. TO							

Item	Quantity	Heat code	Heat Number	Description	Type and mat. specific./year date	Steel mill	Steel mill cert. - forgermaster cert.
186	10	247534	247534	ANALISI CHIMICA DI ACCIAIERIA STEEL MILL CHEMICAL ANALYSIS CARATTERISTICHE MECCANICHE MECHANICAL PROPERTIES	BW-OUTLETS 48-1X3/4 SCHXOS C% Mn% P% S% Si% Cr% Ni% Mo% Ti% Cu% Nb% Co% V% N% CE% Al% B% Z% 0,159 1,016 0,009 0,0050 0,210 0,128 0,136 0,023 0,012 0,183 0,002 0,000 0,004 0,000 0,380 0,025 0,000 0,000 Sieramento Yield str. Tens.St. Red. Corf. Hardness Impact test Resilienza Prova Idraulica N/mm(2) N/mm(2) N/mm(2) N/mm(2) HBW 127 158 158 104 108 107 -46°C valJ/cm(2) H-Test B-Test 373,000 522,000 27,000 67,000 67,000 67,000 127 158 158 104 108 107 -46°C valJ/cm(2) H-Test B-Test	ACCIAIERIE VENETE SPA 297802	Visual and dimensional check **OK**
RACCORDI SECONDO / FITTINGS IN ACC. TO							

I risultati dell'analisi chimica sono la corretta trascrizione del certificato emesso dall'acciaieria.
I risultati delle prove meccaniche sono la corretta trascrizione del certificato emesso dall'acciaieria.
che ha seguito l'ultima trasformazione del materiale.
Dichiaro che il prodotto fornito è conforme alle normative sopraindicate ed ai requisiti dell'ordine.
The results of the chemical analysis are a true and correct copy of the steel mill certificate.
The results of the mechanical tests are the correct records of the certificate issued from the company
that has executed the last transformation of the material.
We state that the delivered product complies with the above standards and to the order's requirements.

ENTE COLLAUDO/INSPECTOR

Certificato secondo / Certificate acc. to: EN 10204/3.1
ANNUAL BOX ASTM SE2.1 VOL.01.01, 2021
MANUFACTURER HAS A QUALITY-ASSURANCE SYSTEM WITH SPECIFIC ASSESSMENT
FOR MATERIALS, ACCORDING TO P.E.N. 2014/60/EU ANNEX 1 - SECTION 4.3 & AD 2000
CERTIFIED BY TIV RHEINLAND

C.QUALITA/QUALITY CONTROL



LAME Srl a Sede unito - 21040 JERVAGO CON ORAGO (VA) ITALY - Via Papa Giovanni XXIII, 1 - Tel. 0039 - 0331 216.444 f.a. - TELEFAX 0331 216.396 - E-mail: info@lame.it

22/01/25



BOTH-WELL STEEL FITTINGS CO., LTD.

NO.303, RENXIN ROAD, RENWU DISTRICT, KAOHSIUNG CITY, TAIWAN, R.O.C. (814020)
TEL : (886)7-3711536, 3710497, 3720260 FAX : (886)7-371-3864, 3713882
WEB SITE : <http://www.bothwell.com.tw> E-Mail : BW_SalesT1@bothwell.com.tw

An ISO 9001 : 2015 Registered Manufacturer

Item No 5, 7, 8 - 18, 14, 2 R < S

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 3.1

CUSTOMER : J.S.S PIPES & FITTINGS TRADING L.L.

PAGE : 1

CERT NO.: 241724

INVOICE NO. : 5200025460

DATE : 07/04/2024

ORDER NO.: OPMS/BW/617/2024(PO2-2024000017)

L/C NO. :

ORIGIN : TAIWAN

ITEM	RAW HEAT NO. HEAT NO.	QTY	DESC/GRADE OR SPECIFICATION NO. CHEMICAL COMPOSITION(%) MECHANICAL PROPERTIES.
30	309668Z CA1729	200 PCS	OUTLET REDUCING WAY A105 48"-1-1/4"X1" 3000# S/W OLSLB00017 C:0.19 Si:0.23 Mn:1.07 P:0.015 S:0.004 Cu:0.05 Cr:0.10 Ni:0.04 Mo:0.01 V:0.003 Nb:0.002 N:0.0057 Ti:0.001 CE:0.40 TS(KSI):72.3 YS 0.2%(KSI):47.8 EL(%):33.5 R.A.(%):64.1 HARDNESS 1(HBW):141 HARDNESS 2(HBW):142
31	0107510 CA0421	500 PCS	OUTLET REDUCING WAY A105 36"-1"X3/4" 3000# S/W OLSLB00059 C:0.18 Si:0.18 Mn:0.86 P:0.015 S:0.006 Cu:0.13 Cr:0.10 Ni:0.08 Mo:0.02 V:0.002 Nb:0.001 N:0.0070 Ti:0.0022 CE:0.36 TS(KSI):75.7 YS 0.2%(KSI):54.0 EL(%):34.0 R.A.(%):64.5 HARDNESS 1(HBW):141 HARDNESS 2(HBW):143
32	0097742 4371	250 PCS	OUTLET REDUCING WAY A105 48"-1-1/4"X1" S160 BW OLWLBO0123 C:0.19 Si:0.20 Mn:0.92 P:0.012 S:0.004 Cu:0.15 Cr:0.06 Ni:0.06 Mo:0.01 V:0.001 Nb:0 CE:0.37 TS(KSI):75.5 YS 0.2%(KSI):57.6 EL(%):35.4 R.A.(%):66.4 HARDNESS 1(HBW):143 HARDNESS 2(HBW):145
33	0103392 CA0188	300 PCS	OUTLET REDUCING WAY A105 48"-1"X3/4" S160 BW OLWLBO0125 C:0.19 Si:0.17 Mn:0.86 P:0.020 S:0.004 Cu:0.09 Cr:0.14 Ni:0.05 Mo:0.01 V:0.006 Nb:0.001 Ti:0.002 CE:0.37 TS(KSI):74.2 YS 0.2%(KSI):51.0 EL(%):32.0 R.A.(%):70.3

WE CERTIFY THE ABOVE MENTIONED FITTINGS/FLANGES HAVE BEEN
MANUFACTURED, SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH
THE SPECIFICATIONSSHOWN

Y.Y. Chang

Q.C. MANAGER

C.L. Ko

INSPECTOR



22/01/25



BOTH-WELL STEEL FITTINGS CO., LTD.

NO.303, RENXIN ROAD, RENWU DISTRICT, KAOHSIUNG CITY, TAIWAN, R.O.C. (814020)
TEL : (886)7-3711536, 3710497, 3720260 FAX : (886)7-371-3864, 3713882
WEB SITE : <http://www.bothwell.com.tw> E-Mail : BW_SalesT1@bothwell.com.tw

An ISO 9001 : 2015 Registered Manufacturer

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 3.1

CUSTOMER : J.S.S PIPES & FITTINGS TRADING L.L.

PAGE : 3

CERT NO.: 241724

INVOICE NO. : 5200025460

DATE : 07/04/2024

ORDER NO.: OPMS/BW/617/2024(PO2-2024000017)

L/C NO. :

ORIGIN : TAIWAN

ITEM	RAW HEAT NO. HEAT NO.	QTY	DESC/GRADE OR SPECIFICATION NO. CHEMICAL COMPOSITION(%) MECHANICAL PROPERTIES.
------	--------------------------	-----	---

REMARK :

THE MATERIAL SUPPLIED IDENTIFIED AS ASTM A105N -24, ASME SA105-2023ED

THE FITTING SUPPLIED IDENTIFIED AS MSS SP-97 - 2019

THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH SPECIFICATION(SURFACE & DIM). : GOOD

STANDARD : CHEMICAL COMPOSITION(%) MECHANICAL PROPERTIES & CE= $C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15$

	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Cb(Nb)
MIN	-	0.10	0.60	-	-	-	-	-	-	-	-
MAX	0.35	0.35	1.05	0.035	0.040	0.40	0.30	0.40	0.12	0.08	-
	N	Al	Ti	Zr	CE	TS(KSI)	YS(KSI)	YS 0.2%(KSI)	EL(%)	R of A(%)	HARDNESS(HBW)
MIN	-	-	-	-	-	70	-	36	22	30	-
MAX	-	-	-	-	0.43	-	-	-	-	-	187

HEAT TREATMENT : NORMALIZED, 900°C(1652°F) A.C.

STEEL MAKING PROCESS : ELECTRIC ARC FURNACE (EAF)

CONFORMS TO NACE MR0175-2021/ISO 15156-2020 & MR0103/ISO 17945 :2015

FULLY KILLED AND FINE GRAIN PRACTICE

FREE FROM RADIATION CONTAMINATION

WE CERTIFY THE ABOVE MENTIONED FITTINGS/FLANGES HAVE BEEN
MANUFACTURED, SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH
THE SPECIFICATION SHOWN

Y.Y. Chang

Q.C. MANAGER

C.L. Ko

INSPECTOR



[Signature] 22/01/25



BOTH-WELL STEEL FITTINGS CO., LTD.

NO.303, RENXIN ROAD, RENWU DISTRICT, KAOHSIUNG CITY, TAIWAN, R.O.C. (814020)
TEL : (886)7-3711536, 3710497, 3720260 FAX : (886)7-371-3864, 3713882
WEB SITE : <http://www.bothwell.com.tw> E-Mail : BW_SalesT1@bothwell.com.tw

An ISO 9001 : 2015 Registered Manufacturer

Item No 9-4 Pcs

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 3.1

CUSTOMER : J.S.S PIPES & FITTINGS TRADING L.L.

PAGE : 1

CERT NO.: 241724

INVOICE NO. : 5200025460

DATE : 07/04/2024

ORDER NO.: OPMS/BW/617/2024(PO2-2024000017)

L/C NO. :

ORIGIN : TAIWAN

ITEM	RAW HEAT NO. HEAT NO.	QTY	DESC/GRADE OR SPECIFICATION NO. CHEMICAL COMPOSITION(%) MECHANICAL PROPERTIES.
30	309668Z CA1729	200 PCS	OUTLET REDUCING WAY A105 48"-1-1/4"X1" 3000# S/W OLSLB00017 C:0.19 Si:0.23 Mn:1.07 P:0.015 S:0.004 Cu:0.05 Cr:0.10 Ni:0.04 Mo:0.01 V:0.003 Nb:0.002 N:0.0057 Ti:0.001 CE:0.40 TS(KSI):72.3 YS 0.2%(KSI):47.8 EL(%):33.5 R.A.(%):64.1 HARDNESS 1(HBW):141 HARDNESS 2(HBW):142
31	0107510 CA0421	500 PCS	OUTLET REDUCING WAY A105 36"-1"X3/4" 3000# S/W OLSLB00059 C:0.18 Si:0.18 Mn:0.86 P:0.015 S:0.006 Cu:0.13 Cr:0.10 Ni:0.08 Mo:0.02 V:0.002 Nb:0.001 N:0.0070 Ti:0.0022 CE:0.36 TS(KSI):75.7 YS 0.2%(KSI):54.0 EL(%):34.0 R.A.(%):64.5 HARDNESS 1(HBW):141 HARDNESS 2(HBW):143
32	0097742 4371	250 PCS	OUTLET REDUCING WAY A105 48"-1-1/4"X1" S160 BW OLWLB00123 C:0.19 Si:0.20 Mn:0.92 P:0.012 S:0.004 Cu:0.15 Cr:0.06 Ni:0.06 Mo:0.01 V:0.001 Nb:0 CE:0.37 TS(KSI):75.5 YS 0.2%(KSI):57.6 EL(%):35.4 R.A.(%):66.4 HARDNESS 1(HBW):143 HARDNESS 2(HBW):145
33	0103392 CA0188	300 PCS	OUTLET REDUCING WAY A105 48"-1"X3/4" S160 BW OLWLB00125 C:0.19 Si:0.17 Mn:0.86 P:0.020 S:0.004 Cu:0.09 Cr:0.14 Ni:0.05 Mo:0.01 V:0.006 Nb:0.001 Ti:0.002 CE:0.37 TS(KSI):74.2 YS 0.2%(KSI):51.0 EL(%):32.0 R.A.(%):70.3

WE CERTIFY THE ABOVE MENTIONED FITTINGS/FLANGES HAVE BEEN
MANUFACTURED, SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH
THE SPECIFICATIONS SHOWN

Y.Y. Qiang

Q.C. MANAGER

C.L. Ko

INSPECTOR



22/6/25



BOTH-WELL STEEL FITTINGS CO., LTD.

NO.303, RENXIN ROAD, RENWU DISTRICT, KAOHSIUNG CITY, TAIWAN, R.O.C. (814020)
TEL : (886)7-3711536, 3710497, 3720260 FAX : (886)7-371-3864, 3713882
WEB SITE : <http://www.bothwell.com.tw> E-Mail : BW_SalesT1@bothwell.com.tw

An ISO 9001 : 2015 Registered Manufacturer

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 3.1

CUSTOMER : J.S.S PIPES & FITTINGS TRADING L.L.

PAGE : 3

CERT NO.: 241724

INVOICE NO. : 5200025460

DATE : 07/04/2024

ORDER NO.: OPMS/BW/617/2024(P02-2024000017)

L/C NO. :

ORIGIN : TAIWAN

ITEM	RAW HEAT NO. HEAT NO.	QTY	DESC/GRADE OR SPECIFICATION NO. CHEMICAL COMPOSITION(%) MECHANICAL PROPERTIES.
------	--------------------------	-----	---

REMARK :

THE MATERIAL SUPPLIED IDENTIFIED AS ASTM A105N -24, ASME SA105-2023ED

THE FITTING SUPPLIED IDENTIFIED AS MSS SP-97 - 2019

THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH SPECIFICATION(SURFACE & DIM). : GOOD

STANDARD : CHEMICAL COMPOSITION(%) MECHANICAL PROPERTIES & CE= C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Cb(Nb)
MIN	-	0.10	0.60	-	-	-	-	-	-	-	-
MAX	0.35	0.35	1.05	0.035	0.040	0.40	0.30	0.40	0.12	0.08	-
	N	Al	Ti	Zr	CE	TS(KSI)	YS(KSI)	YS 0.2%(KSI)	EL(%)	R of A(%)	HARDNESS(HBW)
MIN	-	-	-	-	-	70	-	36	22	30	-
MAX	-	-	-	-	0.43	-	-	-	-	-	187

HEAT TREATMENT : NORMALIZED, 900°C(1652°F) A.C.

STEEL MAKING PROCESS : ELECTRIC ARC FURNACE (EAF)

CONFORMS TO NACE MR0175-2021/ISO 15156-2020 & MR0103/ISO 17945 :2015

FULLY KILLED AND FINE GRAIN PRACTICE

FREE FROM RADIATION CONTAMINATION

WE CERTIFY THE ABOVE MENTIONED FITTINGS/FLANGES HAVE BEEN
MANUFACTURED, SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH
THE SPECIFICATIONSSHOWN

Y.Y. Chang

Q.C. MANAGER

C.L. Ko

INSPECTOR

Ⓢ BW-D0839 REV:4

[Signature] 22/01/25





BOTH-WELL STEEL FITTINGS CO., LTD.

NO.303, RENXIN ROAD, RENWU DISTRICT, KAOHSIUNG CITY, TAIWAN, R.O.C. (814020)
TEL : (886)7-3711536, 3710497, 3720260 FAX : (886)7-371-3864, 3713882
WEB SITE : <http://www.bothwell.com.tw> E-Mail : BW_SalesT1@bothwell.com.tw

An ISO 9001 : 2015 Registered Manufacturer

Item No 1011 2.8 Res

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 3.1

CUSTOMER : J.S.S PIPES & FITTINGS TRADING L.L.

PAGE : 1

CERT NO.:241724

INVOICE NO. : 5200025460

DATE : 07/04/2024

ORDER NO.:OPMS/BW/617/2024(P02-2024000017)

L/C NO. :

ORIGIN : TAIWAN

ITEM	RAW HEAT NO. HEAT NO.	QTY	DESC/GRADE OR SPECIFICATION NO. CHEMICAL COMPOSITION(%) MECHANICAL PROPERTIES.
30	309668Z CA1729	200 PCS	OUTLET REDUCING WAY A105 48"-1-1/4"X1" 3000# S/W OLSLB00017 C:0.19 Si:0.23 Mn:1.07 P:0.015 S:0.004 Cu:0.05 Cr:0.10 Ni:0.04 Mo:0.01 V:0.003 Nb:0.002 N:0.0057 Ti:0.001 CE:0.40 TS(KSI):72.3 YS 0.2%(KSI):47.8 EL(%):33.5 R.A.(%):64.1 HARDNESS 1(HBW):141 HARDNESS 2(HBW):142
31	0107510 CA0421	500 PCS	OUTLET REDUCING WAY A105 36"-1"X3/4" 3000# S/W OLSLB00059 C:0.18 Si:0.18 Mn:0.86 P:0.015 S:0.006 Cu:0.13 Cr:0.10 Ni:0.08 Mo:0.02 V:0.002 Nb:0.001 N:0.0070 Ti:0.0022 CE:0.36 TS(KSI):75.7 YS 0.2%(KSI):54.0 EL(%):34.0 R.A.(%):64.5 HARDNESS 1(HBW):141 HARDNESS 2(HBW):143
32	0097742 4371	250 PCS	OUTLET REDUCING WAY A105 48"-1-1/4"X1" S160 BW OLWLBO0123 C:0.19 Si:0.20 Mn:0.92 P:0.012 S:0.004 Cu:0.15 Cr:0.06 Ni:0.06 Mo:0.01 V:0.001 Nb:0 CE:0.37 TS(KSI):75.5 YS 0.2%(KSI):57.6 EL(%):35.4 R.A.(%):66.4 HARDNESS 1(HBW):143 HARDNESS 2(HBW):145
33	0103392 CA0188	300 PCS	OUTLET REDUCING WAY A105 48"-1"X3/4" S160 BW OLWLBO0125 C:0.19 Si:0.17 Mn:0.86 P:0.020 S:0.004 Cu:0.09 Cr:0.14 Ni:0.05 Mo:0.01 V:0.006 Nb:0.001 Ti:0.002 CE:0.37 TS(KSI):74.2 YS 0.2%(KSI):51.0 EL(%):32.0 R.A.(%):70.3

WE CERTIFY THE ABOVE MENTIONED FITTINGS/FLANGES HAVE BEEN
MANUFACTURED, SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH
THE SPECIFICATIONSSHOWN

Y.Y. Chang

Q.C. MANAGER

C.L. Ko

INSPECTOR



22/01/25



BOTH-WELL STEEL FITTINGS CO., LTD.

NO.303, RENXIN ROAD, RENWU DISTRICT, KAOHSIUNG CITY, TAIWAN, R.O.C. (814020)
TEL : (886)7-3711536, 3710497, 3720260 FAX : (886)7-371-3864, 3713882
WEB SITE : <http://www.bothwell.com.tw> E-Mail : BW_SalesT1@bothwell.com.tw

An ISO 9001 : 2015 Registered Manufacturer

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 3.1

CUSTOMER : J.S.S PIPES & FITTINGS TRADING L.L.

PAGE : 3

CERT NO.: 241724

INVOICE NO. : 5200025460

DATE : 07/04/2024

ORDER NO.: OPMS/BW/617/2024(PO2-2024000017)

L/C NO. :

ORIGIN : TAIWAN

ITEM	RAW HEAT NO. HEAT NO.	QTY	DESC/GRADE OR SPECIFICATION NO. CHEMICAL COMPOSITION(%) MECHANICAL PROPERTIES.
------	--------------------------	-----	---

REMARK :

THE MATERIAL SUPPLIED IDENTIFIED AS ASTM A105N -24, ASME SA105-2023ED

THE FITTING SUPPLIED IDENTIFIED AS MSS SP-97 - 2019

THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH SPECIFICATION(SURFACE & DIM). : GOOD

STANDARD : CHEMICAL COMPOSITION(%) MECHANICAL PROPERTIES & CE= C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Cb(Nb)
MIN	-	0.10	0.60	-	-	-	-	-	-	-	-
MAX	0.35	0.35	1.05	0.035	0.040	0.40	0.30	0.40	0.12	0.08	-
	N	Al	Ti	Zr	CE	TS(KSI)	YS(KSI)	YS 0.2%(KSI)	EL(%)	R of A(%)	HARDNESS(HBW)
MIN	-	-	-	-	-	70	-	35	22	30	-
MAX	-	-	-	-	0.43	-	-	-	-	-	187

HEAT TREATMENT : NORMALIZED, 900°C (1652°F) A.C.

STEEL MAKING PROCESS : ELECTRIC ARC FURNACE (EAF)

CONFORMS TO NACE MR0175-2021/ISO 15156-2020 & MR0103/ISO 17945 :2015

FULLY KILLED AND FINE GRAIN PRACTICE

FREE FROM RADIATION CONTAMINATION

WE CERTIFY THE ABOVE MENTIONED FITTINGS/FLANGES HAVE BEEN
MANUFACTURED, SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH
THE SPECIFICATION SHOWN

Y.Y. Chang

Q.C. MANAGER

C.L. Ko

INSPECTOR

[Signature] 22/01/25



DELCORTE s.a.s
FORGED STEEL & STAINLESS STEEL
Certified ISO9001 by TUV MS19 Q11118



17, Avenue du Corbeau - CS10597
 59605 MAUBEUGE CEDEX FRANCE
 Tél : +33 (0)327 691 414 Fax : +33 (0)327 642 569
 info@delcorte.com

CERTIFICAT DE RECEPTION - ACCEPTANCE CERTIFICATE EN 10204 3.1 (Ed. 2004)

Customer : **J.S.S PIPES&FITTINGS TRDG LLC**
 DUBAI INVESTMENT PARK 2,
 PLOT N° 597-595 ,PO BOX 182113
 DUBAI - UNITED ARAB EMIRATES

Order : **PO2-2024000026**

Item No 12 - 14 PCS

Certificate n° : **232409 / 12**

23/07/2024

Dispatch note **232409**

22/07/2024

Material specification **ASTM A105/A105M-23 ASME SA105/SA105M Sect II Part A Ed:2023**
 Heat Treatment **NORMALIZED T° 843°C-927°C COOLED IN STILL AIR**

DESCRIPTION

Item	Qty	Designation	Heat N°	Identification	Spec dimension	Localisation
45	3	45 ELBOW NPT 3000 3"	76151	IBA	ASME B16.11/21	03/09 22422
74	20	BW-OUTLETS 160 1"1/2X2"-48"	223294	GHB	MSS SP 97/2019	11/14 31520

MADE IN FRANCE
 Forged Steel & Stainless Steel

CHEMICAL ANALYSIS

Item	Identif.	C %	Si%	Mn%	P%	S%	Cr%	Mo%	V%	Ni%	Cu%	Cb%	Ce%	Cu+Ni+Cr+Mo+V
mini		0.250	0.100	0.600	0.035	0.040	0.300	0.120	0.080	0.400	0.400		0.47	1.000
maxi		0.190	0.230	1.010	0.012	0.015	0.100	0.010	0.001	0.050	0.160	0.001	0.39	0.321
45 IBA		0.172	0.191	1.042	0.008	0.004	0.106	0.026	0.005	0.107	0.100	0.003	0.39	0.344
74 GHB														

MECHANICAL TESTS

Item	Identification	Re 0.2% N/mm²	Rm N/mm²	A%	Z%	HB	MADE IN FRANCE
mini		250.0	485.0	22.0	30.00	187.0	Forged Steel & Stainless Steel
maxi		334.0	539.0	33.0	58.00	163 - 165	
45 IBA		375.0	525.0	31.0	68.00	154 - 155	
74 GHB							

MADE IN FRANCE
 Forged Steel & Stainless Steel

Others
 CONFORMITY NACE MR 0175-20 ISO15156 - NACE MR 0103-16

GRAIN SIZE 7 OR FINER ACC TO ASTM E112

STEEL FULLY KILLED TO FINE GRAIN PRACTICE
 STEEL MAKING PROCESS : ELECTRIC FURNACE

TENSILE TEST SPECIMEN SIZE GAUGE LENGTH 2" & ORIENTATION LONG.

Nous certifions que les produits énumérés ci-dessous sont conformes aux prescriptions de la commande et des spécifications et ont subi, sans objection, les contrôles d'aspect et de dimensions.

We hereby certify that above mentioned products are in accordance with the requirements of the order and specifications and have been checked without objection for surface and dimensional control.

Quality département Fittings

Régistration NACE MR 0103-16 27.03.14.71



22/01/25

#122

DELCORTE s.a.s
FORGED STEEL & STAINLESS STEEL
Certified ISO9001 by TUV MS19 Q11118



17, Avenue du Corbeau - CS10597
 59605 MAUBEUGE CEDEX FRANCE
 Tél : +33 (0)327 691 414 Fax : +33 (0)327 642 569
 info@delcorte.com

CERTIFICAT DE RECEPTION - ACCEPTANCE CERTIFICATE EN 10204 3.1 (Ed. 2004)

Customer: **J.S.S PIPES&FITTINGS TRDG LLC**
 DUBAI INVESTMENT PARK 2,
 PLOT N° 597-595 ,PO BOX 182113
 DUBAI - UNITED ARAB EMIRATES

Order: **PO2-2024000026**
Item No 13 - 3 pcs

Certificate n° : **232409 / 11** 23/07/2024 Dispatch note: **232409** 22/07/2024

Material specification: **ASTM A105/A105M-23 ASME SA105/SA105M Sect II Part A Ed.2023**
 Heat Treatment: **NORMALIZED T° 843°C-927°C COOLED IN STILL AIR**

DESCRIPTION

Item	Qty	Désignation	Heat N°	Identification	Spec dimension	Localisation
5	150	FF UNION NPT 3000 1"1/2	22701179	U1	BS 3799/74	03/23 45588
9	150	FF UNION NPT 3000 2"	22410024	U2	BS 3799/74	03/23 45589
80	5	BW-OUTLET STD 10"X12"-48"	457395	PXL	MSS SP 97/2019	04/21 42400
81	50	BW-OUTLET S160 F 2"X3"-48"	21/74455	TGT	MSS SP 97/2019	05/22 43965
83	20	BW-OUTLET S 160 3" X 4"-48"	11/38514	DMY	MSS SP 97/2019	02/13 28352
88	50	BW-OUTLET STD 6" X 8"-48"	234377	RFD	MSS SP 97/2019	03/21 42353
96	50	SOCK-OUTLET 6000 F.1"X1 1/4-48"	22/76045	TTF	MSS SP 97/2019	01/23 44626

MADE IN FRANCE
 Forged Steel & Stainless Steel

CHEMICAL ANALYSIS

Item	Identif.	C %	Si%	Mn%	P%	S%	Cr%	Mo%	V%	Ni%	Cu%	Cb%	Ce%	Cu+Ni+Cr+Mo+V
mini		0.250	0.100	0.600										
maxi		0.250	0.350	1.350	0.035	0.040	0.300	0.120	0.080	0.400	0.400		0.47	1.000
5 U1		0.210	0.240	0.950	0.011	0.003	0.050	0.010	0.001	0.020	0.030	0.004	0.38	0.111
9 U2		0.180	0.210	0.910	0.013	0.009	0.030	0.003	0.000	0.010	0.010	0.004	0.34	0.053
80 PXL		0.156	0.250	1.210	0.010	0.002	0.168	0.040	0.006	0.140	0.160	0.002	0.42	0.506
81 TGT		0.175	0.180	0.960	0.010	0.005	0.130	0.020	0.002	0.080	0.190	0.001	0.38	0.422
83 DMY		0.205	0.250	1.100	0.011	0.007	0.090	0.005	0.001	0.040	0.140	0.002	0.42	0.276
88 RFD		0.180	0.210	1.020	0.010	0.002	0.120	0.020	0.004	0.070	0.220	0.004	0.40	0.434
96 TTF		0.140	0.220	0.940	0.009	0.005	0.120	0.010	0.002	0.050	0.150	0.001	0.34	0.332

MECHANICAL TESTS

Item	Identif.	Re 0.2% N/mm²	Rm N/mm²	A%	Z%	HB
mini		250.0	485.0	22.0	30.00	
maxi		250.0	485.0	22.0	30.00	187.0
5 U1		348.0	511.0	32.4	58.10	141 - 145
9 U2		302.0	495.0	37.1	65.00	149 - 145
80 PXL		333.0	520.0	36.0	74.00	155 - 157
81 TGT		322.0	512.0	33.0	59.00	151 - 153
83 DMY		359.0	550.0	30.0	57.00	164 - 166
88 RFD		366.0	525.0	30.2	70.00	156 - 156
96 TTF		308.0	488.0	32.7	59.70	148 - 150

MADE IN FRANCE

Forged Steel & Stainless Steel



Others
 CONFORMITY NACE MR 0175-20 ISO15156 - NACE MR 0103-16

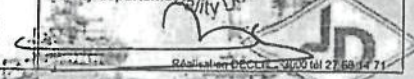
GRAIN SIZE 7 OR FINER ACC TO ASTM E112

STEEL FULLY KILLED TO FINE GRAIN PRACTICE
 STEEL MAKING PROCESS : ELECTRIC FURNACE

TENSILE TEST SPECIMEN SIZE GAUGE LENGTH 2" & ORIENTATION LONG.

Nous certifions que les produits énumérés ci-dessous sont conformes aux prescriptions de la commande et des spécifications et ont subi, sans objection, les contrôles d'aspect et de dimensions.
 We hereby certify that above mentioned products are in accordance with the requirements of the order and specifications and have been checked without objection for surface and dimensional control.

Quality département



Handwritten signature and date: 22/01/25



BOTH-WELL STEEL FITTINGS CO., LTD.

NO.303, RENXIN ROAD, RENWU DISTRICT, KAOHSIUNG CITY, TAIWAN, R.O.C. (814020)
TEL : (886)7-3711536, 3710497, 3720260 FAX : (886)7-371-3864, 3713882
WEB SITE : <http://www.bothwell.com.tw> E-Mail : BW_SalesT1@bothwell.com.tw

An ISO 9001 : 2015 Registered Manufacturer

Item NO 14, 15, 16 - 2, 1, 32 PCS

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 3.1

CUSTOMER : J.S.S PIPES & FITTINGS TRADING L.L.

PAGE : 1

CERT NO.: 241724

INVOICE NO. : 5200025460

DATE : 07/04/2024

ORDER NO.: OPMS/BW/617/2024(PO2-2024000017)

L/C NO. :

ORIGIN : TAIWAN

ITEM	RAW HEAT NO. HEAT NO.	QTY	DESC/GRADE OR SPECIFICATION NO. CHEMICAL COMPOSITION(%) MECHANICAL PROPERTIES.
30	309668Z CA1729	200 PCS	OUTLET REDUCING WAY A105 48"-1-1/4"X1" 3000# S/W OLSLB00017 C:0.19 Si:0.23 Mn:1.07 P:0.015 S:0.004 Cu:0.05 Cr:0.10 Ni:0.04 Mo:0.01 V:0.003 Nb:0.002 N:0.0057 Ti:0.001 CE:0.40 TS(KSI):72.3 YS 0.2%(KSI):47.8 EL(%):33.5 R.A.(%):64.1 HARDNESS 1(HBW):141 HARDNESS 2(HBW):142
31	0107510 CA0421	500 PCS	OUTLET REDUCING WAY A105 36"-1"X3/4" 3000# S/W OLSLB00059 C:0.18 Si:0.18 Mn:0.86 P:0.015 S:0.006 Cu:0.13 Cr:0.10 Ni:0.08 Mo:0.02 V:0.002 Nb:0.001 N:0.0070 Ti:0.0022 CE:0.36 TS(KSI):75.7 YS 0.2%(KSI):54.0 EL(%):34.0 R.A.(%):64.5 HARDNESS 1(HBW):141 HARDNESS 2(HBW):143
32	0097742 4371	250 PCS	OUTLET REDUCING WAY A105 48"-1-1/4"X1" S160 BW OLWLB00123 C:0.19 Si:0.20 Mn:0.92 P:0.012 S:0.004 Cu:0.15 Cr:0.06 Ni:0.06 Mo:0.01 V:0.001 Nb:0 CE:0.37 TS(KSI):75.5 YS 0.2%(KSI):57.6 EL(%):35.4 R.A.(%):66.4 HARDNESS 1(HBW):143 HARDNESS 2(HBW):145
33	0103392 CA0188	300 PCS	OUTLET REDUCING WAY A105 48"-1"X3/4" S160 BW OLWLB00125 C:0.19 Si:0.17 Mn:0.86 P:0.020 S:0.004 Cu:0.09 Cr:0.14 Ni:0.05 Mo:0.01 V:0.006 Nb:0.001 Ti:0.002 CE:0.37 TS(KSI):74.2 YS 0.2%(KSI):51.0 EL(%):32.0 R.A.(%):70.3

WE CERTIFY THE ABOVE MENTIONED FITTINGS/FLANGES HAVE BEEN
MANUFACTURED, SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH
THE SPECIFICATIONSSHOWN

Y.Y. Chang

Q.C. MANAGER

C.L. Ko

INSPECTOR



22/01/25



BOTH-WELL STEEL FITTINGS CO., LTD.

NO.303, RENXIN ROAD, RENWU DISTRICT, KAOHSIUNG CITY, TAIWAN, R.O.C. (814020)
TEL : (886)7-3711536, 3710497, 3720260 FAX : (886)7-371-3864, 3713882
WEB SITE : <http://www.bothwell.com.tw> E-Mail : BW_SalesT1@bothwell.com.tw

An ISO 9001 : 2015 Registered Manufacturer

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 3.1

CUSTOMER : J.S.S PIPES & FITTINGS TRADING L.L.

PAGE : 3

CERT NO.: 241724

INVOICE NO. : 5200025460

DATE : 07/04/2024

ORDER NO.: OPMS/BW/617/2024(PO2-2024000017)

L/C NO. :

ORIGIN : TAIWAN

ITEM	RAW HEAT NO. HEAT NO.	QTY	DESC/GRADE OR SPECIFICATION NO. CHEMICAL COMPOSITION(%) MECHANICAL PROPERTIES.
------	--------------------------	-----	---

REMARK :

THE MATERIAL SUPPLIED IDENTIFIED AS ASTM A105N -24, ASME SA105-2023ED

THE FITTING SUPPLIED IDENTIFIED AS MSS SP-97 - 2019

THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH SPECIFICATION(SURFACE & DIM). : GOOD

STANDARD : CHEMICAL COMPOSITION(%) MECHANICAL PROPERTIES & CE= C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Cb(Nb)
MIN	-	0.10	0.60	-	-	-	-	-	-	-	-
MAX	0.35	0.35	1.05	0.035	0.040	0.40	0.30	0.40	0.12	0.08	-
	N	Al	Ti	Zr	CE	TS(KSI)	YS(KSI)	YS 0.2%(KSI)	EL(%)	R of A(%)	HARDNESS(HBW)
MIN	-	-	-	-	-	70	-	36	22	30	-
MAX	-	-	-	-	0.43	-	-	-	-	-	187

HEAT TREATMENT : NORMALIZED, 900°C (1652°F) A.C.

STEEL MAKING PROCESS : ELECTRIC ARC FURNACE (EAF)

CONFORMS TO NACE MR0175-2021/ISO 15156-2020 & MR0103/ISO 17945 :2015

FULLY KILLED AND FINE GRAIN PRACTICE

FREE FROM RADIATION CONTAMINATION

WE CERTIFY THE ABOVE MENTIONED FITTINGS/FLANGES HAVE BEEN
MANUFACTURED, SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH
THE SPECIFICATION SHOWN

Y.Y. Qiang

Q.C. MANAGER

C.L. Ko

INSPECTOR



22/01/25

#129
130

DELCORTE s.a.s FORGED STEEL & STAINLESS STEEL Certified ISO9001 by TUV MS19 Q11118		 DELCORTE Fittings		17, Avenue du Corbeau - CS10597 59605 MAUBEUGE CEDEX FRANCE Tél : +33 (0)327 691 414 Fax : +33 (0)327 642 569 info@delcorte.com	
CERTIFICAT DE RECEPTION - ACCEPTANCE CERTIFICATE EN 10204 3.1 (Ed. 2004)					
Customer : J.S.S PIPES&FITTINGS TRDG LLC DUBAI INVESTMENT PARK 2, PLOT N° 597-595 ,PO BOX 182113 DUBAI - UNITED ARAB EMIRATES			Order : PO2-2024000026 <i>Item NO 17,18-1 Pcs, 1 Pcs</i>		
Certificate n° : 232409 / 11		23/07/2024		Dispatch note : 232409 22/07/2024	
Material specification ASTM A105/A105M-23 ASME SA105/SA105M Sect II Part A Ed:2023					
Heat Treatment NORMALIZED T° 843°C-927°C COOLED IN STILL AIR					

DESCRIPTION							
Item	Qty	Designation	Heat N°	Identification	Spec dimension		Localisation
5	150	FF UNION NPT 3000 1"1/2	22701179	U1	BS 3799/74		03/23 45568
9	150	FF UNION NPT 3000 2"	22410024	U2	BS 3799/74		03/23 45569
80	5	BW-OUTLET STD 10"X12"-48"	457395	PXL	MSS SP 97/2019		04/21 42400
81	50	BW-OUTLET S160 F 2"X3"-48"	21/74455	TGT	MSS SP 97/2019		05/22 43965
83	20	BW-OUTLET S 160 3" X 4"-48"	11/38514	DMY	MSS SP 97/2019		02/13 28352
88	50	BW-OUTLET STD 6" X 8"-48"	234377	RFD	MSS SP 97/2019		03/21 42353
96	50	SOCK-OUTLET6000 F.1"X1"1/4-48"	22/76045	TTF	MSS SP 97/2019		01/23 44626

MADE IN FRANCE
Forged Steel & Stainless Steel

CHEMICAL ANALYSIS															
Item	Identif.	C %	Si%	Mn%	P%	S%	Cr%	Mo%	V%	Ni%	Cu%	Cb%		Ce%	Cu+Ni+Cr+Mo+V
mini		0.250	0.100	0.600	0.035	0.040	0.300	0.120	0.080	0.400	0.400			0.47	1.000
maxi		0.250	0.350	1.350	0.035	0.040	0.300	0.120	0.080	0.400	0.400			0.47	1.000
5	U1	0.210	0.240	0.950	0.011	0.003	0.050	0.010	0.001	0.020	0.030	0.004		0.38	0.111
9	U2	0.180	0.210	0.910	0.013	0.009	0.030	0.003	0.000	0.010	0.010	0.004		0.34	0.053
80	PXL	0.156	0.250	1.210	0.010	0.002	0.160	0.040	0.006	0.140	0.160	0.002		0.42	0.506
81	TGT	0.175	0.180	0.960	0.010	0.005	0.130	0.020	0.002	0.080	0.190	0.001		0.38	0.422
83	DMY	0.205	0.250	1.100	0.011	0.007	0.090	0.005	0.001	0.040	0.140	0.002		0.42	0.276
88	RFD	0.180	0.210	1.020	0.010	0.002	0.120	0.020	0.004	0.070	0.220	0.004		0.40	0.434
96	TTF	0.140	0.220	0.940	0.009	0.005	0.120	0.010	0.002	0.050	0.150	0.001		0.34	0.332

MECHANICAL TESTS										MADE IN FRANCE	
Item	Identif.	Re 0.2% N/mm²	Rm N/mm²	A%	Z%	HB					
mini		250.0	485.0	22.0	30.00						
maxi		250.0	485.0	22.0	30.00						
5	U1	348.0	511.0	32.4	58.10	141 - 145					
9	U2	302.0	495.0	37.1	65.00	149 - 145					
80	PXL	333.0	520.0	36.0	74.00	155 - 157					
81	TGT	322.0	512.0	33.0	59.00	151 - 153					
83	DMY	359.0	550.0	30.0	57.00	164 - 166					
88	RFD	366.0	525.0	30.2	70.00	156 - 156					
96	TTF	308.0	488.0	32.7	59.70	148 - 150					

MADE IN FRANCE
Forged Steel & Stainless Steel

Others
CONFORMITY NACE MR 0175-20 ISO15156 - NACE MR 0103-16

GRAIN SIZE 7 OR FINER ACC TO ASTM E112

STEEL FULLY KILLED TO FINE GRAIN PRACTICE
STEEL MAKING PROCESS : ELECTRIC FURNACE

TENSILE TEST SPECIMEN SIZE GAUGE LENGTH 2" & ORIENTATION LONG.

Nous certifions que les produits énumérés ci-dessous sont conformes aux prescriptions de la commande et des spécifications et ont subi, sans objection, les contrôles d'aspect et de dimensions.
We hereby certify that above mentioned products are in accordance with the requirements of the order and specifications and have been checked without objection for surface and dimensional control.

Quality département
16891514
22/01/25

RAI/01/01/2024 71





CERTIFICATO DI COLLAUDO / TEST CERTIFICATE

M 8.6_1 Rev 0

Client/Customer JSS PIPES & FITTINGS TRADING L.L.C.

Certific. N. 2023/CERT/447

Ordine cliente/Customer order n. PO2-2023000012 DTD 14/02/23

Date/Date 27/03/2023

RACCOMANDA FORGIATA E DERIVAZIONI
FORGED STEEL FITTINGS AND OUTLETS

Documento di trasporto/Delivery note 85/E dtd 27/03/2023

Item	Quantity	Heat code	Heat Number	Description	Type and mat. specific/year date	Steel Mill	Steel mill cert. - forgemaster cert.
51	100	20/77215	20/77215	BM-OUTLETS 48-4X3 SCHSTD Steel is produced by EAF, fully killed & Fine Grain Practiced, TENSILE Test Longitudinal G50mm, Impact 10x10, No Weld Repairs Performed	ASTM SA410SN-21	RYVA ACCIAIO SPA	7859-220205
				ANALISI CHIMICA DI ACCIAIERIA C% Mn% P% S% Si% Cr% Ni% Mo% Ti% Cu% Nb% Co% V% N% CE% Al% B% Zr% STEEL MILL CHEMICAL ANALYSIS 0,162 1,000 0,011 0,010 0,230 0,140 0,080 0,020 0,019 0,180 0,002 0,000 0,017 0,000 0,380 0,022 0,0000 0,000 CARATTERISTICHE MECCANICHE Sieramento Yield str. 338.000 N/mm2 Tens.St. 529.000 N/mm2 All. 34.000 Corr. 62.400 Durezza 155 157 157 Hardness 106 87 93 Resilienza Impact test val./cm2 -46°C Relig. H-Test Prova idraulica Pig. B-Test Visual and dimensional check **OK**			
				MECHANICAL PROPERTIES N/mm2 N/mm2 E% Red. d. HBW 155 157 157 62 101 59 -46°C RACCORDI SECONDO / FITTINGS IN ACC. TO ASME SEC. II PART A -2021, MSS SP-97-19, MSS SP-25-18, NACE MR0175-2015/ISO 15156, Material in Acc.to ASTM/SA 961/961M-21, NACE MR0103/ISO 17945-1:2016, Grain Size 6			
52	15	20/77011	20/77011	BM-OUTLETS 48-6X4 SCHSTD Steel is produced by EAF, fully killed & Fine Grain Practiced, TENSILE Test Longitudinal G50mm, Impact 10x10, No Weld Repairs Performed	ASTM SA410SN-21	RYVA ACCIAIO S.p.A.	6545 - 208
				ANALISI CHIMICA DI ACCIAIERIA C% Mn% P% S% Si% Cr% Ni% Mo% Ti% Cu% Nb% Co% V% N% CE% Al% B% Zr% STEEL MILL CHEMICAL ANALYSIS 0,180 1,000 0,009 0,0100 0,200 0,080 0,060 0,010 0,019 0,120 0,001 0,000 0,017 0,000 0,380 0,024 0,0000 0,000 CARATTERISTICHE MECCANICHE Sieramento Yield str. 338.000 N/mm2 Tens.St. 529.000 N/mm2 All. 34.000 Corr. 62.400 Durezza 155 157 157 Hardness 106 87 93 Resilienza Impact test val./cm2 -46°C Relig. H-Test Prova idraulica Pig. B-Test Visual and dimensional check **OK**			
				MECHANICAL PROPERTIES N/mm2 N/mm2 E% Red. d. HBW 155 157 157 62 101 59 -46°C RACCORDI SECONDO / FITTINGS IN ACC. TO ASME SEC. II PART A -2021, MSS SP-97-19, MSS SP-25-18, NACE MR0175-2015/ISO 15156, Material in Acc.to ASTM/SA 961/961M-21, NACE MR0103/ISO 17945-1:2016, Grain Size 6			

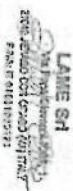
I risultati dell'analisi chimica sono la corretta trascrizione del certificato emesso dall'acciaieria.
I risultati delle prove meccaniche sono la corretta trascrizione del certificato emesso dall'azienda che ha seguito l'ultima trasformazione del materiale.
Dichiariamo che il prodotto fornito è conforme alle normative sopradicate ed ai requisiti dell'ordine.
The results of the chemical analysis are a true and correct copy of the steel mill certificate.
The results of the mechanical tests are the correct records of the certificate issued from the company that has executed the last transformation of the material.
We state that the delivered product complies with the above standards and to the order's requirements.

ENTE COLLAUDO/INSPECTOR

Certificato secondo / Certificate acc. to: EN 10204/3.1

ANNUAL BOOK ASTM SE2.1 VOL.01.01, 2022
MANUFACTURER HAS A QUALITY-ASSURANCE SYSTEM WITH SPECIFIC ASSESSMENT
FOR MATERIALS ACCORDING TO P.E.D. 2014/69/EU ANNEX I - SECTION 4.3 & AD 2000
WO
CERTIFIED by TÜV RHEINLAND

C.QUALITA/QUALITY CONTROL



22/01/28

#131



BOTH-WELL STEEL FITTINGS CO., LTD.

NO.303, RENXIN ROAD, RENWU DISTRICT, KAOHSIUNG CITY, TAIWAN, R.O.C. (814020)
TEL : (886)7-3711536, 3710497, 3720260 FAX : (886)7-371-3864, 3713882
WEB SITE : <http://www.bothwell.com.tw> E-Mail : BW_SalesT1@bothwell.com.tw

An ISO 9001 : 2015 Registered Manufacturer

Item No 20, 21, 1, 4, 8, 9

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 3.1

CUSTOMER : J.S.S PIPES & FITTINGS TRADING L.L.

PAGE : 1

CERT NO.: 241724

INVOICE NO. : 5200025460

DATE : 07/04/2024

ORDER NO. : OPMS/BW/617/2024(P02-2024000017)

L/C NO. :

ORIGIN : TAIWAN

ITEM	RAW HEAT NO. HEAT NO.	QTY	DESC/GRADE OR SPECIFICATION NO. CHEMICAL COMPOSITION(%) MECHANICAL PROPERTIES.
30	309668Z CA1729	200 PCS	OUTLET REDUCING WAY A105 48"-1-1/4"X1" 3000# S/W OLSLB00017 C:0.19 Si:0.23 Mn:1.07 P:0.015 S:0.004 Cu:0.05 Cr:0.10 Ni:0.04 Mo:0.01 V:0.003 Nb:0.002 N:0.0057 Ti:0.001 CE:0.40 TS(KSI):72.3 YS 0.2%(KSI):47.8 EL(%):33.5 R.A.(%):64.1 HARDNESS 1(HBW):141 HARDNESS 2(HBW):142
31	0107510 CA0421	500 PCS	OUTLET REDUCING WAY A105 36"-1"X3/4" 3000# S/W OLSLB00059 C:0.18 Si:0.18 Mn:0.86 P:0.015 S:0.006 Cu:0.13 Cr:0.10 Ni:0.08 Mo:0.02 V:0.002 Nb:0.001 N:0.0070 Ti:0.0022 CE:0.36 TS(KSI):75.7 YS 0.2%(KSI):54.0 EL(%):34.0 R.A.(%):64.5 HARDNESS 1(HBW):141 HARDNESS 2(HBW):143
32	0097742 4371	250 PCS	OUTLET REDUCING WAY A105 48"-1-1/4"X1" S160 BW OLWLB00123 C:0.19 Si:0.20 Mn:0.92 P:0.012 S:0.004 Cu:0.15 Cr:0.06 Ni:0.06 Mo:0.01 V:0.001 Nb:0 CE:0.37 TS(KSI):75.5 YS 0.2%(KSI):57.6 EL(%):35.4 R.A.(%):66.4 HARDNESS 1(HBW):143 HARDNESS 2(HBW):145
33	0103392 CA0188	300 PCS	OUTLET REDUCING WAY A105 48"-1"X3/4" S160 BW OLWLB00125 C:0.19 Si:0.17 Mn:0.86 P:0.020 S:0.004 Cu:0.09 Cr:0.14 Ni:0.05 Mo:0.01 V:0.006 Nb:0.001 Ti:0.002 CE:0.37 TS(KSI):74.2 YS 0.2%(KSI):51.0 EL(%):32.0 R.A.(%):70.3

WE CERTIFY THE ABOVE MENTIONED FITTINGS/FLANGES HAVE BEEN
MANUFACTURED, SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH
THE SPECIFICATIONSSHOWN

Y.Y. Chang

Q.C. MANAGER

C.L. Ko

INSPECTOR

BW-D0839 REV:4

[Signature] 22/01/25





BOTH-WELL STEEL FITTINGS CO., LTD.

NO.303, RENXIN ROAD, RENWU DISTRICT, KAOHSIUNG CITY, TAIWAN, R.O.C. (814020)
TEL : (886)7-3711536, 3710497, 3720260 FAX : (886)7-371-3864, 3713882
WEB SITE : <http://www.bothwell.com.tw> E-Mail : BW_SalesT1@bothwell.com.tw

An ISO 9001 : 2015 Registered Manufacturer

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 3.1

CUSTOMER : J.S.S PIPES & FITTINGS TRADING L.L.

PAGE : 3

CERT NO.: 241724

INVOICE NO. : 5200025460

DATE : 07/04/2024

ORDER NO.: OPMS/BW/617/2024(P02-2024000017)

L/C NO. :

ORIGIN : TAIWAN

ITEM	RAW HEAT NO. HEAT NO.	QTY	DESC/GRADE OR SPECIFICATION NO. CHEMICAL COMPOSITION(%) MECHANICAL PROPERTIES.
------	--------------------------	-----	---

REMARK :

THE MATERIAL SUPPLIED IDENTIFIED AS ASTM A105N -24, ASME SA105-2023ED

THE FITTING SUPPLIED IDENTIFIED AS MSS SP-97 - 2019

THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH SPECIFICATION(SURFACE & DIM). : GOOD

STANDARD : CHEMICAL COMPOSITION(%), MECHANICAL PROPERTIES & CE= $C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15$

	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Cb(Nb)
MIN	-	0.10	0.60	-	-	-	-	-	-	-	-
MAX	0.35	0.35	1.05	0.035	0.040	0.40	0.30	0.40	0.12	0.08	-
	N	Al	Ti	Zr	CE	TS(KSI)	YS(KSI)	YS 0.2%(KSI)	EL(%)	R of A(%)	HARDNESS(HBWN)
MIN	-				-	70		36	22	30	-
MAX	-				0.43	-		-	-	-	187

HEAT TREATMENT : NORMALIZED, 900°C (1652°F) A.C.

STEEL MAKING PROCESS : ELECTRIC ARC FURNACE (EAF)

CONFORMS TO NACE MR0175-2021/ISO 15156-2020 & MR0103/ISO 17945 :2015

FULLY KILLED AND FINE GRAIN PRACTICE

FREE FROM RADIATION CONTAMINATION

WE CERTIFY THE ABOVE MENTIONED FITTINGS/FLANGES HAVE BEEN
MANUFACTURED, SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH
THE SPECIFICATIONSSHOWN

Y.Y. Chang

Q.C. MANAGER

C.L. Ko

INSPECTOR

BW-D0839 REV:4

[Signature] 22/01/25



H137



BOTH-WELL STEEL FITTINGS CO., LTD.

NO.303, RENXIN ROAD, RENWU DISTRICT, KAOHSIUNG CITY, TAIWAN, R.O.C. (814020)
 TEL : (886)7-3711536, 3710497, 3720260 FAX : (886)7-371-3864, 3713882
 WEB SITE : <http://www.bothwell.com.tw> E-Mail : BW_SalesT1@bothwell.com.tw

An ISO 9001 : 2015 Registered Manufacturer

Item No 22 - 1 PCS

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 3.1

CUSTOMER : J.S.S PIPES & FITTINGS TRADING L.L.

PAGE : 2

CERT NO.: 241724

INVOICE NO. : 5200025460

DATE : 07/04/2024

ORDER NO.: OPMS/BW/617/2024(PO2-2024000017)

L/C NO. :

ORIGIN : TAIWAN

ITEM	RAW HEAT NO. HEAT NO.	QTY	DESC/GRADE OR SPECIFICATION NO. CHEMICAL COMPOSITION(%) MECHANICAL PROPERTIES.
			HARDNESS 1(HBW):140 HARDNESS 2(HBW):141
34	304127Z CA1644	103 PCS	OUTLET REDUCING WAY A105 48"-3"X2" S80 BW OLWLBO0131 C:0.18 Si:0.24 Mn:1.06 P:0.014 S:0.002 Cu:0.07 Cr:0.09 Ni:0.04 Mo:0.01 V:0.004 Nb:0.003 N:0.0047 Ti:0.001 CE:0.38 TS(KSI):74.7 YS 0.2%(KSI):49.6 EL(%):35.0 R.A.(%):68.8 HARDNESS 1(HBW):142 HARDNESS 2(HBW):144
34	308001Z CA1699	397 PCS	OUTLET REDUCING WAY A105 48"-3"X2" S80 BW OLWLBO0131 C:0.18 Si:0.23 Mn:1.06 P:0.012 S:0.003 Cu:0.07 Cr:0.05 Ni:0.03 Mo:0.01 V:0.004 Nb:0.002 N:0.0048 Ti:0.001 CE:0.38 TS(KSI):79.9 YS 0.2%(KSI):56.9 EL(%):36.6 R.A.(%):70.2 HARDNESS 1(HBW):145 HARDNESS 2(HBW):147

WE CERTIFY THE ABOVE MENTIONED FITTINGS/FLANGES HAVE BEEN
 MANUFACTURED, SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH
 THE SPECIFICATIONSSHOWN

Y.Y. Chang

Q.C. MANAGER

C.L. Ko

INSPECTOR

BW-D0839 REV:4





BOTH-WELL STEEL FITTINGS CO., LTD.

NO.303, RENXIN ROAD, RENWU DISTRICT, KAOHSIUNG CITY, TAIWAN, R.O.C. (814020)
TEL : (886)7-3711536, 3710497, 3720260 FAX : (886)7-371-3864, 3713882
WEB SITE : <http://www.bothwell.com.tw> E-Mail : BW_SalesT1@bothwell.com.tw

An ISO 9001 : 2015 Registered Manufacturer

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 3.1

CUSTOMER : J.S.S PIPES & FITTINGS TRADING L.L.

PAGE : 3

CERT NO.: 241724

INVOICE NO. : 5200025460

DATE : 07/04/2024

ORDER NO.: OPMS/BW/617/2024(PO2-2024000017)

L/C NO. :

ORIGIN : TAIWAN

ITEM	RAW HEAT NO. HEAT NO.	QTY	DESC/GRADE OR SPECIFICATION NO. CHEMICAL COMPOSITION(%) MECHANICAL PROPERTIES.
------	--------------------------	-----	---

REMARK :

THE MATERIAL SUPPLIED IDENTIFIED AS ASTM A105N -24, ASME SA105-2023ED

THE FITTING SUPPLIED IDENTIFIED AS MSS SP-97 - 2019

THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH SPECIFICATION(SURFACE & DIM). : GOOD

STANDARD : CHEMICAL COMPOSITION(%), MECHANICAL PROPERTIES & CE= $C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15$

	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Cb(Nb)
MIN	-	0.10	0.60	-	-	-	-	-	-	-	-
MAX	0.35	0.35	1.05	0.035	0.040	0.40	0.30	0.40	0.12	0.08	-
	N	Al	Ti	Zr	CE	TS(KSI)	YS(KSI)	YS 0.2%(KSI)	EL(%)	R of A(%)	HARDNESS(HBW)
MIN	-	-	-	-	-	70	-	36	22	30	-
MAX	-	-	-	-	0.43	-	-	-	-	-	187

HEAT TREATMENT : NORMALIZED, 900°C (1652°F) A.C.

STEEL MAKING PROCESS : ELECTRIC ARC FURNACE (EAF)

CONFORMS TO NACE MR0175-2021/ISO 15156-2020 & MR0103/ISO 17945 :2015

FULLY KILLED AND FINE GRAIN PRACTICE

FREE FROM RADIATION CONTAMINATION

WE CERTIFY THE ABOVE MENTIONED FITTINGS/FLANGES HAVE BEEN
MANUFACTURED, SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH
THE SPECIFICATIONSSHOWN

Y.Y. Qiang

Q.C. MANAGER

C.L. Ko

INSPECTOR



#3

DELORTE s.a.s
FORGED STEEL & STAINLESS STEEL
Certified ISO9001 by TUV MS19 Q11118



17, Avenue du Corbeau - CS10597
59605 MAUBEUGE CEDEX FRANCE
Tél : +33 (0)327 691 414 Fax : +33 (0)327 642 569
info@delorte.com

CERTIFICAT DE RECEPTION - ACCEPTANCE CERTIFICATE EN 10204 3.1 (Ed. 2004)

Customer : J.S.S PIPES&FITTINGS TRDG LLC
DUBAI INVESTMENT PARK 2,
PLOT N° 597-595 ,PO BOX 182113
DUBAI - UNITED ARAB EMIRATES

Order : PO2-2023000087

Item No 23 - 9 PCs

Certificate n° : 229904 / 1

08/12/2023

Dispatch note 229904

07/12/2023

Material specification **ASTM A182/A182M-22a F316/316L - ASME SA182/SA182M Sect II Part A Ed.2021**
Heat Treatment **SOLUTION TREATED AT 1040° C MIN AND QUENCHED**

DESCRIPTION

Item	Qty	Designation	Heat N°	Identification	Spec dimension	Localisation
63	20	CPLG NPT 3000 1"1/4	560981	SJC	ASME B16.11/11	12/23 45895
64	15	45 ELBOW SW 3000 1"1/2	200388	RTM	ASME B16.11/11	03/23 44759
65	25	90 ELBOW SW 3000 1"1/2	556571	EK8	ASME B16.11/11	12/23 45880
66	50	90 ELBOW SW 3000 3/4"	201334	RPS	ASME B16.11/11	02/22 43548
67	25	HEX HD PLUG NPT 6M1"1/4	524207	TCB	ASME B16.11/11	12/23 45896
68	15	HEX HD PLUG NPT 6M1"	305039	XPP	ASME B16.11/11	07/23 45486
69	50	HEX HD PLUG NPT 6M3/4"	536748	TXB	ASME B16.11/11	04/23 44987
70	25	BW-OLET 10S F 2"X2"1/2-36	280058	NJZ	MSS SP 97/2019	11/19 40327
71	20	SOCK-OUTLET3000 F 1"X1"1/2-36"	172450	SPR	MSS SP 97/2019	03/23 45066
72	50	SOCK-OUTLET3000 F 1/2" X 1-48	291407	XXT	MSS SP 97/2019	11/23 45897
73	100	SOCK-OUTLET 3000 3/4X1"1/2-36	265205	GHJ	MSS SP 97/2019	03/15 32127

CHEMICAL ANALYSIS

Item	Identif.	C%	Si%	Mn%	P%	S%	Ni%	Cr%	Mo%	N%
mini		0.030	1.000	2.000	0.045	0.030	10.000	16.000	2.000	
maxi							15.000	18.000	3.000	0.100
63	SJC	0.012	0.330	1.800	0.030	0.026	11.200	16.860	2.070	0.029
64	RTM	0.013	0.418	1.100	0.039	0.020	10.070	16.600	2.047	0.061
65	EK8	0.029	0.390	1.520	0.033	0.029	10.150	16.560	2.030	0.024
66	RPS	0.019	0.410	1.050	0.037	0.023	10.060	16.630	2.070	0.058
67	TCB	0.023	0.530	1.180	0.035	0.028	10.060	16.550	2.000	0.035
68	XPP	0.012	0.408	1.384	0.030	0.026	10.060	16.660	2.029	0.041
69	TXB	0.028	0.410	1.540	0.034	0.027	10.060	16.590	2.000	0.035
70	NJZ	0.011	0.460	1.530	0.030	0.026	10.180	16.850	2.060	0.058
71	SPR	0.022	0.360	1.820	0.026	0.025	10.120	16.610	2.100	0.083
72	XXT	0.010	0.430	1.510	0.003	0.023	10.060	16.790	2.060	0.060
73	GHJ	0.014	0.590	1.480	0.032	0.028	10.110	16.680	2.020	0.059

MECHANICAL TESTS

Item	Identif.	Re 0.2% N/mm²	Rm N/mm²	A%	Z%	HB
mini		170.0	485.0	30.0	50.00	
maxi						237.0
63	SJC	269.0	530.0	52.0	71.00	165 - 172
64	RTM	288.4	556.8	62.4	76.30	161 - 165
65	EK8	265.0	580.0	50.0	75.00	152 - 155
66	RPS	293.9	560.3	57.5	77.20	163 - 167
67	TCB	414.0	612.0	42.0	71.00	187 - 187
68	XPP	500.0	664.0	42.0	71.00	198 - 200
69	TXB	462.0	656.0	41.0	72.00	207 - 210
70	NJZ	366.0	583.0	53.5	76.00	168 - 169
71	SPR	281.0	565.0	59.9	78.50	167 - 168
72	XXT	461.0	588.0	40.8	63.00	217 - 194
73	GHJ	319.0	628.0	54.0	68.00	182 - 183

Others

CONFORMITY NACE MR 0175-20 ISO15156 - NACE MR 0103-16

ALL THE STAINLESS STEEL FITTINGS ARE CAPABLE OF PASSING THE INTERGRANULAR CORROSION TEST AS PER ASTM A262 PR.E -

PMI 100 % PERFORMED ON RAW MATERIAL

COOLING MEDIA : WATER

TENSILE TEST SPECIMEN SIZE GAUGE LENGTH 2" & ORIENTATION LONG.

Nous certifions que les produits énumérés ci-dessous sont conformes aux prescriptions de la commande et des spécifications et ont subi, sans objection, les contrôles d'aspect et de dimensions.

We hereby certify that above mentioned products are in accordance with the requirements of the order and specifications and have been checked without objection for surface and dimensionnal control.

Quality département

Réalisation DELCORTE 20001M 27.08.14.71



BOTH-WELL STEEL FITTINGS CO., LTD.

NO.303, RENXIN ROAD, RENWU DISTRICT, KAOHSIUNG CITY, TAIWAN, R.O.C. (814020)
TEL : (886)7-3711536, 3710497, 3720260 FAX : (886)7-371-3864, 3713882
WEB SITE : <http://www.bothwell.com.tw> E-Mail : BW_SalesT1@bothwell.com.tw

An ISO 9001 : 2015 Registered Manufacturer

Item No 24, 25, - 5, 4 Pcs

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 3.1

CUSTOMER : J.S.S PIPES & FITTINGS TRADING L.L.

PAGE : 1

CERT NO.:241724

INVOICE NO. : 5200025460

DATE : 07/04/2024

ORDER NO.:OPMS/BW/617/2024(PO2-2024000017)

L/C NO. :

ORIGIN : TAIWAN

ITEM	RAW HEAT NO. HEAT NO.	QTY	DESC/GRADE OR SPECIFICATION NO. CHEMICAL COMPOSITION(%) MECHANICAL PROPERTIES.
30	309668Z CA1729	200 PCS	OUTLET REDUCING WAY A105 48"-1-1/4"X1" 3000# S/W OLSLB00017 C:0.19 Si:0.23 Mn:1.07 P:0.015 S:0.004 Cu:0.05 Cr:0.10 Ni:0.04 Mo:0.01 V:0.003 Nb:0.002 N:0.0057 Ti:0.001 CE:0.40 TS(KSI):72.3 YS 0.2%(KSI):47.8 EL(%):33.5 R.A.(%):64.1 HARDNESS 1(HBW):141 HARDNESS 2(HBW):142
31	0107510 CA0421	500 PCS	OUTLET REDUCING WAY A105 36"-1"X3/4" 3000# S/W OLSLB00059 C:0.18 Si:0.15 Mn:0.86 P:0.015 S:0.006 Cu:0.13 Cr:0.10 Ni:0.08 Mo:0.02 V:0.002 Nb:0.001 N:0.0070 Ti:0.0022 CE:0.36 TS(KSI):75.7 YS 0.2%(KSI):54.0 EL(%):34.0 R.A.(%):64.5 HARDNESS 1(HBW):141 HARDNESS 2(HBW):143
32	0097742 4371	250 PCS	OUTLET REDUCING WAY A105 48"-1-1/4"X1" S160 BW OLWLB00123 C:0.19 Si:0.20 Mn:0.92 P:0.012 S:0.004 Cu:0.15 Cr:0.06 Ni:0.06 Mo:0.01 V:0.001 Nb:0 CE:0.37 TS(KSI):75.5 YS 0.2%(KSI):57.6 EL(%):35.4 R.A.(%):66.4 HARDNESS 1(HBW):143 HARDNESS 2(HBW):145
33	0103392 CA0188	300 PCS	OUTLET REDUCING WAY A105 48"-1"X3/4" S160 BW OLWLB00125 C:0.19 Si:0.17 Mn:0.86 P:0.020 S:0.004 Cu:0.09 Cr:0.14 Ni:0.05 Mo:0.01 V:0.006 Nb:0.001 Ti:0.002 CE:0.37 TS(KSI):74.2 YS 0.2%(KSI):51.0 EL(%):32.0 R.A.(%):70.3

WE CERTIFY THE ABOVE MENTIONED FITTINGS/FLANGES HAVE BEEN
MANUFACTURED, SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH
THE SPECIFICATIONSSHOWN

Y.Y. Chang

Q.C. MANAGER

C.L. Ko

INSPECTOR





BOTH-WELL STEEL FITTINGS CO., LTD.

NO.303, RENXIN ROAD, RENWU DISTRICT, KAOHSIUNG CITY, TAIWAN, R.O.C. (814020)
TEL : (886)7-3711536, 3710497, 3720260 FAX : (886)7-371-3864, 3713882
WEB SITE : <http://www.bothwell.com.tw> E-Mail : BW_SalesT1@bothwell.com.tw

An ISO 9001 : 2015 Registered Manufacturer

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 3.1

CUSTOMER : J.S.S PIPES & FITTINGS TRADING L.L.

PAGE : 3

CERT NO.:241724

INVOICE NO. : 5200025460

DATE : 07/04/2024

ORDER NO.:OPMS/BW/617/2024(PO2-2024000017)

L/C NO. :

ORIGIN : TAIWAN

ITEM	RAW HEAT NO. HEAT NO.	QTY	DESC/GRADE OR SPECIFICATION NO. CHEMICAL COMPOSITION(%) MECHANICAL PROPERTIES.
------	--------------------------	-----	---

REMARK :

THE MATERIAL SUPPLIED IDENTIFIED AS ASTM A105N -24, ASME SA105-2023ED

THE FITTING SUPPLIED IDENTIFIED AS MSS SP-97 - 2019

THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH SPECIFICATION(SURFACE & DIM). : GOOD

STANDARD : CHEMICAL COMPOSITION(%) MECHANICAL PROPERTIES & CE= C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Cb(Nb)
MIN	-	0.10	0.60	-	-	-	-	-	-	-	-
MAX	0.35	0.35	1.05	0.035	0.040	0.40	0.30	0.40	0.12	0.08	-
	N	Al	Ti	Zr	CE	TS(KSI)	YS(KSI)	YS 0.2%(KSI)	EL(%)	R of A(%)	HARDNESS(HBW)
MIN	-	-	-	-	-	70	-	36	22	30	-
MAX	-	-	-	-	0.43	-	-	-	-	-	187

HEAT TREATMENT : NORMALIZED, 900°C (1652°F) A.C.

STEEL MAKING PROCESS : ELECTRIC ARC FURNACE (EAF)

CONFORMS TO NACE MR0175-2021/ISO 15156-2020 & MR0103/ISO 17945 :2015

FULLY KILLED AND FINE GRAIN PRACTICE

FREE FROM RADIATION CONTAMINATION

WE CERTIFY THE ABOVE MENTIONED FITTINGS/FLANGES HAVE BEEN
MANUFACTURED, SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH
THE SPECIFICATIONSSHOWN

Y.Y. Qiang

Q.C. MANAGER

C.L. Ko

INSPECTOR



#48

COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV ISO 9001 ■ ISO 14001		 METALFAR PRODOTTI INDUSTRIALI SPA 23861 CESANA BRIANZA (LC) - ITALY VIA G. PARINI, 28 PHONE + 39 031 655441 - FAX +39 031 655149 certificate@metalfaritaly.com	COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV ISO 9001 ■ ISO 14001
INSPECTION CERTIFICATE EN 10204:2004 / 3.1		Nr. 2023-C_MFF-02031	Data / Dated 20.07.2023
TECH HARD OILFIELD SUPPLIES FZE PLOT NO.S30207 JEBEL ALI FREE ZONE PO BOX 33985 DUBAI, U.A.E.		Ordine / PO THOF-PO2300398 Item 062 DDT / Delivery note 2023-3E301-0002020 Packing List 2023-3E401-0002065 Fattura / Invoice 2023-3E401-0002065 Ns. rif. / Our ref. 2023-3E201-0001157-0062	
Cod. colata Heat Code	Nr. colata Heat Nr	Quantità Quantity	Descrizione Description
	22/77616	520,00	W/N 150 RF 2" 160 A105N

Mat. in acc. a / Mat. in acc. to ASTM A105M - 18, ASME SA105M-19 ASME CODE SECT. II, PART A, ED. 2019
 MESC SPE 76/100 -2022
 MESC SPE 76/210 -2023
 NACE MR-0175/2021 ISO 15156-2 :2020
 NACE MR-0103/2015 ISO 17945 :2015
 Q.A.S.IN ACCORD WITH PRESS.EQUIPM.DIRECT.2014/68/EU(PED) ANNEX I, PARAGRAPH 4.3
 Cert. No.4687-2014-CE-ITA-DNV.

Ann. mat. / Mat. remarks FULLY KILLED STEEL AND FINE GRAIN PRACTICED
 GRAIN SIZE No.CALCULATED IN ACCORDANCE WITH ASTM E112 -13 METHOD

Elementi / Elements	C	Si	Mn	S	P	Cr	Ni	Mo	Ti	Cu	V	Nb	N
LADLE ANALYSIS	0,180	0,220	1,030	0,009	0,015	0,150	0,070	0,010	0,017	0,170	0,002	0,001	0,010
PRODUCT ANALYSIS	0,183	0,212	1,046	0,005	0,012	0,158	0,076	0,007	0,020	0,164	0,003	0,003	0,007
	Al	B	Ca						CE LF	CE SF	F1	F2	PREN
LADLE ANALYSIS	0,025	0,0000	0,001						0,400	0,352	0,402	0,160	--
PRODUCT ANALYSIS	0,031	0,0000	0,001						0,407	0,357	0,408	0,165	--

CE LF=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15 CE SF=C+(Mn/6) F1=Cu+Ni+Cr+Mo+V F2=Cr+Mo

Provetta	Forma	C ⁰³	Snervamento	C ¹¹	Snervamento	C ¹¹	Rottura	C ¹²	Allungamento	C ¹³	Contrazione	C ¹⁴
Test specimen	Shape		Yield Strength	>0,2%	Yield Strength	>1,0%	Tensile		Elongation	%	Reduction of area	%
Sez/Sect mm2 Gauge Lmm 1=0 - 2=□			MPa		MPa		MPa		%		%	
126,60 50,80	1	20	348,0		--		518,0		33,9		69,5	

DUREZZA / HARDNESS C³⁰

RESILIENZA / IMPACT TEST

HBW	C ³¹	Tipo/Type	C ⁴⁰	Provetta / Test Specimen	C ⁴¹	°C	C ⁰³	1-Joule	C ⁴²	2-Joule	C ⁴²	3-Joule	C ⁴²	Media/Average	C ⁴³
147,0 ; 151,0		KV		10x10x55 mm		-29		55		63		48		55,3	

Dim. grano / Grain size	7
Tratt. Term. / Heat treatment	NORMALIZED AT 910°C +/- 10°C - HOLDING TIME 1 h/in MINIMUM 1 h - COOLE B ⁰ IN STILL AIR
Dim in acc. a / Dim. acc. to	ASME/ANSI B16.5 -2020 ; ASME/ANSI B36.10M -2022
Finitura / Roughness	ASME/ANSI B46.1 -2019 ; RF FINISHING 125-250 µin AARH
Marcatura in acc. B ⁰⁵ Marking in acc. to	ANSI/MSS SP-25-2018
Vis. & Dim. D ⁰¹	SATISFACTORY
Origine B ¹⁵ Origin of Steel	EUROPEAN UNION

Note / Notes 201-B03 MATERIAL 100% MANUFACTURED IN ITALY.
 MATERIAL IN ACCORDANCE WITH ORDER AND SPECIFICATION
 Issued in agreement with TÜV SÜD Industrie Service GmbH August 12th, 2021".
 "QS approved acc. to PED, Annex I, Para. 4.3 by Notified Body 0036"
 Certification no.DGR-0036-QS-W 1025/2021/MUC-01
 TENSILE TEST AND CHARPY KV IMPACT TEST PERFORMED IN ACCORDANCE WITH ASTM A370 -22.

Charpy KV test specimens taken in transverse way from one forging representing heat no. located at the mid thickness with the notch perpendicular to the forging surface in accordance with SHELL MESC SPE 76/210 -2023

UFFICIO CONTROLLO QUALITÀ QUALITY CONTROL DEPARTMENT A. Pontiggia	ENTE UFFICIALE DI COLLAUDO INSPECTION AUTHORITY	MARCHIO PRODUZIONE MANUFACTURER'S SYMBOL 
--	---	---

VERIFIED TRUE COPY
 Client: ARABIAN PIPELINE SUPPLY FZCO
 PO No: 25010001
 Item No: 1 Qty 2
 Sign: _____



A32

COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV ISO 9001 ■ ISO 14001		METALFAR PRODOTTI INDUSTRIALI SPA 23861 CESANA BRIANZA (LC) - ITALY VIA G. PARINI, 28 PHONE + 39 031 655441 - FAX +39 031 655149 certificate@metalfaritaly.com	A01	COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV ISO 9001 ■ ISO 14001
---	---	--	-----	---

INSPECTION CERTIFICATE EN 10204:2004 / 3.1	A02	Nr ^{A03} 2024-C_MFF-02169	Data / Dated 20.09.2024	Z02
--	-----	------------------------------------	-------------------------	-----

TECH HARD OILFIELD SUPPLIES FZE PLOT NO.S30207 JEBEL ALI FREE ZONE PO BOX 33985 DUBAI, U.A.E.	A05	Ordine / PO Item DDT / Delivery note Packing List Fattura / Invoice Ns. rif. / Our ref.	THOF-PO2400674 015 2024-3E301-0002090 2024-3E401-0002102 2024-3E401-0002102 2024-3E201-0001259-0015	A07 A07 A10 A11 A12 A08
---	-----	--	--	--

Cod. colata Heat Code	Nr. colata Heat Nr	Quantità Quantity	Descrizione Description	B01 - (B09 - B11)
	23/70828	81,00	W/N 150 RF 2" 160 A105N	

Mat. in acc. a / Mat. in acc. to B02 ASTM A105M - 23 ASME SA105M-23 ASME CODE SECT. II, PART A, ED. 2023
MESC SPE 76/100 -2022
MESC SPE 76/210 -2023
NACE MR-0175/2021 ISO 15156-2 :2020
NACE MR-0103/2015 ISO 17945 :2015
Q.A.S.IN ACCORD.WITH PRESS.EQUIPM.DIRECT.2014/68/EU(PED) ANNEX I, PARAGRAPH 4.3
& PRESSURE EQUIPMENT(SAFETY) REGULATION 2016 No.1105 SCHEDULE 2, PART 4 PARA.31

Ann. mat. / Mat. remarks	D02-B03	FULLY KILLED STEEL AND FINE GRAIN PRACTICED GRAIN SIZE No.CALCULATED IN ACCORDANCE WITH ASTM E112 -13 METHOD
--------------------------	---------	---

Elementi / Elements	C	Si	Mn	S	P	Cr	Ni	Mo	Ti	Cu	V	Nb	N
LADLE ANALYSIS	0,180	0,230	1,040	0,005	0,011	0,090	0,070	0,020	0,017	0,180	0,002	0,002	0,009
PRODUCT ANALYSIS	0,183	0,225	1,028	0,007	0,013	0,094	0,065	0,016	0,015	0,186	0,004	0,002	0,009
	Al	B	Ca						CE LF	CE SF	F1	F2	PREN
LADLE ANALYSIS	0,025	0,0000	0,002						0,392	0,353	0,362	0,110	--
PRODUCT ANALYSIS	0,028	0,0000	0,002						0,394	0,354	0,365	0,110	--

CE LF=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15		CE SF=C+(Mn/6)		F1=Cu+Ni+Cr+Mo+V		F2=Cr+Mo	
Provetta C10	Forma C10	°C C03	Snervamento>0,2% C11	Snervamento>1,0% C11	Rottura C12	Allungamento C13	Contrazione C14
Test specimen	Shape		Yield Strength>0,2%	Yield Strength>1,0%	Tensile	Elongation	Reduction of area
Sez/Sect mm2 Gauge Lmm 1=O - 2=□			MPa	MPa	MPa	%	%
126,60 50,80	1 20		349,0	—	506,0	35,1	70,8

DUREZZA / HARDNESS ^{C30}			RESILIZIENZA / IMPACT TEST					
HBW ^{C31}	Tipo/Type ^{C40}	Provetta / Test Specimen ^{C41}	°C ^{C03}	1-Joule ^{C42}	2-Joule ^{C42}	3-Joule ^{C42}	Media/Average ^{C43}	
148,0 ; 155,0	KV	10x10x55 mm	-29	89	92	85	88.7	

Dim. grano / Grain size	7					
Tratt. Term. / Heat treatment	B04	NORMALIZED AT 910°C +/- 10°C - HOLDING TIME 1 h/in MINIMUM 1 h - COOLED IN STILL AIR			B10	GAS FURNACE
Dim in acc. a / Dim. acc. to	B14	ASME/ANSI B16.5 -2020 ; ASME/ANSI B36.10M -2022				
Finitura / Roughness	B15	ASME/ANSI B46.1 -2019 ; RF FINISHING 125-250 µin AARH				
Marcatura in acc. / Marking in acc. to	B06	ANSI/MSS SP-25-2018	Vis. & Dim. D01	SATISFACTORY	Origine / Origin of Steel B16	EUROPEAN UNION

Note / Notes Z01-B03 MATERIAL 100% MANUFACTURED IN ITALY; MATERIAL IN ACCORDANCE WITH ORDER AND SPECIFICATION
Issued in agreement with TÜV SÜD Industrie Service GmbH August 12th, 2021".
Certification no.DGR-0036-QS-W 1025/2021/MUC-01
TENSILE TEST AND CHARPY KV IMPACT TEST PERFORMED IN ACCORDANCE WITH ASTM A370 -22.

Charpy KV test specimens taken in transverse way from one forging representing heat no. located at the mid thickness with the notch perpendicular to the forging surface in accordance with SHELL MESC SPE 76/210 -2023

Client: ARABIAN
PO No: 25010001
Item No: 2 QTY: 11
Date: 22/01/25



UFFICIO CONTROLLO QUALITA' QUALITY CONTROL DEPARTMENT A05	ENTE UFFICIALE DI COLLAUDO INSPECTION AUTHORITY Z03	MARCHIO PRODUZIONE MANUFACTURER'S SYMBOL A04
		

COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV ISO 9001 ■ ISO 14001	 METALFAR ITALIA COMPANY	METALFAR PRODOTTI INDUSTRIALI SPA 23861 CESANA BRIANZA (LC) - ITALY VIA G. PARINI, 28 PHONE + 39 031 655441 - FAX +39 031 655149 certificate@metalfaritaly.com	A01	COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV ISO 9001 ■ ISO 14001
---	--	--	-----	---

INSPECTION CERTIFICATE EN 10204:2004 / 3.1		A02	Nr A03 2023-C_MFF-02031	Data / Dated 20.07.2023	Z02
TECH HARD OILFIELD SUPPLIES FZE PLOT NO.S30207 JEBEL ALI FREE ZONE PO BOX 33985 DUBAI, U.A.E.		A05	Ordine / PO Item DDT / Delivery note Packing List Fattura / Invoice Ns. rif. / Our ref.	THOF-PO2300398 082 2023-3E301-0002020 2023-3E401-0002065 2023-3E401-0002065 2023-3E201-0001157-0082	A07 A07 A10 A11 A12 A08

Cod. colata Heat Code	Nr. colata Heat Nr	Quantità Quantity	Descrizione Description
	22/35783	250,00	W/N 150 RF 3" XS A105N

Mat. In acc. a / Mat. In acc. to B02 ASTM A105M - 18 ,ASME SA105M-19 ASME CODE SECT. II, PART A, ED. 2019
MESC SPE 76/100 -2022
MESC SPE 76/210 -2023
NACE MR-0175/2021 ISO 15156-2 :2020
NACE MR-0103/2015 ISO 17945 :2015
Q.A.S.IN ACCORD.WITH PRESS.EQUIPM.DIRECT.2014/68/EU(PED) ANNEX I,PARAGRAPH 4.3
Cert. No.4687-2014-CE-ITA-DNV

Ann. mat. / Mat. remarks D02-B03 FULLY KILLED STEEL AND FINE GRAIN PRACTICED
GRAIN SIZE No.CALCULATED IN ACCORDANCE WITH ASTM E112 -13 METHOD

Elementi / Elements	C	SI	Mn	S	P	Cr	NI	Mo	TI	Cu	V	Nb	N
LADLE ANALYSIS	0,180	0,230	1,040	0,005	0,011	0,130	0,060	0,020	0,016	0,150	0,001	0,001	0,010
PRODUCT ANALYSIS	0,184	0,243	1,046	0,003	0,007	0,122	0,065	0,015	0,020	0,139	0,003	0,002	0,007
	Al	B	Ca						CE LF	CE SF	F1	F2	PREN
LADLE ANALYSIS	0,027	0,0001	0,002						0,398	0,353	0,361	0,150	--
PRODUCT ANALYSIS	0,033	0,0000	0,002						0,400	0,358	0,344	0,137	--

CE LF=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15				CE SF=C+(Mn/6)		F1=Cu+Ni+Cr+Mo+V		F2=Cr+Mo							
Provetta C10		Forma C10		*C C03		Snervamento>0,2% C11		Snervamento>1,0% C11		Rottura C12		Allungamento C13		Contrazione C14	
Test specimen		Shape				Yield Strength>0,2%		Yield Strength>1,0%		Tensile		Elongation		Reduction of area	
Sez/Sect mm2 Gauge L.mm 1=0 - 2=□						MPa		MPa		MPa		%		%	
126,60 50,80		1 20				327,0		—		510,0		34,2		63,8	

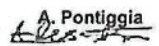
DUREZZA / HARDNESS ^{C30}			RESILIENZA / IMPACT TEST				
HBW ^{C31}	Tipo/Type ^{C40}	Provetta / Test Specimen ^{C41}	°C ^{C03}	1-Joule ^{C42}	2-Joule ^{C42}	3-Joule ^{C42}	Media/Average ^{C43}
148,0 ; 152,0	KV	10x10x55 mm	-29	71	50	79	66,7

Dim. grano / Grain size	7
Tratt. Term. / Heat treatment B04	NORMALIZED AT 910°C +/- 10°C - HOLDING TIME 1 h/in MINIMUM 1 h - COOLED IN STILL AIR
Dim in acc. a / Dim. acc. to B14	ASME/ANSI B16.5 -2020 ; ASME/ANSI B36.10M -2022
Finitura / Roughness B15	ASME/ANSI B46.1 -2019 ; RF FINISHING 125-250 µin AARH

Marcatura In acc. B05 Marking In acc. to	ANSI/MSS SP-25-2018	Vis. & Dim. D01	SATISFACTORY	Origine B16 Origin of Steel	EUROPEAN UNION
---	---------------------	-----------------	--------------	--------------------------------	----------------

Note / Notes Z01-B03 MATERIAL 100% MANUFACTURED IN ITALY
MATERIAL IN ACCORDANCE WITH ORDER AND SPECIFICATION
Issued in agreement with TÜV SÜD Industrie Service GmbH August 12th, 2021".
"QS approved acc. to PED, Annex I, Para. 4.3 by Notified Body 0036"
Certification no.DGR-0036-QS-W 1025/2021/MUC-01
TENSILE TEST AND CHARPY KV IMPACT TEST PERFORMED IN ACCORDANCE WITH ASTM A370 -22.

Charpy KV test specimens taken in transverse way from one forging representing heat no. located at the mid thickness with the notch perpendicular to the forging surface in accordance with SHELL MESC SPE 76/210 -2023

UFFICIO CONTROLLO QUALITA' A05 QUALITY CONTROL DEPARTMENT 	ENTE UFFICIALE DI COLLAUDO Z03 INSPECTION AUTHORITY	MARCHIO PRODUZIONE A04 MANUFACTURER'S SYMBOL 
---	--	--





A54

COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV ISO 9001 ■ ISO 14001		METALFAR PRODOTTI INDUSTRIALI SPA 23861 CESANA BRIANZA (LC) - ITALY VIA G. PARINI, 28 PHONE + 39 031 655441 - FAX +39 031 655149 certificate@metalfaritaly.com	A01	COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV ISO 9001 ■ ISO 14001
---	---	--	-----	---

INSPECTION CERTIFICATE EN 10204:2004 / 3.1		A02	Nr ^{A03} 2024-C_MFF-02169	Data / Dated 20.09.2024	Z02
TECH HARD OILFIELD SUPPLIES FZE PLOT NO: S30207 JEBEL ALI FREE ZONE PO BOX 33985 DUBAI, U.A.E.		A06	Ordine / PO	THOF-PO2400674	A07
		AE	Item	025	A07
			DDT / Delivery note	2024-3E301-0002090	A10
			Packing List	2024-3E401-0002102	A11
			Fattura / Invoice	2024-3E401-0002102	A12
			Ns. rif. / Our ref.	2024-3E201-0001259-0025	A08
Cod. colata ^{B07} Heat Code	Nr. colata ^{B07} Heat Nr	Quantità ^{B08} Quantity	Descrizione ^{B01 - (B09 - B11)} Description		
	23/79635	100,00	W/N 300 RF 3" XS A105N		

Mat. in acc. a / Mat. in acc. to^{B02} ASTM A105M - 23 ,ASME SA105M-23 ASME CODE SECT. II, PART A, ED. 2023
MESC SPE 76/100 -2022
MESC SPE 76/210 -2023
NACE MR-0175/2021 ISO 15156-2 :2020
NACE MR-0103/2015 ISO 17945 :2015
Q.A.S.IN ACCORD.WITH PRESS.EQUIPM.DIRECT.2014/68/EU(PED) ANNEX I,PARAGRAPH 4.3
& PRESSURE EQUIPMENT(SAFETY) REGULATION 2016 No.1105 SCHEDULE 2, PART 4 PARA.31

Ann. mat. / Mat. remarks	D02-B03 FULLY KILLED STEEL AND FINE GRAIN PRACTICED GRAIN SIZE.No.CALCULATED IN ACCORDANCE WITH ASTM E112 -13 METHOD												
Elementi / Elements	C	SI	Mn	S	P	Cr	NI	Mo	Ti	Cu	V	Nb	N
LADLE ANALYSIS	0,190	0,230	1,030	0,005	0,010	0,100	0,060	0,010	0,018	0,190	0,002	0,001	0,010
PRODUCT ANALYSIS	0,194	0,222	1,055	0,003	0,006	0,088	0,052	0,013	0,020	0,173	0,005	0,002	0,006
	Al	B	Ca						CE LF	CE SF	F1	F2	PREN
LADLE ANALYSIS	0,025	0,0000	0,002						0,401	0,362	0,362	0,110	-
PRODUCT ANALYSIS	0,031	0,0000	0,002						0,406	0,370	0,331	0,101	-
CE LF=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15			CE SF=C+(Mn/6)		F1=Cu+Ni+Cr+Mo+V			F2=Cr+Mo					
Provetta	Forma	°C	Snervamento>0,2%		Snervamento>1,0%		Rottura	Allungamento		Contrazione			
Test specimen	Shape		Yield Strength>0,2%		Yield Strength>1,0%		Tensile	Elongation		Reduction of area			
Sez/Sect mm2 Gauge L.mm 1=O - 2=□			MPa		MPa		MPa	%		%			
126,60	50,80	1	334,0		--		512,0	34,6		66,2			
DUREZZA / HARDNESS							RESILLENZA / IMPACT TEST						
HBW	Tipo/Type	Provetta / Test Specimen	°C	1-Joule	2-Joule	3-Joule	Media/Average						
151,0 ; 155,0	KV	10x10x55 mm	-29	71	54	83	69,3						

Dim. grano / Grain size	7				
Tratt. Term. / Heat treatment	B04 NORMALIZED AT 910°C +/- 10°C - HOLDING TIME 1 h/n MINIMUM 1 h - COOLED		B09 GAS FURNACE IN STILL AIR		
Dim in acc. a / Dim. acc. to	B14 ASME/ANSI B16.5 -2020 ; ASME/ANSI B36.10M -2022				
Finitura / Roughness	B15 ASME/ANSI B46.1 -2019 ; RF FINISHING 125-250 µin AARH				
Marcatura in acc. Marking in acc. to	B08 ANSI/MSS SP-25-2018	Vis. & Dim.	D01 SATISFACTORY	Origine Origin of Steel	B16 EUROPEAN UNION

Note / Notes^{Z01-B03} MATERIAL 100% MANUFACTURED IN ITALY; MATERIAL IN ACCORDANCE WITH ORDER AND SPECIFICATION
Issued in agreement with TÜV SÜD Industrie Service GmbH August 12th, 2021".
Certification no.DGR-0036-QS-W 1025/2021/MUC-01
TENSILE TEST AND CHARPY KV IMPACT TEST PERFORMED IN ACCORDANCE WITH ASTM A370 -22.

Charpy KV test specimens taken in transverse way from one forging representing heat no. located at the mid thickness with the notch perpendicular to the forging surface in accordance with SHELL MESC SPE 76/210 :2023

Hard Oilfield Supplies FZE
No. 25010001
City 7



UFFICIO CONTROLLO QUALITA' QUALITY CONTROL DEPARTMENT 	ENTE UFFICIALE DI COLLAUDO INSPECTION AUTHORITY	MARCHIO PRODUZIONE MANUFACTURER'S SYMBOL 
---	--	--

22/01/25

#60

COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV ISO 9001 ■ ISO 14001	 METALFAR PRODOTTI INDUSTRIALI SPA 23861 CESANA BRIANZA (LC) - ITALY VIA G. PARINI, 28 PHONE + 39 031 655441 - FAX +39 031 655149 certificate@metalfaritaly.com	COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV ISO 9001 ■ ISO 14001
--	---	--

INSPECTION CERTIFICATE EN 10204:2004 / 3.1		Nr ^{A03} 2023-C_MFF-01854	Data / Dated 30.06.2023 ^{Z02}
TECH HARD OILFIELD SUPPLIES FZE PLOT NO.S30207 JEBEL ALI FREE ZONE PO BOX 33985 DUBAI, U.A.E.		Ordine / PO THOF-PO2300398 Item 093 DDT / Delivery note 2023-3E301-0001859 Packing List 2023-3E401-0001904 Fattura / Invoice 2023-3E401-0001904 Ns. rif. / Our ref. 2023-3E201-0001157-0093	A07 A07 A10 A11 A12 A08
Cod. colata ^{B07} Heat Code	Nr. colata ^{B07} Heat Nr 19/44163	Quantità ^{B08} Quantity 30,00	Descrizione ^{B01 - (B09 - B11)} Description W/N 300 RF 4" 160 A105N

Mat. in acc. a / Mat. in acc. to^{B02} ASTM A105M - 18 ,ASME SA105M-19 ASME CODE SECT. II, PART A, ED. 2019
 MESC SPE 76/100 -2022
 MESC SPE 76/210 -2023
 NACE MR-0175/2021 ISO 15156-2 :2020
 NACE MR-0103/2015 ISO 17945 :2015
 Q.A.S.IN ACCORD.WITH PRESS.EQUIPM.DIRECT.2014/68/EU(PED) ANNEX I,PARAGRAPH 4.3
 Cert. No.4687-2014-CE-ITA-DNV

Ann. mat. / Mat. remarks^{D02-B03} FULLY KILLED STEEL AND FINE GRAIN PRACTICED
 GRAIN SIZE No.CALCULATED IN ACCORDANCE WITH ASTM E112 -13 METHOD

Elementi / Elements ^(C71 - C92)	C	SI	Mn	S	P	Cr	Ni	Mo	TI	Cu	V	Nb	N
LADLE ANALYSIS	0,180	0,250	1,060	0,005	0,014	0,150	0,050	0,010	0,016	0,130	0,003	0,001	0,008
PRODUCT ANALYSIS	0,183	0,238	1,047	0,004	0,011	0,159	0,063	0,011	0,019	0,134	0,002	0,003	0,006
	Al	B	Ca						CE LF	CE SF	F1	F2	PREN
LADLE ANALYSIS	0,027	0,0001	0,002						0,401	0,357	0,343	0,160	--
PRODUCT ANALYSIS	0,030	0,0000	0,002						0,405	0,358	0,369	0,170	--

CE LF=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15 CE SF=C+(Mn/6) F1=Cu+Ni+Cr+Mo+V F2=Cr+Mo

Provetta ^{C10}	Forma ^{C10}	*C03	Snervamento>0,2% ^{C11}	Snervamento>1,0% ^{C11}	Rottura ^{C12}	Allungamento ^{C13}	Contrazione ^{C14}
Test specimen	Shape		Yield Strength>0,2%	Yield Strength>1,0%	Tensile	Elongation	Reduction of area
Sez/Sect mm2 Gauge L.mm 1=0 - 2=□			MPa	MPa	MPa	%	%
126,60	50,80	1	20	333,0	522,0	34,0	62,0

DUREZZA / HARDNESS^{C30}

HBW^{C31}
148,0 ; 149,0

Tipo/Type^{C40}
KV

Provetta / Test Specimen^{C41}
10x10 mm

RESILIENZA / IMPACT TEST

°C^{C03}
-29

1-Joule^{C42}
58

2-Joule^{C42}
74

3-Joule^{C42}
72

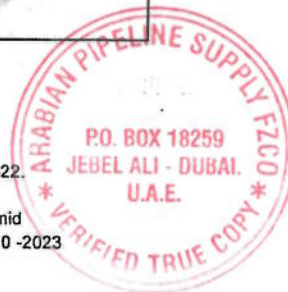
Media/Average^{C43}
68,0

Dim. grano / Grain size	7
Tratt. Term. / Heat treatment ^{B04}	NORMALIZED AT 910°C +/- 10°C - HOLDING TIME 1 h/in MINIMUM 1 h - COOLED ^{B05} IN STILL AIR
Dim in acc. a / Dim. acc. to ^{B14}	ASME/ANSI B16.5 -2020 ; ASME/ANSI B36.10M -2022
Finitura / Roughness ^{B15}	ASME/ANSI B46.1 -2019 ; RF FINISHING 125-250 µin AARH
Marcatura in acc. ^{B06} Marking in acc. to	ANSI/MSS SP-25-2018
Vis. & Dim. ^{D01}	SATISFACTORY
Origine ^{B16} Origin of Steel	EUROPEAN UNION

Note / Notes^{Z01-B03} MATERIAL 100% MANUFACTURED IN ITALY
 MATERIAL IN ACCORDANCE WITH ORDER AND SPECIFICATION
 Issued in agreement with TÜV SÜD Industrie Service GmbH August 12th, 2021".
 "QS approved acc. to PED, Annex I, Para. 4.3 by Notified Body 0036"
 Certification no.DGR-0036-QS-W 1025/2021/MUC-01
 TENSILE TEST AND CHARPY KV IMPACT TEST PERFORMED IN ACCORDANCE WITH ASTM A370 -22.

Charpy KV test specimens taken in transverse way from one forging representing heat no. located at the mid thickness with the notch perpendicular to the forging surface in accordance with SHELL MESC SPE 76/210 -2023

UFFICIO CONTROLLO QUALITA' QUALITY CONTROL DEPARTMENT A. Pontiggia	ENTE UFFICIALE DI COLLAUDO INSPECTION AUTHORITY	MARCHIO PRODUZIONE MANUFACTURER'S SYMBOL 
---	---	---



CLIENTE / Customer / Client
TECH HARD OILFIELD SUPPLIES FZE
P.O. BOX 33985
JEBEL ALI FREE ZONE
DUBAI, U.A.E.
ARE

CERTIFICADO DE INSPECCION

Inspection Certificate - Certificat de Réception

FECHA: 17/01/2024
N.º: 22. 69
HQA: Page: 4

Company management certifications:
ISO 9001: 2015
ISO 14001: 2015
ISO 45001: 2018



ULMA FORJAS, S.COOP.

PRODUCTO
Article - Produit
FLANGES

NORMAS APLICABLES
Requirements - Normes Applicables
ASME B16.5-20

SU PEDIDO N.º
Your Order No.
THOF-PO2300439

DE
dt. - de 20/06/2023

MATERIAL CORRESPONDIENTE
Material Correspondent - Matière
ASME SA105M-23, ASTM A105M-21, MESC SPE 76-210-2023

MODO DE FUSION (*)
Steel Making - Elaboration de l'acier

EAF (Electric Arc Furnace)

ANSINANCE MR0175-2021/ISO 15156-2020 & ANSINANCE MR0103/ISO 17945:2015

DEPARTAMENTO
Section
QUALITY ASSURANCE

Management System certified by LRQA
Certified acc. PED 2014/68/EU+AD2000-WO
by TÜV Rheinland
N.º 01 202 E/C 02 7443
UNE EN 10204/06/13.1
ISO 10474:13/13.1



BP Zubillaga, 3 - Apdo. 14
20560 Oñati (Gipuzkoa) SPAIN
Tel.: 34 - 943 780532
Fax: 34 - 943 781808
E-mail: ulma@ulmatorge.com

Packing List: 180899
Expedition: 450086

PARTIDA	Item	Poste	CANTIDAD	Quantity	Quantité	DESCRIPCION	Description	Description	OBSERVACIONES	Remarks	Observations	COLADA N.º	Heat No	Produit	PRESISTENCIA	T.Strength	Tensile Rupt	LIMIT ELAST.	Y.Strength	Elongation	ALARGAM.	ESTRICCION	RED. AREA	RESILIENCIA	Impact test	RESILIENCE	CHARPY V 10x10mm	DUREZA	Hardness	Dureté
27	89		BLIND 6 150LB RF A105N			22Y316 EAF						19EE22			522	328	37.47	71.73	114	110	114	-29	142	144						
27	39		BLIND 6 150LB RF A105N			28N315 EAF						64EE23			516	315	38.96	73.72	122	131	124	-29	143	146						
27	23		BLIND 6 150LB RF A105N			29N304 EAF						64EE23			516	315	38.96	73.72	122	131	124	-29	143	146						
29	13		WN 6 600LB STD/40 RF A105N			23J302 EAF						05MA23			519	326	35.74	74.08	107	126	124	-29	143	146						
29	27		WN 6 600LB STD/40 RF A105N			24N306 EAF						062A23			525	315	33.30	69.40	113	82	99	-29	146	149						

COLADA N.º	Heat No	Produit	C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	Nb %	V %	Cu %	Al %	Ti %	B %	CEq %	Origin of Steel
19EE22	L	0,180	0,180	1,140	0,011	0,007	0,080	0,100	0,010	0,002	0,003	0,200	0,029	0,001	0,0004	0,41	Ukraine	
19EE22	F	0,180	0,185	1,110	0,012	0,005	0,078	0,097	0,010	0,001	0,002	0,191	0,031	0,001	0,0002	0,40	Ukraine	
64EE23	L	0,183	0,230	1,080	0,010	0,003	0,140	0,090	0,020	0,001	0,003	0,140	0,028	0,002	0,0001	0,41	Italy	
64EE23	F	0,181	0,211	1,100	0,011	0,004	0,095	0,094	0,015	0,001	0,001	0,151	0,031	0,001	0,0001	0,40	Italy	
05MA23	L	0,184	0,220	1,181	0,012	0,003	0,100	0,055	0,011	0,001	0,002	0,068	0,037	0,002	0,0002	0,41	France	
05MA23	F	0,184	0,223	1,170	0,012	0,003	0,108	0,059	0,012	0,001	0,002	0,067	0,032	0,003	0,0002	0,41	France	
062A23	L	0,181	0,270	1,120	0,009	0,004	0,070	0,110	0,011	0,001	0,002	0,230	0,035	0,002	0,0002	0,41	France	
062A23	F	0,180	0,260	1,110	0,007	0,003	0,079	0,120	0,010	0,001	0,001	0,220	0,032	0,001	0,0002	0,41	France	

COMPOSICION QUIMICA - STEEL MAKER'S LADLE ANALYSIS - ANALYSE CHIMIQUE

- Las dimensiones y la condición superficial se hallaron satisfactorias.

- Dimension and surface condition were found acceptable.

- Les dimensions et l'états de surface sont satisfaisants.

- Los materiales citados cumplen las normas aplicables.

- Manufacturing requirements are satisfied.

- Les normes applicables sont respectées.

EL INSPECTOR

Works Inspector - L'inspecteur

UULMA FORJAS S.A. COOP.

Dpto. de Control de Calidad

P.O. BOX 18259
JEBEL ALI - DUBAI
U.A.E.

RECEIVED TRUE COPY
P.O. BOX 18259
JEBEL ALI - DUBAI
U.A.E.

- Las dimensiones y la condición superficial se hallaron satisfactorias.

- Dimension and surface condition were found acceptable.

- Les dimensions et états de surface sont satisfaisants.

- Los materiales citados cumplen las normas aplicables.

- Manufacturing requirements are satisfied.

- Les normes applicables sont respectées.

EL INSPECTOR

Works Inspector - L'inspecteur



ULMA FORJAS S.COOP.
Dpto. de Control de calidad
Quality Assurance Dept.

(*) OBSERVACIONES:

STEEL FULLY KILLED & PRODUCED TO FINE GRAIN PRACTICE.
ALL ULMA'S FLANGES RF SURFACE FINISH ARE FROM 125 TO 250 AARH, AS INDICATED IN ASME B16.5-20.
N_NORMALIZED ABOVE 900°C & COOLED IN AIR.

RECEIVED TRUE COPY
P.O. BOX 18259
JEBEL ALI - DUBAI
U.A.E.

DATE: 22/01/24

BY: 9

461

63

COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV ISO 9001 ■ ISO 14001		METALFAR PRODOTTI INDUSTRIALI SPA 23861 CESANA BRIANZA (LC) - ITALY VIA G. PARINI, 28 PHONE + 39 031 655441 - FAX +39 031 655149 certificate@metalfaritaly.com	A01	COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV ISO 9001 ■ ISO 14001
---	---	--	-----	---

INSPECTION CERTIFICATE EN 10204:2004 / 3.1		A02	Nr A03 2023-C_MFF-01679	Data / Dated 14.06.2023	Z02
TECH HARD OILFIELD SUPPLIES FZE PLOT NO.S30207 JEBEL ALI FREE ZONE PO BOX 33985 DUBAI, U.A.E.		A05	Ordine / PO	THOF-PO2300398	A07
		AE	Item	097	A07
			DDT / Delivery note	2023-3E301-0001690	A10
			Packing List	2023-3E401-0001731	A11
			Fattura / Invoice	2023-3E401-0001731	A12
			Ns. rif. / Our ref.	2023-3E201-0001157-0097	A08
Cod. colata Heat Code	Nr. colata Heat Nr	Quantità Quantity	Descrizione Description		
	22/35783	153,00	W/N 150 RF 6" XS A105N		

Mat. in acc. a / Mat. in acc. to B02 ASTM A105M - 18 ASME SA105M-19 ASME CODE SECT. II, PART A, ED. 2019
MESC SPE 76/100 -2022
MESC SPE 76/210 -2023
NACE MR-0175/2021 ISO 15156-2 :2020
NACE MR-0103/2015 ISO 17945 :2015
Q.A.S.IN ACCORD WITH PRESS.EQUIPM.DIRECT.2014/68/EU(PED) ANNEX I, PARAGRAPH 4.3
Cert. No.4687-2014-CE-ITA-DNV

Ann. mat. / Mat. remarks	FULLY KILLED STEEL AND FINE GRAIN PRACTICED GRAIN SIZE No.CALCULATED IN ACCORDANCE WITH ASTM E112 -13 METHOD													
Elementi / Elements	C	Si	Mn	S	P	Cr	Ni	Mo	Ti	Cu	V	Nb	N	
LADLE ANALYSIS	0,180	0,230	1,040	0,005	0,011	0,130	0,060	0,020	0,016	0,150	0,001	0,001	0,010	
PRODUCT ANALYSIS	0,184	0,243	1,046	0,003	0,007	0,122	0,065	0,015	0,020	0,139	0,003	0,002	0,007	
	Al	B	Ca						CE LF	CE SF	F1	F2	PREN	
LADLE ANALYSIS	0,027	0,0001	0,002						0,398	0,353	0,361	0,150	--	
PRODUCT ANALYSIS	0,033	0,0001	0,002						0,400	0,358	0,344	0,137	--	
CE LF=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15 CE SF=C+(Mn/6) F1=Cu+Ni+Cr+Mo+V F2=Cr+Mo														
Provetta	C10	Forma	C10	*C03	Snervamento>0,2%	C11	Snervamento>1,0%	C11	Rottura	C12	Allungamento	C13	Contrazione	C14
Test specimen	Shape				Yield Strength>0,2%		Yield Strength>1,0%		Tensile		Elongation		Reduction of area	
Sez/Sect mm2 Gauge L.mm	1=O - 2=□				MPa		MPa		MPa		%		%	
126,60	50,80	1	20		327,0		--		510,0		34,2		63,8	

DUREZZA / HARDNESS C30		RESILIENZA / IMPACT TEST						
HBW	C31	Tipo/Type	C40	Provetta / Test Specimen	C41	*C03	1-Joule	C42
148,0 ; 152,0		KV		10x10x55 mm		-29	71	50
							2-Joule	C42
							79	66,7
Dim. grano / Grain size	7							
Tratt. Term. / Heat treatment	B04	NORMALIZED AT 910°C +/- 10°C - HOLDING TIME 1 h/in MINIMUM 1 h - COOLED IN STILL AIR						
Dim in acc. a / Dim. acc. to	B14	ASME/ANSI B16.5 -2020 ; ASME/ANSI B36.10M -2022						
Finitura / Roughness	B15	ASME/ANSI B46.1 -2019 ; RF FINISHING 125-250 µin AARH						
Marcatura in acc. B05	ANSI/MSS SP-25-2018	Vis. & Dim.	D01	SATISFACTORY	Origine	B16	EUROPEAN UNION	
Marking in acc. to					Origin of Steel			

Note / Notes Z01-B03 MATERIAL 100% MANUFACTURED IN ITALY
MATERIAL IN ACCORDANCE WITH ORDER AND SPECIFICATION
Issued in agreement with TÜV SÜD Industrie Service GmbH August 12th, 2021".
"QS approved acc. to PED, Annex I, Para. 4.3 by Notified Body 0036"
Certification no.DGR-0036-QS-W 1025/2021/MUC-01
TENSILE TEST AND CHARPY KV IMPACT TEST PERFORMED IN ACCORDANCE WITH ASTM A370-22 25010001
Charpy KV test specimens taken in transverse way from one forging representing heat no. located at the mid thickness with the notch perpendicular to the forging surface in accordance with SHELL MESC SPE.76/210-2023

VERIFIED TRUE COPY
Jebel Ali Free Zone
Arabian
2023/06/19

ARABIAN PRELINE SUPPLY FZCO
P.O. BOX 18259
JEBEL ALI - DUBAI
U.A.E.
VERIFIED TRUE COPY *

UFFICIO CONTROLLO QUALITA' QUALITY CONTROL DEPARTMENT A. Pontiggia	ENTE UFFICIALE DI COLLAUDO INSPECTION AUTHORITY	MARCHIO PRODUZIONE MANUFACTURER'S SYMBOL MFF
--	--	--

22/01/25

A 6h, 6596

COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV ISO 9001 ■ ISO 14001	 METALFAR PRODOTTI INDUSTRIALI SPA 23861 CESANA BRIANZA (LC) - ITALY VIA G. PARINI, 28 PHONE + 39 031 655441 - FAX +39 031 655149 certificate@metalfaritaly.com	COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV ISO 9001 ■ ISO 14001
---	---	---

INSPECTION CERTIFICATE EN 10204:2004 / 3.1		Nr ^{A03} 2024-C_MFF-02002	Data / Dated 29.08.2024
TECH HARD OILFIELD SUPPLIES FZE PLOT NO.S30207 JEBEL ALI FREE ZONE PO BOX 33985 DUBAI, U.A.E.		Ordine / PO THOF-PO2400674	
		Item 031	
		DDT / Delivery note 2024-3E301-0001938	
		Packing List 2024-3E401-0001939	
		Fattura / Invoice 2024-3E401-0001939	
		Ns. rif. / Our ref. 2024-3E201-0001259-0031	

Cod. colata ^{B07} Heat Code	Nr. colata ^{B07} Heat Nr BK1430	Quantità ^{B08} Quantity 100,00	Descrizione ^{B01 - (B09 - B11)} Description W/N 300 RF 6" XS A105N
---	--	---	---

Mat. In acc. a / Mat. in acc. to^{B02} ASTM A105M - 18 ASME SA105M-19 ASME CODE SECT. II, PART A, ED. 2019
MESC SPE 76/100 -2022
MESC SPE 76/210 -2023
NACE MR-0175/2021-ISO 15156-2 :2020
NACE MR-0103/2015 ISO 17945 :2015
Q.A.S.IN ACCORD.WITH PRESS.EQUIPM.DIRECT.2014/68/EU(PED) ANNEX I, PARAGRAPH 4.3
& PRESSURE EQUIPMENT(SAFETY) REGULATION-2016 No.1105 SCHEDULE 2, PART 4 PARA.31

Ann. mat. / Mat. remarks^{B02-B03} FULLY KILLED STEEL AND FINE GRAIN PRACTICED
GRAIN SIZE No.CALCULATED IN ACCORDANCE WITH ASTM E112 -13 METHOD

Elementi / Elements ^(C71 - C92)	C	SI	Mn	S	P	Cr	Ni	Mo	Ti	Cu	V	Nb	N
LADLE ANALYSIS	0,195	0,210	1,040	0,005	0,009	0,080	0,070	0,010	0,021	0,050	0,003	0,000	0,007
PRODUCT ANALYSIS	0,199	0,205	1,060	0,003	0,011	0,087	0,035	0,008	0,023	0,050	0,002	0,000	0,007
	Al	B	Ca						CE LF	CE SF	F1	F2	PREN
LADLE ANALYSIS	0,029	0,0000	0,004						0,395	0,368	0,213	0,090	--
PRODUCT ANALYSIS	0,029	0,0000	0,003						0,401	0,376	0,182	0,095	--

CE LF=C+Mn/5+(Cr+Mo+V)/5+(Ni+Cu)/15 CE SF=C+(Mn/6) F1=Cu+Ni+Cr+Mo+V F2=Cr+Mo

Provetta ^{C10}	Forma ^{C10}	°C ^{C03}	Snervamento ^{C11}	Snervamento ^{C11}	Rottura ^{C12}	Allungamento ^{C13}	Contrazione ^{C14}
Test specimen	Shape		Yield Strength>0,2%	Yield Strength>1,0%	Tensile	Elongation	Reduction of area
Sez/Sect mm2 Gauge L.mm 1=O - 2=□			MPa	MPa	MPa	%	%
29,88 25,00 1 20			344,0	--	522,0	37,6	73,9

DUREZZA / HARDNESS^{C30}

HBW^{C31}
155,0 ; 149,0

Tipo/Type^{C40}
KV

Provetta / Test Specimen^{C41}
10x10x55 mm

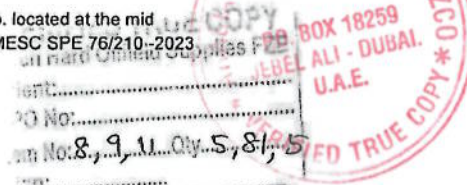
RESILIENZA / IMPACT TEST

°C^{C03} 1-Joule^{C42} 2-Joule^{C42} 3-Joule^{C42} Media/Average^{C43}
-29 68 117 166 117,0

Dim. grano / Grain size	7				
Tratt. Term. / Heat treatment ^{B04}	NORMALIZED AT 910°C +/- 10°C - HOLDING TIME 1 h/in MINIMUM 1 h - COOLE ^{B05} GAS FURNACE IN STILL AIR				
Dim in acc. a / Dim. acc. to ^{B14}	ASME/ANSI B16.5 -2020 ; ASME/ANSI B36.10M -2022				
Finitura / Roughness ^{B15}	ASME/ANSI B46.1 -2019 ; RF FINISHING 125-250 µin AARH				
Marcatura in acc. ^{B06} Marking in acc. to	ANSI/MSS SP-25-2018	Vis. & Dim. ^{D01}	SATISFACTORY	Origine ^{B16} Origin of Steel	EUROPEAN UNION

Note / Notes^{Z01-B03} MATERIAL 100% MANUFACTURED IN ITALY; MATERIAL IN ACCORDANCE WITH ORDER AND SPECIFICATION
Issued in agreement with TÜV SÜD Industrie Service GmbH August 12th, 2021".
Certification no.DGR-0036-QS-W 1025/2021/MUC-01
TENSILE TEST AND CHARPY KV IMPACT TEST PERFORMED IN ACCORDANCE WITH ASTM A370 -22.

Charpy KV test specimens taken in transverse way from one forging representing heat no. located at the mid thickness with the notch perpendicular to the forging surface in accordance with SHELL MESC SPE 76/210-2023.



UFFICIO CONTROLLO QUALITA' QUALITY CONTROL DEPARTMENT 	ENTE UFFICIALE DI COLLAUDO INSPECTION AUTHORITY	MARCHIO PRODUZIONE MANUFACTURER'S SYMBOL 
---	--	--



470

COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV ISO 9001 ■ ISO 14001		METALFAR PRODOTTI INDUSTRIALI SPA 23861 CEŠANA BRIANZA (LC) - ITALY VIA G. PARINI, 28 PHONE + 39 031 655441 - FAX +39 031 655149 certificate@metalfaritaly.com	A01	COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV ISO 9001 ■ ISO 14001
---	---	--	-----	---

INSPECTION CERTIFICATE EN 10204:2004 / 3.1		A02	Nr ^{A03} 2023-C_MFF-01741	Data / Dated 20.06.2023	Z02
TECH HARD OILFIELD SUPPLIES FZE PLOT NO.S30207 JEBEL ALI FREE ZONE PO BOX 33985 DUBAI, U.A.E.		A08	Ordine / PO	THOF-PO2300398	A07
		AE	Item	107	A07
			DDT / Delivery note	2023-3E301-0001740	A10
			Packing List	2023-3E401-0001777	A11
			Fattura / Invoice	2023-3E401-0001777	A12
			Ns. rif. / Our ref.	2023-3E201-0001157-0107	A08

Cod. colata ^{B07} Heat Code	Nr. colata ^{B07} Heat Nr	Quantità ^{B08} Quantity	Descrizione ^{B01 - (B02 - B11)} Description		
	22/37154	12,00	W/N 300 RF 8" XS A105N		

Mat. in acc. a / Mat. in acc. to^{B02} ASTM A105M - 18 ,ASME SA105M-19 ASME CODE SECT. II, PART A, ED. 2019
 MESG SPE 76/100 -2022
 MESG SPE 76/210 -2023
 NACE MR-0175/2021 ISO 15156-2 :2020
 NACE MR-0103/2015 ISO 17945 :2015
 Q.A.S.IN ACCORD.WITH PRESS.EQUIPM.DIRECT.2014/68/EU(PED) ANNEX I,PARAGRAPH 4.3
 Cert. No.4687-2014-CE-ITA-DNV

Ann. mat. / Mat. remarks^{D02-B03} FULLY KILLED STEEL AND FINE GRAIN PRACTICED
 GRAIN SIZE No.CALCULATED, IN ACCORDANCE WITH ASTM E112 -13 METHOD

Elementi / Elements ^(C71 - C92)	C	SI	Mn	S	P	Cr	Ni	Mo	Ti	Cu	V	Nb	N
LADLE ANALYSIS	0,190	0,240	1,050	0,004	0,009	0,100	0,070	0,020	0,019	0,140	0,002	0,001	0,010
PRODUCT ANALYSIS	0,188	0,241	1,052	0,006	0,010	0,098	0,072	0,023	0,020	0,143	0,002	0,002	0,011
	Al	B	Ca						CE LF	CE SF	F1	F2	PREN
LADLE ANALYSIS	0,026	0,0020	0,001						0,403	0,365	0,332	0,120	--
PRODUCT ANALYSIS	0,025	0,0020	0,001						0,402	0,363	0,338	0,121	--

CE LF=C+Mn/5+(Cr+Mo+V)/5+(Ni+Cu)/15		CE SF=C+(Mn/6)		F1=Cu+Ni+Cr+Mo+V		F2=Cr+Mo	
Provetta ^{C10} Test specimen	Forma ^{C10} Shape	Snervamento ^{C03} Yield Strength	Snervamento ^{C03} Yield Strength	Rottura ^{C12} Tensile	Allungamento ^{C13} Elongation	Contrazione ^{C14} Reduction of area	
Sez/Sect mm2 Gauge L mm 1=O - 2=□		MPa	MPa	MPa	%	%	
126,60 50,80 1	20	351,0	--	516,0	30,2	58,3	

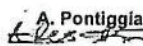
DUREZZA / HARDNESS ^{C30}		RESILIENZA / IMPACT TEST					
HBW ^{C31}	Tipo/Type ^{C40}	Provetta / Test Specimen ^{C41}	°C ^{C03}	1-Joule ^{C42}	2-Joule ^{C42}	3-Joule ^{C42}	Media/Average ^{C43}
150,0 ; 155,0	KV	10x10x55 mm	-29	56	50	61	55,7

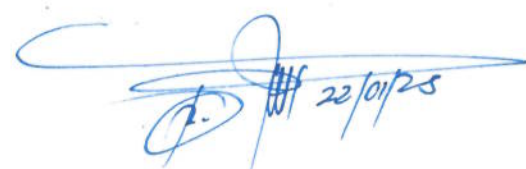
Dim. grano / Grain size	7				
Tratt. Term. / Heat treatment	NORMALIZED AT 910°C +/- 10°C - HOLDING TIME 1 h/in MINIMUM 1 h - COOLE ^{B09} GAS FURNACE IN STILL AIR				
Dim in acc. a / Dim. acc. to	ASME/ANSI B16.5 -2020 ; ASME/ANSI B36.10M -2022				
Finitura / Roughness	ASME/ANSI B46.1 -2019 ; RF FINISHING 125-250 µin AARH				
Marcatura in acc. ^{B06} Marking in acc. to	ANSI/MSS SP-25-2018	Vis. & Dim. ^{D01}	SATISFACTORY	Origine ^{B16} Origin of Steel	EUROPEAN UNION

Note / Notes^{Z01-B03} MATERIAL 100% MANUFACTURED IN ITALY
 MATERIAL IN ACCORDANCE WITH ORDER AND SPECIFICATION
 Issued in agreement with TÜV SÜD Industrie Service GmbH August 12th, 2021".
 "QS approved acc. to PED, Annex I, Para. 4.3 by Notified Body 0036"
 Certification no.DGR-0036-QS-W 1025/2021/MUC-01
 TENSILE TEST AND CHARPY KV IMPACT TEST PERFORMED IN ACCORDANCE WITH ASTM A370-22.

Charpy KV test specimens taken in transverse way from one forging representing heat no. located at the mid 12,130 8
 thickness with the notch perpendicular to the forging surface in accordance with SHELL MESG SPE 76/210-2023



UFFICIO CONTROLLO QUALITA' ^{A05} QUALITY CONTROL DEPARTMENT 	ENTE UFFICIALE DI COLLAUDO ^{Z03} INSPECTION AUTHORITY	MARCHIO PRODUZIONE ^{A04} MANUFACTURER'S SYMBOL 
--	---	---



#66

COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV ISO 9001 ■ ISO 14001		METALFAR PRODOTTI INDUSTRIALI SPA 23861 CESANA BRIANZA (LC) - ITALY VIA G. PARINI, 28 PHONE + 39 031 655441 - FAX +39 031 655149 certificate@metalfaritaly.com	A01	COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV ISO 9001 ■ ISO 14001
---	---	--	-----	---

INSPECTION CERTIFICATE EN 10204:2004 / 3.1	A02	Nr ^{A03} 2024-C_MFF-02001	Data / Dated 29.08.2024	Z02
--	-----	------------------------------------	-------------------------	-----

ARROW PIPES AND FITTINGS FZCO P.O. BOX 17574 - JEBEL ALI FREE ZONE. DUBAI	A06	Ordine / PO Item DDT / Delivery note Packing List Fattura / Invoice Ns. rif. / Our ref.	1618/07/2024 IMP 008 2024-3E301-0001935 2024-3E401-0001936 2024-3E401-0001936 2024-3E201-0001143-0008	A07 A07 A10 A11 A12 A08
---	-----	--	--	--

Cod. colata Heat Code	Nr. colata Heat Nr	Quantità Quantity	Descrizione Description	B01 - (B09 - B11)
	BK1430	78,00	W/N 300 RF 6" XS A105N	

Mat. in acc. a / Mat. in acc. to ^{B02} ASTM A105M - 23 ,ASME SA105M-23 ASME CODE SECT. II, PART A, ED. 2023
NACE MR-0175/2021 ISO 15156-2 :2020
NACE MR-0103/2015 ISO 17945 :2015
Q.A.S.IN ACCORD.WITH PRESS.EQUIPM.DIRECT.2014/68/EU(PED) ANNEX I,PARAGRAPH 4.3
& PRESSURE EQUIPMENT(SAFETY) REGULATION 2016 No.1105 SCHEDULE 2, PART 4 PARA.31

Ann. mat. / Mat. remarks ^{B02-B03} FULLY KILLED STEEL AND FINE GRAIN PRACTICED

Elementi / Elements	C	Si	Mn	S	P	Cr	Ni	Mo	Ti	Cu	V	Nb	N
LADLE ANALYSIS	0,195	0,210	1,040	0,005	0,009	0,080	0,070	0,010	0,021	0,050	0,003	0,000	0,007
PRODUCT ANALYSIS	0,199	0,205	1,060	0,003	0,011	0,087	0,035	0,008	0,023	0,050	0,002	0,000	0,007
	Al	B	Ca						CE LF	CE SF	F1	F2	PREN
LADLE ANALYSIS	0,029	0,0000	0,004						0,395	0,368	0,213	0,090	-
PRODUCT ANALYSIS	0,029	0,0000	0,003						0,401	0,376	0,182	0,095	-

CE LF=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15 CE SF=C+(Mn/6) F1=Cu+Ni+Cr+Mo+V F2=Cr+Mo

Provetta Test specimen	Forma Shape	*C ^{B03}	Snervamento>0,2% Yield Strength>0,2%	Snervamento>1,0% Yield Strength>1,0%	Rottura Tensile	Allungamento Elongation	Contrazione Reduction of area
Sez/Sect mm2 Gauge L.mm 1=0 - 2=□			MPa	MPa	MPa	%	%
29,88 25,00	1	20	344,0	-	522,0	37,6	73,9

DUREZZA / HARDNESS^{C30}

HBW	Tipo/Type	Provetta / Test Specimen	*C ^{B03}	1-Joule	2-Joule	3-Joule	Media/Average
155,0 ; 149,0 ; 160,0	KV	10x10x55 mm	20	136	144	141	140,3

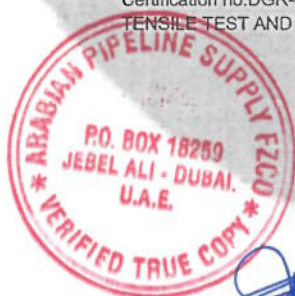
Tratt. Term. / Heat treatment ^{B04} NORMALIZED AT 920 °C - COOLED IN STILL AIR ^{C70} GAS FURNACE

Dim in acc. a / Dim. acc. to ^{B14} ASME/ANSI B16.5 -2020 ; ASME/ANSI B36.10M -2022

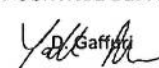
Finitura / Roughness ^{B15} ASME/ANSI B46.1 -2019 ; RF FINISHING 125-250 µin AARH

Marcatura in acc. Marking in acc. to	ANSI/MSS SP-25-2018	Vis. & Dim.	SATISFACTORY	Origine Origin of Steel	EUROPEAN UNION
---	---------------------	-------------	--------------	----------------------------	----------------

Note / Notes ^{Z01-B03} MATERIAL 100% MANUFACTURED IN ITALY; MATERIAL IN ACCORDANCE WITH ORDER AND SPECIFICATION
Issued in agreement with TÜV SÜD Industrie Service GmbH August 12th, 2021".
Certification no.DGR-0036-QS-W 1025/2021/MUC-01
TENSILE TEST AND CHARPY KV IMPACT TEST PERFORMED IN ACCORDANCE WITH ASTM A370 -22.



22/01/23
(P)

UFFICIO CONTROLLO QUALITA' QUALITY CONTROL DEPARTMENT	ENTE UFFICIALE DI COLLAUDO INSPECTION AUTHORITY	MARCHIO PRODUZIONE MANUFACTURER'S SYMBOL
		



BOTH-WELL STEEL FITTINGS CO., LTD.

NO.303, RENXIN ROAD, RENWU DISTRICT, KAOHSIUNG CITY, TAIWAN, R.O.C. (814020)
TEL : (886)7-3711536, 3710497, 3720260 FAX : (886)7-371-3864, 3713882
WEB SITE : <http://www.bothwell.com.tw> E-Mail : BW_SalesT1@bothwell.com.tw

An ISO 9001 : 2015 Registered Manufacturer

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 3.1

CUSTOMER ☐ SUNEL WALA BUILDING MATERIALS LLC

PAGE ☐ 7

CERT NO. : 240770

INVOICE NO. ☐ 5200024799

DATE ☐ 03/ 18/ 2024

ORDER NO. : OPMS/ BW 610/ 2023

L/ C NO. ☐

ORIGIN ☐ TAIWAN

ITEM	RAW HEAT NO. HEAT NO.	QTY	DESC/ GRADE OR SPECIFICATION NO. CHEMICAL COMPOSITION(%) MECHANICAL PROPERTIES.
			HARDNESS 1(HBW): 144 HARDNESS 2(HBW): 146
68	304132Z CA1636	48 PCS	OUTLET REDUCING WAY A105 48"-2-1/2"X2" S80 BW C: 0.19 Si: 0.22 Mn: 1.06 P: 0.011 S: 0.003 Cu: 0.07 Cr: 0.07 Ni: 0.03 Mo: 0.02 V: 0.002 Nb: 0.002 N: 0.0056 Ti: 0.001 CE: 0.39 TS(KSI): 74.1 YS 0.2%(KSI): 51.6 EL(%): 37.0 R.A. (%): 66.0 HARDNESS 1(HBW): 145 HARDNESS 2(HBW): 147
69	300558Z CA1559	10 PCS	OUTLET REDUCING WAY A105 48"-3"X2-1/2" S80 BW C: 0.19 Si: 0.21 Mn: 1.05 P: 0.017 S: 0.005 Cu: 0.07 Cr: 0.06 Ni: 0.04 Mo: 0.01 V: 0.004 Nb: 0.003 N: 0.0049 Ti: 0.002 CE: 0.39 TS(KSI): 79.2 YS 0.2%(KSI): 52.2 EL(%): 34.3 R.A. (%): 66.7 HARDNESS 1(HBW): 144 HARDNESS 2(HBW): 145
70	391347Z CA1407	10 PCS	OUTLET REDUCING WAY A105 48"-4"X3" S80 BW C: 0.20 Si: 0.22 Mn: 1.08 P: 0.012 S: 0.002 Cu: 0.04 Cr: 0.07 Ni: 0.03 Mo: 0.02 V: 0.003 Nb: 0.002 N: 0.0047 Ti: 0.001 CE: 0.40 TS(KSI): 77.6 YS 0.2%(KSI): 53.7 EL(%): 33.7 R.A. (%): 69.3 HARDNESS 1(HBW): 148 HARDNESS 2(HBW): 151
71	307052Z CA1686	10 PCS	OUTLET REDUCING WAY A105 48"-5"X4" S80 BW C: 0.19 Si: 0.20 Mn: 1.05 P: 0.012 S: 0.003 Cu: 0.09 Cr: 0.07

WE CERTIFY THE ABOVE MENTIONED FITTINGS/ FLANGES HAVE BEEN
MANUFACTURED, SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH
THE SPECIFICATIONSSHOW

Y.Y. Chang

Q. C. MANAGER

C.L. Ko

INSPECTOR

[Signature] 22/01/28





BOTH-WELL STEEL FITTINGS CO., LTD.

NO.303, REN-SIN ROAD, REN-WU DISTRICT, KAOHSIUNG CITY, TAIWAN, R.O.C.(814020)
TEL : (886)7-3711536, 3710497, 3720260 FAX : (886)7-371-3864, 3713882
WEB SITE : <http://www.bothwell.com.tw> E-Mail : box@bothwell.com.tw

An ISO 9001 : 2015 Registered Manufacturer

53
108
111
113
117

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 3.1

CUSTOMER ☐ SUNEL WALA BUILDING MATERIALS LLC

PAGE ☐ 6

CERT NO. : 201147

INVOICE NO. ☐ 5200016213

DATE ☐ 06/ 12/ 2020

ORDER NO. : OPMS/ BW 496/ 2020

L/ C NO. ☐

ORIGIN ☐ TAI WAN

ITEM	RAW HEAT NO. HEAT NO.	QTY	DESC/ GRADE OR SPECIFICATION NO. CHEMICAL COMPOSITION(%) MECHANICAL PROPERTIES.
91	0132291 CA1260	350 PCS	OUTLET REDUCING WAY A105 48"x1/2" S80 BW C: 0.18 Si: 0.18 Mn: 0.98 P: 0.015 S: 0.009 Cu: 0.20 Cr: 0.11 Ni: 0.07 Mo: 0.01 V: 0.002 Nb: 0.000 N: 0.009 Ti: 0.001 CE: 0.39 TS(KSI): 77.1 YS 0.2%(KSI): 52.8 EL(%): 31.0 R.A.(%): 62.7 HARDNESS 1(HBW): 144 HARDNESS 2(HBW): 146
92	0132287 CA1258	350 PCS	OUTLET REDUCING WAY A105 48"x3/4" S80 BW C: 0.18 Si: 0.20 Mn: 0.98 P: 0.019 S: 0.009 Cu: 0.15 Cr: 0.14 Ni: 0.08 Mo: 0.01 V: 0.003 Nb: 0.001 N: 0.010 Ti: 0.001 CE: 0.39 TS(KSI): 80.8 YS 0.2%(KSI): 55.5 EL(%): 33.1 R.A.(%): 66.9 HARDNESS 1(HBW): 145 HARDNESS 2(HBW): 148
93	0110214 CA0907	200 PCS	OUTLET REDUCING WAY A105 48"x1" S80 BW ✓ C: 0.18 Si: 0.21 Mn: 1.04 P: 0.012 S: 0.007 Cu: 0.10 Cr: 0.08 Ni: 0.05 Mo: 0.01 V: 0.002 Nb: 0.001 N: 0.0087 Ti: 0.0023 CE: 0.38 TS(KSI): 76.1 YS 0.2%(KSI): 49.5 EL(%): 34.5 R.A.(%): 64.4 HARDNESS 1(HBW): 146 HARDNESS 2(HBW): 147
94	326701 3742	50 PCS	OUTLET REDUCING WAY A105 48"x1-1/4" S80 BW C: 0.200 Si: 0.200 Mn: 0.850 P: 0.016 S: 0.010 Cu: 0.150 Cr: 0.090 Ni: 0.060 Mo: 0.020 V: 0.002 Nb: 0.001 N: - CE: 0.38

WE CERTIFY THE ABOVE MENTIONED FITTINGS HAVE BEEN MANUFACTURED,
SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH THE
SPECIFICATIONS SHOWN

Q. C. MANAGER

INSPECTOR

BW-D0839 REV: 4





BOTH-WELL STEEL FITTINGS CO., LTD.

NO.303, RENXIN ROAD, RENWU DISTRICT, KAOHSIUNG CITY, TAIWAN, R.O.C. (814020)
TEL : (886)7-3711536, 3710497, 3720260 FAX : (886)7-371-3864, 3713882
WEB SITE : <http://www.bothwell.com.tw> E-Mail : BW_SalesT1@bothwell.com.tw

An ISO 9001 : 2015 Registered Manufacturer

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 3.1

CUSTOMER ☐ SUNEL WALA BUILDING MATERIALS LLC

PAGE ☐ 66

CERT NO. : 240770

INVOICE NO. ☐ 5200024799

DATE ☐ 03/18/2024

ORDER NO. : OPMS/BW 610/2023

L/C NO. ☐

ORIGIN ☐ TAIWAN

ITEM	RAW HEAT NO. HEAT NO.	QTY	DESC/ GRADE OR SPECIFICATION NO. CHEMICAL COMPOSITION(%) MECHANICAL PROPERTIES.
			N: 0.03 Mb: 0.01 V: 0.004 Nb: 0.003 N: 0.0053 Ti: 0.002 CE: 0.38 TS(KSI): 76.2 YS 0.2%(KSI): 52.2 EL(%): 34.0 R.A.(%): 70.7 HARDNESS 1(HBW): 145 HARDNESS 2(HBW): 146
232	300569Z CA1567	25 PCS	TEE A105 1-1/4" 3000# S/W C: 0.19 Si: 0.24 Mn: 1.05 P: 0.018 S: 0.005 Cu: 0.09 Cr: 0.07 Ni: 0.04 Mb: 0.01 V: 0.004 Nb: 0.001 N: 0.0044 Ti: 0.001 CE: 0.39 TS(KSI): 76.7 YS 0.2%(KSI): 51.4 EL(%): 33.3 R.A.(%): 67.5 HARDNESS 1(HBW): 142 HARDNESS 2(HBW): 143
233	307048Z CA1674	25 PCS	TEE A105 1-1/2" 3000# S/W C: 0.19 Si: 0.20 Mn: 1.08 P: 0.011 S: 0.004 Cu: 0.10 Cr: 0.07 Ni: 0.03 Mb: 0.01 V: 0.003 Nb: 0.003 N: 0.0049 Ti: 0.001 CE: 0.40 TS(KSI): 79.7 YS 0.2%(KSI): 53.0 EL(%): 34.4 R.A.(%): 66.7 HARDNESS 1(HBW): 149 HARDNESS 2(HBW): 150
234	306486Z CA1669	25 PCS	TEE A105 2" 3000# S/W C: 0.20 Si: 0.20 Mn: 1.04 P: 0.021 S: 0.003 Cu: 0.10 Cr: 0.11 Ni: 0.05 Mb: 0.02 V: 0.002 Nb: 0.003 N: 0.0044 Ti: 0.002 CE: 0.41 TS(KSI): 73.1 YS 0.2%(KSI): 46.0 EL(%): 31.8 R.A.(%): 65.3

WE CERTIFY THE ABOVE MENTIONED FITTINGS/ FLANGES HAVE BEEN
MANUFACTURED, SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH
THE SPECIFICATION SHOWN

Y.Y. Chang
Q. C. MANAGER

C.L. Ko
INSPECTOR



[Signature] 22/01/25
[Signature]

CLIENTE / Customer / Client
TIGER OFFSHORE FZC
P.O. BOX 49278
HAMRIYAH FREE ZONE
SHARJAH,
UNITED ARAB EMIRATES

CERTIFICADO DE INSPECCION
Inspection Certificate - Certificat de Réception

DIN EN 10204 / 3.1
ISO 10474 / 3.1

FECHA: 11/09/2013
Nº 159585
HOUA: 2
Page: 2



ULMA

PRODUCTO

FLANGES

SU PEDIDO N.º TPO-1306-368
Your Order No. Voire Cde. N.º

DE 30/06/2013
of - de

Certified acc. PED 97/23/EC-AD2000-WO
by TÜV Rheinland
N.º 01 202 EQ 02 7443

ULMA FORJA S COOP.

NORMAS APLICABLES

ASME B16.5-13

MATERIAL CORRESPONDIENTE

ASME SA105M-10 add.11, ASTM A105M-12

MODO DE FUSION (*)

Steel Making - Elaboration de l'acier
E = Elec. Y = Oxygeno básico

NACE MR0175/ISO 15156-2-09 & MR0103-12
ASME II-A Ed. 2010 + ADD 2011
MESC SPE-76/210 & 76/100 Ed. 2012

DEPARTAMENTO QUALITY ASSURANCE



Packing List: 104580

PARTIDA Item Poste	CANTIDAD Quantity Quantité	DESCRIPCION Description Description	OBSERVACIONES Remarks Observations	COLADA N.º Heat No N.º Coudée	T. Strength Tensile Min/Max	Y. Strength 0.2 % Min/Max	Elongation at break Lo. 4 d %	Red Area Section %	RESISTENCIA Impact test Resistance Joules	CHARPY V 10x10mm MECA Average Range	DUREZA Hardness Dureté
32	40	WN 8 300L B STD40 RF A105N	NE	C19A3	522	314	30.80	55.30			153 180
43	48	WN 8 150LB XS/80 RF A105N	NE	B52A3	518	319	30.60	53.20			156 160
51	96	WN 4 300LB XS/80 RF A105N	NE	A45T3	513	307	28.60	59.50			152 156
50	180	WN 2 600LB XS/80 RF A105N	NE	B31T3	513	312	32.40	61.30			150 156
61	35	WN 3 600LB XS/80 RF A105N	NE	A97T3	511	296	29.80	61.30			149 155
63	36	WN 6 600LB XS/80 RF A105N	NE	B30T3	519	309	31.70	53.40			152 157
67	8	WN 6 150LB S180 RF A105N	NE	B50T3	517	312	30.40	51.70			150 157
67	22	WN 6 150LB S160 RF A105N	NE	452V2	517	306	29.10	59.30			152 156
67			NE	560T2	508	309	28.50	58.80			150 154

COMPOSICION QUIMICA - STEEL MAKERS LADLE ANALYSIS - ANALYSE CHIMIQUE

C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	Nb %	V %	Cu %	Al %	Ti %	N %	Ceq %
452V2	0.187	0.193	0.920	0.011	0.004	0.080	0.040	0.027	0.000	0.004	0.023	0.021	0.000	0.0000
560T2	0.210	0.170	0.860	0.010	0.009	0.070	0.040	0.010	0.001	0.002	0.230	0.000	0.000	0.0000
A45T3	0.210	0.200	0.880	0.011	0.010	0.060	0.040	0.021	0.003	0.001	0.230	0.000	0.000	0.0000
A97T3	0.192	0.217	0.854	0.016	0.010	0.148	0.040	0.040	0.000	0.004	0.362	0.000	0.000	0.0000
B30T3	0.190	0.160	0.880	0.012	0.010	0.080	0.040	0.032	0.008	0.002	0.360	0.000	0.000	0.0000
B31T3	0.200	0.190	0.850	0.020	0.010	0.080	0.040	0.030	0.005	0.002	0.400	0.000	0.000	0.0000
B50T3	0.200	0.160	0.870	0.011	0.010	0.060	0.040	0.020	0.006	0.001	0.350	0.000	0.000	0.0000
B52A3	0.190	0.205	1.050	0.012	0.005	0.070	0.040	0.022	0.006	0.005	0.192	0.027	0.000	0.0000
C19A3	0.190	0.220	0.940	0.007	0.003	0.092	0.040	0.026	0.000	0.001	0.201	0.035	0.000	0.0000

- Les dimensions y la condition superficielle se hallaron satisfactorias.
- Dimension and surface condition were found acceptable.
- Les dimensions et états de surface sont satisfaisants.
- Los materiales citados cumplen las normas aplicables.
- Manufacturing requirements are satisfied.
- Les normes applicables sont respectées.

EL INSPECTOR

Wors Inspector - L'inspecteur



ULMA FORJA S COOP.

Dpto. de Garantía de calidad
Quality Assurance Dept.

(*) OBSERVACIONES:
Remarks
Observations

N.º NORMALIZED AT 900 C AND ALLOWED TO COOL IN STILL AIR

SL PO - 25010015
4 NOS

22/01/25



CLIENTE / Customer / Client

CERTIFICADO DE INSPECCION

Inspection Certificate - Certificat de Réception

FECHA: 22/05/2008

Nº 121257

HOJA: 1

REV.01

SU PEDIDO N.º
Your Order No
Votm Cde. N.º

PO NO. TPO-0802-056

DE
at - de 29/02/2008



ULMA

PRODUCTO
Article - Produit

FLANGES

ASME B16.5-13

NORMAS APLICABLES
Requirements - Normes Applicables

ASME SA105M-13, ASTM A105M-14

MATERIAL CORRESPONDIENTE
Material Correspondent - Qualité

MODE DE FUSION (*)
Steel Making - Elaboration duacier

NACE MR0175/ISO15156-02-09 & MR0103-12

DEPARTAMENTO
Section

QUALITY ASSURANCE

Marca del fabricante
Mark of factory
Marque du fabricant



Bº Zuhalega, 3, Aptdo 14
20580 ORMAI TI (Gipuzkoa) SPAIN
Tel: 34 - 943 780552
Fax: 34 - 943 781808
E-mail: ulma@ulmapiping.com

Packing List: 66839

PARTIDA Item Poste	CANTIDAD Quantity Quantité	DESCRIPCION Description Description	OBSERVACIONES Remarks Observations	COLADA N.º Heat No N.ºCoulée	RESISTENCIA Tensile Résistance	ALARGUE Elongation Allongement	REDUCCION DE AREA Red Area Loi Réduction	RESILIENCIA Impact test Résilience	CHARPY V 10410mm Método Méthode	DUREZA Hardness Dureté
1	539	WN 2 150LB S40 RF A105N	NE	149A8	517	309	28.40	53.70		149 155
6	196	WN 4 150LB S40 RF A105N	NE	387A7	519	304	28.70	56.00		150 156
12	105	WN 6 150LB S40 RF A105N	NE	123A8	514	306	28.40	53.70		150 155
14	25	WN 8 300LB S40 RF A105N	NE	144A8	518	303	27.90	56.30		149 155
17	72	WN 8 150LB S40 RF A105N	NE	158A8	520	319	32.40	65.30		150 156
18	80	WN 8 300LB S40 RF A105N	NE	149R8	515	339	34.80	69.00		143 150
19	80	WN 8 300LB S80 RF A105N	NE	165A8	514	315	30.80	63.00		148 154
20	80	WN 8 300LB S80 RF A105N	NE	157A8	514	313	28.70	56.40		150 156

COMPOSICION QUIMICA - STEEL MAKER'S LABLE ANALYSIS - ANALYSE CHIMIQUE

COLADA N.º Heat No N.ºCoulée	C %	Si %	Mn %	P %	S %	Cr %	Mo %	Nb %	V %	Cu %	Al %	Ti %	Ceq %
123A8	0.190	0.220	0.850	0.014	0.007	0.060	0.130	0.010	0.000	0.001	0.340	0.021	0.000
144A8	0.200	0.200	0.850	0.009	0.006	0.060	0.110	0.010	0.000	0.002	0.220	0.024	0.000
149A8	0.210	0.210	0.840	0.011	0.007	0.070	0.100	0.010	0.000	0.001	0.240	0.024	0.000
149R8	0.150	0.220	1.160	0.014	0.001	0.080	0.070	0.040	0.007	0.001	0.180	0.034	0.000
157A8	0.190	0.270	0.860	0.018	0.003	0.130	0.080	0.020	0.007	0.004	0.210	0.015	0.000
158A8	0.190	0.250	0.840	0.015	0.004	0.150	0.090	0.040	0.007	0.001	0.260	0.046	0.000
165A8	0.190	0.230	0.830	0.006	0.004	0.040	0.060	0.020	0.007	0.001	0.200	0.034	0.000
387A7	0.210	0.220	0.870	0.012	0.006	0.080	0.120	0.010	0.000	0.005	0.220	0.020	0.000

- Les dimensions y la condition superficielle se basent satisfaisantes.
- Dimension and surface condition were found acceptable.
- Les dimensions et états de surface sont satisfaisants.
- Los materiales citados cumplen las normas aplicables.
- Manufacturing requirements are satisfied.
- Les normes applicables sont respectées.



(*) OBSERVACIONES
Remarks
Observations

N.º NORMALIZED AT 900 C AND ALLOWED TO COOL IN STILL AIR.
B. LESS THAN 5 ppm.

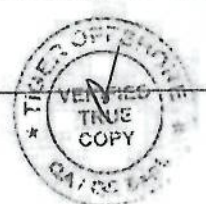
P.O.NO. SLPO-25010015
ITEM NO. 4
REV. 21/05/08

22/01/08



#70
APCS

A70
2 BPL

		23813 Cortenova (Lecco) ITALY Largo De Vecchi 11 P.O. box 11 Tel. 0341.98341 Fax 0341.983496 - 983497 lino.uberti@melesi.it		CERTIFICATO DI COLLAUDO WORKS CERTIFICATE CERTIFICAT D'ESSAIS		N. 110162 Rev. 01		DATA / DATE 15/04/15 SHEET / PAGE 1/1							
		FLANGE E FORGIATI		ORDINE / ORDER / C.DE TPO-1502-671 Rev.00		DATA / DATE 2/03/15 COMMESSA 55504 TIGER OFFSHORE P.O. BOX 49278 SHARJAH UA6									
N. RIF.	ITEM	N / QUANTITY	DESCRIZIONE / DESCRIPTION / DESIGNATION						NOTE						
LB4175	125 *	50	A105N	24"	WN	150	RF	SCH	STD	125-250 RMS					
LB5172	9	300	A105N	6"	WN	150	RF	SCH	40	125-250 RMS					
LB5511	89	41	A105N	10"	BL	300	RF			125-250 RMS					
LB5640	11	50	A105N	8"	WN	150	RF	SCH	40	125-250 RMS					
LB5640	12	50	A105N	8"	WN	150	RF	SCH	80	125-250 RMS					
LB5640	35	50	A105N	8"	WN	300	RF	SCH	40	125-250 RMS					
LB5640	36	50	A105N	8"	WN	300	RF	SCH	80	125-250 RMS					
LB5640	76	50	A105N	8"	BL	150	RF			125-250 RMS					
LB5640	88	50	A105N	8"	BL	300	RF			125-250 RMS					
LB5640	114	100	A105N	8"	SO	150	RF			125-250 RMS					
N.	MATERIALE / MATERIAL / MATÉRIEL		HEAT / COULÉE		ACCIAIERIA / STEEL PLANT / ACIÉRIE				ORIGIN. CERT. / CERT. D'ORIGIN						
LB4175	ASTM A105 14		T15688		TRINEKE				2010/06/0619						
LB5172	ASTM A105 14		3121230024		LUCCHINI SIDERMECCANICA SPA				44964/12						
LB5511	ASTM A105 14		1334896		LUCCHINI SIDERMECCANICA SPA				100000061597						
LB5640	ASTM A105 14 ASME SA105		1336231		LUCCHINI SIDERMECCANICA SPA				100000066147						
N. RIF.	ANALISI CHIMICA / CHEMICAL ANALYSIS / COMPOSITION CHIMIQUE														
	C	Mn	Si	P	S	Cr	Ni	Mo	Nb	V	Cu	Al	Sn	* C.Eq	
Min		0,600	0,100												
Max	0,210	1,050	0,350	0,020	0,010	0,300	0,040	0,120		0,080	0,400			0,400	
LB4175Lad	0,200	0,840	0,240	0,011	0,005	0,180	0,023	0,008	0,002	0,004	0,030	0,030	0,000	0,382	
LB4175Chec	0,199	0,838	0,240	0,010	0,004	0,179	0,019	0,007	0,002	0,003	0,029	0,030	0,000	0,380	
LB5172Lad	0,175	1,020	0,235	0,011	0,004	0,155	0,023	0,004	0,001	0,004	0,058	0,030	0,000	0,383	
LB5172Chec	0,177	1,030	0,236	0,011	0,004	0,157	0,025	0,004	0,001	0,004	0,061	0,030	0,000	0,387	
LB5511Lad	0,170	1,020	0,235	0,015	0,003	0,160	0,029	0,007	0,002	0,003	0,078	0,025	0,000	0,381	
LB5511Chec	0,180	1,020	0,240	0,016	0,004	0,170	0,027	0,008	0,003	0,004	0,079	0,027	0,000	0,393	
LB5640Lad	0,180	1,030	0,230	0,011	0,005	0,160	0,022	0,004	0,001	0,005	0,050	0,028	0,000	0,390	
LB5640Chec	0,185	1,040	0,233	0,011	0,005	0,165	0,023	0,006	0,001	0,006	0,057	0,028	0,000	0,399	
N. RIF.	PROVE MECCANICHE / MECHANICAL TESTS / ESSAIS MECANQUES														
	σ mm.	σ _{0.2} mm.2	LU mm.	RS-YIELD LIMITE	R-TENSILE RUPTURE	A-%ELONG. ALLONGEM.	C-%REDUCT. STRICTION	RESILLENZA / IMPACT TEST / RESILIENCE			HARDNESS / DURETÉ				
				MPA	MPA	2"		MEDIO / AVERAGE MOYEN	MINIMO MINIMUM	TIPO TYPE	TEMP.	Brinell 10-3000-30 Max.187			
LB4175	12,70	126,65	50,80	325,00	521,00	31,00	63,00					156/157			
LB5172	12,70	126,65	50,80	325,30	542,30	32,50	64,50					152/158			
LB5511	12,70	126,65	50,80	289,50	539,00	29,90	65,90					156/159			
LB5640	12,70	126,65	50,80	288,50	544,10	30,00	67,30					155/157			
N. RIF.	TRATTAMENTI TERMICI / HEAT TREATMENTS / TRAITEMENTS THERMIQUES														
LB4175	Normalizzato / Normalized at 900°C						Cooling still air								
LB5172	Normalizzato / Normalized at 900°C						Cooling still air								
LB5511	Normalizzato / Normalized at 900°C						Cooling still air								
LB5640	Normalizzato / Normalized at 900°C						Cooling still air								
Acc. DIN50049 3.1B/EN10204 3.1 Surface and dimensional check according to ASME B16,5 2013. Steel made by electric furnace fully killed fine grain practice. (**)CEq. by long formula. * ITEM 125: material vacuum degassed. Material acc. to NACE MR 01-75 ed. 2009. ✓ Material acc. to NACE MR 01-03 ed. 2012. Material acc. to ASME SA105 ASME section II part A ed. 2013.															
 															
ESITO DELLE PROVE / TEST ISSUE / RESULTATS DES ESSAIS: FAVORABLE SATISFACTORY SATISFAISANT TRADE MARK P. OFF. A. MELESI & C. COLLAUDATORE / INSPECTOR / INSPECTEUR ENTE COLLAUDATORE / INSPECTION AGENCY   Uberti p.i. Lino															

NO. 5LPD-25010015
 CM RT. 2
 PV 6 N.O.S

22/01/25

CLIENTE / Customer / Client
TIGER OFFSHORE FZC
P.O. BOX 49278
HAMRIYAH FREE ZONE
SHARJAH,
UNITED ARAB EMIRATES

CERTIFICADO DE INSPECCION

Inspection Certificate - Certificat de Réception

DIN EN 10204 / 3.1
ISO 10474 / 3.1

FECHA: 30/07/2013
N.º 159141

HOUA: 3



ULMA FORJA S.COOP.

PRODUCTO
Article - Produit

FLANGES

NORMAS APLICABLES
Requirements - Normes Applicables

ASME B16.5-13

SU PEDIDO N.º
Your Order No. TPO-1306-368
Votre Cde. N.º

DE
of - de 30/06/2013

Certified acc PED 97/23/EC+AD2000-WO
by TÜV Rheinland
N.º 01 202 E/Q 02 7443

MARCA DEL FABRICANTE
Mark of factory

Manque du fabricant

Packing List: 104075

MATERIAL CORRESPONDIENTE
Material Correspondent - Qualité

ASME SA105-10 add.11, ASTM A105N-12

MODO DE FUSION (*)
Steel Making - Elaboration de l'acier

NACE MR0175/ISO15156-2-09 & MR0103-12
ASME II-A Ed. 2010 + ADD 2011
MESC SPE-76/210 & 76/100 Ed. 2012

E = Elec. Y = Oxígeno básico

DEPARTAMENTO QUALITY ASSURANCE
Département



PARTIDA Item Poste	CANTIDAD Quantity Quantité	DESCRIPCION Description Description	OBSERVACIONES Remarks Observations (*)	COLADA N.º Heat No N.º Coulee	T. Strength Tensile Rupture N/mm2	Y. Strength Yield N/mm2	ALARGA Elongation Lo. 4 d %	ESTRICCION Red. Area Section %	RESILIENCIA Impact test Resilience Joules	CHARPY V 10x10mm Average Moyness °C	DUREZA Hardness Dureté HBW
40	112	WN 4 150LB XS/80 RF A105N	NE	B1513	519	324	30.60	54.70			150 158
46	100	WN 1 300LB XS/80 RF A105N	NE	112TV2	528	325	28.20	58.60			156 160
50	9	WN 3 300LB XS/80 RF A105N	NE	A5313	512	320	30.70	50.90			154 159
52	45	WN 5 300LB XS/80 RF A105N	NE	650T2	512	307	28.60	58.90			150 153
54	48	WN 8 300LB XS/80 RF A105N	NE	A7113	508	313	32.70	49.60			149 154
56	60	WN 3/4 600LB XS/80 RF A105N	NE	109TV2	532	312	29.80	59.20			158 164
59	1	WN 1.1/2 600LB XS/80 RF A105N	NE	A30T3	516	320	28.60	59.50			147 150
	49	WN 1.1/2 600LB XS/80 RF A105N	NE	A6TV3	514	318	29.40	59.70			153 157

COMPOSICION QUIMICA - STEEL MAKERS LADLE ANALYSIS - ANALYSE CHIMIQUE

COLADA N.º Heat No N.º Coulee	C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	Nb %	V %	Cu %	Al %	Ti %	N %	Ceq %
109TV2	0.170	0.210	1.030	0.014	0.004	0.150	0.031	0.005	0.002	0.003	0.069	0.026	0.014	0.000	0.380
112TV2	0.169	0.230	1.050	0.017	0.010	0.160	0.040	0.020	0.002	0.029	0.170	0.022	0.030	0.000	0.400
650T2	0.200	0.170	0.850	0.009	0.008	0.070	0.040	0.024	0.001	0.002	0.330	0.000	0.000	0.000	0.386
A30T3	0.210	0.170	0.900	0.016	0.010	0.050	0.040	0.017	0.004	0.001	0.280	0.000	0.000	0.000	0.395
A5313	0.200	0.200	0.940	0.016	0.010	0.050	0.040	0.029	0.005	0.001	0.310	0.000	0.000	0.000	0.398
A6TV3	0.192	0.230	1.020	0.012	0.002	0.072	0.040	0.029	0.001	0.001	0.230	0.035	0.000	0.000	0.400
A7113	0.169	0.233	0.879	0.016	0.010	0.276	0.040	0.034	0.002	0.002	0.286	0.000	0.000	0.000	0.400
B1513	0.180	0.200	0.930	0.014	0.010	0.080	0.040	0.031	0.003	0.001	0.320	0.000	0.000	0.000	0.381

- Les dimensions y la condition superficial se hallaron satisfactorias.
- Dimension and surface condition were found acceptable.
- Les dimensions et états de surface sont satisfaisants.

- Los materiales citados cumplen las normas aplicables.
- Manufacturing requirements are satisfied.
- Les normes applicables sont respectées.

SLP0-25010015
48 NOS



EL INSPECTOR
Works Inspector - L'inspecteur

ULMA FORJA S.COOP.
Dpto. de Garantía de calidad
Quality Assurance Dept.

(*) OBSERVACIONES:
Remarks
Observations
N NORMALIZED AT 900 C AND ALLOWED TO COOL IN STILL AIR



A70
148PCS

H71
21P5

CLIENTE / Customer / Client

CERTIFICADO DE INSPECCION

Inspection Certificate - Certificat de Réception

DIN EN 10204 / 3.1
ISO 10474 / 3.1

FECHA:
Date: 22/05/2008

N.º
No. 121257

HOJA:
Page 1



ULMA FORJA, S.COOP

PRODUCTO
Article - Produit
FLANGES
SU PEDIDO N.º
Your Order No.
NORMAS APLICABLES
ASME B16.5-13
Requisitos - Normes Applicables
MATERIAL CORRESPONDIENTE
ASTM A105M-14
MATERIAL CORRESPONDIENTE
ASTM A105M-14
MODO DE FUSION (*)
Steel Making - Elaboration de l'acier
E = Efic. Y = Origino Básico

PO NO. TPO-0802-056
Votre Cde. N.º

DE
of - de 29/02/2008

Certified acc. PED 97/23/EC-AD2003-WO
by TÜV Rheinland
N.º 01 202 ETD 02 7443
MARCA DEL FABRICANTE
Mark of factory
Maurice du fabricant
DEPARTAMENTO
Section
QUALITY ASSURANCE



BP Zubilaga, 3 - Apdo. 14
20580 ORMAI (Gipuzkoa) SPAIN
Tel.: 34 - 943 780532
Fax: 34 - 943 781808
E-mail: ulma@ulmapiping.com
Packing List: 66839

PARTIDA Item Poste	CANTIDAD Quantity Quantité	DESCRIPCION Description Description	OBSERVACIONES Remarks Observations	COLADA N.º Heat No N.º Caille	T. Strength Reaser Rupt N/mm2	Y Strength 0.2 % N/mm2	ALARGAM. Elongation Red. Area Lo. Strained %	RESILIENCIA Impact Test Resilience Joules	DUREZA Hardness HBW
1	539	WIN 2 150LB S40 RF A105N	NE	149A8	517	309	28.40	53.70	149 155
6	196	WIN 4 150LB S40 RF A105N	NE	387A7	519	304	28.70	56.00	150 156
12	105	WIN 6 150LB S40 RF A105N	NE	123A8	514	306	28.40	53.70	150 155
14	25	WIN 8 300LB S40 RF A105N	NE	144A8	518	303	27.90	56.30	149 155
17	72	WIN 8 150LB S40 RF A105N	NE	159A8	520	319	32.40	65.00	150 156
18	72	WIN 8 150LB S40 RF A105N	NE	149R6	515	339	34.80	69.00	143 150
19	80	WIN 8 300LB S40 RF A105N	NE	165A8	514	315	30.80	63.00	148 154
20	80	WIN 8 300LB S40 RF A105N	NE	157A8	514	313	28.70	56.40	150 156

COMPOSICION QUIMICA - STEEL MAKERS LADLE ANALYSIS - ANALYSE CHIMIQUE

COLADA N.º Heat No N.º Caille	C %	Si %	Mn %	P %	S %	Cr %	Mo %	Nb %	V %	Cu %	Al %	Ti %	CEq %
123A8	0.190	0.220	0.850	0.014	0.007	0.060	0.130	0.010	0.000	0.001	0.340	0.021	0.000
144A8	0.200	0.200	0.850	0.009	0.006	0.060	0.110	0.010	0.000	0.002	0.220	0.024	0.000
149A8	0.210	0.210	0.840	0.011	0.007	0.070	0.100	0.010	0.000	0.001	0.240	0.024	0.000
149R6	0.150	0.220	1.160	0.014	0.001	0.080	0.070	0.040	0.007	0.001	0.160	0.034	0.000
157A8	0.190	0.270	0.860	0.018	0.003	0.130	0.080	0.020	0.007	0.004	0.210	0.015	0.000
158A8	0.190	0.250	0.840	0.015	0.004	0.150	0.090	0.040	0.007	0.001	0.260	0.046	0.000
165A8	0.190	0.230	0.830	0.006	0.004	0.040	0.060	0.020	0.007	0.001	0.200	0.034	0.000
387A7	0.210	0.220	0.870	0.012	0.006	0.080	0.120	0.010	0.000	0.005	0.220	0.020	0.000

- Les dimensions y la condition superficial se hallaron satisfactorias.
- Dimension and surface condition were found acceptable.
- Les dimensions et états de surface sont satisfaisants.
- Los materiales citados cumplen las normas aplicables.
- Manufacturing requirements are satisfied.
- Les normes applicables sont respectées.

EL INSPECTOR
Who's Inspector - L'inspecteur



(*) OBSERVACIONES
Remarks
Observations
N.º NORMALIZED AT 900 C AND ALLOWED TO COOL IN STILL AIR.
B. LESS THAN 5 ppm.

P.O. NO.	SLPO - 25010015
ITEM NO.	4
REV.	21NOS



#33

CLIENTE / Customer / Client
TIGER OFFSHORE FZC
P.O. BOX 49278
HAMIRIYAH FREE ZONE
SHARJAH
UNITED ARAB EMIRATES

CERTIFICADO DE INSPECCION
Inspection Certificate - Certificat de Réception
DIN EN 10204 / 3.1
ISO 10474 / 3.1
FECHA: 11/09/2013
N° 159685
HOLA: 2
Page: 2



PRODUCTO **FLANGES**
Article - Product
SU PEDIDO N° TPO-1306-368
Your Order No. Votre Cde. N°

DE 30/06/2013
of - de

Certified acc. PED 97/23/EC-AD2000-WG
by TÜV Rheinland
N° 01 202 EQ 02 7443

B° Zuhilaga, 3 - Agoa, 14
20560 ONATI (Gipuzkoa) SPAIN
Tel: 34 - 943 780552
Fax: 34 - 943 781808
E-mail: ulma@ulmapiping.com

Packing List: 104680

MATERIAL CORRESPONDIENTE **ASME SA105M-10 add.11, ASTM A105M-12**
Material Correspondent - Qualité
MODE DE FUSION (1)
Steel Making - Elaboration de l'acier
E = Elec. Y = Origina blanco
MARCA DEL FABRICANTE
Mark of factory
Marque du fabricant
DEPARTAMENTO **QUALITY ASSURANCE**
Department

PARTIDA Item Poste	CANTIDAD Quantity Quantité	DESCRIPCION Description	OBSERVACIONES Remarks Observations	COLADA N° Heat No. N°-Coulée	RESISTENCIA Tensile Résistance	ALARGAM. Elongation Allongement	RESILIENCIA Impact test Résilience	CHARPY V 10J Métal Métal	DUREZA Hardness Dureté
22	40	WN B 300LB STD/40 RF A105N	NE	C19A3	522	314	55.30	MECA	153 160
32	24	WN B 600LB STD/40 RF A105N	NE	B52A3	516	319	30.80	MECA	156 160
43	48	WN B 150LB XS/80 RF A105N	NE	A45T3	513	307	28.60	MECA	152 156
51	96	WN 4 300LB XS/80 RF A105N	NE	B31T3	513	312	32.40	MECA	150 156
60	180	WN 2 600LB XS/80 RF A105N	NE	A97T3	511	296	29.80	MECA	149 155
61	36	WN 3 600LB XS/80 RF A105N	NE	B30T3	519	309	31.70	MECA	152 157
63	8	WN 6 150LB S160 RF A105N	NE	B50T3	517	312	30.40	MECA	150 157
67	8	WN 6 150LB S160 RF A105N	NE	A52V2	517	306	29.10	MECA	152 156
67	22	WN 6 150LB S160 RF A105N	NE	560T2	508	309	28.50	MECA	150 154

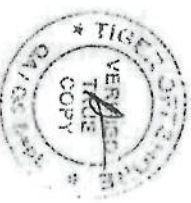
COLADA N° Heat No. N°-Coulée	C %	SI %	Mn %	P %	S %	Cr %	W %	Mo %	Nb %	V %	Cu %	Al %	Ti %	N %	Ceq %
452V2	0.187	0.193	0.920	0.011	0.004	0.080	0.040	0.027	0.000	0.004	0.229	0.021	0.000	0.0000	0.380
560T2	0.210	0.170	0.880	0.010	0.009	0.070	0.040	0.010	0.001	0.002	0.230	0.000	0.000	0.0000	0.391
A45T3	0.210	0.200	0.880	0.011	0.010	0.060	0.040	0.021	0.003	0.001	0.230	0.000	0.000	0.0000	0.391
A97T3	0.192	0.217	0.854	0.016	0.010	0.148	0.040	0.040	0.000	0.004	0.362	0.000	0.000	0.0000	0.400
B30T3	0.190	0.160	0.880	0.012	0.010	0.080	0.040	0.032	0.008	0.002	0.360	0.000	0.000	0.0000	0.386
B31T3	0.200	0.190	0.850	0.020	0.010	0.080	0.040	0.030	0.005	0.002	0.400	0.000	0.000	0.0000	0.393
B50T3	0.200	0.180	0.870	0.011	0.010	0.080	0.040	0.020	0.006	0.001	0.350	0.000	0.000	0.0000	0.387
B52A3	0.190	0.205	1.050	0.012	0.005	0.070	0.040	0.022	0.006	0.005	0.192	0.027	0.000	0.0000	0.400
C19A3	0.190	0.220	0.940	0.007	0.003	0.092	0.040	0.026	0.000	0.001	0.201	0.035	0.000	0.0000	0.387

(1) OBSERVACIONES:
Remarks
Observations
N NORMALIZED AT 900 C AND ALLOWED TO COOL IN STILL AIR

NO. 3
SLPO-25010015
1 NO

22/01/25

EL INSPECTOR
Works Inspector - L'inspecteur
ULMA FORJAS, S.COOP.
Dpto. de Garantía de calidad
Quality Assurance Dept.



Purchaser : TIGER OFFSHORE

INSPECTION CERTIFICATE

BENKAN.

Thai Benkan Co., Ltd.

58 Soi Wadkrutai, Bangkok, Prapadaeng,
Samutprakan, 10130 Thailand

TO EN10204 3.1/ISO 10474 3.1

E-No.

Purchase Order No.

Job No.

MD-465

TPO-1404-476

D M Y Certificate No.

17/01/2022 T-2014480805 Rev.1

No.	Base Material Heat No.	MFG. No.	Specification for Material										Specification for Inspection		Visual Examination	Dimensional Inspection				
			Made from Seamless Pipe										ASME B16.9-2018, B16.25-2017							
			ASTM A234/A234M-19/ASME SA234/SA234M-19										ASME Section II part A 2018, NACE MR0175/ISO 15156-2: 2015 & MR0103-2015							
			Product & Size										(T-1)	Quantity	Heat Treatment (Note 1)	Hardness Actual Data				
1	113407	57E20226-1	✓	RC WPB 6 X 4 S80										✓	30/100	N	HB : 151 - 155			
2	34200	57E20228		RE WPB 4 X 2 S40											100	N	HB : 118 - 126			
3	58905	57E20226	✓	RC WPB 6 X 4 S80										✓	70/100	N	HB : 147 - 154			
4	J2KA099	57E20227		RC WPB 8 X 6 S80											37/50	N	HB : 136 - 146			
5	J2KA099	57E20227-1		RC WPB 8 X 6 S80											13/50	N	HB : 137 - 142			
Specification			Chemical Composition %										Tension Test #2							
			C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	C.E.	YS	TS	E			
			X 100	X 100	X 100	X 1000	X 1000	X 100	X 100	X 100	X 100	X 1000	X 1000	X 100						
			Min.										MPa.				%			
			Max.																	
Base Material Heat No.			21		106	20	10	40	40	40	15	80	20	42		240	415	30		
1	113407	15	21	74	12	3	22	9	14	4	2	0.4	33	317	471	44				
2	34200	16	25	83	10	1	8	3	7	2	2	1	32	334	475	34				
3	58905	15	23	89	9	1	11	4	7	4	2	1	33	331	476	37				
4	J2KA099	18	20	82	12	5	2	3	6	3	0	0	34	311	471	50				
5	J2KA099	18	20	82	12	5	2	3	6	3	0	0	34	311	471	50				
													HARDNESS MAX				197 HBW : GOOD			
																	</			

Materials are in compliance with MSJC Spec. 76/200 & 76/110-2014, supplementary requirements as per MDC-08-002 R.3.

(Note 1) After formed with final temperature between 845 - 845 Deg C, N/A normalizing 810 C x 1 hr air cooling.

The flange was manufactured, sampled, tested and inspected in accordance with the specification and was found to meet the requirements. Steel is vacuum degassed, fully killed and fine grain processed.

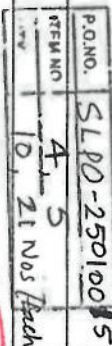
C.E. = C-Mn/(C+Mn+V)/5+(Ni+Cu)/15

* 1 : "T" symbolized wall thickness in mm. * 2 : YS Yield strength TS = Tensile strength E = Elongation

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

Note for WPB: For each reduction of 0.01 % below the specified carbon maximum, an increase of 0.06 % manganese above the specified maximum will be permitted, up to a maximum of 1.65 %

Akemitsu Kondo

Quality Assurance Manager
Thai Benkan Co., Ltd.H20
H162



RACCORDERIA FORGIATA E DERIVAZIONI
FORGED STEEL FITTINGS AND OUTLETS

Cliente/Customer
TIGER OFFSHORE
Ordine cliente/Customer order n.
TPO-1405-482 DTD 11/05/14
Documento di trasporto
DTVEND201400001084

Certific. N.
CTCERT201400001214
Data/Date
27/06/2014

CERTIFICATO DI COLLAUDO / TEST CERTIFICATE

Lista/Job 1327

Item	Quantity	Heat code	Heat Number	Description	Type and mat. specific / year date	Steel Mill	Steel mill cert. - Forgemaster cert
4	250	14/70194	14/70194	THD-OUTLETS 36-10X2 3000 NPT. ANALISI CHIMICA DI ACCIAIERIA STEEL MILL CHEMICAL ANALYSIS CARATTERISTICHE MECCANICHE MECHANICAL PROPERTIES	ASTM SA/SA105N-14 C% Mn% P% S% C% Ni% Mo% Ti% Cu% Nb% Co% V% N% CE% Al% Z% 0.180 1.000 0.0120 0.0080 0.210 0.110 0.050 0.010 0.015 0.170 0.002 0.000 0.021 0.000 0.390 0.000 0.000 Sieramento Yield str. Tens Str. Hardness Resilienza N/mm(2) 320.00 N/mm(2) 516.00 32.40 56.60 HBW 165 - 158 Red of Hardness Impact test val J/cm(2) 0.00	RIVA ACCIAIO SPA 7319	Steel mill cert. - Forgemaster cert
RACCORDI SECONDO FITTINGS IN ACC TO ANSI/ASME B1 20.1-2013, ASME SEC II PART A L E, MSS SP-97 L E, MSS SP-25 L E, NACE MR0175 T4-2014, NACE MR103-2012, Material fully killed, fine grained practice							

Item	Quantity	Heat code	Heat Number	Description	Type and mat. specific / year date	Steel Mill	Steel mill cert. - Forgemaster cert
5	150	13/76056	13/76056	BW-OUTLETS 5-2X1 SCHSTD40 ANALISI CHIMICA DI ACCIAIERIA STEEL MILL CHEMICAL ANALYSIS CARATTERISTICHE MECCANICHE MECHANICAL PROPERTIES	ASTM SA/SA105N-14 C% Mn% P% S% C% Ni% Mo% Ti% Cu% Nb% Co% V% N% CE% Al% Z% 0.195 0.870 0.0140 0.0090 0.210 0.140 0.060 0.010 0.016 0.170 0.002 0.000 0.016 0.000 0.390 0.000 0.000 Sieramento Yield str. Tens Str. Hardness Resilienza N/mm(2) 348.00 N/mm(2) 562.00 35.20 61.40 HBW 162 - 171 51 58 55 -46°C Red of Hardness Impact test val J/cm(2) 0.00	RIVA ACCIAIO SPA 18969	Steel mill cert. - Forgemaster cert
RACCORDI SECONDO FITTINGS IN ACC TO ASME SEC II PART A L E, MSS SP-97 L E, MSS SP-25 L E, NACE MR0175 T4-2014, NACE MR103-2012, Material fully killed, fine grained practice							

Item	Quantity	Heat code	Heat Number	Description	Type and mat. specific / year date	Steel Mill	Steel mill cert. - Forgemaster cert
6	150	22/1834	22/1834	BW-OUTLETS 36-6X1 SCHSTD40 ANALISI CHIMICA DI ACCIAIERIA STEEL MILL CHEMICAL ANALYSIS CARATTERISTICHE MECCANICHE MECHANICAL PROPERTIES	ASTM SA/SA105N-14 C% Mn% P% S% C% Ni% Mo% Ti% Cu% Nb% Co% V% N% CE% Al% Z% 0.168 1.043 0.0100 0.0070 0.190 0.111 0.150 0.045 0.000 0.241 0.004 0.000 0.005 0.000 0.400 0.000 0.000 Sieramento Yield str. Tens Str. Hardness Resilienza N/mm(2) 401.00 N/mm(2) 549.00 31.00 71.00 HBW 161 - 166 58 63 69 -46°C Red of Hardness Impact test val J/cm(2) 0.00	ACCIAIERIE VENETE 186247	Steel mill cert. - Forgemaster cert
RACCORDI SECONDO FITTINGS IN ACC TO ASME SEC II PART A L E, MSS SP-97 L E, MSS SP-25 L E, NACE MR0175 T4-2014, NACE MR103-2012, Material fully killed, fine grained practice							

I risultati dell'analisi chimica sono la corretta trascrizione del certificato emesso dall'acciaieria.
I risultati delle prove meccaniche sono la corretta trascrizione del certificato emesso dall'azienda
che ha eseguito l'ultima trasformazione del materiale.
Dichiaro che il prodotto fornito è conforme alle normative sopraindicate ed ai requisiti dell'ordine.
The results of the chemical analysis are a true and correct copy of the steel mill certificate.
The results of the mechanical tests are the correct records of the certificate issued from the company that has
executed the last transformation of the material.
We state that the delivered product complies with the above standards and to the order's requirements.

Certificato secondo / Certificate acc. to EN 10204/2.1

ANNUAL BOOK ASTM SEZ. 1 VOL. 01.01, 2014
MATERIAL MANUFACTURER APPROVED BY TIV RHEINLAND INDUSTRIE SERVICE GMBH ACCORDING TO P.E.D. 2014/68/EC
ANNEX 1 POINT 4.3, DGR 2014/68/EU & AD 2000 W0.

ENTE COLLAUDO / INSPECTOR

LAME S.p.A. Socio unico - 21040 TERAGO CON ORAGO (VA) ITALY - Via Papa Giovanni XXIII, 1 - Tel. 0339 - 0331 216 444 r.a. - TELEFAX 0331 216 306 - E-mail: info@lame-ent 19.it

Page

2 / 22

QUALITY CONTROL
22/01/25
P.O. BOX 18259
JEBEL ALI - DUBAI
U.A.E.



Purchaser : TIGER OFFSHORE

INSPECTION CERTIFICATE

BENKAN.

Thai Benkan Co., Ltd.
58 Soi Wadkrual, Bangkok, Prapadaeng,
Samutprakan, 10130 Thailand.

E-No. Purchase Order No. Job No.

TO EN10204 3.1/ISO 10474 3.1

MD-455 TPO-1404-478

D M Y Certificate No.

17/01/2022 T-2014480810 Rev.1

No.	Base Material Heat No.	MEG. No.	Specification for Material		Specification for Inspection		Visual Examination	Dimensional Inspection
			ASTM A234/A234M-19/ASME SA234/SA234M-19	Made from Seamless Pipe	ASME B16.9-2018, B16.25-2017	Quantity	Heat Treatment (Note 1)	Hardness Actual Data
1	51228	57E10176	✓	T WPB 6 X 4 S80	✓	50	N	HB : 134 - 137
2	J3KA489	57E10175-1		T WPB 4 X 2 S80		9/50	N	HB : 152 - 156
3								
4								
5								



Specification	Chemical Composition %													Tension Test #2		
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	C.E.	YS	TS	E	
	X/100	X/100	X/100	X/1000	X/1000	X/100	X/100	X/100	X/100	X/1000	X/1000	X/100	MPa.	%		
Min.																
Max.		10	29										240	415	30	197 HBW : GOOD
Base Material Heat No.	21		106	20	10	40	40	40	15	80	20	42		655		
1	51228	18	23	88	12	1	8	3	8	3	2	1	36	325	468	40
2	J3KA489	19	18	80	15	5	2	2	4	1	0	0	34	318	484	41
3																
4																
5																

P.O. NO. 51PD-25010015
ITEM NO. 7
2ND

Materials are in compliance with MESSE Spec. 76/200 & 76/110-2014, supplementary requirements as per MDC-08-002 R.3.

(Note 1) A-Hot formed with final temperature between 945 - 945 Deg C. N/Normalizing 910 C/0.5 Hr air cooling. The fittings was manufactured, sampled, tested, and inspected in accordance with the specification, and was found to meet the requirements. Specified by, signed and Fine grain Practiced.

C.E. = C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

* 1 : "T" symbolized wall thickness in mm. * 2 : YS Yield strength TS = Tensile strength B = Elongation

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

Note for WPB: For each reduction of 0.01 % below the specified carbon maximum, an increase of 0.06 % manganese above the specified maximum will be permitted, up to a maximum of 1.65 %

Akemiitsu Kondo

Quality Assurance Manager
Thai Benkan Co., Ltd.



#182

Purchaser : **TIGER OFFSHORE**

INSPECTION CERTIFICATE

BENKAN

TO EN10204 3.1/ISO 10474 3.1

Thai Benkan Co., Ltd.
58 Soi Wadkrui, Bangkok, Prapatsang,
Samprakan, 10130 Thailand.

E-No. **MD-455** Purchase Order No. **TPO-1404-476** Job No.

D M Y **17/01/2022** Certificate No. **T-2014480808** Rev.1

No.	Base Material Heat No.	MFG. No.	Specification for Material		Specification for Inspection		Visual Examination	Dimensional Inspection
			ASTM A234AP234M-19/ASME SA234AP234M-19	ASME B16.9-2018, B16.25-2017	Quantity	Heat Treatment (Note 1)	Hardness Actual Data	
1	34200	57E10172	Product & Size T WPB 4 X 2 S40	(T+1)	14/100	N	HB : 142 - 159	Good
2	342482	57E10172-1	T WPB 4 X 2 S40		86/100	N	HB : 123 - 130	
3	58905	57E10170-1	T WPB 6 S80		35/200	N	HB : 130 - 135	
4	7-12592	57E10171 ✓	T WPB 8 S80 ✓		50	N	HB : 129 - 134	
5	J3L1389	57E10173	T WPB 6 X 4 S40		48/100	N	HB : 125 - 130	



Specification		Chemical Composition %												Tension Test #2			
		C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	C.E.	YS	TS	E	
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	MPa.	%		
Base Material Heat No.		21		106	20	10	40	40	40	15	80	20	42				
			10	29										240	415	30	197 HBW : GOOD
1	34200	16	25	83	10	1	8	3	7	2	2	1	32	334	475	34	
2	342482	19	19	83	15	1	2	3	6	1	0	0	35	322	485	37	
3	58905	15	23	89	9	1	11	4	7	4	2	1	33	331	476	37	
4	7-12592	18	22	84	20	2	1	1	7	1	<1	<1	34	327	489	50	
5	J3L1389	20	17	82	17	5	1	2	4	3	0	1	35	305	474	40	
														HARDNESS MAX			
														197 HBW : GOOD			

P.O. NO. **SLP0-25016015**
ITEM NO. **8**
DATE **17-NOV-2021**

Materials are in compliance with MSSC Spec. 76/200 & 76/110-2014, supplementary requirements as per MSSC-08-002 R.3.
(Note 1) All heat treated with final temperature between 865 - 845 Deg C. Normalizing 810 C/D 5 H air cooling.
The fittings were manufactured, sampled, tested and inspected in accordance with the specifications and was found to meet the requirements. * Steel is vacuum degassed, fully killed and fine grain practice.
C.E. = C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15
* 1 : "T" symbolized wall thickness in mm. * 2 : YS Yield strength TS = Tensile strength B = Elongation
MAGNETIC PARTICLE EXAMINATION FOR TIB ONLY : **GOOD**
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

Note for WPB for each reduction of 0.01 % below the specified carbon maximum, an increase of 0.06 % manganese above the specified maximum will be permitted, up to a maximum of 1.65 %

Quality Assurance Manager
Thai Benkan Co., Ltd.

Akemitu Kondo



1191

CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)

ST&H CORPORATION

OFFICE - 74, Jwadowsunhwan-ro, Haeundae-gu, Busan, Korea
PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
E-mail : qm@stnhcorp.com



CE

RPS 0340008 / 01

Certificate No. MJY1190-11/15

Date : DEC. 15, 2023

Customer JSS Pipes & Fittings Trading L.L.C

Contract No. PO2 - 2023000085

Spec. For Material ASME SECTION II PART-A SA105N/SA350 LF2 CL1-23,ASTM A105N/SA350 LF2 CL1-23,NACE MR0175-2021/ISO15156-2:2020,NACE MR0103/ISO17945:2015

Heat Treatment NORMALIZED 910°C X 4.5hrs & AIR COOLED

Dimensional inspectionASME B16.5 - 2020, Flange Face Roughness = 3.2 - 6.3µm

Certified to ISO9001/ ISO14001:2015,PED2014/68/EU by LRQA

ITEM / SIZE	Q'ty	Heat No./ Batch No.	Size of Test Specimen		Tension Test					Hardness	Charpy Impact Test (10X10mm Specimen Size)					
			TRANSVERSE D mm	GL mm	Y.S MPa	T.S MPa	E.L %	R.A %	Test (HB) 197	(10X10mm Specimen Size)						
										Indiv. 21J	Ave. 27J	Notch V	Temp. -50°C Ave.(J)			
DA300WR808	300LBS WN RF S80/XS 8"	50	01373A	12.5	50.0	317	511	38	82	149	149	67	76	65	69	
DA600KR1601	600LBS SW RF S160 1"	15	01373A	12.5	50.0	317	511	38	82	149	149	67	76	65	69	
DA150WR4010	150LBS WN RF S40 10"	3	04818A	12.5	50.0	355	505	35	79	159	162	80	76	60	72	
BLANK	BLANK	BLANK	BLANK	BLANK	BLANK	BLANK	BLANK	BLANK	BLANK	BLANK	BLANK	BLANK	BLANK	BLANK	BLANK	BLANK

Heat No./ Batch No.	Chemical Composition (%) * H : Heat Analysis P : Product Analysis															UT
	C	SI	Mn	P	S	NI	Cr	Mo	Cu	V	Nb	Al	GRAIN	Mn/C	CE	
	Max	0.300	1.350	0.035	0.040	0.400	0.300	0.120	0.400	0.080	0.020	0.020		5.000	0.430	
01373A	H	0.182	0.262	1.300	0.014	0.006	0.012	0.022	0.015	0.006	0.008	0.004	0.028	7.142	0.408	PT
	P	0.175	0.291	1.290	0.018	0.001	0.011	0.013	0.029	0.006	0.003	0.004	0.020	8.000	0.400	N/A
	H	0.180	0.215	1.210	0.010	0.003	0.012	0.020	0.010	0.006	0.004	0.038		6.722	0.388	
04818A	P	0.177	0.212	1.220	0.016	0.004	0.015	0.020	0.002	0.009	0.006	0.004	0.037	8.500	0.387	Visual
														6.892	0.387	GOOD

REMARK * Fully Killed and Fine Grained * Melting process - Steel is produced BASIC OXYGEN by EAF

* Impact Test performed according to ASTM A370-2021 & MESC 76/210/2017 Paragraph 8.5 / Table 4 & 5.

* GRAIN SIZE as per ASTM E112-2013 * No weld repair performed * Impact Test Direction : Transverse

* Tensile Test Direction : Transverse * CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

Witnessed by / H. J. LEE

Manager of Q.A Dept / J. Y. KIM

ST&H CORPORATION



Handwritten signature/initials

CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)



ST&H CORPORATION

OFFICE - 74, Jwadongsunhwan-ro, Haundae-gu, Busan, Korea
PLANT - 11, Eogokgongdan 2-gil, Yangsan-si, Kyungnam, Korea
Tel : +82.51.744-4680(5 line) Fax : +82.51.744-4670
E-mail : qm@stnhcorp.com



CE

RECEIVED 7/01

Certificate No. MJY1289-17/21

Date : SEP. 20. 2024

Customer JSS Pipes & Fittings Trading L.L.C

Contract No. PO2-2024000043

Spec. For Material ASME SEC II PART-A SA105N/SA350 LF2 CL1-23,ASTM A105N/A350 LF2 CL1-23,NACE MR0175-2021/ISO15156-2:2020,NACE MR0103/ISO17945:2015
Heat Treatment NORMALIZED 930°C X 4.5Hrs & A.C

Certified to ISO9001/ ISO14001:2015,PED2014/68/EU by LRQA

Dimensional InspectionASME B16.5 - 2020, Flange Face Roughness = 3.2 - 6.3µm

ITEM / SIZE	Q'ty	Heat No./ Batch No.	Size of Test Specimen		Tension Test				Hardness	Charpy Impact Test (10X10mm Specimen Size)						
			TRANSVERSE D mm	GL mm	Max Min	Y.S MPa	T.S MPa	E.L %	R.A %	Test (HB)	(10X10mm Specimen Size)					
											Indiv. 21J	Ave. 27J	Notch V	Temp. -50°C		
															Test Result (J)	
DA150WR4010	150LBS WN RF S40/STD 10"	5	B03758G2	12.5	50.0		348	513	33	73	157	161	74	70	66	70
DA150WR406	150LBS WN RF S40/STD 6"	100	B03758G2	12.5	50.0		348	513	33	73	157	161	74	70	66	70
DA300WR806	300LBS WN RF S80/XS 6"	50	B03758G2	12.5	50.0		348	513	33	73	157	161	74	70	66	70
DA300WR808	300LBS WN RF S80/XS 8"	30	B03758G2	12.5	50.0		348	513	33	73	157	161	74	70	66	70
DA600WR806	600LBS WN RF S80/XS 6"	15	B03758G2	12.5	50.0		348	513	33	73	157	161	74	70	66	70
DA150BR10	150LBS BL RF 10"	10	B03758G3	12.5	50.0		348	513	33	73	157	161	74	70	66	70
DA150BR14	150LBS BL RF 14"	2	B03758G3	12.5	50.0		348	513	33	73	157	161	74	70	66	70
DA150WR1603	150LBS WN RF S160 3"	50	B03758G3	12.5	50.0		348	513	33	73	157	161	74	70	66	70

Heat No./ Batch No.	Chemical Composition (%) * H : Heat Analysis P : Product Analysis															UT	GOOD
	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb	Al	GRAIN	Mn/C	CE		
Max	0.300	0.300	1.350	0.035	0.040	0.400	0.300	0.120	0.400	0.080	0.020	0.020				0.430	
Min	0.150	0.600													5.000		
B03758G2	H	0.173	0.240	1.270	0.013	0.003	0.007	0.026	0.003	0.012	0.001	0.001	0.022	7.341	0.391	PT	N/A
	P	0.171	0.244	1.250	0.012	0.005	0.006	0.028	0.003	0.009	0.001	0.001	0.021	7.500	0.386		
	H	0.173	0.240	1.270	0.013	0.003	0.007	0.026	0.003	0.012	0.001	0.001	0.022	7.341	0.391	Visual	GOOD
B03758G3	P	0.171	0.244	1.250	0.012	0.005	0.006	0.028	0.003	0.009	0.001	0.001	0.021	7.500	0.386	& DIM	

REMARK

- * Fully Killed and Fine Grained
- * Melting process - Steel is produced BASIC OXYGEN by EAF
- * Impact Test performed according to ASTM A370-2021 & MESC 76/210/2017 Paragraph 8.5 / Table 4 & 5.
- * GRAIN SIZE as per ASTM E112-2013
- * No weld repair performed
- * Impact Test Direction : Transverse
- * Tensile Test Direction : Transverse
- * CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15
- * UT - ASTM A388-19/ASME Sec. VIII Div.2 Ed.2021 para 3.3.4.
- * MT-ASTM A275-18/ASME Sec. VIII Div.2 Ed.2021 para 3.3.5.

BLANK

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

Witnessed by / H. J. LEE

Manager of Q.A Dept. / J. Y. KIM

ST&H CORPORATION



#71
26865



BOTH-WELL STEEL FITTINGS CO., LTD.

NO.303, RENXIN ROAD, RENWU DISTRICT, KAOHSIUNG CITY, TAIWAN, R.O.C. (814020)
TEL : (886)7-3711536, 3710497, 3720260 FAX : (886)7-371-3864, 3713882
WEB SITE : <http://www.bothwell.com.tw> E-Mail : box@bothwell.com.tw

An ISO 9001 : 2015 Registered Manufacturer

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 3.1

CUSTOMER : J.S.S PIPES & FITTINGS TRADING L.L.

PAGE : 1

CERT NO.:232319

INVOICE NO. : 5200023952

DATE : 09/12/2023

ORDER NO.:OPMS/BW/604/2023(P02-2023000051)

L/C NO. :

ORIGIN : TAIWAN

ITEM	RAW HEAT NO. HEAT NO.	QTY	DESC/GRADE OR SPECIFICATION NO. CHEMICAL COMPOSITION(%) MECHANICAL PROPERTIES.
18	305208Z CA1651	400 PCS	OUTLET REDUCING WAY A105 36"-1"X3/4" 3000# S/W C:0.20 Si:0.21 Mn:1.05 P:0.015 S:0.004 Cu:0.09 Cr:0.07 Ni:0.04 Mo:0.01 V:0.003 Nb:0.003 N:0.0053 Ti:0.002 CE:0.40 TS(KSI):78.1 YS 0.2%(KSI):50.8 EL(%):32.9 R.A.(%):66.3 HARDNESS 1(HBW):148 HARDNESS 2(HBW):149
✓ 19	0097742 4371	150 PCS	OUTLET REDUCING WAY A105 48"-1-1/4"X1" S160 BW C:0.19 Si:0.20 Mn:0.92 P:0.012 S:0.004 Cu:0.15 Cr:0.06 Ni:0.06 Mo:0.01 V:0.001 Nb:0 CE:0.37 TS(KSI):75.5 YS 0.2%(KSI):57.6 EL(%):35.4 R.A.(%):66.4 HARDNESS 1(HBW):143 HARDNESS 2(HBW):145

REMARK :

THE MATERIAL SUPPLIED IDENTIFIED AS ASTM A105N -23, ASME SA105-2023ED.

THE FITTING SUPPLIED IDENTIFIED AS MSS SP-97 - 2019

THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH SPECIFICATION(SURFACE & DIM) : GOOD

STANDARD : CHEMICAL COMPOSITION(%), MECHANICAL PROPERTIES & CE= C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Cb(Nb)
MIN	-	0.10	0.60	-	-	-	-	-	-	-	-
MAX	0.35	0.35	1.05	0.035	0.040	0.40	0.30	0.40	0.12	0.08	-
	N	Al	Ti	Zr	CE	TS(KSI)	YS(KSI)	YS 0.2%(KSI)	EL(%)	R of A(%)	HARDNESS (HBW)
MIN	-	-	-	-	-	70	-	36	22	30	-
MAX	-	-	-	-	0.43	-	-	-	-	-	187

HEAT TREATMENT : NORMALIZED, 900°C(1652°F) A.C. ,1 HOUR HOLDING TIME.

STEEL MAKING PROCESS : ELECTRIC ARC FURNACE (EAF)

WE CERTIFY THE ABOVE MENTIONED FITTINGS/FLANGES HAVE BEEN
MANUFACTURED, SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH
THE SPECIFICATIONSSHOWN

Y.Y. Chang
Q.C. MANAGER

C.L. Ko
INSPECTOR





BOTH-WELL STEEL FITTINGS CO., LTD.

NO.303, RENXIN ROAD, RENWU DISTRICT, KAOHSIUNG CITY, TAIWAN, R.O.C. (814020)

TEL : (886)7-3711536, 3710497, 3720260

FAX : (886)7-371-3864, 3713882

WEB SITE : <http://www.bothwell.com.tw>

E-Mail : box@bothwell.com.tw

An ISO 9001 : 2015 Registered Manufacturer

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 3.1

CUSTOMER : J.S.S PIPES & FITTINGS TRADING L.L.

PAGE : 8

CERT NO.: 232319

INVOICE NO. : 5200023952

DATE : 09/12/2023

ORDER NO. : OPMS/BW/604/2023 (P02-2023000051)

L/C NO. :

ORIGIN : TAIWAN

ITEM	RAW HEAT NO. HEAT NO.	QTY	DESC/GRADE OR SPECIFICATION NO. CHEMICAL COMPOSITION(%) MECHANICAL PROPERTIES.
------	--------------------------	-----	---

REMARK :

THE MATERIAL SUPPLIED IDENTIFIED AS ASTM A105N -23, ASME SA105-2023ED

THE FITTING SUPPLIED IDENTIFIED AS ASME B16.11 - 2021

THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH SPECIFICATION(SURFACE & DIM) : GOOD

STANDARD : CHEMICAL COMPOSITION(%) ,MECHANICAL PROPERTIES & CE= $C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15$

	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Cb(Nb)
MIN	-	0.10	0.60	-	-	-	-	-	-	-	-
MAX	0.35	0.35	1.05	0.035	0.040	0.40	0.30	0.40	0.12	0.08	-
	N	Al	Ti	Zr	CE	TS(KSI)	YS(KSI)	YS 0.2%(KSI)	EL(%)	R of A(%)	HARDNESS(HBW)
MIN	-	-	-	-	-	70	-	36	22	30	-
MAX	-	-	-	-	0.43	-	-	-	-	-	187

HEAT TREATMENT : NORMALIZED, 900°C(1652°F) A.C. ,1 HOUR HOLDING TIME.

STEEL MAKING PROCESS : ELECTRIC ARC FURNACE (EAF)

CONFORMS TO NACE MR0175-2021/ISO 15156-2020 & MR0103/ISO 17945 :2015

FULLY KILLED AND FINE GRAIN PRACTICE

FREE FROM RADIATION CONTAMINATION

WE CERTIFY THE ABOVE MENTIONED FITTINGS/FLANGES HAVE BEEN
MANUFACTURED, SAMPLED, TESTED, AND INSPECTED IN ACCORDANCE WITH
THE SPECIFICATIONSSHOWN

Y.Y. Chang

Q.C. MANAGER

C.L. Ko

INSPECTOR

BW-D0839 REV:4



#169



INSPECTION CERTIFICATE

(EN 10204: 2004 3.1 / ISO 10474: 2013 3.1)

117-12, Noksan Saneop Daero,
Gangseo-gu, Busan,
46752 Korea
Tel : 82-51-970-6666
Fax : 82-51-831-6886

Customer	JSS Pipes & Fittings Trading L.L.C	Certificate No.	20220505339	Date	2022/05/30
P.O No.	PO2 - 2022000007	Project Name	Stock		
Job No.					
Specification for Material	ASTM/ASME A/SA234 WPB(2021Ed.)NACE MR0175/ISO 15156-2015 & NACE MR0103-2016	Starting Material	FORGED STEEL		
Specification for Inspection	ASME B16.9-2018	Dimension and Visual Inspection	GOOD		
Heat Code No [HCN]	No.	Descriptions	Q'ty (Pcs)	Heat Treatment	
ED910	0065	REDUCING TEE XX-S B.W 1" x 3/4"	50	N: 910 °C	

CHEMICAL COMPOSITION (%)

Heat Code No [HCN]	Spec.	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb	Ti	C.E	Raw Heat No
	Max.	0.23	-	1.06	0.15	0.008	0.40	0.40	0.15	0.40	0.030	-	0.030	0.38	
	Min.	-	0.10	0.29	-	-	-	-	-	-	-	-	-	-	
ED910	L	0.179	0.210	*1.063	0.0058	0.0039	0.059	0.089	0.015	0.062	0.001	0.0026	-	0.38	S33858
	P	0.15	0.20	*1.08	0.010	0.001	0.04	0.04	0.003	0.012	0.003	0.001	0.002	0.343	

MECHANICAL PROPERTIES

Heat Code No [HCN]	Spec	Y.S	T.S	E.L	Hardness Test				
		ksi		(%)	HBW				
	Max.	-	-	-	187				
	Min.	35	60	22	-				
ED910	P	46.5	70.6	34.8	138 128 135				

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order. Any forgery or falsification of this certificate will be subjected to the full extent of the criminal prosecution. Please contact us by the below Fax or E-mail if you have any inquiries on this certificate.

Fax: +82 51 831 6886 / E-mail: tkqaqc@tkbend.co.kr

Remark: *Mn/C > 5
-ACTL: 5.9
*V+Nb+Ti: Max.0.10
-ACTL: 0.006
*Fully Killed & Fine Grain
*Cooling method - Normalized at 910°C and cooled in still Air
*Tensile test gauge length orientation: 50mm (Longitudinal)
*Steel making process: Basic oxygen
*Final Product is Seamless
*No weld repair has been performed

* For each reduction of 0.01% below the specified carbon maximum, an increase of 0.08% manganese above the specified maximum will be permitted, up to a maximum of 1.35%.

Reviewed by:

Witnessed by:

Approved by:

Head of Quality Control Dept

Legend:
HB: Brinell
ST: Solution Treatment
SR: Stress Relieving
N: Normalized
T: Tempered
A: Annealed
Q: Quenched
YS: 0.2% Offset Method
(G): Hot-Dip Galvanized Coating
(P): Poly Ethylene Coating
AC: Air Cool
OC: Oil Cool
WQ: Water Quenched
WC: Water Cool
B: Base
W: Weld
H: Haz
L: Ladle
P: Product

To EN10204 3.1/ISO 10474 3.1B

#172

TBC PO No.: TB-285

Customer PO No.: P02-20230000032

JOB No. :

D/M/Y 19/12/2023 Certificate No.: T202309110249 Rev. No.: 0

Rev. No.: 0

Telephone : 66 (0) 2463 0074. 66 (0) 463 6235-7



Akemitsu Kondō

Quality Assurance Manager
Thai Benkan Co.,Ltd.

Form No. TZ-6ZV/0

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B
DIN 50049/3.1

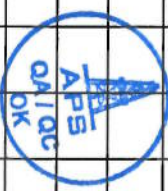
THAI BENKAN CO.,LTD. **BENKAN**

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TB-652
Customer PO No. : ALPO-240800150
Benkan No. :
JOB No. :

58 Moo 13 Soi Suksawat 70, Bangkru Phrapadaeng, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

D/M/Y 15/01/2025 Certificate No. : T202511480041 Rev. No. : 0

Specification for Product		ASTM A420/A420M-24/ASME SA420SA420M-23, ASME Section II Part A 2023 NACE MR0175-2021/ISO 15156-2 : 2020 & MR0103-ISO 17945-2015 (R2023) Sour service.										MFG No.	67K01M012	Seamless or Weld	SEAMLESS	Pipe/Plate	PIPE	
Specification for Inspection		ASME B16.9-2018 B16.25-2022										Product Description	90EL WPL6 1 S160	Quantity	30			
Starting Material	Heat No.	J6L5089										Steel Making Process	BASIC OXYGEN					
% Chemical content	C x100	SI x100	Mn x100	P x1000	S x1000	Cu x100	NI x100	Cr x100	Mo x100	V x1000	Nb x1000	TI x1000	B x1000	Al x1000	Ca x10000	CE x100		
Required Maximum	20	40	135	20	10	40	40	30	12	20	10	20	5			40		
Required Minimum		15	50											20				
Heat Analysis	11	29	126	10	1	1	2	10	2	0	0	10	1	38	21	35		
% CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15 Normalizing 910 C X 60 Minutes. Cooled in Still Air																		
Tension test	Gauge length	50 mm.	Impact test		10 x 7.5 x2V			Hardness test										
TP Direction : Longitudinal			TP Direction : Longitudinal	Temp.	-50 C	HBW	1	2	3	Req. Max.	197							
MPa	Req.Min.	Req.Max.	Actual results	Joule	1	2	3	AVE	Fitting	123	128	126						
Yield Strength	240		289	Base	255	243	241	246										
Tensile Strength	415		655	441														
% Elongation	30		45															
Supplementary Note : MESC SPEC 76/201 Rev. February 2023 Steel is vacuum degassed, fully killed and fine grain practiced" The fittings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements. Grain size determination as per ASTM E112-13 : 7 or finer.																		
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct. Visual Examination GOOD Dimensional Inspection GOOD																		



Form No. TZ-62V/0

Akernitsu Kondo

Quality Assurance Manager

Thai Benkan Co.,Ltd.

ITEM NO 4

MATERIAL INSPECTION CERTIFICATE

TO EN10204 3.1/ISO 10474 3.1B

DIN 50049/3.1

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
 TBC PO No. : TB-652 Customer PO No. : AIP0-24080015/0
 Benkan No. : JOB No. :

THAI BENKAN CO.,LTD. **BENKAN**
 58 Moo 13 Soi Sukawat 70, Bangkok Phrapadaeng, Samutprakarn 10130, THAILAND
 Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

D/M/Y 25/11/2024 Certificate No. : T202409483580 Rev. No. : 0

Specification for Product		ASTM A234/A234M-24/ASME SA234/SA234M-23 ASME Section II Part A 2023										Mfg No.		67K00M024		Seamless or Weld		SEAMLESS	
Specification for Inspection		NACE MR0175-2021/ISO 15156-2 : 2020 & MR0103-ISO 17945-2015 (R2023) Sour service.										Product Description		90EL WPB 1 XXS		Quantity		30	
Starting Material		Heat No.		J6L5089		Pipe or Plate		PIPE		Steel making Process		BASIC OXYGEN							
% Chemical content		C x100	SI x100	Mn x100	P x1000	S x1000	Cu x100	NI x100	Cr x100	Mo x100	V x1000	Nb x1000	B x10000	TI x1000	Al x1000	Ca x10000	CE x100		
Required Maximum		20		106	20	10	40	40	40	15	20	10	5	20			40		
Required Minimum				10	29										20				
Heat Analysis		11	29	126	10	1	1	2	10	2	0	0	1	10	38	21	35		
For each reduction of 0.01 % below the specified carbon maximum,an increase of 0.06 % manganese above the specified maximum will be permitted,up to a maximum of 1.65 % $\% CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15$																			
Tension test		Gauge length		50 mm.		Hardness test		HBW		1		2		3					
TP Direction : Longitudinal								Req. Min.		197									
Yield Strength		240	440	295				Fitting	138	142	139								
Tensile Strength		415		485															
% Elongation		30		42															
Supplementary Note : MESIC SPEC 70200 Rev. February 2024 Steel is vacuum degassed, fully killed and fine grain practice The fittings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements.																			
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.																			
Form No. TZ-62V/0 Quality Assurance Manager Thai Benkan Co.,Ltd. Atentisu Kondo Signature: <i>A. Kondo</i>																			

BKN 571/24

ITEM NO 15

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B

DIN 50049/3.1

THAI BENKAN CO., LTD.

BENKAN

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
 TBC PO No. : TB-652
 Customer PO No. : AIPO-240800150
 Benkan No. : JOB No. :

58 Moo 13 Soi Sukawat 70, Bangkru Phraosadeno, Samutprakarn 10130, THAILAND
 Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

D/M/Y 25/11/2024 Certificate No. : T202411483690 Rev. No. : 0

Specification for Product		ASTM A420/A420M-24/ASME SA420/SA420M-23, ASME Section II Part A 2023										MFG No.		67K01M029		Seamless or Weld		SEAMLESS		Pipe/Plate		PIPE			
Specification for Inspection		ASME B16.9-2018 B16.25-2022										Product Description		90EL WPL6 6 S80											
Starting Material		Heat No.		046755										Steel Making Process		ELECTRIC FURNACE									
% Chemical content		C	SI	Mn	P	S	Cu	NI	Cr	Mo	V	Nb	TI	B	Al	Ca	CE								
Required Maximum		x100	x100	x100	x1000	x1000	x100	x100	x100	x1000	x1000	x1000	x1000	x1000	x1000	x10000	x100								
Required Minimum		20	40	135	20	10	40	40	30	12	20	10	20	5	20		40								
Heat Analysis		13	29	129	12	2	5	3	8	3	10	1	1	4	27	14	37								
$\% CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15$																									
Tension test		Gauge length		50 mm.		Impact test		10 x 10.0 x2V		Hardness test															
TP Direction : Longitudinal		TP Direction : Longitudinal		Temp. -50 °C		HBW		1 2 3		Req. Max. 197															
MPa		Req. Min.	Req. Max.	Actual results		Joule		1 2 3 AVE		Fitting		141 145 143													
Yield Strength		240		312		Base		160 345 347 284																	
Tensile Strength		415		431																					
% Elongation		30		50																					
Supplementary Note : MESCC SPEC 76201 Rev/February 2023 Steel is vacuum degassed, fully killed and fine grain practice. The fittings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements. Grain size determination as per ASTM E112-13 : 7 or finer.																									
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.																									
Form No. TZ-62Y/0 Akemitsu Kondo Quality Assurance Manager Thai Benkan Co., Ltd.																									

Bkn 681/24

ITEM NO 16

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B

DIN 50049/3.1

THAI BENKAN CO., LTD. **BENKAN**

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TB-692
Customer PO No. : AIPO-2408001510
JOB No. :

58 Moo 13 Soi Sukswat 70, Bangkru Phraepadaeng, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

D/M/Y 25/11/2024 Certificate No. : T7022409483606 Rev. No. : 0

Specification for Product		ASTM A234/A234M-24/ASME SA234/SA234M-23 ASME Section II Part A 2023										MFG No.		67K00M090		Seamless or Weld		SEAMLESS		Quantity		50	
Specification for Inspection		NACE MR0175-2021/ISO 15156-2 : 2020 & MR0103-ISO 17945-2015 (R2023) Sour service.										Product Description		49EL WPB 6 S80									
Starting Material		Heat No.		046735		Pipe or Plate		PIPE		Steel making Process		ELECTRIC FURNACE											
% Chemical content		C x100	SI x100	Mn x100	P x1000	S x1000	Cu x100	NI x100	Cr x100	Mo x100	V x1000	Nb x1000	B x10000	Ti x1000	Al x1000	Ca x10000	CE x100						
Required Maximum		20		106	20	10	40	40	40	15	20	10	5	20			40						
Required Minimum				10	29												20						
Heat Analysis		13	29	129	12	2	5	3	8	3	10	1	4	1	27	14	37						
For each reduction of 0.01 % below the specified carbon maximum an increase of 0.06 % manganese above the specified maximum will be permitted up to a maximum of 1.65 % % CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15																							
Tension test		Gauge length		50 mm.		Hardness test		HBW		1		2		3									
TP Direction : Longitudinal		Req. Min.		Req. Max		Actual results		Fitting		132		136		134									
Yield Strength		240		440		312																	
Tensile Strength		415				451																	
% Elongation		30				50																	
Impact test		10 x 10.0 x 2V		Supplementary Note :																			
TP Direction : Transverse		Temp.		-29 ° C		MESO SPEC 76/200 Rev. February 2024																	
		3		1		2		3		AVE		Steel is vacuum degassed, fully killed and fine grain practice*											
		Base		444		405		396		415		The fillings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements.											
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.																							
Akeritsu Kondo Quality Assurance Manager Thai Benkan Co., Ltd.																							



Form No. TZ-62V/O

Blank 597/24

ITEM NO 17 8 PCS

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B

DIN 50049/3.1

THAI BENKAN CO., LTD.

BENKAN

Purchaser Name : ARABIAN PIPELINE SUPPLY FCZO
 TBC PO No. : TB-652
 Customer PO No. : AIPO-2408001510
 Benkan No. : JOB No. :

58 Moo 13 Soi Sukswat 70, Bantru Piradada, Samutprakarn 10130, THAILAND

Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

D/M/Y 25/11/2024 Certificate No. : T202411483690 Rev. No. : 0

Specification for Product		ASTM A420/A420M-24/ASME SA420/SA420M-23, ASME Section II Part A 2023										MFG No.		67K01M029		Seamless or Weld		SEAMLESS		Pipe/Plate		PIPE	
Specification for Inspection		ASME B16.9-2018/B16.25-2022										Product Description		90EL WPL 6 S80						Quantity		15	
Starting Material		Heat No.		046755										Steel Making Process		ELECTRIC FURNACE							
% Chemical content		C	SI	Mn	P	S	Cu	NI	Cr	Mo	V	Nb	Ti	B	Al	Ca	CE						
Required Maximum		x100	x100	x100	x1000	x1000	x100	x100	x100	x1000	x1000	x1000	x1000	x1000	x1000	x10000	x100						
Required Minimum		20	40	135	20	10	40	40	30	12	20	10	20	5	20		40						
Heat Analysis		13	29	129	12	2	5	3	8	3	10	1	1	4	27	14	37						
$\% CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15$																							
Tension test		Gauge length		50 mm.		Impact test		10 x 10.0 x2V		Hardness test													
TP Direction : Longitudinal				TP Direction : Longitudinal		Temp. -50 °C		HBW		1		2		3									
MPa		Req. Min.	Req. Max	Actual results		Joule		1		2		3		AVE		Fitting		141		145		143	
Yield Strength		240		312		Base		160		345		347		264									
Tensile Strength		415		431																			
% Elongation		30		50																			
Supplementary Note : MEBC SPEC 76/201 Rev February 2023 Steel is vacuum degassed, 'fully killed and fine grain practice' The fittings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements. Grain size determination as per ASTM E112-13 : 7 or finer.																							
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.																							
Form No. TZ-6ZV/0 Akemitsu Kondo Quality Assurance Manager Thai Benkan Co., Ltd.																							

BKN 681/24

ITEM NO 17 4PCS

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B

DIN 50049/3.1

THAI BENKAN CO.,LTD.

BENKAN

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TB-652
Benkan No. :
Customer PO No. : AIPC-240800150
JOB No. :

58 Moo 13 Soi Sukswat 70, Bangkok Pinradpaeng, Samutprakam 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

D/M/Y 25/11/2024 Certificate No. : T202431483736 Rev. No. : 0

Specification for Product		ASTM A420/A420M-24/ASME SA420S/A420M-23/ASME SA420S-2019, ASME Section II Part A 2023										MFG No.		67K08M010		Seamless or Weld		SEAMLESS		Pipe/Plate		PIPE			
Specification for Inspection		ASME B16.9-2018,B16.25-2022										Product Description		90EL WPL6M/PHY52 6 S80											
Starting Material		Heat No.		046755		Heat treatment										Quenching:910 C X 80 Minutes, Tempering 700 C X 30 Minutes.		Steel Making Process		ELECTRIC FURNACE					
% Chemical content		C	SI	Mn	P	S	Cu	NI	Cr	Mo	V	Nb	TI	B	Al	Ca	CE								
Required Maximum		x100	x100	x100	x1000	x10000	x100	x100	x100	x100	x1000	x1000	x1000	x10000	x1000	x10000	x100								
Required Minimum		20	40	135	20	10	35	40	30	12	20	10	20	5	60	40									
Heat Analysis		13	29	129	12	2	5	3	8	3	10	1	1	4	27	14	37								
% CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15																									
Tension test		Gauge length		50 mm.		Impact test		10 x 10.0 x2V		Hardness test															
TP Direction : Longitudinal		Req.Min		Req.Max		Actual results		Joule		1		2		3		AVE		Fitting		132		134		133	
Yield Strength		360		531		384		Base		295		272		294		287									
Tensile Strength		455		625		514																			
% Elongation		32				45																			
Supplementary Note :																									
MESIC SPEC 76/201 Rev.February 2023																									
Steel is vacuum degassed, fully killed and fine grain practiced																									
The fittings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements. Grain size delamination as per ASTM E112-13 : 7 or finer.																									
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.																									
Akemitsu Kondo Quality Assurance Manager Thai Benkan Co.,Ltd.																									
Form No. TZ-62V/0																									

Benkan 7/24/24

ITEM NO 20

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B

DIN 50049/3.1

THAI BENKAN CO., LTD.

BENKAN

58 Moo 13 Soi Sukswat 70, Bangkru Pinapadaeng, Samutprakarn 10130, THAILAND

Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO

TBC PO No. : TB-347

Customer PO No. : AIFO-230700140

Benkan No. : SOUR SERVICE

JOB No. :

D/M/Y 01/11/2023 Certificate No. : T202309483402 Rev. No. : 0

Specification for Product		ASTM A234/A234M-23a/ASME SA234/SA234M-23, ASME Section II Part A 2023										MFG No.		66H00M224		Seamless or Weld		SEAMLESS		Quantity		30	
Specification for Inspection		NACE MR0175-2021/ISO 15156-2 : 2020 & MR0103-ISO 17945-2015 (R2023)										Product Description		90EL WPB 8 S60									
		ASME B16.9-2018,B16.25-2017																					
Starting Material		Heat No.		532595										Pipe or Plate		PIPE		Steel making Process		ELECTRIC FURNACE			
				Heat treatment Normalizing 910 C X 60 Minutes.Cooled In Still Air																			
% Chemical content		C x100	SI x100	Mn x100	P x1000	S x1000	Cu x100	NI x100	Cr x100	Mo x100	V x1000	Nb x1000	B x10000	TI x1000	Al x1000	Ca x10000	CE x100						
Required Maximum		20		106	20	10	40	40	40	15	20	10	5	20			40						
Required Minimum				10	29																		
Heat Analysis		13	22	102	10	2	3	2	8	3	<3	<2	<3	14	30	12	33						

For each reduction of 0.01 % below the specified carbon maximum an increase of 0.06 % manganese above the specified maximum will be permitted up to a maximum of 1.65 %
 $\% CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15$

Tension test		Gauge length		50 mm.		Hardness test					
TP Direction : Longitudinal											
MPa		Req.Min.		Req.Max		HBW					
Yield Strength		240		440		272					
Tensile Strength		415				434					
% Elongation		30				49					
Impact test				10 x 10.0 x 2V		Supplementary Note :					
TP Direction : Transverse											
J		1		2		3		AVE			
Base		237		233		222		237			

Steel is vacuum degassed, fully killed and fine grain practice.
 The fittings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements.

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

APPS
QA/100
OK

Benkan Co., Ltd.

Quality Assurance Manager
 Thai Benkan Co., Ltd.

Form No. TZ-62V/0

18/12/24

ITEM NO 21

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B

DIN 50049/3.1

Purchaser Name : ARABIAN PIPELINE SUPPLY FCZO
TBC PO No. : TB-652
Customer PO No. : AIP0-24080015/0
Benkan No. :
JOB No. :

THAI BENKAN CO., LTD.

BENKAN.

58 Moo 13 Soi Sukswat 70, Bangkru Phrapadaeng, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

D/M/Y 03/12/2024

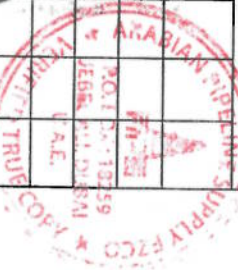
Certificate No. : T202409483608

Rev. No. : 1

Specification for Product		ASTM A234/A234M-24/ASME SA234/SA234M-23 ASME Section II Part A 2023										MFG No.		67K00M092		Seamless or Weld		SEAMLESS			
Specification for Inspection		NACE MR0175-2021/ISO 15156-2 : 2020 & MR0103-ISO 17945-2015 (R2023) Sour service.										Product Description		45EL WPB 8 S80		Quantity		8			
Starting Material		Heat No.		134045										Pipe or Plate		PIPE		Steel making Process		ELECTRIC FURNACE	
% Chemical content		C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	B	Ti	Al	Ca	CE				
Required Maximum		x100	x100	x100	x1000	x1000	x100	x100	x100	x1000	x1000	x10000	x10000	x10000	x10000	x10000	x100				
Required Minimum		20		106	20	10	40	40	40	15	20	10	5	20			40				
Heat Analysis		14	22	105	14	2	3	1	10	1	5	2	4	14	25	9	34				
For each reduction of 0.01 % below the specified carbon maximum an increase of 0.05 % manganese above the specified maximum will be permitted up to a maximum of 1.55 % % CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15																					
Tension test		Gauge length		50 mm.																	
TP Direction : Longitudinal																					
MPa		Req.Min.	Req.Max	Actual results																	
Yield Strength		240	440	302																	
Tensile Strength		415		458																	
% Elongation		30		51																	
Impact test		10 x 10.0 x 2V																			
TP Direction : Transverse		Temp. -29 °C																			
Base		143	129	138	143																
Supplementary Note :		MESC SPEC 76/200 Rev February 2024																			
Steel is vacuum degassed, fully killed and fine grain practiced																					
The fittings were manufactured, sampled, tested and inspected in accordance with the specification, and were found to meet the requirements.																					
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.																					
 Form No. TZ-62/V0 Quality Assurance Manager Thai Benkan Co., Ltd.		 Akemitsu Kondo Quality Assurance Manager Thai Benkan Co., Ltd.																			



91



Blank 599106

ITEM NO 156 2PCS

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B

DIN 50049/3.1

THAI BENKAN CO., LTD.

BENKAN

58 Moo 13 Soi Sukswat 70, Banokru Phraadern, Samutprakarn 10130, THAILAND

Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

Purchaser Name : ARABIAN PIPELINE SUPPLY FCZO

TBC PO No. : TB-652

Customer PO No. : AIPQ-240800150

Benkan No. :

JOB No. :

D/M/Y 25/11/2024 Certificate No. : T202411483705 Rev. No. : 0

Specification for Product		ASTM A420/A420M-24/ASME SA420/SA420M-23 ASME Section II Part A 2023										MFG No.		67K21M017		Seamless or Weld		SEAMLESS		Pipe/Plate		PIPE			
Specification for Inspection		ASME B16.9-2018 B16.25-2022										Product Description		RC WPL6 4 x 2 S160											
Starting Material		Heat No.		038549										Steel Making Process		ELECTRIC FURNACE									
% Chemical content		C	SI	Mn	P	S	Cu	NI	Cr	Mo	V	Nb	TI	B	Al	Ca	CE								
Required Maximum		x100	x100	x100	x1000	x1000	x100	x100	x100	x1000	x1000	x1000	x1000	x1000	x1000	x10000	x100								
Required Minimum		20	40	135	20	10	40	40	30	12	20	10	20	5	20		40								
Heat Analysis		14	29	106	10	2	3	2	10	1	3	1	14	4	27	10	34								
$\% CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15$																									
Tension test		Gauge length		50 mm.		Impact test		10 x 10.0 x2V		Hardness test															
TP Direction : Longitudinal						TP Direction : Longitudinal		Temp. -50 °C		HBW															
MPa		Req.Min.	Req.Max	Actual results		Joule		1	2	3	AVE	Fitting	146	153	149										
Yield Strength		240		319		Base		133	170	164	162														
Tensile Strength		415	655	481																					
% Elongation		30		47																					
Supplementary Note : MESG SPEC 76/201 Rev. February 2023 Steel is vacuum degassed, fully killed and fine grain practice The fillings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements. Grain size determination as per ASTM E112-13 : 7 or finer.																									
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.																									
Visual Examination Dimensional Inspection GOOD GOOD																									

Form No. TZ-62V/D



Akemitsu Kondo

Quality Assurance Manager
Thai Benkan Co., Ltd.

BKN 696/24

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B

DIN 50049/3.1

THAI BENKAN CO.,LTD.

BENKAN

58 Moo 13 Soi Suksawat 70, Bangkru Phrapadaeng, Samutprakarn 10130, THAI AND

Teléfono: 66 (0) 3463 0074 66 (0) 463 6336

JOB No.:

JOB NO.:

D/M/Y 25/11/2024 Certificate No.: T202409483651 Rev No.: 0

Rev. No.: 0

[illegible]

ITEM NO 165

Purchaser : ARABIAN PIPELINE SUPPLY PZCO

INSPECTION CERTIFICATE

TO EN10204 3.1

Thai Benkan Co., Ltd.
58 Soi Watkrutai, Bangken, Prapadeng,
Samutprakarn, 10130 Thailand.



Purchase Order No.

Job No.

D M Y Certificate No.
27/1/2014 T-2014100101

E.No.	Specification for Material Made from Seamless Pipe	Specification for Inspection	Visual Examination	Dimensional Inspection													
MD-362	ASTM/A516-420-13 GR.WPL-6/A516-13 WPHY 52 NACE MR0175/ISO 15156-2:2009	ASME B16.9-2012, B16.25-2012	Good	Good													
MFG. No.	Product & Size (T*1)		Quantity														
57B28063-1	RC WPL6/WPHY52 8 x 6 S80		12/20														
	Material Heat No.	Boron (%) : Max 0.0005	Hardness Actual Data														
	J4L5266	0.0001	124,130,136														
Specifi- cation	Chemical Composition %													*2 Tension Test	Hardness Max 197 HB : GOOD		
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Al	V	Nb	C.E.	Y S	T S	E	Impact Test (J) 10 x 10 x 2V AT -46 C
X	X	X	X	X	X	X	X	X	X	X	X	X	X			%	
100	100	100	1000	1000	1000	100	100	100	100	1000	1000	1000	100	Mpa.			
Min.	15	100												360	435	32	300
Max.	20	40	130	30	10	35	40	30	12	60	80	20	40	465	655		355
	11	23	128	15	5	2	2	11	1	36	0	0	35	378	480	45	355
AVE																	337

NORMALIZING 910 C X 0.5 HR. W.Q.T

Steel is Fully Killed and Fine Grain Practice

Steel making process : Basic Oxygen

The forgings was manufactured, sampled, tested and inspected in accordance with the specification, and was found to meet the requirements.

C.E. = C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY :

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

* 1 : "T" symbolized wall thickness in mm. * 2 : YS Yield strength TS = Tensile strength E = Elongation



Rungrota Kumpornen

Quality Assurance Manager

Thai Benkan Co., Ltd.

BVL 522/14



ITEM NO 166

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B

DIN 50049/3.1

THAI BENKAN CO.,LTD.

BENKAN

58 Moo 13 Soi Sukisawat 70, Bangkok Phraepadaeng, Samutprakan 10130, THAILAND

Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO

TBC PO No. : TB-652

Customer PO No. : AIPO-2408001510

Benkan No. :

JOB No. :

D/M/Y 25/11/2024 Certificate No. : T202411483713 Rev. No. : 0

Specification for Product		ASTM A420/A420M-24/ASME SA420/SA420M-23, ASME Section II Part A 2023										MFG No.		67K21M036		Seamless or Weld		SEAMLESS		Pipe/Plate		PIPE	
Specification for Inspection		ASME B16.9-2018/B16.25-2022										Product Description		RE WPL6 8 x 6 S80		Quantity		6					
Starting Material		Heat No.		040107										Steel Making Process		ELECTRIC FURNACE							
% Chemical content		C	SI	Mn	P	S	Cu	NI	Cr	Mo	V	Nb	TI	B	Al	Ca	CE						
Required Maximum		x100	x100	x100	x1000	x1000	x100	x100	x100	x100	x1000	x1000	x1000	x1000	x1000	x10000	x100						
Required Minimum		20	40	135	20	10	40	40	30	12	20	10	20	5	20		40						
Heat Analysis		14	23	106	9	2	5	3	10	1	4	2	15	3	26	4	34						
% CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15																							
Tension test		Gauge length		50 mm.		Impact test		10 x 10.0 x2V		Hardness test		HBW		1		2		3					
TP Direction : Longitudinal						TP Direction : Longitudinal		Temp. -50 °C				Req. Max. 197											
MPa		Req.Min.	Req.Max	Actual results		Joule		1		2		3		AVE		FITTING		135		141 138			
Yield Strength		240		279		Base		69		202		86		119									
Tensile Strength		415		655																			
% Elongation		30		50																			
Supplementary Note : MESIC SPEC 76/201 Rev February 2023 Steel is vacuum degassed, fully killed and fine grain practiced The fittings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements. Grain size determination as per ASTM E112-13 : 7 or finer.																							
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.																							
Visual Examination Dimensional Inspection GOOD GOOD																							
Form No. TZ-62V/0 Akenitsu Kondo Quality Assurance Manager Thai Benkan Co.,Ltd.																							

BLEN 704/24

ITEM NO 183 1PC

Purchaser : ARABIAN PIPELINE SUPPLY FZCO

INSPECTION CERTIFICATE

TO EN10204 3.1

BENKAN

Thai Benkan Co., Ltd.
58 Soi Watkrumai, Bangkru, Prapadaeng,
Samutprakan, 10130 Thailand

Purchase Order No.

Job No.

D M Y Certificate No.
10/02/2023 T-2014100093 Rev.1

E-No.	Specification for Material Made from Seamless Pipe	Specification for Inspection	Visual Examination	Dimensional Inspection													
MD-352	ASTM A420M/20M-2005M/20S/420M-19/AS60/AS60M-18 NACE MR0175/ISO15156-2:2020	ASME B16.3-2018, B16.25-2017	Good	Good													
MFG. No.	Product & Size (T*1)	Quantity															
57B18082-1	T WPL6M/PHY52 6 x 4 S160	17/20															
Material Heat No.		Boron (%) : Max 0.0005	Hardness Actual Data														
J3L2216		0.0001	124,130,132														
Specifi- cation	Chemical Composition %													*2 Tension Test			HARDNESS MAX 197 HB : GOOD
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Al	V	Nb	C.E.	Y S	T S	E	
X	X	X	X	X	X	X	X	X	X	X	X	X	X	Mpa.			Impact Test (J) 10 x 10 x 2V AT -46 C
100	100	100	1000	1000	100	100	100	100	1000	1000	1000	100					
Mfn.	15	100												360	435	32	AVE. 353
Max.	20	40	130	30	10	35	40	30	12	60	80	20	40	465	655		
	11	25	129	18	5	1	2	13	2	30	0	0	36	386	501	46	352

NORMALIZING 910 C x 0.5 HR., W.Q.T

"Steel is Fully Killed and Fine Grain Practiced"

Steel making process : Basic Oxygen

The fittings was manufactured, sampled, tested and inspected in accordance with the specification, and was found to meet the requirements.

C.E. = C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY :

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

* 1 : "T" symbolized wall thickness in mm. * 2 : YS Yield strength TS = Tensile strength E = Elongation
Form TZ-6/1

GOOD

Quality Assurance Manager

Thai Benkan Co., Ltd.

Akemitsu Kondo

846 507



ITEM NO 183 1PC

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B

THAI BENKAN CO., LTD.

BENKAN

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TB-347
Customer PO No. : AIPC-2307001410

DIN 50049/3.1

58 Moo 13 Soi Sukswat 70, Bangkru Phraapadeng, Samutprakarn 10130, THAILAND

Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

Benkan No. : SOUR SERVICE

JOB No. :

D/M/Y 19/02/2024 Certificate No. : T202431480535 Rev. No. : 0

Specification for Product		ASTM A420/A420M-22/ASME SA420/A420M-22/ASME Section II Part A 2023										MFG No.		66H18M028		Seamless or Weld		SEAMLESS		Pipe/Plate		PIPE	
		NACE MR0175-2021/ISO 15156-2: 2020 & MR0103-ISO 17945-2015 (R2023)										Product Description		T WPL6/WPHY52 6 x 4 S120				Quantity		3			
Specification for Inspection		ASME B16.9-2018,B16.25-2022														Steel Making Process		ELECTRIC FURNACE					
Starting Material		Heat No.		025718																			
				Heat treatment																			
				Quenching, 910 C X 60 Minutes, Tempering 700 C X 45 Minutes.																			
% Chemical content		C x100	SI x100	Mn x100	P x1000	S x1000	Cu x100	NI x100	Cr x100	Mo x100	V x1000	Nb x1000	TI x1000	B x10000	Al x1000	Ca x10000	CE x100						
Required Maximum		20	40	135	20	10	35	40	30	12	20	10	20	5	60		40						
Required Minimum		15	100												20								
Heat Analysis		13	25	107	8	2	6	3	10	2	10	1	15	5	31	9	34						
$\% CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15$																							
Tension test		Gauge length		50 mm.		Impact test		10 x 10.0 x2V		Hardness test													
TP Direction : Longitudinal				Longitudinal		Temp. -50 ° C		HBW		1 2 3													
MPa		Req.Min.	Req.Max.	Joule		1	2	3	AVE	Fitting		137	141	139									
Yield Strength		360	531	377		Base		277	280	285	276												
Tensile Strength		455	625	493																			
% Elongation		32		45																			
Supplementary Note : MESIC SPEC 76/201 Rev.February 2023 Steel is vacuum degassed, fully killed and fine grain practice The fillings were manufactured, sampled, tested, and inspected in accordance with the specification. and were found to meet the requirements. Grain size determination as per ASTM E112-13.7 or finer. 100% MT performed for all accessible surface in acc ASME Sec VIII Div 1, Appendix 8 : GOOD																							
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.																							
Visual Examination Dimensional Inspection GOOD GOOD																							



Form No. TZ-627/0

Akemitsu Kondo
Quality Assurance Manager
Thai Benkan Co., Ltd.

Benkan 4/14/24

ITEM NO 184

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B

DIN 50049/3.1

THAI BENKAN CO., LTD.

BENKAN®

58 Moo 13 Soi Suksewat 70, Bangkok Phrapadaeng, Samutprakarn 10130, THAILAND

Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO

TBC PO No. : TB-652

Customer PO No. : AIPCO-24080015/0

Benkan No. :

JOB No. :

D/M/Y 02/12/2024 Certificate No. : T202409483805 Rev. No. : 0

Specification for Product		ASTM A234/A234M-24/ASME SA234/SA234M-23 ASME Section II Part A 2023										MEG No.		67K10M052		Seamless or Weld		SEAMLESS			
Specification for Inspection		NACE MR0175-2021/ISO 15156-2 : 2020 & MR0103 ISO 17945-2015 (R2023) Sour service.										Product Description		T WPB 6 S80		Quantity		17			
Starting Material		Heat No.		044464										Pipe or Plate		PIPE		Steel making Process		ELECTRIC FURNACE	
% Chemical content		C x100	SI x100	Mn x100	P x1000	S x1000	Cu x100	NI x100	Cr x100	Mo x100	V x1000	Nb x1000	B x10000	TI x1000	Al x1000	Ca x10000	CE x100				
Required Maximum		20		106	20	10	40	40	40	15	20	10	5	20			40				
Required Minimum				10	29																
Heat Analysis		13	20	105	11	2	3	2	8	2	3	2	4	13	25	5	33				

For each reduction of 0.01 % below the specified carbon maximum, an increase of 0.06 % manganese above the specified maximum will be permitted up to a maximum of 1.65 %
 $\% CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15$

Tension test		Gauge length		50 mm.		Hardness test		HBW			1 2 3					
TP Direction : Longitudinal								Req. Max. 197								
MPa		Req. Min.	Req. Max.	Actual results		Fitting		143 143 143								
Yield Strength		240	440	309												
Tensile Strength		415		447												
% Elongation		30		49												

Impact test 10 x 7.5 x 2V
 TP Direction : Transverse Temp. -29 °C
 MESC SPEC 76/200 Rev. February 2024
 Steel is vacuum degassed, fully killed and fine grain practice*
 The fittings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements.
 100% MT performed for all accessible surface in acc ASME Sec VIII D1 Appendix 6 : GOOD

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

Quality Assurance Manager
 Thai Benkan Co., Ltd.
 Akemitsu Kondo
 Form No. TZ-62V/0

12.12.24 14:11:24

ITEM NO 187

Purchaser : ARABIAN PIPELINE SUPPLY FZCO

INSPECTION CERTIFICATE

TO EN10204 3.1

Thai Benkan Co., Ltd.
58 Soi Watkrumi, Bangkok, Prapadaeng,
Samutprakarn, 10130 Thailand.



Purchase Order No. Job No.

D M Y Certificate No.
23/09/2014 T-2014100041

E-No.	Specification for Material Made from Seamless Pipe				Specification for Inspection				Visual Examination		Dimensional Inspection						
MD-352	ASTM/ASME A583-13 Gr. WPL-60/60-13 WPHY 52 NACE MR0175/ISO 15156-2:2009				ASME B16.9-2012, B16.25-2012				Good		Good						
MFG. No.	Product & Size (T*1)				Quantity												
57B18084	T WPL6W/PHY52.8 x 6 S80				15												
		Material Heat No.		Baron (%) : Max 0.0005		Hardness Actual Data											
		J4L5266		0.0001		134, 140, 146											
Specifi- cation	Chemical Composition %													*2 Tension Test		Hardness Max 197 HB : GOOD	
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Al	V	Nb	C.E.	Y S	T S	E	Impact Test (J) 10 x 10 x 2V AT -46 C
	X 100	X 100	X 100	X 1000	X 1000	X 100	X 100	X 100	X 100	X 1000	X 1000	X 1000	X 100	Mpa.		%	
Min.		15	100											360	435	32	352
Max.	20	40	130	30	10	35	40	30	12	60	80	20	40	465	655		352
	11	23	128	15	5	2	2	11	1	36	0	0	35	378	480	45	352
AVE. 352																	

NORMALIZING 910 C x 0.5 HR. W.Q.T

Steel is Fully Killed and Fine Grain Practiced

Steel making process : Basic Oxygen

The fittings were manufactured, sampled, tested and inspected in accordance with the specification, and was found to meet the requirements.

C.E. = C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY :

GOOD



Quality Assurance Manager

Thai Benkan Co., Ltd.

BKL 443/14

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

* 1 : "T" symbolized wall thickness in mm. * 2 : YS Yield strength TS = Tensile strength E = Elongation

ITEM NO 188

ARABIAN PIPELINE SUPPLY FTCCO

Purchaser : _____

INSPECTION CERTIFICATE

BENKAN.

Thai Benkan Co., Ltd.

58 Soi Watkrumai, Bangkrui, Prapadaeng,
Samutprakan, 10130 Thailand.

TO EN10204 3.1

DIN 50049.3.1

D M Y Certificate No.

Purchase Order No. _____ Job No. _____

STC-VV-0121-17-S1K

21/09/2017 T - 2017070362

E-No.		Specification for Material Made from Seamless Pipe										Specification for Inspection		Visual Examination		Dimensional Inspection	
TA-018		ASTM A420-16/ASME SA420-16 GR.WPL6 / ASME B16.9-2012, B16.25-2012 NAME FILE B Part A 2016. ANCHORAGE WROTHEN/SA420-16/SA 2.2000MM-0109 2016										ASME B16.9-2012, B16.25-2012		Good		Good	
MFG. No.		Product & Size										(T:*)		Quantity		Hardness Actual Data	
60B11010		T WPL6 8 S80												4		HBW : 130,130,132	
		Material Heat No.										Boron : Max 0.0005 (%)		Chemical Composition%(Note1)			
		78496										0.0001		Ti = 5		OK QC/QC OK	

ITEM NO 181

Purchaser : ARABIAN PIPELINE SUPPLY PZCO

INSPECTION CERTIFICATE

TO EN10204 3.1

Thai Benkan Co., Ltd.
58 Soi Walkrunai, Bangken, Prapadaeng,
Samutprakan, 10130 Thailand.



Purchase Order No.

Job No.

D M Y Certificate No.
23/09/2014 T-2014100037

E.No.		Specification for Material Made from Seamless Pipe				Specification for Inspection				Visual Examination		Dimensional Inspection					
MD-352		ASTM/ASME A54-120-13 GR.WPL-60/60-13 WPHY 52 NACE MR0175/ISO15156-2:2009				ASME B16.9-2012,B16.25-2012				Good		Good					
MFG. No.		Product & Size (T=*1)				Quantity											
57B18079		T WPL6WPHY52 6 x 3 S80				5/15											
		Material Heat No.		Boron (%) : Max 0.0005		Hardness Actual Data											
		J2L2515		0.0002		136,144,148											
Specifi- cation	Chemical Composition %												*2 Tension Test		Hardness Max 197 HB : GOOD		
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Al	V	Nb	C.E.	Y S	T S	E	Impact Test (J) 10 x 7.5 x 2V AT -46 C
	X	X	X	X	X	X	X	X	X	X	X	X	X	Mpa.		%	
	100	100	100	1000	1000	100	100	100	100	1000	1000	1000	100				
Min.		15	100											360	435	32	226
Max.	20	40	130	30	10	35	40	30	12	60	80	20	40	465	655		260
	11	26	128	15	3	2	2	11	1	26	0	0	35	431	537	44	254
AVE																	

ABIAN

247

ABIAN

247

NORMALIZING 910 C x 0.5 HR. W.Q.T

"Steel is Fully Killed and Fine Grain Practiced"

Steel making process : Basic Oxygen

The fittings were manufactured, sampled, tested and inspected in accordance with the specification, and was found to meet the requirements.

C.E. = C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY :

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

* 1 : "T" symbolized wall thickness in mm. * 2 : YS Yield strength TS = Tensile strength E = Elongation
T T L A C T A

GOOD



Quality Assurance Manager

Thai Benkan Co., Ltd.

BCL 444/14

Rungrasde Kambharn



ITEM NO 192

Purchaser : ARABIAN PIPELINE SUPPLY PZCO

INSPECTION CERTIFICATE

BENKAN.

Thai Benkan Co., Ltd.

58 Soi Watdarnai, Bangkok, Prapadaeng,
Samutprakan, 10130 Thailand.

E-No.

Purchase Order No.

Job No.

TO EN10204 3.1/ISO 10474 3.1

TA-057

STC/W-1022-17/BKL-STKREV.1

D M Y Certificate No.

10/02/2024 T- 2017/480790 Rev.1

No.	Base Material Heat No.	MFG. No.	Specification for Material										Specification for Inspection		Visual Examination	Dimensional Inspection			
			ASTM A234A234M-19/ASME SA234/SA234M-21 ASME Section II part A 221, NACE MR0175/ISO 15155-2: 2015 & API 2003-2015										ASME B16.9-2018, B16.25-2017						
			Product & Size										Ti (T+1)	Quantity			Heat Treatment (Note 1)	Hardness Actual Data	30000(%)
1	161321	60N10M065	T WPB 8 X 6 S80										0.002	30	N	HBW : 124,128,130	0.0005		
2	25793	60N10M068	T WPB 10 X 5 S40										0.000	1	N	HBW : 128,129,132	0.0001		
3	573371	60N10M081	T WPB 10 S30										0.001	8/50	N	HBW : 141,142,143	0.0004		
4	J7L2076	60N10M069	T WPB 10 X 6 XS										0.000	3	N	HBW : 121,122,123	0.0001		
5	J7L6491	60N10M078	T WPB 8 S20										0.000	10	N	HBW : 123,124,128	0.0001		
Specification			Chemical Composition %														Tension Test #2		
			C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	C.E.	YS	TS	E		
			X/100	X/100	X/100	X/1000	X/1000	X/100	X/100	X/100	X/100	X/1000	X/1000	X/100		MPa.	%		
Min.																			
Max.				10	29										240	415	30		
Base Material Heat No.			20		106	20	10	40	40	40	15	80	20	40					
1	161321		19	22	97	13	7	12	4	5	2	10	10	38	345	501	46		
2	25793		19	19	83	11	4	2	2	8	1	0	0	35	306	478	40		
3	573371		17	21	68	6	7	9	4	6	5	10	10	32	288	467	32		
4	J7L2076		20	23	85	16	5	4	2	4	11	0	0	38	339	507	44		
5	J7L6491		19	23	87	20	5	2	2	4	1	0	0	35	307	479	35		
			197 HBW : GOOD																
			HARDNESS MAX																

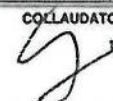
(Note 1) As-heat treated with final temperature between 600 C-845 C, cooled in still air. N: Normalizing 810 C X 0.5 hr, cooled in still air. Specification of Boron compounds: max 0.0005
 The following were measured, sampled, tested and inspected in accordance with the specification, and was found to meet the requirements. Steel is vacuum degassed fully killed and fine grain practice.
 C.E. = C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15
 * 1 : T: symbolized wall thickness in mm. * 2 : YS Yield strength TS = Tensile strength E = Elongation
 We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned
 and also with the purchaser's requirements and that the test results shown herein are correct.
 Note for WPB: for each reduction of 0.01 % below the specified carbon maximum, an increase of 0.06 % manganese above the specified maximum will be permitted, up to a maximum of 1.55 %
 Form T2-51/1

Quality Assurance Manager
 Thai Benkan Co., Ltd.

Benkan 826
 22 01/25
 Benkan Kondo



#45

		23813 Cortenova (Lecco) ITALY Largo De Vecchi 11 P.o. box 11 Tel. 0341.98341 Fax 0341.983496 - 983497 lino.uberti@melesi.it		CERTIFICATO DI COLLAUDO WORKS CERTIFICATE CERTIFICAT D'ESSAIS		N. 83338	DATA / DATE 30/07/12	SHEET / PAGE 1/3
		FLANGE E FORGIATI		ORDINE / ORDER / C.D.E 50623 R.1		GERAB NATIONAL ENTERPRISES P.O. BOX 17719 JEBEL ALI - DUBAI UAE		
				DATA / DATE 10/05/12		COMMESSA 48659		
N. RIF.	ITEM	N / QUANTITY	DESCRIZIONE / DESCRIPTION / DESIGNATION				NOTE	
CA1244	212	25	A105N	1/2"	SW	300 RF SCH	STD	125-250 RMS
CA798	180	4	A105N	42"	BL	B16.47/A	150 RF	125-250 RMS
LB3441	223	250	A105N	2"	WN	150 RF SCH	160	125-250 RMS
LB3442	209	200	A105N	3/4"	SW	150 RF SCH	XXS	125-250 RMS
LB3465	151	100	A105N	1/2"	WN	600 RF SCH	160	125-250 RMS
LB3594	3	100	A105N	3/4"	WN	150 RF SCH	XXS	125-250 RMS
LB3610	29	200	A105N	3/4"	WN	300 RF SCH	160	125-250 RMS
LB3791	163	10	A105N	20"	WN	600 RJ SC	30/XS	
LB3886	42	100	A105N	10"	WN	300 RF SC	60/XS	125-250 RMS
LB4058	63	50	A105N	6"	WN	600 RF SCH	STD	125-250 RMS
LB4084	169	2	A105N	20"	WN	900 RF SCH	80	125-250 RMS
LB4191	136	200	A105N	3/4"	SW	150 RF SCH	160	125-250 RMS
LB4262	30	100	A105N	3/4"	WN	300 RF SCH	XXS	125-250 RMS
LB4267	113	5	A105N	30"	BL	B16.47/B	300 RF	THICKNESS= 93,7 mm
LB4316	33	150	A105N	1 1/2"	WN	300 RF SCH	160	125-250 RMS
LB4316	34	50	A105N	1 1/2"	WN	300 RF SCH	XXS	125-250 RMS
LB4360	105	200	A105N	1"	WN	900/1500 RF	XXS	125-250 RMS
LB4360	106	225	A105N	1"	WN	900/1500 RJ	XXS	
LB4475	171	5	A105N	20"	WN	900 GR RJ	160	Without RTJ and unbevelled
LB4481	6	200	A105N	1"	WN	150 RF SCH	XXS	125-250 RMS
LB4511	45	25	A105N	12"	WN	300 RF SCH	XS	125-250 RMS
LB4512	43	20	A105N	10"	WN	300 RF SCH	80	125-250 RMS
LB4532	9	50	A105N	4"	WN	150 RF SCH	120	125-250 RMS
LB4708	64	200	A105N	6"	WN	600 RF SCH	XS	125-250 RMS
LB4722	170	4	A105N	20"	WN	900 RF SCH	100	125-250 RMS
LB4730	54	200	A105N	3/4"	WN	600 RF SCH	160	125-250 RMS
LB4734	79	10	A105N	24"	WN	600 RF SCH	40	125-250 RMS
LB4738	55	50	A105N	3/4"	WN	600 RF SCH	XXS	125-250 RMS
LB4766	164	10	A105N	24"	WN	600 RF	20/STD	125-250 RMS
LB4800	186	3	A105N	36"	BL	B16.47/A	300 RF	125-250 RMS
LB4991	115	50	A105N	4"	BL	600 RF		125-250 RMS
LB880	110	25	A105N	16"	BL	300 RF		125-250 RMS
N.	MATERIALE / MATERIAL / MATERIEL		HEAT / COULÉE		ACCIAIERIA / STEEL PLANT / ACIERIE		ORIGIN. CERT. / CERT. D'ORIGIN	
CA1244	ASTM A 105 09a		34063		ACCIAIERIE FERRIERE DI CARONNO		22751	
CA798	ASTM A 105 09a		555675		BENTELER		17625	
LB3441	ASTM A 105 09a		74590		RIVA		51625	
LB3442	ASTM A 105 09a		78615		RIVA		31477	
LB3465	ASTM A 105 09a		78618		RIVA		31689	
LB3594	ASTM A 105 09a		849642		LUCCHINI SIDERMECCANICA SPA		12257/2008	
LB3610	ASTM A 105 09a		835677		LUCCHINI SIDERMECCANICA SPA		2008 12256	
LB3791	ASTM A 105 09a		T56643		TRINEKE		3850/07/2009	
LB3886	ASTM A 105 09a		42396		DUFERDOFIN SAN ZENO ACCIAI		27	
LB4058	ASTM A 105 09a		39618		RIVA		2395	
LB4084	ASTM A 105 09a		194306		ACCIAIERIE VENETE		138276	
LB4191	ASTM A 105 09a		72131		RIVA		7809	
LB4262	ASTM A 105 09a		48491		LEALI		AS09640/2010	
LB4267	ASTM A 105 09a		0261879		JSC ASOVELECTROSTEEL		10A-1998	
LB4316	ASTM A 105 09a		48492		LEALI		AS09638/2010	
LB4360	ASTM A 105 09a		4101045787		LUCCHINI SIDERMECCANICA SPA		100000016257	
LB4475	ASTM A 105 09a		201822		ACCIAIERIE VENETE		151077	
LB4481	ASTM A 105 09a		47541		LEALI		AS13471/2010	
LB4511	ASTM A 105 09a		51183		DUFERDOFIN SAN ZENO ACCIAI		18	
LB4512	ASTM A 105 09a		51184		DUFERDOFIN SAN ZENO ACCIAI		18	
LB4532	ASTM A 105 09a		347		OLIFER ACP		ACP00295	
LB4708	ASTM A 105 09a		51443		DUFERDOFIN SAN ZENO ACCIAI		24	
LB4722	ASTM A 105 09a		207927		ACCIAIERIE VENETE		161891	
LB4730	ASTM A 105 09a		50782		LEALI		AS28576/2011	
LB4734	ASTM A 105 09a		208093		ACCIAIERIE VENETE		162202	
LB4738	ASTM A 105 09a		52834		LEALI		AS36776/2011	
LB4766	ASTM A 105 09a		208095		ACCIAIERIE VENETE		163657	
TRADE MARK		P. OFF. A. MELESI & C.		COLLAUDATORE / INSPECTOR / INSPECTEUR		ENTE COLLAUDATORE / INSPECTION AGENCY		
				 Uberti p.i. Lino				

22/07/25

		23813 Cortenova (Lecco) ITALY Largo De Vecchi 11 P.O. box 11 Tel. 0341.98341 Fax 0341.983496 - 983497 lino.uberti@melesi.it	CERTIFICATO DI COLLAUDO WORKS CERTIFICATE CERTIFICAT D'ESSAIS		N. 83338 DATA / DATE 30/07/12 SHEET / PAGE 2/3									
		FLANGE E FORGIATI	ORDINE / ORDER / C.D.E. 50623 R.1 DATA / DATE 10/05/12 COMMESSA 48659		GERAB NATIONAL ENTERPRISES P.O. BOX 17719 JEBEL ALI - DUBAI UAE									
N.	MATERIALE / MATERIAL / MATÉRIEL	HEAT / COULÉE	ACCIAIERIA / STEEL PLANT / ACIERIE		ORIGIN. CERT. / CERT. D'ORIGIN									
LB4800	ASTM A 105 09a	412385	A B S ACCIAIERIE BERTOLI SAFAU		50236/1									
LB4991	ASTM A 105 09a	9543	OLIFER ACP		9543									
LB880	ASTM A 105 09a ASME SA105	50802	ESB ELLWOOD STEEL BELGIUM		A.00802									
N. RIF.	ANALISI CHIMICA / CHEMICAL ANALYSIS / COMPOSITION CHIMIQUE													
	C	Mn	Si	P	S	Cr	Ni	Mo	Nb	V	Cu	Al	Sn	* C.Eq
CA1244	0,180	0,980	0,300	0,011	0,008	0,090	0,050	0,010	0,000	0,002	0,140	0,021	0,009	0,380
CA798	0,200	0,650	0,190	0,008	0,004	0,200	0,050	0,030	0,001	0,002	0,070	0,033	0,008	0,396
LB3441	0,180	1,110	0,230	0,009	0,010	0,090	0,050	0,010	0,000	0,021	0,160	0,020	0,009	0,403
LB3442	0,170	1,200	0,240	0,011	0,008	0,070	0,040	0,010	0,001	0,025	0,100	0,025	0,008	0,400
LB3465	0,170	1,050	0,200	0,010	0,005	0,060	0,030	0,000	0,001	0,023	0,100	0,022	0,006	0,370
LB3594	0,190	1,180	0,270	0,013	0,005	0,110	0,035	0,013	0,002	0,002	0,062	0,023	0,000	0,418
LB3610	0,180	1,170	0,215	0,015	0,009	0,105	0,025	0,004	0,001	0,003	0,031	0,024	0,000	0,401
LB3791	0,173	1,200	0,250	0,012	0,005	0,130	0,030	0,006	0,003	0,015	0,040	0,032	0,004	0,408
LB3886	0,180	1,210	0,270	0,011	0,010	0,070	0,090	0,010	0,001	0,001	0,170	0,026	0,010	0,415
LB4058	0,165	1,210	0,200	0,009	0,009	0,130	0,070	0,020	0,003	0,024	0,140	0,025	0,008	0,415
LB4084	0,176	1,166	0,224	0,010	0,002	0,069	0,096	0,016	0,001	0,027	0,147	0,031	0,008	0,409
LB4191	0,185	0,900	0,220	0,013	0,007	0,080	0,050	0,010	0,001	0,015	0,170	0,021	0,010	0,371
LB4262	0,190	1,100	0,200	0,013	0,006	0,080	0,110	0,020	0,003	0,001	0,210	0,025	0,000	0,415
LB4267	0,180	1,220	0,260	0,011	0,009	0,060	0,100	0,009	0,000	0,005	0,170	0,025	0,009	0,416
LB4316	0,190	1,110	0,190	0,011	0,006	0,070	0,100	0,010	0,003	0,001	0,210	0,025	0,000	0,412
LB4360	0,175	1,190	0,250	0,014	0,001	0,125	0,025	0,010	0,001	0,028	0,028	0,031	0,000	0,409
LB4475	0,162	1,138	0,237	0,008	0,004	0,111	0,121	0,033	0,015	0,023	0,150	0,032	0,007	0,403
LB4481	0,190	1,120	0,220	0,011	0,007	0,000	0,140	0,030	0,002	0,001	0,270	0,027	0,000	0,410
LB4511	0,180	1,180	0,280	0,012	0,010	0,070	0,060	0,010	0,002	0,000	0,170	0,038	0,010	0,408
LB4512	0,180	1,180	0,250	0,011	0,009	0,070	0,080	0,010	0,002	0,000	0,220	0,031	0,013	0,413
LB4532	0,179	1,140	0,220	0,008	0,006	0,040	0,070	0,018	0,002	0,002	0,100	0,030	0,007	0,392
LB4708	0,170	1,170	0,280	0,013	0,009	0,070	0,090	0,020	0,002	0,001	0,180	0,024	0,015	0,401
LB4722	0,174	1,140	0,246	0,008	0,006	0,075	0,084	0,022	0,012	0,030	0,109	0,033	0,008	0,402
LB4730	0,180	1,100	0,170	0,010	0,006	0,080	0,150	0,030	0,003	0,001	0,250	0,026	0,000	0,412
LB4734	0,178	1,162	0,248	0,007	0,005	0,096	0,099	0,018	0,014	0,026	0,135	0,029	0,007	0,415
LB4738	0,180	1,140	0,180	0,009	0,004	0,070	0,100	0,020	0,003	0,001	0,240	0,024	0,000	0,411
LB4766	0,160	1,136	0,236	0,007	0,006	0,102	0,152	0,036	0,014	0,026	0,194	0,025	0,011	0,405
LB4800	0,172	1,120	0,250	0,010	0,002	0,140	0,080	0,020	0,001	0,025	0,170	0,025	0,010	0,412
LB4991	0,163	1,110	0,200	0,006	0,007	0,080	0,240	0,110	0,003	0,002	0,090	0,016	0,007	0,405
LB880	0,174	1,187	0,297	0,015	0,005	0,097	0,096	0,023	0,003	0,007	0,128	0,040	0,011	0,412
N. RIF.	PROVE MECCANICHE / MECHANICAL TESTS / ESSAIS MECHANQUES													
	Ø mm.	SO mm.2	LU mm.	RS-YIELD LIMITE	R-TENSILE RUPTURE	A %-ELONG. ALLONGEM.	C %-REDUCT. STRICTION	RESILLENZA / IMPACT TEST / RESILIENCE				HARDNESS / DURETE		
				MPA	MPA	2"		MEDIO / AVERAGE MOYEN	MINIMO MINIMUM	TIPO TYPE	TEMP.	Brinell 10-3000-30 Max.187		
CA1244	12,70	126,65	50,80	324,00	510,00	32,00	59,00					153/159		
CA798	12,70	126,65	50,80	332,00	524,00	31,00	64,00					155/157		
LB3441	12,70	126,65	50,80	326,00	524,00	31,00	63,00					155/158		
LB3442	12,70	126,65	50,80	325,00	523,00	31,00	65,00					155/158		
LB3465	12,70	126,65	50,80	325,00	524,00	31,00	63,00					155/156		
LB3594	12,70	126,65	50,80	324,30	541,70	32,00	64,30					152/158		
LB3610	12,70	126,65	50,80	333,00	524,00	31,00	64,00					155/157		
LB3791	12,70	126,65	50,80	325,00	524,00	31,00	69,00					155/156		
LB3886	12,70	126,65	50,80	321,00	524,00	31,00	65,00					154/156		
LB4058	12,70	126,65	50,80	327,00	524,00	31,00	62,00					154/156		
LB4084	12,70	126,65	50,80	327,00	526,00	31,00	65,00					148/150		
LB4191	12,70	126,65	50,80	323,00	512,00	28,50	61,30					148/155		
LB4262	12,70	126,65	50,80	312,00	517,00	30,90	64,80					153/156		
LB4267	12,70	126,65	50,80	319,00	512,00	29,80	66,30					154/156		
LB4316	12,70	126,65	50,80	321,00	524,00	31,60	64,20					150/152		
LB4360	12,70	126,65	50,80	312,00	532,00	31,50	68,00					151/153		
LB4475	12,70	126,65	50,80	327,00	543,50	31,00	61,50					156/159		
LB4481	12,70	126,65	50,80	335,20	548,90	32,10	66,20					151/159		
TRADE MARK	P. OFF. A. MELESI & C.		COLLAUDATORE / INSPECTOR / INSPECTEUR				ENTE COLLAUDATORE / INSPECTION AGENCY							
			Uberti p.i. Lino				AUTORITÉ DE RECETTE							



[Handwritten signature] 22/01/25



23813 Cortenova (Lecco)
ITALY
Largo De Vecchi 11
P.O. box 11
Tel. 0341.98341
Fax 0341.983496 - 983497
lino.uberti@melesi.it

FLANGE E FORGIATI

CERTIFICATO DI COLLAUDO
WORKS CERTIFICATE
CERTIFICAT D'ESSAIS

N. 63338 DATA / DATE 30/07/12 SHEET / PAGE 3/3

ORDINE / ORDER / C.D.E.
50623 R.1

DATA / DATE
10/05/12

COMMESSA
48659

GERAB NATIONAL ENTERPRISES
P.O. BOX 17719

JEBEL ALI - DUBAI UAE

LB4511	12,70	126,65	50,80	335,00	528,00	32,20	59,00							156/157
LB4512	12,70	126,65	50,80	328,00	522,00	33,00	67,00							149/151
LB4532	12,70	126,65	50,80	335,20	547,10	32,40	64,10							152/158
LB4708	12,70	126,65	50,80	332,20	547,70	30,10	67,00							156/159
LB4722	12,70	126,65	50,80	333,00	516,50	31,00	63,30							154/156
LB4730	12,70	126,65	50,80	335,20	542,30	32,50	68,50							152/158
LB4734	12,70	126,65	50,80	311,30	548,00	30,30	66,00							157/159
LB4738	12,70	126,65	50,80	312,30	544,30	32,50	65,20							154/158
LB4766	12,70	126,65	50,80	311,50	544,00	32,30	67,00							151/153
LB4800	12,70	126,65	50,80	311,80	520,00	31,50	58,40							151/153
LB4991	12,70	126,65	50,80	320,00	530,00	31,00	70,00							151/158
LB880	12,70	126,65	50,80	318,00	532,40	28,40	57,20							152/160

N. RIF.	TRATTAMENTI TERMICI / HEAT TREATMENTS / TRAITEMENTS THERMIQUES												
CA1244	Normalizzazione / Normalisation					Ti=0,000 Ca=0,000 B=0,0000							
CA798	Normalizzazione / Normalisation					Ti=0,000 Ca=0,000 B=0,0000							
LB3441	Normalizzazione / Normalisation					Ti=0,023 Ca=0,000 B=0,0000							
LB3442	Normalizzazione / Normalisation					Ti=0,025 Ca=0,000 B=0,0000							
LB3465	Normalizzazione / Normalisation					Ti=0,025 Ca=0,000 B=0,0000							
LB3594	Normalizzazione / Normalisation					Ti=0,017 Ca=0,000 B=0,0000							
LB3610	Normalizzazione / Normalisation					Ti=0,000 Ca=0,000 B=0,0000							
LB3791	Normalizzazione / Normalisation					Ti=0,000 Ca=0,000 B=0,0000							
LB3886	Normalizzazione / Normalisation					Ti=0,002 Ca=0,004 B=0,0000							
LB4058	Normalizzazione / Normalisation					Ti=0,016 Ca=0,000 B=0,0000							
LB4084	Normalizzazione / Normalisation					Ti=0,000 Ca=0,000 B=0,0000							
LB4191	Normalizzazione / Normalisation					Ti=0,016 Ca=0,000 B=0,0000							
LB4262	Normalizzazione / Normalisation					Ti=0,001 Ca=0,000 B=0,0000							
LB4267	Normalizzazione / Normalisation					Ti=0,000 Ca=0,000 B=0,0000							
LB4316	Normalizzazione / Normalisation					Ti=0,001 Ca=0,000 B=0,0000							
LB4360	Normalizzazione / Normalisation					Ti=0,002 Ca=0,001 B=0,0000							
LB4475	Normalizzazione / Normalisation					Ti=0,003 Ca=0,002 B=0,0000							
LB4481	Normalizzazione / Normalisation					Ti=0,001 Ca=0,000 B=0,0000							
LB4511	Normalizzazione / Normalisation					Ti=0,002 Ca=0,000 B=0,0000							
LB4512	Normalizzazione / Normalisation					Ti=0,002 Ca=0,000 B=0,0000							
LB4532	Normalizzazione / Normalisation					Ti=0,002 Ca=0,000 B=0,0000							
LB4708	Normalizzazione / Normalisation					Ti=0,002 Ca=0,000 B=0,0003							
LB4722	Normalizzazione / Normalisation					Ti=0,000 Ca=0,000 B=0,0000							
LB4730	Normalizzazione / Normalisation					Ti=0,000 Ca=0,000 B=0,0000							
LB4734	Normalizzazione / Normalisation					Ti=0,001 Ca=0,000 B=0,0000							
LB4738	Normalizzazione / Normalisation					Ti=0,002 Ca=0,000 B=0,0000							
LB4766	Normalizzazione / Normalisation					Ti=0,000 Ca=0,000 B=0,0000							
LB4800	Normalizzazione / Normalisation					Ti=0,000 Ca=0,000 B=0,0000							
LB4991	Normalizzazione / Normalisation					Ti=0,000 Ca=0,000 B=0,0000							
LB880	Normalizzazione / Normalisation					Ti=0,001 Ca=0,000 B=0,0000							

Acc.to DIN50049 3.1B/EN10204 3.1 Surface and dimensional check according to ASME B16,5 ed.2009

Steel made by electric furnace fully killed fine grain practice. (*)CEq. by long formula.

Material acc. to NACE MR 01-75 ed. 2009 / MR 01-03 ed. 2010 ISO 15156.

Material acc. to ASME SA105 ASME section II part A ed. 2010 plus addenda.



ESITO DELLE PROVE / TEST ISSUE / RESULTS DES ESSAIS: FAVOREVOLE SATISFACTORY SATISFAISANT



P. OFF. A. MELESI & C.

COLLAUDATORE / INSPECTOR / INSPECTEUR

Uberti p.i. Lino

ENTE COLLAUDATORE / INSPECTION AGENCY
AUTHORITE DE RECETTE

Handwritten signature and date 22/07/12

#44
23PIS

COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV ISO 9001 ■ ISO 14001		METALFAR PRODOTTI INDUSTRIALI SPA 23861 CESANA BRIANZA (LC) - ITALY VIA G. PARINI, 28 PHONE + 39 031 655441 - FAX +39 031 655149 certificate@metalfaritaly.com	COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV ISO 9001 ■ ISO 14001
---	---	--	---

INSPECTION CERTIFICATE EN 10204:2004 / 3.1		A02	Nr ^{A03} 2024-C_MFF-01332	Data / Dated 29.05.2024	Z02
GERAB NATIONAL ENTERPRISES L.L.C P.O. BOX: 17719, JEBEL ALI FREE ZONE DUBAI	A06	Ordine / PO	2113750669		A07
		Item	034		A07
	AE	DDT / Delivery note			A10
		Packing List			A11
		Fattura / Invoice			A12
		Ns. rif. / Our ref.	2024-3E201-0000015-0034		A08

Dest. GERAB NATIONAL ENTERPRISES LLC PO BOX 17719 JEBEL ALI FREE ZONE, DUBAI			A08 AE
Cod. colata Heat Code	Nr. colata Heat Nr 23/78265	Quantità Quantity 25,00	Descrizione Description W/N 300 RF 1.1/2" XXS A105N

Mat. in acc. a / Mat. in acc. to ASTM A105M - 23, ASME SA105M-23 ASME CODE SECT. II, PART A, ED. 2023
GSSSM-FGC-GOR-MFR REV.03; NACE MR-0175/2021 ISO 15156-2 :2020; NACE MR-0103/2015 ISO 17945 :2015 (R2023); Q.A.S.IN ACCORD.WITH PRESS.EQUIPM.DIRECT.2014/68/EU(PED) ANNEX I, PARAGRAPH 4.3
& PRESSURE EQUIPMENT(SAFETY) REGULATION 2016 No.1105 SCHEDULE 2, PART 4 PARA.31

Ann. mat. / Mat. remarks STEEL PRODUCED BY "EAF" PROCESS ; FULLY KILLED STEEL AND FINE GRAIN PRACTICED VACUUM DEGAISED MATERIAL

Elementi / Elements	C	Si	Mn	S	P	Cr	Ni	Mo	Ti	Cu	V	Nb	N
LADLE ANALYSIS	0,180	0,220	1,040	0,007	0,012	0,110	0,060	0,010	0,019	0,180	0,002	0,001	0,000
PRODUCT ANALYSIS	0,185	0,225	1,037	0,008	0,010	0,111	0,063	0,013	0,021	0,176	0,003	0,004	0,000
	Al	B	Ca	O2					CE LF	CE SF	F1	F2	PREN
				(ppm)									
LADLE ANALYSIS	0,025	0,0000	0,000	0,000					0,394	0,353	0,362	0,120	~
PRODUCT ANALYSIS	0,026	0,0000	0,000	0,000					0,399	0,358	0,366	0,124	--
CE LF=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15				CE SF=C+(Mn/6)		F1=Cu+Ni+Cr+Mo+V			F2=Cr+Mo				
Provetta Test specimen	C10	Forma Shape	*C03	Snervamento>0,2%	Snervamento>1,0%	Rottura Tensile	C12	Allungamento Elongation	C13	Contrazione Reduction of area	C14		
Sez/Sect mm2 Gauge Lmm 1=O - 2=□				MPa	MPa	MPa		%		%			
126,60 50,80 1 20				323,0	--	516,0		32,8		60,1			

DUREZZA / HARDNESS	RESILIENZA / IMPACT TEST
HBW 157,0 ; 155,0	1-Joule 58 2-Joule 53 3-Joule 47 Media/Average 52,7

Dim. grano / Grain size	7					
Tratt. Term. / Heat treatment	^{B04}	NORMALIZED AT 920 °C -SOAKING TIME 1h/in X min 1h - COOLED IN STILL AIR H.T. LOT 230221			^{C70} GAS FURNACE	
Dim in acc. a / Dim. acc. to	^{B14}	ASME/ANSI B16.5 -2020 ; ASME/ANSI B36.10M -2022				
Finitura / Roughness	^{B15}	ASME/ANSI B46.1 -2019 ; RF FINISHING 125-250 µin AARH				
Marcatura in acc. Marking in acc. to	^{B06}	ANSI/MSS SP-25-2018	^{D01} Vis. & Dim.	SATISFACTORY	^{B16} Origine Origin of Steel	RIVA ACCIAIO SPA ITALY

Note / Notes MATERIAL 100% MANUFACTURED IN ITALY; MATERIAL IN ACCORDANCE WITH ORDER AND SPECIFICATION
Issued in agreement with TÜV SÜD Industrie Service GmbH August 12th, 2021".
Certification no.DGR-0036-QS-W 1025/2021/MUC-01
TENSILE TEST AND CHARPY KV IMPACT TEST PERFORMED IN ACCORDANCE WITH ASTM A370 -22.

Material free from radioactive contaminations. Radioactivity level less than 0.5µSv/h or 100 Bq/g; Tensile specimen direction : Transversal. Grain size testing method in accordance with ASTM E112 -13; Hardness test performed in accordance to ASTM E10 on 100% of total qty. Microalloy elements such as V,Nb,Ti are not deliberately added; V+Nb+Ti < 0,15% ; Flanges are new,unused and free of damage and surface defects both internal and external.

UFFICIO CONTROLLO QUALITA' QUALITY CONTROL DEPARTMENT	ENTE UFFICIALE DI COLLAUDO INSPECTION AUTHORITY	MARCHIO PRODUZIONE MANUFACTURER'S SYMBOL
		

31.05.24



MATERIAL TEST & INSPECTION CERTIFICATE

SUNGKWANG BEND CO., LTD.(SKB)

CUSTOMER: GERAB NATIONAL ENTERPRISES LLC
PROJECT NAME: N/A

According to
DIN 50049 3.1 / EN 10204 3.1 / ISO 10474 3.1

26, Noksansandan 262-ro, Gangseo-Gu, Busan, Korea

TEL : 82-051-3300-450
FAX : 82-051-3300-335
http://www.skbind.com

PURCHASE ORDER NO.	2113750365	SPEC. FOR MATERIAL	ASTM A234WPB-S 23a	CERTIFICATE NO.	OCLJ2024050376
PJT NO.	N/A	SPEC. FOR INSPECTION	ASME B16.9.2018 & ASME B16.25.2017	DATE OF ISSUE	2024.05.23
STARTING MATERIAL	SEAMLESS PIPE	SKB NO.	2023112418	VISUAL & DIMENSION	SATISFACTORY

NO.	SEQ/LINE/ITEM NO	DESCRIPTION				QTY	HEAT NO.	MFG ID NO.	MILL MAKER	PORCODE/TAG NO
16		90D ELBOW(L)	X-S	6"	B.W SMLS Black	115	540332	540332	TPCO	
16		90D ELBOW(L)	X-S	6"	B.W SMLS Black	285	032052	032052	TPCO	

STD. / HEAT NO.		CHEMICAL COMPOSITION(%) (L: LADLE, P: PRODUCT)																TENSILE TEST							
		SPEC.	C	SI	Mn	P	S	NI	Cr	Mo	Cu	V	Nb	N	Al	B	Zr	Fe	TI	C.E	SPEC.	Y.S 0.2% offset KSI	T.S KSI	EL. %	R.A %
032052	MIN			0.10	0.29																MIN	35.0	60.0	30.0	
	MAX	0.20			1.20	0.020	0.010	0.40	0.40	0.15	0.40	0.01	0.005			0.0005				0.40	MAX				
	L	0.14	0.22		1.05	0.014	0.002	0.01	0.10	0.01	0.03	0.005	0.002			0.0004				0.34					
540332	P	0.14	0.20		1.06	0.016	0.001	0.01	0.08	0.02	0.03	0.007	0.001			0.0002				0.34					
	L	0.13	0.23		1.03	0.010	0.002	0.02	0.08	0.01	0.04	0.003	0.002			0.0001				0.32					
	P	0.13	0.25		1.01	0.009	0.001	0.01	0.06	0.02	0.02	0.002	0.001			0.0001				0.32		47.8	70.5	41.0	

HEAT NO.	TEST TEMP.	SIZE OF SPECIMEN(mm)	ABSORBED ENERGY			LATERAL EXPANSION			PERCENT SHEAR			HARDNESS		HEAT TREATMENT		NORMALIZED, 870°C, 30Min., "N"			
			STD. 127134J Min/Avg.	VALUE	AVG.	STD. /	VALUE	AVG.	STD. /	VALUE	AVG.	MIN	HBW	PMI	N/A	N.O.E	N/A		
032052	-29°C	BIM	142.20	160.00	150.00	150.73								FLATTENING TEST	N/A				
		H.A.Z												BENDING TEST	N/A				
		WIM												HYDROSTATIC TEST	N/A				
540332	-29°C	BIM	135.20	140.00	149.90	141.70								CORROSION TEST	N/A				
		H.A.Z												GRAIN SIZE TEST	N/A				
		WIM												HIC TEST	N/A				

Fully killed and fine grain practice
ASME SECTION II Part A : 2023 Edition, NACE MR0175.2021/ISO 15156-1:2020, NACE MR0132.2015, Q130-18259
The sum of Copper, Nickel, Chromium, and Molybdenum shall not exceed 1.00 %.

WE CERTIFY THIS MATERIAL HAS BEEN MANUFACTURED AND EXAMINED IN ACCORDANCE WITH ALL REQUIREMENTS OF THE SPECIFICATION AND THE RESULTS OF ALL EXAMINATION ARE ACCEPTABLE

CHIEF QUALITY OFFICER

SKB-8903

* 본 검사증명서에 명기된 규격용의 사용시 안전상 문제가 발생될 수 있으며, 검사증명서 위 변조시 사문서 위조(형법23조)로 불이익을 당하실 수 있습니다.





CERTIFICATO DI COLLAUDO / TEST CERTIFICATE

Ciente/Customer

GERAB NATIONAL ENTERPRISES

Certific. N. CTCERT201300000340

Ordine cliente/Customer order n. 54655 DTD 28/1/12

Data/Date 26/02/2013

RACCORDERIA FORGIATA E DERIVAZIONI
FORGED STEEL FITTINGS AND OUTLETS

Documento di trasporto

DTVEND201300000283

INVOICE NUMBER 282

Lista/Job 3380

Item	Quantity	Heat code	Heat Number	Description	Type and mat. specific	Year date	Steel Mill	Steel mill cert. - forgermaster cert.	
40	25	ARE	09/78115	BW-OUTLETS 36-1.1/4X1 SCH160	ASTM A105N-11		RIVA ACCIAIO SPA	8259	
ANALISI CHIMICA DI ACCIAIERIA									
				C% Mn% P% S% Si% Cr% Ni% Mo% Ti% Cu% Nb% Co% V% N% CE%					
				STEEL MILL CHEMICAL ANALYSIS	0.185 0.870 0.009 0.010 0.200 0.090 0.060 0.010 0.022 0.160 0.001 0.000 0.015 0.000 0.370				NORMALIZED AT 900°C / COOLED STILL AIR
CARATTERISTICHE MECCANICHE									
				Servamento					Prova idraulica Pieg.
				Yield str.	Rotura				H Test B Test
				Ten Str.	Hardness				0,00
				Nominal(2) 312,00	Hardness				
				MECHANICAL PROPERTIES	33,20 58,00 HBW 140 - 150				Visual and dimensional check
RACCORDI SECONDO FITTINGS IN ACC TO									
				ASME SEC. II PART A L.E. MSS SP-97-L.E. MSS SP-25-L.E. NACE MR0175-2010, ISO 15156					**OK**

Item	Quantity	Heat code	Heat Number	Description	Type and mat. specific	Year date	Steel Mill	Steel mill cert. - forgermaster cert.	
41	25	ARE	09/78115	BW-OUTLETS 36-1.1/4X1 SCHXXS	ASTM A105N-11		RIVA ACCIAIO SPA	8259	
ANALISI CHIMICA DI ACCIAIERIA									
				C% Mn% P% S% Si% Cr% Ni% Mo% Ti% Cu% Nb% Co% V% N% CE%					
				STEEL MILL CHEMICAL ANALYSIS	0.185 0.870 0.009 0.010 0.200 0.090 0.060 0.010 0.022 0.160 0.001 0.000 0.015 0.000 0.370				NORMALIZED AT 900°C / COOLED STILL AIR
CARATTERISTICHE MECCANICHE									
				Servamento					Prova idraulica Pieg.
				Yield str.	Retura				H Test B Test
				Ten Str.	Hardness				Visual and dimensional check
				Nominal(2) 312.00	Hardness				**OK**
MECHANICAL PROPERTIES									
				33.20 58.00 HBW 140 - 150					
RACCORDI SECONDO FITTINGS IN ACC TO									
				ASME SEC. II PART A L.E. MSS SP-97-L.E. MSS SP-25-L.E. NACE MR0175-2010, ISO 15156					

Item	Quantity	Heat code	Heat Number	Description	Type and mat. specific	Year date	Steel Mill	Steel mill cert. - forgermaster cert.
42	40	ARW	09/78197	BW-OUTLETS 36-2X1.1/2 SCH1160	ASTM A105N-11		RIVA ACCIAIO SPA	9912
ANALISI CHIMICA DI ACCIAIERIA								
				C% Mn% P% S% Si% Cr%	Ni% Mo% Ti% Cu% Nb% Co% V% N% CE%			
				STEEL MILL CHEMICAL ANALYSIS	0.150 1.000 0.013 0.007 0.240 0.070 0.050 0.010 0.016 0.190 0.003 0.000 0.023 0.000 0.350			NORMALIZED AT 900°C / COOLED STILL AIR
CARATTERISTICHE MECCANICHE								
				Servamento				Prova idraulica Pieg.
				Yield str.	Retorta			H Test B Test
				Ten Str.	Hardness			0.00
				Nominal(2) 305.00	Hardness			
MECHANICAL PROPERTIES								
				Nominal(2) 490.00	33.90 59.40 HBW 170 - 160 84 85 89	0°C		Visual and dimensional check
RACCORDI SECONDO FITTINGS IN ACC. TO								
				ASME SEC. II PART A L.E. MSS SP-97-L.E. MSS SP-25-L.E. NACE MR0175-2010, ISO 15156				

I risultati dell'analisi chimica sono la corretta trascrizione del certificato emesso dall'acciaieria
I risultati delle prove meccaniche sono la corretta trascrizione del certificato emesso dall'azienda
che ha eseguito l'ultima trasformazione del materiale
Dichiaro che il prodotto fornito è conforme alle normative sopradette ed ai requisiti dell'ordine
The results of the chemical analysis are a true and correct copy of the steel mill certificate
The results of the mechanical tests are the correct records of the certificate issued from the company that has
executed the last transformation of the material
We state that the delivered product complies with the above standards and to the order's requirements.

ENTE COLLAUDO / INSPECTOR

Certificato secondo / Certificate acc. to: EN 10204/3.1 - DIN 50049/3.1
ANNUAL BOOK ASTM SEZ.1 VOL.01.01.2010
MATERIAL MANUFACTURER APPROVED BY TÜV RHEINLAND INDUSTRIE SERVICE GmbH ACCORDING TO P.E.D. 9723/EC
ANNEX I POINT 4.3 & AD 2000 WD



QUALITY CONTROL

#118



CERTIFICATO DI COLLAUDO / TEST CERTIFICATE

Cliente/Customer

GERAB NATIONAL ENTERPRISES

Certific. N. CTCERT201300000340

Ordine cliente/Customer order n.

54655 DTD 28/11/12

Data/Date 26/02/2013

RACCORDERIA FORGIATA E DERIVAZIONI
FORGED STEEL FITTINGS AND OUTLETS

Documento di trasporto

DTVEND201300000283

INVOICE NUMBER 282

Lista/Job 3380

Item	Quantity	Heat code	Heat Number	Description	Type and mat. specific	Year date	Steel Mill	Steel mill cert. - forgermaster cert.
40	25	ARE	09/78115	BW-OUTLETS 36-1, I/4X1 SCH160	ASTM A105N-11		RIVA ACCIAIO SPA	8259
ANALISI CHIMICA DI ACCIAIERIA								
				C% Mn% P% S% Si% Cr%	Ti% Cu% Nb%	Co%	N% CE%	TRATTAMENTO TERMICO / HEAT TREATMENT
				STEEL MILL CHEMICAL ANALYSIS	0.185 0.870 0.009 0.010 0.200 0.090	0.060 0.010 0.022 0.160 0.001 0.000	0.015 0.000 0.370	NORMALIZED AT 900°C / COOLED STILL AIR
CARATTERISTICHE MECCANICHE								
				Servamento	Rottura	Alf% Conf%	Durezza	Resistenza
				Yield str.	Ten.Sir	Elf% Red of	Hardness	Impact test
				MECHANICAL PROPERTIES	Nimmet2	312.00	502.00	33.20 58.00 HBW 140 - 150
				ASME SEC. II PART A L.E. MSS SP-97-L.E. MSS SP-25-L.E. NACE MR0175-2010, ISO 15156				

Item	Quantity	Heat code	Heat Number	Description	Type and mat. specific	Year date	Steel Mill	Steel mill cert. - forgermaster cert.
41	25	ARE	09/78115	BW-OUTLETS 36-1, I/4X1 SCHXXS	ASTM A105N-11		RIVA ACCIAIO SPA	8259
ANALISI CHIMICA DI ACCIAIERIA								
				C% Mn% P% S% Si% Cr%	Ti% Cu% Nb%	Co%	N% CE%	TRATTAMENTO TERMICO / HEAT TREATMENT
				STEEL MILL CHEMICAL ANALYSIS	0.185 0.870 0.009 0.010 0.200 0.090	0.060 0.010 0.022 0.160 0.001 0.000	0.015 0.000 0.370	NORMALIZED AT 900°C / COOLED STILL AIR
CARATTERISTICHE MECCANICHE								
				Servamento	Rottura	Alf% Conf%	Durezza	Resistenza
				Yield str.	Ten.Sir	Elf% Red of	Hardness	Impact test
				MECHANICAL PROPERTIES	Nimmet2	312.00	502.00	33.20 58.00 HBW 140 - 150
				ASME SEC. II PART A L.E. MSS SP-97-L.E. MSS SP-25-L.E. NACE MR0175-2010, ISO 15156				

Item	Quantity	Heat code	Heat Number	Description	Type and mat. specific	Year date	Steel Mill	Steel mill cert. - forgermaster cert.
42	40	ARW	09/78197	BW-OUTLETS 36-2X1, I/2 SCH160	ASTM A105N-11		RIVA ACCIAIO SPA	9912
ANALISI CHIMICA DI ACCIAIERIA								
				C% Mn% P% S% Si% Cr%	Ti% Cu% Nb%	Co%	N% CE%	TRATTAMENTO TERMICO / HEAT TREATMENT
				STEEL MILL CHEMICAL ANALYSIS	0.150 1.000 0.013 0.007 0.240 0.070	0.050 0.010 0.016 0.190 0.003 0.000	0.023 0.000 0.350	NORMALIZED AT 900°C / COOLED STILL AIR
CARATTERISTICHE MECCANICHE								
				Servamento	Rottura	Alf% Conf%	Durezza	Resistenza
				Yield str.	Ten.Sir	Elf% Red of	Hardness	Impact test
				MECHANICAL PROPERTIES	Nimmet2	305.00	490.00	33.90 59.40 HBW 170 - 160 84 85 89 0°C
				ASME SEC. II PART A L.E. MSS SP-97-L.E. MSS SP-25-L.E. NACE MR0175-2010, ISO 15156				

I risultati dell'analisi chimica sono la corretta trascrizione del certificato emesso dall'acciaieria
I risultati delle prove meccaniche sono la corretta trascrizione del certificato emesso dall'acciaieria
che ha eseguito l'ultima trasformazione del materiale.
Dichiaro che il prodotto fornito è conforme alle normative sopraindicate ed ai requisiti dell'ordine.
The results of the chemical analysis are a true and correct copy of the steel mill certificate.
The results of the mechanical tests are the correct records of the certificate issued from the company that has
executed the last transformation of the material.
We state that the delivered product complies with the above standards and to the order's requirements

ENTE COLLAUDO / INSPECTOR

Certificato secondo / Certificate acc. to: EN 10204/3.1 - DIN 50049/3.1
ANNUAL BOOK ASTM SEZ.1 VOL.01 del 2010
MATERIAL MANUFACTURER APPROVED BY TÜV RHEINLAND INDUSTRIE SERVICE GmbH ACCORDING TO P.E.D. 97/23/EC
ANNEX 1 POINT 4.3 e AD 2000 NO



QUANTITATIVE CONTROL

#126



CERTIFICATO DI COLLAUDO / TEST CERTIFICATE

Ciente/Customer

GERAB NATIONAL ENTERPRISES

Certific. N. CTCERT201300000340

Ordine cliente/Customer order n. 54655 DTD 28/11/12

Date/Date 26/02/2013

RACCORDERIA FORGIATA E DERIVAZIONI
FORGED STEEL FITTINGS AND OUTLETS

Documento di trasporto DTVEND201300000283

INVOICE NUMBER 282

Liste/Job 3380

Item	Quantity	Heat code	Heat Number	Description	Type and mat. specific /year date	Steel Mill	Steel mill cert. - forgermaster cert.
40	25	ARE	09/78115	BW-OUTLETS 36-1.1/4X1 SCH160 ANALISI CHIMICA DI ACCIAIERIA STEEL MILL CHEMICAL ANALYSIS CARATTERISTICHE MECCANICHE MECHANICAL PROPERTIES RACCORDI SECONDO /FITTINGS IN ACC.TO	ASTM A105N-11 C% Mn% P% S% Si% Cr% Ni% Mo% Ti% Cu% Nb% Co% V% CE% Tensile Yield str. Tens.Str. N/mm2 ASME SEC. II PART A L.E., MSS SP-97-L.E., MSS SP-25-L.E., NACE MR0175-2010, ISO 15156	RIVA ACCIAIO SPA TRATTAMENTO TERMICO / HEAT TREATMENT NORMA LIZED AT 900°C / COOLED STILL AIR Prova idraulica Pieg. H Test B Test 0,00 Visual and dimensional check **OK**	
41	25	ARE	09/78115	BW-OUTLETS 36-1.1/4X1 SCHXXS ANALISI CHIMICA DI ACCIAIERIA STEEL MILL CHEMICAL ANALYSIS CARATTERISTICHE MECCANICHE MECHANICAL PROPERTIES RACCORDI SECONDO /FITTINGS IN ACC.TO	ASTM A105N-11 C% Mn% P% S% Si% Cr% Ni% Mo% Ti% Cu% Nb% Co% V% CE% Tensile Yield str. Tens.Str. N/mm2 ASME SEC. II PART A L.E., MSS SP-97-L.E., MSS SP-25-L.E., NACE MR0175-2010, ISO 15156	RIVA ACCIAIO SPA TRATTAMENTO TERMICO / HEAT TREATMENT NORMA LIZED AT 900°C / COOLED STILL AIR Prova idraulica Pieg. H Test B Test 0,00 Visual and dimensional check **OK**	
42	40	ARW	09/78197	BW-OUTLETS 36-2X1.1/2 SCH160 ANALISI CHIMICA DI ACCIAIERIA STEEL MILL CHEMICAL ANALYSIS CARATTERISTICHE MECCANICHE MECHANICAL PROPERTIES RACCORDI SECONDO /FITTINGS IN ACC.TO	ASTM A105N-11 C% Mn% P% S% Si% Cr% Ni% Mo% Ti% Cu% Nb% Co% V% CE% Tensile Yield str. Tens.Str. N/mm2 ASME SEC. II PART A L.E., MSS SP-97-L.E., MSS SP-25-L.E., NACE MR0175-2010, ISO 15156	RIVA ACCIAIO SPA TRATTAMENTO TERMICO / HEAT TREATMENT NORMA LIZED AT 900°C / COOLED STILL AIR Prova idraulica Pieg. H Test B Test 0,00 Visual and dimensional check **OK**	

I risultati dell'analisi chimica sono la corretta trascrizione del certificato emesso dall'acciaieria
I risultati delle prove meccaniche sono la corretta trascrizione del certificato emesso dall'acciaieria
Dichiaro che il prodotto fornito è conforme alle normative sopra indicate ed ai requisiti dell'ordine
The results of the chemical analysis are a true and correct copy of the steel mill certificate
The results of the mechanical tests are the correct records of the certificate issued from the company that has
executed the heat transformation of the material
We state that the delivered product complies with the above standards and to the order's requirements.

ENTE COLLAUDO / INSPECTOR

Certificato secondo / Certificate acc. to: EN 10204/3.1 - DIN 50049/3.1
ANNUAL BOOK ASTM SEZ.1 VOL. 01.01.2010
MATERIAL MANUFACTURER APPROVED BY P.E.D. 9723/EC
ANNEX 1 POINT 4.3 & AD 2000 W0.



QUALITY CONTROL

#134



CERTIFICATO DI COLLAUDO / TEST CERTIFICATE

Cliente/Customer

GERAB NATIONAL ENTERPRISES

Certific. N. CTCERT201300000340

Ordine cliente/Customer order n. 54655 DTD 28/11/12

Data/Date 26/02/2013

RACCORDERIA FORGIATA E DERIVAZIONI
FORGED STEEL FITTINGS AND OUTLETS

Documento di trasporto DTVENDD201300000283

INVOICE NUMBER 282

Lista/Job 3380

Item	Quantity	Heat code	Heat Number	Description	Type and mat. specific	Year date	Steel Mill	Steel mill cert. - forgermaster cert.
40	25	ARE	09/78115	BW-OUTLETS 36-1.1/4X1 SCH160	ASTM A105N-11		RIVA ACCIAIO SPA	8259
				ANALISI CHIMICA DI ACCIAIERIA	C% Mn% P% S% Si% Cr% Ni% Mo% Ti% Cu% Nb% Co% V% CE%		TRATTAMENTO TERMICO / HEAT TREATMENT	
				STEEL MILL CHEMICAL ANALYSIS	0.185 0.870 0.009 0.010 0.200 0.090 0.060 0.010 0.022 0.160 0.001 0.000 0.015 0.000 0.370		NORMALIZED AT 900°C / COOLED STILL AIR	
				CARATTERISTICHE MECCANICHE	Snemamento		Prova idraulica	Visual and dimensional check
				MECHANICAL PROPERTIES	Yield str. Tens. Str. Elong. Hardness		H-Test B-Test	**OK**
				MECHANICAL PROPERTIES	Nimmet2 312.00			
				RACCORDI SECONDO FITTINGS IN ACC. TO	ASME SEC. II PART A L.E. MSS SP-97-L.E. MSS SP-45-L.E. NACE MR0175-2010. ISO 15156			
41	25	ARE	09/78115	BW-OUTLETS 36-1.1/4X1 SCH160	ASTM A105N-11		RIVA ACCIAIO SPA	8259
				ANALISI CHIMICA DI ACCIAIERIA	C% Mn% P% S% Si% Cr% Ni% Mo% Ti% Cu% Nb% Co% V% CE%		TRATTAMENTO TERMICO / HEAT TREATMENT	
				STEEL MILL CHEMICAL ANALYSIS	0.185 0.870 0.009 0.010 0.200 0.090 0.060 0.010 0.022 0.160 0.001 0.000 0.015 0.000 0.370		NORMALIZED AT 900°C / COOLED STILL AIR	
				CARATTERISTICHE MECCANICHE	Snemamento		Prova idraulica	Visual and dimensional check
				MECHANICAL PROPERTIES	Yield str. Tens. Str. Elong. Hardness		H-Test B-Test	**OK**
				MECHANICAL PROPERTIES	Nimmet2 312.00			
				RACCORDI SECONDO FITTINGS IN ACC. TO	ASME SEC. II PART A L.E. MSS SP-97-L.E. MSS SP-45-L.E. NACE MR0175-2010. ISO 15156			
42	40	ARW	09/78197	BW-OUTLETS 36-2X1.1/2 SCH160	ASTM A105N-11		RIVA ACCIAIO SPA	9912
				ANALISI CHIMICA DI ACCIAIERIA	C% Mn% P% S% Si% Cr% Ni% Mo% Ti% Cu% Nb% Co% V% CE%		TRATTAMENTO TERMICO / HEAT TREATMENT	
				STEEL MILL CHEMICAL ANALYSIS	0.150 1.000 0.013 0.007 0.240 0.070 0.050 0.010 0.016 0.190 0.003 0.000 0.023 0.000 0.350		NORMALIZED AT 900°C / COOLED STILL AIR	
				CARATTERISTICHE MECCANICHE	Snemamento		Prova idraulica	Visual and dimensional check
				MECHANICAL PROPERTIES	Yield str. Tens. Str. Elong. Hardness		H-Test B-Test	**OK**
				MECHANICAL PROPERTIES	Nimmet2 305.00			
				RACCORDI SECONDO FITTINGS IN ACC. TO	ASME SEC. II PART A L.E. MSS SP-97-L.E. MSS SP-45-L.E. NACE MR0175-2010. ISO 15156			

I risultati dell'analisi chimica sono in corretta trascrizione del certificato emesso dall'azienda.
I risultati delle prove meccaniche sono in corretta trascrizione del certificato emesso dall'azienda
che ha eseguito l'ultima trasformazione del materiale.
Dichiaro che il prodotto fornito è conforme alle normative sopraindicate ed ai requisiti dell'ordine.
The results of the chemical analysis are a true and correct copy of the steel mill certificate.
The results of the mechanical tests are the correct records of the certificate issued from the company that has
executed the last transformation of the material.
We state that the delivered product complies with the above standards and to the order's requirements.

ENTE COLLAUDO / INSPECTOR

Certificato secondo / Certificate acc. to: EN 10204/3.1 - DIN 50049/3.1
ANNUAL BOOK ASTM SEZ.1 VOL. 01.01.2010.
MATERIAL MANUFACTURER APPROVED BY TÜV RHEINLAND INDUSTRIE SERVICE GmbH ACCORDING TO P.E.D. 9723/EC
ANNEX 1 POINT 4.3 & AD 2000 W0

INSPECTION CERTIFICATE

(EN10204:2004 3.1 / ISO 10474:1991 3.1B)

117-12, Noksan Saneop Daero,
Gangseo-gu, Busan,
46762 Korea
Tel : 82-51-970-6666
Fax : 82-51-831-6886

Customer	SHREE STEEL OVERSEAS				Certificate No.	20140402481	Date	2014/04/09
P.O No.	SSO/TK-01/2013				Project Name			
Job No.								
Specification for Material	ASTM/ASME A/SA234 WPB(2015Ed.)NACE MR0175-03				Starting Material	SEAMLESS PIPE		
Specification for Inspection	ASME B16.9-2012				Dimension and Visual Inspection		GOOD	
Heat Code No [HCN]	No.	Descriptions				Q'ty (Pcs)	Heat Treatment	
CM692	0006	90° ELBOW LONG	XX-S	B.W	1"	500	N: 910℃	

CHEMICAL COMPOSITION (%)

Heat Code No [HCN]	Spec.	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Cb	Ti	Ca	B	C.E	Raw Heat No
CM692	Max.	0.20	-	1.06	0.050	0.010	0.40	0.40	0.15	0.40	0.080	-	-	0.00650	0.0005	0.40	
	Mln.	-	0.10	0.29	-	-	-	-	-	-	-	-	-	-	-	-	
	L	0.11	0.28	*1.35	0.009	0.001	0.02	0.13	0.01	0.02	0.00	0.000	0.015	-	0.00020	0.366	J3K9122
	P	0.10	0.27	*1.34	0.008	0.001	0.01	0.12	0.01	0.02	0.00	0.000	0.014	0.00180	0.0003	0.351	

MECHANICAL PROPERTIES

Heat Code No [HCN]	Spec	Y.S	T.S	E.L	Hardness Test			
		ksi		(%)	HB			
CM692	Max.	-	95	-	197			
	Mln.	35	60	30	-			
	P	40.9	62.9	53.6	122	119		

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order. Any forgery or falsification of this certificate will be subjected to the full extent of the criminal prosecution. Please contact us by the below Fax or E-mail if you have any inquiries on this certificate.

Fax: +82 531 6886 / E-mail: tkqaqc@tkbend.co.kr

Remark: *Fully Killed and Made to Fine Grain Practice

SHREE STEEL OVERSEAS

VERIFIED TRUE COPY

PO. NO: 1313702926

ITEM NO. 162 QTY. 1/1

SIGN: @ 18/18

Legend:
HB: Brinell
ST: Solution Treatment
SR: Stress Relieving

N: Normalized
T: Tempered
A: Annealed
Q: Quenched
Y.S: 0.2% Offset Method
(G): Hot-Dip Galvanized Coating

AC: Air Cool
OC: Oil Cool
WQ: Water Quenched
WC: Water Cool
B: Base
W: Weld
H: Haz
L: Ladle
P: Product

* For each reduction of 0.01% below the specified carbon maximum, an increase of 0.05% manganese above the specified maximum will be permitted, up to a maximum of 1.35%.

☐ Reviewed by:

☐ Witnessed by:

TK EL 4009 Met 01

Approved by:

W. S. Kim
Head of Quality Control Dep't

22/01/25

INSPECTION CERTIFICATE

(EN10204:2004 3.1 / ISO 10474:1991 3.1B)

117-12, Noksan Saneop Daero,
Gangseo-gu, Busan,
46762 Korea
Tel : 82-51-970-6666
Fax : 82-51-831-6886

Customer	SHREE STEEL OVERSEAS					Certificate No.	20140402481	Date	2014/04/09
P.O No.	SSO/TK-01/2013					Project Name			
Job No.									
Specification for Material	ASTM/ASME A/SA234 WPB(2015Ed.)NACE MR0175-03					Starting Material	SEAMLESS PIPE		
Specification for Inspection	ASME B16.9-2012					Dimension and Visual Inspection		GOOD	
Heat Code No [HCN]	No.	Descriptions				Q'ty (Pcs)	Heat Treatment		
CM692	0006	90° ELBOW LONG	XX-S	B.W	1"	500	N: 910℃		

CHEMICAL COMPOSITION (%)

Heat Code No [HCN]	Spec.	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Co	Ti	Ca	B	C.E	Raw Heat No.
CM692	Max.	0.20	-	1.06	0.050	0.010	0.40	0.40	0.15	0.40	0.080	-	-	0.00650	0.0005	0.40	
	Mn.	-	0.10	0.29	-	-	-	-	-	-	-	-	-	-	-	-	
	L	0.11	0.28	*1.35	0.009	0.001	0.02	0.13	0.01	0.02	0.00	0.000	0.015	-	0.00020	0.366	J3K9122
	P	0.10	0.27	*1.34	0.008	0.001	0.01	0.12	0.01	0.02	0.00	0.000	0.014	0.00180	0.00030	0.351	

MECHANICAL PROPERTIES

Heat Code No [HCN]	Spec	Y.S	T.S	E.L	Hardness Test			
		ksi		(%)	HB			
		Max.	95	-	197			
CM692	P	35	60	30	-			
		40.9	62.9	53.6	122	119		

REVISED ISSUE
2017.00.17

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order. Any forgery or falsification of this certificate will be subjected to the full extent of the criminal prosecution. Please contact us by the below Fax or E-mail if you have any inquiries on this certificate.

Fax: +82 531 6886 / E-mail: tkqaqc@tkbend.co.kr

Remark: *Fully Killed and Made to Fine Grain Practice

SHREE STEEL OVERSEAS

VERIFIED TRUE COPY

PO. NO: 1313702926

ITEM NO. 162 QTY. 1/1

SIGN: @ 18/18

Legend:
HB: Brinell
ST: Solution Treatment
SR: Stress Relieving

N: Normalized
T: Tempered
A: Annealed
Q: Quenched
Y.S: 0.2% Offset Method
(G): Hot-Dip Galvanized Coating

AC: Air Cool
OC: Oil Cool
WQ: Water Quenched
WC: Water Cool
B: Base
W: Weld
H: Haz
L: Ladle
P: Product

* For each reduction of 0.01% below the specified carbon maximum, an increase of 0.06% manganese above the specified maximum will be permitted, up to a maximum of 1.25%.

☐ Reviewed by:

☐ Witnessed by:

TK EL 4009 Mel 01

Approved by:

W. S. Kim
Head of Quality Control Dept

22/01/25

MATERIAL TEST & INSPECTION CERTIFICATE

SUNGKHWANG BEND CO., LTD.(SKB)

26, Noksansandan 262-ro, Gangseo-Gu, Busan, Korea

TEL : 82-051-3300-450

FAX : 82-051-3300-335

http://www.skband.com

CUSTOMER: GERAB NATIONAL ENTERPRISE
PROJECT NAME: N/A

According to
DIN 5049 3.1 / EN 10204 3.1 / ISO 10474 3.1

PURCHASE ORDER NO.	52736	SPEC. FOR MATERIAL	ASTM A524WFB-S 2011	CERTIFICATE NO.	OCL/2013011985
PLT NO.	N/A	SPEC. FOR INSPECTION	ASME B16.9-2007	DATE OF ISSUE	2013.01.23
STARTING MATERIAL	FORGED MATL	SKB NO.	201207240	VISUAL & DIMENSION	SATISFACTORY

NO.	SEQ/ITEM NO	DESCRIPTION	QTY	HEAT NO.	MFG ID NO.	PORCODE/TAG NO
173		CROTCH STRAIGHT TEE XX-S 3/4"	50	S94558		151210
177		CROTCH STRAIGHT TEE XX-S 1 1/2"	20	S97196		151211

CHEMICAL COMPOSITION(%) (L: LADLE, P: PRODUCT)

STD.	SPEC.	C	SI	Mn	P	S	NI	Cr	Mo	Cu	V	Nb	N	Al	B	Zr	Fe	Ti	C.E	SPEC.	Y.S 0.2% offset	T.S	EL	RA
HEAT NO.	MIN	0.29																		MIN	KSI	KSI	%	%
	MAX	0.35		1.06	0.020	0.010	0.40	0.40	0.15	0.40	0.005	0.005							0.40	MAX				
S94558	L	0.17	0.20	1.04	0.009	0.002	0.05	0.12	0.02	0.16	0.001	0.004							0.39					
	P	0.17	0.21	1.05	0.008	0.001	0.05	0.11	0.01	0.17	0.001	0.004							0.38					
S97196	L	0.16	0.21	1.06	0.014	0.005	0.11	0.12	0.03	0.14	0.001	0.004							0.38					
	P	0.15	0.22	1.05	0.012	0.004	0.10	0.11	0.04	0.12	0.002	0.002							0.37					

TENSILE TEST

Y.S 0.2% offset	T.S	EL	RA
KSI	KSI	%	%
35.0	60.0	22.0	
49.3	81.3	50.0	
42.6	73.5	44.0	

IMPACT TEST	TEST TEMP.	SIZE OF SPECIMEN(mm)	ABSORBED ENERGY	LATERAL EXPANSION	PERCENT SHEAR	HARDNESS	HEAT TREATMENT	NORMALIZED 900°C, 2.5hrs, "A"
			STD. / VALUE	STD. / VALUE	STD. / VALUE	MIN HB	PHI	
			AVE.	AVE.	AVE.	MAX HB		

S94558		BIM					FLATTENING TEST	N/A	N.D.E	N/A
		H.A.Z					BENDING TEST	N/A		
		WIM					HYDROSTATIC TEST	N/A		
		BIM					CORROSION TEST	N/A		
		H.A.Z					GRAIN SIZE TEST	N/A		
S97196		WIM					HIC TEST	N/A		

1. ALL FITTINGS IS MANUFACTURED NEW, UNUSED AND DAMAGE FREE
2. WE USED RAW MATERIAL BASED ON FULLY KILLED. 3. NACE MR 0175 / ISO 15156-2 : 2009(E)
*** 173 : 140,135,144 / 177 : 142,144,140

REVIEWED BY :
WITNESSED BY :
QAM DIV. SENIOR MANAGING DIRECTOR



22/01/2013
[Signature]
QAM DIV. SENIOR MANAGING DIRECTOR



INSPECTION CERTIFICATE ACCORDING TO EN 10204 3.1

No: 07/15007 Date 23 July 2007

Specifica di collaudo - Test Specification
ASTM / ASME A54234M-04Comm. / Job
2006 1009Item Allied Int
0178Pos. / Item N°
0336Client / Customer
GERAB NATIONAL ENTERPRISESOrdine Cliente / P.O.
20477

ASTM B16.9-03/B16.25-03

Description - Description

CONC. RED. 2" X 1 1/2" SCH. XXS/XXS

Codice Prod. / Tag Number
10045Material / Materiale
WPB Q.tà - Qty
50,00

Trazione - Tension

Durezza - Hardness

Resistenza - Impact Test

Colata / Heat

Direzione / Direction

Snervamento RT 0,2
Yield Point
N/mm2Rottura Rm
Tensile Strength
N/mm2Allungamento
Elongation
%

Rt0,5/Rm

Valore Ottenuto
Values Found

Diff. / Dif.

Direzione - Direction
Posizione - LocationDimensione - Dimension
mmEnergia Ottenuta
Obtained Energy

Joule

Media /
Average

Valore / Values

Area Duttile
Shear Area

mm

Valore / Values

317916(*)

L

312

467

40

152

152

148

C %

Mn %

P %

S %

Si %

Ti %

V %

Al %

Nb %

Sn %

Ni %

Cu %

Mo %

Cr %

Co %

B %

Ca %

X1

X2

Heat

317916(*)

0,140

0,720

0,013

0,002

0,220

0,000

0,002

0,000

0,004

0,000

0,001

0,040

0,030

0,010

0,050

0,0000

0

0,277

0,01

0,13

Heat

317916(*)

0,140

0,720

0,013

0,003

0,220

0,001

0,002

0,020

0,004

0,000

0,001

0,040

0,030

0,030

0,050

0,0000

0

0,283

0,01

0,15

Note / Remarks :

(*) = Fittings Marked with Code no.: 546 Correspond to Heat no.: 317916

Melting Process :

I Basic oxygen(BO) ; I X Electric Furnace(E) A.O.D.

Manufacturing Method :

I X Cold Formed ; I Hot Forming at ends temperatures between 850° and 950 °C still air cooling

Heat Treatment :

Normalizing at 920 °C still air cooling

Type of construction: Seamless produced by Pipe

Visual and Dimensional examination in accordance with order requirements

Fittings according to PED 97/23/EC Annex 1 Par.4.3

Raw material see certificate n°: 113040 VALLOUREC

Material according to MACE HR 01 75 - 03 -- (HRC 22 Max.)

The chemical values and tensile properties are a true and correct copy of the certificate issued by the supplier of the raw material or by the laboratory which has determined them.

We hereby certify that the a/m products are made and inspected strictly in accordance with the standard and specification mentioned in the P.O.

Importatore di riferimento - Works Inspector

Rappresentante del cliente - Customer Inspector

Ente di collaudo - Third party Inspector

TRADE MARK

TI

ALLIED INTERNATIONAL S.p.A.

M. MALLAM

C/O. Control

P.O. NO. :
ITEM NO. :
QUANTITY :
S.O. NO. :
REMARKS :
.....L = Long / Lunghezza
T = Transv. / Transvers.
W = Saldatura / Welds
H = Z.T.A. / H.A.Z.
M = Mat. Base / Base Mat
A = Atc. Sold. / Through Weld
C = C + Mn / 6 + C + V + Mo / 5 + Cu + Ni / 15
X1 = P % + Nb %
X2 = Ni % + Cr % + Mo % + Cu %

#150

MATERIAL TEST & INSPECTION CERTIFICATE



SUNGKWANG BEND CO., LTD.(SKB)
1720, Songjeong-Dong, Gangseo-Ku, Busan, Korea

CUSTOMER: GERAB NATIONAL ENTERPRISE
PROJECT NAME: STOCK ORDER

According to
DIN 50049 3.1 / EN 10204 3.1 / ISO 10474 3.1

TEL : 82-051-3300-450
FAX : 82-051-3300-335
http://www.skbend.com

PURCHASE ORDER NO.		32639		SPEC. FOR MATERIAL		ASTM A234WPB-S 07		CERTIFICATE NO.		QCJL2008060995																
PJT NO.		N/A		SPEC. FOR INSPECTION		ASME B16.9 / 02-SMSS-406 & GSSSM-FBG-QIS		DATE OF ISSUE		2009.05.13																
STARTING MATERIAL		SEAMLESS PIPE		SKB NO.		2008101307		VISUAL & DIMENSION		SATISFACTORY																
NO.		SEQLINITEM NO		DESCRIPTION		QTY		HEAT NO.		MFG ID NO.																
8		STRAIGHT TEE		S60 3" B.W.S.M.S. Black		25		04943		04943																
										MILL MAKER																
										PORCODETAG NO																
										8/13/2009																
CHEMICAL COMPOSITION (%) (L: LADLE P: PRODUCT)																										
HEAT NO.	STL.	SPEC.	C	SI	Mn	P	S	NI	Cr	Mo	Cu	V	Nb	N	Al	B	W	Sn	TI	C.E	SPEC.	Y.S	T.S	EL.	RA	
	MIN	MAX	0.20	0.10	0.29	0.020	0.010	0.40	0.40	0.15	0.40	0.005	0.005			0.0005					MIN	35.0	60.0	30.0		
04943	L	0.18	0.19	0.46	0.013	0.001	0.01	0.03	0.03	0	0.01	0	0			0.0001					0.40	0.25				
	P	0.18	0.20	0.50	0.011	0.002	0.03	0.02	0.02	0.01	0.02	0	0.001			0.0001					0.27		48.7	72.4	30.0	
	L																									
IMPACT TEST	TEST	TEMP.	SIZE OF SPECIMEN(mm)	ABSORBED ENERGY				LATERAL EXPANSION				PERCENT SHEAR				HARDNESS		HEAT TREATMENT		NORMALIZED 500 G, 30Min., 147						
	HEAT NO.			STD. /	VALUE	AVE.	STD. /	VALUE	AVE.	STD. /	VALUE	AVE.	STD. /	VALUE	AVE.	MIN	MAX	NDE	MT:GOOD	PHI	N/A					
04943			BM															FLATTENING TEST	N/A							
			HAZ															BENDING TEST	N/A							
			WM															HYDROSTATIC TEST	N/A							
			BM															CORROSION TEST	N/A							
			HAZ															GRAIN SIZE TEST	N/A							
		WM															HIC TEST	N/A								

MATERIAL MEETS THE REQUIREMENTS OF NACE MR0175.
FULLY ALUMINIUM KILLED & FINE GRAIN PRACTICE P.O. NO.
Ca Spec = 0.0065%Max, Act=0.0019

REVIEWED BY :
WITNESSED BY :
QUANTITY :
ITEM NO. :
REMARKS :

WE CERTIFY THIS MATERIAL HAS BEEN MANUFACTURED AND EXAMINED IN ACCORDANCE WITH ALL REQUIREMENTS OF THE SPECIFICATION AND THE RESULTS OF ALL EXAMINATION ARE ACCEPTABLE.

QM DIV. SENIOR MANAGING DIRECTOR



22/01/25

#190
#188
58's



SUNGKWANG BEND CO., LTD.

1720, Songjeong-Dong, Gangseo-Ku, Busan, Korea

TEL : 82-051-3300-450

FAX : 82-051-3300-335

C OF C No. : 2008101307-01

DATE : August. 18, 2009

PAGE : 1 of 1

CERTIFICATE OF CONFORMANCE

- . PJT. NAME	: N/A (STOCK ORDER)
- . CUSTOMER	: GEARB NATIONAL ENTERPRISES.
- . CUSTOMER P.O NO.	: 32839
- . ITEMS DESCRIPTION	: WROUGHT BUTTWELDING FITTINGS.
- . Q'TY	: TOTAL : 2,454 EA

WE HERE BY CERTIFY THAT THE HEREIN HAS BEEN MADE AND TESTED/

INSPECTED IN ACCORDANCE WITH THE ABOVE SPECIFICATION, ASME SECTION II PART A

AND ALSO WITH REQUIREMENTS CALLED FOR BY THE ABOVE ORDER



CERTIFIED BY :

QM MANAGING DIRECTOR
SUNGKWANG BEND CO., LTD

자 분 탐 상 검 사 보 고 서

MAGNETIC PARTICLE EXAMINATION REPORT

 회사명 : 株式會社 韓國工業エンジニアリング HANKUK INDUSTRIAL ENGINEERING CO., LTD. 주 소 : 서울특별시 송파구 거여동 20-4 전 화 : 3402-3105 F A X : 3402-3110		보고서번호 Report No. HIE-BS-SK-MT-09-05-007	
		보고 일자 Date of Report 2009. 5. 6.	
주문주/발주선 Owner/Customer SUNGKWANG BEND CO., LTD.		공 사 명 Project Name GERAB	
제 품 명 Item TEE		공사 번호 P.O No. SKB NO : 10-13-7	
제품 번호 Item No N/A		도면 번호 D W G. NO. P.O NO : 32639	
제품 재질/두께 Material/Thickness A234WPB-S		TRV No. Revision. Operation No.	
표면 조건 Surface Condition		☐ 용 정 As Welded ☐ 단 조 As Forged ☐ 주 조 As Casted ☐ 기계가공 As Machined ☒ 사 상 As Grind ☐ OTHERS	
탐 상 기 Equipment Technique 제조사 Maker : KYUNG DO CO 모 델 Model : MP-A-3 출 력 Output : LIFTING POWER 10LB OVER		자 분 Magnetic Particle 제조사 Marker: G S CHEM 형 태 Type: MMG-P ☐ 습 식 Wet ☐ 건 식 Dry ☐ 염 색 Color ☒ 형 광 Fluorescent	
자 화 법 Magnetization Technique ☒ 연 속 법 Continuous ☐ 잔 류 법 Residual ☐ 프로드법 Prod ☒ 곡 간 법 Yoke ☐ 코 일 법 Coil ☐		자외선등 Black Light 제조사 Maker : KYUNG DO.CO 모 델 Model : BD-100 ☐ Ft-od 강 도 Intensity : 1.000 ☒ $\mu W/cm^2$	
시 험 시 기 Examination Time		대비 시험편 Reference Block FIELD INDICATOR	
자 화 방 향 Magnetization Direction		자 화 간 격 Magnetization Spacing 100-180	
자 화 전 류 Magnetizing Current		탈 자 Demagnetization	
적용 규격 Applied Spec. ASME SEC VIII Div1&2 APPENDIX 6 & ASTM E709		절차서 번호 Procedure No. HIE-NDT-MT-E02	
개 정 번 호 Rev.No. 3			
□ 링 Sketch * M.T CHECK POINT : ALL AREA. 			
유 침 Attachment		☒ 유 YES ☐ 무 NO	
시 험 자 Examiner K R Jung Level II		입 회 자 Witness	
판 독 자 Interpreter K R Jung Level II		검 토 자 Reviewer	
승 인 자 Approver G. E. LEE Level III		주문주/발주자 Owner/Customer	



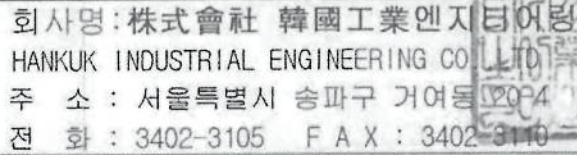
자 분 탐 상 검 사 보 고 서

REPORT OF MAGNETIC EXAMINATION

 회사명: 株式會社 韓國工業エンジニアリング HANKUK INDUSTRIAL ENGINEERING CO., LTD 주 소 : 서울특별시 송파구 거여동 20-4 전 화 : 3402-3105 F A X : 3402-3110						보고서번호 Report No. HIE-BS-SK-MT-09-05-007 보고일자 Date of Report 2009. 5. 6.	
Item no	확 인 번 호 Identification No.	합 격 Accept	불합격 Reject	등 급 Grade	판 독 Interpretation	비 고 Remark	
1	TEE S160 1/2" 50EA	v			NO RECORDABLE INDICATION	A234WPB-S	
2	TEE XX-S 1/2" 50EA	v			"	A234WPB-S	
4	TEE S80 1" 50EA	v			"	A234WPB-S	
5	TEE XX-S 1" 50EA	v			"	A234WPB-S	
6	TEE S80 2" 100EA	v			"	A234WPB-S	
7	TEE S120 4" 35EA	v			"	A234WPB-S	
8	TEE S60 8" 25EA	v			"	A234WPB-S	
9	TEE S120 8" 25EA	v			"	A234WPB-S	
10	TEE S160 8" 25EA	v			"	A234WPB-S	
11	TEE S100 14" 4EA	v			"	A234WPB-S	
12	TEE S80 * X-S 3/4" * 1/2" 25EA	v			"	A234WPB-S	
13	TEE S160 1" * 1/2" 25EA	v			"	A234WPB-S	
14	TEE S80 * X-S 1" * 3/4" 25EA	v			"	A234WPB-S	
15	TEE S160 1" * 3/4" 50EA	v			"	A234WPB-S	
16	TEE XX-S 1" * 3/4" 50EA	v			"	A234WPB-S	
17	TEE S160 1 1/2" * 3/4" 25EA	v				A234WPB-S	
18	TEE S80 * X-S 2" * 1/2" 25EA	v				A234WPB-S	
19	TEE S80 * X-S 2" * 1" 50EA	v				A234WPB-S	
21	TEE S80 * X-S 2" * 1 1/2" 50EA	v				A234WPB-S	
23	TEE S40 * STD 4" * 2" 50EA	v				A234WPB-S	
24	TEE S40 * STD 4" * 3" 25EA	v			"	A234WPB-S	
25	TEE S80 * X-S 4" * 3" 25EA	v			"	A234WPB-S	
26	TEE S40 * STD 6" * 2" 25EA	v			"	A234WPB-S	
27	TEE S160 8" * 4" 10EA	v			NO RECORDABLE INDICATION	A234WPB-S	



REPORT OF MAGNETIC EXAMINATION



보고서번호 Report No.	HIE-BS-SK-MT-09-05-007
보고일자 Date of Report	2009. 5. 6.

[illegible]

28/01/25

 Arabian Pipeline Supplies FZCO Office & Plant		VIA DEL SALICCIO, 11/A 21040 SUMIRAGO (VA) - ITALY Phone +39 0331 271011 Fax +39 0331 908669 http://www.viar.it - E-Mail: info@viar.it		Cert. N°: DV 212791 Rev: 1 Data/Date: 07/02/2022		CERTIFICATO DI ANALISI CHIMICA E PROVE MECCANICHE CHEMICAL COMPOSITION AND TENSILE PROPERTIES CERTIFICATE		UNI EN 10204 / 3.1 SHEET 11 / 68	
Cliente ARABIAN PIPELINE SUPPLIES FZCO. P.O. BOX 18259 JEBEL ALI, DUBAI UAE - UNITED ARAB EMIRATES		Cod. Cliente Client code number 21179734		Colata n° Heat number 21179734		Cod. colata Heat code 1486		Our job N°, IT 211524 Del / Of 07/10/2021	
Ordine / Order N° ALPO-21100002/0 Del / Of 07/10/2021		Acciaieria Steel plant RIVA ACCIAIO S.P.A.		Tratt. Termico Heat Treatment Normalization		Del / Of 07/10/2021			

Pos. Item	Q. lib Q. ly	Descrizione Description	Classe materiale	Cod. Cliente Client code number	Colata n° Heat number	Cod. colata Heat code	Cert. originale Mill. certif.	Acciaieria Steel plant	Tratt. Termico Heat Treatment
11	200	VIAR WELD 48"-2,1/2" X 2" STD/SCH.40 SMA105N	SMA105N		21179734		1486	RIVA ACCIAIO S.P.A.	Normalization

ANALISI CHIMICA / CHEMICAL COMPOSITION																			
Colata n° Heat n°	C %	Mn %	Si %	P %	S %	Cr %	Ni %	Mo %	Cu %	V %	Nb/Cb %	Sn %	Al %	Ca %	N %	Pb %	Ti %	W %	Fe %
21/79734	0,1600	0,9100	0,1900	0,0130	0,0050	0,1800	0,0600	0,0100	0,1900	0,0020	0,0020	0,0070	0,0210	0	0,0091		0,0060		

CARATTERISTICHE MECCANICHE / MECHANICAL PROPERTIES									
Colata n° Heat n°	YS 0,2% [MPa]	YS 0,5% [MPa]	TS [MPa]	EI %	RA %	YS/TS %	Prove di resistenza Single Value [J]	Ave [J]	Shear [ksi]
21/79734	334,00		529,00	37,60	61,80				

ACCORDING TO ASME B31.1/B31.3/B16.25/MSS-SP97-ED.2019
 NORMALIZATION AT 920°C. FOLLOWED BY CALM AIR COOLING - NACE MR-0175 / ISO 15156 ED.2015 - NACE MR0103 ED.2016
 ACCORDING TO ASME SECTION II PART A ED. 2021 - VISUAL AND DIMENSIONAL CHECKING: SATISFACTORY
 MATERIAL FULLY KILLED & FINE GRAINED - STEEL MAKING PROCESS: EAF
 FOR PRODUCT CHEMICAL ANALYSIS REPORT SEE "VIAR" CERTIFICATE N° 2038/21/V
 ASTM EDITION 2021
 MATERIAL PRODUCED BY LOW SULPHUR & PHOSPHOROUS REFINING PROCESS
 TENSILE SPECIMEN SIZE: Ø12,5mm X 122,7mm X 50,0mm

APS
QA/QC
OK

ARABIAN PIPELINE SUPPLY FZCO
 VERIFIED TRUE COPY
 P.O. BOX 18259
 JEBEL ALI - DUBAI
 U.A.E.

ENTE COLLAUD. / Inspection Agency

22/01/25

VIAR S.P.A.
 PROLO FORMARA

VIA 180/22



WIGOR S.p.A.



Scale legale ed operativa: VIA DEL SALICCIU, 11/A 21040 SIRMARAGO (VA) - ITALY
PHONE: +39 0331 271011 r.a. - FAX: +39 0331 918669
http://www.wigor.it - E-Mail: info@wigor.it

Cert. N°: 840 Rev. N°: 0
DATA/Date: 14/05/2013

CERTIFICATO DI ANALISI CHIMICA E PROVE MECCANICHE
CHEMICAL COMPOSITION AND TENSILE PROPERTIES CERTIFICATE

UNI EN 10224 / 3.1
SHEET 5 OF 7

Cliente
STEEL TRADING COMPANY L.L.C

Customer
PO BOX 5606
DUBAI - UAE

Our job N° 30328

Del 13/03/2013

Ordine N° PBF 10.021
Del 13/03/2013
PO. STC-VV-0305-13-STK

Pos. Item	Q.13 Qty	Description	Cod. Cliente Client code number	Colata n° Heat n°	Cod. colata Heat code	Treat. Termico Heat Treatment	Cert. originale Mill. certif.	Acciaieria Steel plant
21	20	VAR WELD 36"-4" X 3" SCH. 160 SAA105N-SAA350 LF2 (NACE)		11035483		NORM. & TEMPERING	21907	RIVA
22	10	VAR WELD 36"-4" X 3" SCH. 160 SAA105N-SAA350 LF2 (NACE)		11035483		NORM. & TEMPERING	21907	RIVA
23	30	VAR WELD 36"-6" X 5" STD/SCH. 40 SAA105N-SAA350 LF2 (NACE)		1279998		NORM. & TEMPERING	11841	RIVA
24	50	VAR WELD 36"-6" X 6" STD/SCH. 40 SAA105N-SAA350 LF2 (NACE)		1279998		NORM. & TEMPERING	11841	RIVA
25	50	VAR WELD 36"-6" X 6" STD/SCH. 40 SAA105N-SAA350 LF2 (NACE)		1279998		NORM. & TEMPERING	11841	RIVA
26	5	VAR WELD 48"-10" X 8" XS/SCH. 80 SAA105N-SAA350 LF2 (NACE)		10031318		NORM. & TEMPERING	42954	RIVA
27	10	VAR WELD 48"-10" X 8" XS/SCH. 80 SAA105N-SAA350 LF2 (NACE)		10031318		NORM. & TEMPERING	42954	RIVA
28	30	VAR WELD 48"-12" X 10" STD/SCH. 40 SAA105N-SAA350 LF2 (NACE)		10031318		NORM. & TEMPERING	42954	RIVA

ANALISI CHIMICA / CHEMICAL COMPOSITION

Colata n° Heat n°	C %	Mn %	Si %	P %	S %	Cr %	Ni %	Mo %	Cu %	V %	Nb+Cb %	Sn %	Al %	Ca %	N %	Pb %	Ti %	W %	Fe %	Co %	B %	Ta %	C.E. %	PRE	Zr %	PCM	Nb+Ta %
10/31318	0.200	0.960	0.240	0.0120	0.0100	0.090	0.060	0.010	0.120	0.0230		0.0080	0.0240				0.015						0.40				
11/35483	0.185	1.034	0.280	0.0160	0.0180	0.140	0.060	0.010	0.170	0.0030	0.0010	0.0080	0.0230				0.012						0.40				
12/79998	0.200	0.970	0.210	0.0120	0.0030	0.060	0.040	0.010	0.090	0.0010	0.0020	0.0070	0.0290		0.0091		0.020						0.35				

CARATTERISTICHE MECCANICHE / MECHANICAL PROPERTIES

Colata n° Heat n°	Rm [N/mm²]	Sn 0.2% [N/mm²]	A%	Z % - Stc for area	Impact Test Charpy KV 2016 Joule -46°C	HB	HB	HYDR. TEST
10031318	521.0	378.0	30.0	60.0	83	88	171	
11035483	569.0	361.0	32.1	63.7	124	128	159	
1279998	547.0	339.0	37.0	69.0	51	50	175	

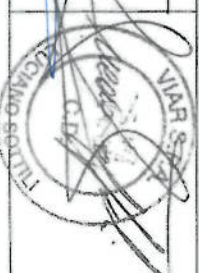
NOTE/Notes: ACCORDING TO ASME B31.1B31.3B16.25MSS-SP-97-ED 06

NORMALIZATION AT 820°C, TEMPERING AT 640°C, THEN CALM AIR COOLING

ACCORDING TO ASME SECTION II, ED. 2010 AND 2011-VISUAL AND DIMENSIONAL CHECKING SATISFACTORY

NACE MR 0175 / ISO 15156 (latest edition)

ENTE COLLAUD. / Inspection Agency



VIA 22/13 Rev.01

#194
- 112



WIGOR s.p.a.



CONFORM WITH QUALITY MANAGEMENT
SYSTEM CERTIFIED BY IRIS
= ISO 9001:2008 =

Sede legale ed operativa: VIA DEL SALICCIO, 11/A 21040 SUMARAO (VA) - ITALY
PHONE +39 0331 271011 r.a. - FAX +39 0331 908669
http://www.wigor.it - E-Mail: info@wigor.it

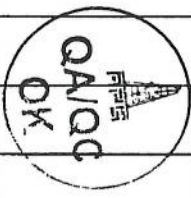
Cert. N°: 1971 Rev. N°: 1
DATA/Date: 27/01/2011
Clienti ARABIAN PIPELINE SUPPLY FZCO
Customer PO BOX 18259
JEBEL ALI DUBAEE - UAE

UNI EN 10204 / 3.1
SHEET 3 OF 13
Our job N° 1514 Del 21/10/2010
Ordine N° FBF-05609 Del 21/10/2010
PO NO: VV-1019-10-VIA-STK-ORD

14	200	VIAR WELD 36" - 5" X 4" STD/SCH.40 SA/A105N	NACE	434854	NORMALIZED	2004 0245	LUCCHINI
15	100	VIAR WELD 36" - 5" X 4" XS/SCH.80 SA/A105N	NACE	434854	NORMALIZED	2004 0245	LUCCHINI
16	40	VIAR WELD 48" - 10" X 8" STD/SCH.40 SA/A105N	NACE	10/70189	NORMALIZED	1535	RIVA
16	20	VIAR WELD 48" - 10" X 8" STD/SCH.40 SA/A105N	NACE	10/70189	NORMALIZED	1535	RIVA
16	40	VIAR WELD 48" - 10" X 8" STD/SCH.40 SA/A105N	NACE	10/70189	NORMALIZED	1535	RIVA
17	20	VIAR WELD 48" - 10" X 8" XS/SCH.80 SA/A105N	NACE	341402	NORMALIZED	2003 19255	LUCCHINI
18	16	VIAR WELD 48" - 14" X 12" STD SA/A105N	NACE	72268	NORMALIZED	94607	ABS
18	4	VIAR WELD 48" - 14" X 12" STD SA/A105N	NACE	72268	NORMALIZED	94607	ABS

Colata n°	Heat n°	C	Mn	Si	P	S	Cr	NI	Mo	Cu	V	Nb/Cb	Sn	Al	Ca	N	Pb	TI	W	Fe	Co	B	Ta	C.E.	PRE	Zr	PCM	Nb+Ta
10/70189		0,170	1,160	0,240	0,0110	0,0100	0,090	0,060	0,010	0,180	0,0240	0,0010	0,0080	0,0260				0,0220						0,40				
341402		0,170	1,160	0,210	0,0080	0,0010	0,093	0,010	0,010	0,027	0,0020	0,0020											0,39					
434854		0,165	1,120	0,240	0,0130	0,0030	0,145	0,060	0,004	0,023	0,0020	0,0020											0,39					
72268		0,162	0,890	0,270	0,0100	0,0010	0,270	0,160	0,040	0,170	0,0020	0,0010											0,39					

Colata n°	Heat n°	Rm [N/mm²]	Sn 0.2% [N/mm²]	A% Zr / Solmn.	Z % -Sn. Tot area	Impact Test - Charpy KV/27 / 19 Joule -50° F / -46° C.	HB	HB	HB	HB	HB	HB	HB	HYDR. TEST	Ratio YS/TS
10/70189		534	330	31,0	59,0		158	160							
341402		500	334	25,1	49,0		141	143							
434854		511	339	26,0	51,0		149	147							
72268		510	400	30,0	68,0		154	151							

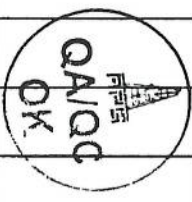


Colata n°	Heat n°	Rm	Sn,0.2%	A% Z' / Z % - St.	Impact Test - Charpy KV 27 / 19	HB	HB	HB	HB	HB	HB	HYDR. TEST	Ratio YS/TS
10/70189	534		330	31.0	59.0	158	160						
341402	500		334	25.1	49.0	141	143						
434854	511		339	26.0	51.0	149	147						
72268	510		400	30.0	66.0	154	151						

NOTE/Notes: ACCORDING TO ASME B31.1/B31.3/B16.25/MSS-SP-97-ED.06

A105- NORMALIZATION AT 920°C.FOR 2HRS. FOLLOWED BY CALM AIR COOLING-NACE MR01.75-ISO 15156-1/2/3
ACCORDING TO ASME SECTION II ED. 2007 add 2009- VISUAL AND DIMENSIONAL CHECKING: SATISFACTORY

ENTE COLLAUD. / Inspection Agency



1944
hp's

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B

DIN 50049/3.1

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TB-652
Customer PO No. : AIPO-24080015/0
Benkan No. :
JOB No. :

D/M/Y 02/12/2024 Certificate No. : T202409483807 Rev. No. : 0

THAI BENKAN CO.,LTD.
58 Moo 13 Soi Sukswat 70, Bangkru Phrapadeng, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

Specification for Product	ASTM A234/A234M-24/ASME SA234/SA234M-23 ASME Section II Part A 2023										MFG No.	67K10M052-2	Seamless or Weld	SEAMLESS	Quantity	20
Specification for Inspection	NACE MR0175-2021/ISO 15156-2 : 2020 & MR0103-ISO 17945-2015 (R2023) Sour service.										Product Description	T WPB 6 S80				
Starting Material	Heat No.	044464										Pipe or Plate	PIPE	Steel making Process	ELECTRIC FURNACE	
% Chemical content	C x100	Si x100	Mn x100	P x1000	S x1000	Cu x100	Ni x100	Cr x100	Mo x100	V x1000	Nb x1000	B x10000	Ti x1000	Al x1000	Ca x10000	CE x100
Required Maximum	20		106	20	10	40	40	40	15	20	10	5	20			40
Required Minimum			10	29										20		
Heat Analysis	13	20	105	11	2	3	2	8	2	3	2	4	13	25	5	33

For each reduction of 0.01 % below the specified carbon maximum an increase of 0.06 % manganese above the specified maximum will be permitted up to a maximum of 1.65 %
% CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15

Tension test		Gauge length		50 mm.						Hardness test																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
--------------	--	--------------	--	--------	--	--	--	--	--	---------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--



We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

Akensu Kondo

Quality Assurance Manager
Thai Benkan Co.,Ltd.



Benkan 493124

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B

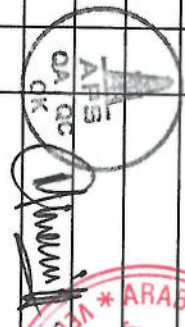
DIN 50049/3.1

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TB-652
Customer PO No. : AIPC-2408001510
Benkan No. :
JOB No. :

THAI BENKAN CO., LTD. **BENKAN**
58 Moo 13 Soi Sukasawat 70, Bangkru Phrapadeeng, Samutprakan 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

D/M/Y 02/12/2024 Certificate No. : T202409483806 Rev. No. : 0

Specification for Product		ASTM A234/A234M-24/ASME SA234/SA234M-23, ASME Section II Part A 2023										MFG No.		67K10M052-1		Seamless or Weld		SEAMLESS							
Specification for Inspection		NACE MR0175-2021/ISO 15156-2 : 2020 & MR0103-ISO 17945-2015 (F2023) Sour service.										Product Description		T WPB 6 S80		Quantity		63							
Starting Material		Heat No.		04464										Pipe or Plate		PIPE		Steel making Process		ELECTRIC FURNACE					
% Chemical content		C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	B	Ti	Al	Ca	CE								
Required Maximum		x100	x100	x100	x1000	x1000	x100	x100	x100	x100	x1000	x1000	x10000	x1000	x10000	x10000	x100								
Required Minimum		20		106	20	10	40	40	40	15	20	10	5	20			40								
Heat Analysis		13	20	105	11	2	3	2	8	2	3	2	4	13	25	5	33								
For each reduction of 0.01 % below the specified carbon maximum an increase of 0.05 % manganese above the specified maximum will be permitted up to a maximum of 1.65 % % CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15																									
Tension test		Gauge length		50 mm.																Hardness test					
TP Direction : Longitudinal																				HBW		1 2 3			
MPa		Req.Min.	Req.Max.	Actual results																Fitting		133 139 136			
Yield Strength		240	440	309																					
Tensile Strength		415		447																					
% Elongation		30		49																					
Impact test		10 x 7.5 x 2V		Supplementary Note :																					
TP Direction : Transverse		Temp. -29 °C		MESC SPEC 76/200 Rev February 2024																					
		J	1	2	3	AVE																			
		Base	215	223	233	224																			
Steel is vacuum degassed, fully killed and fine grain practiced																									
The fittings were manufactured, sampled, tested, and inspected in accordance with the specification																									
and were found to meet the requirements.																									
100% MT performed for all accessible surface in acc ASME Sec VIII Div 1, Appendix 6 : GOOD																									
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.																									
 Form No. TZ-62V/0 Akernitsu Kondo Quality Assurance Manager Thai Benkan Co., Ltd.																									



Benkan 492124

#184

MATERIAL INSPECTION CERTIFICATE

TO EN10204 3.1/ISO 10474 3.1B

DIN 50049/3.1

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TB-652
Customer PO No. : AIPO-24080015/0
Benkan No. :
JOB No. :

D/M/Y 02/12/2024 Certificate No. : T202409483807 Rev. No. : 0

THAI BENKAN CO., LTD. **BENKAN**
58 Moo 13 Soi Sukawat 70, Bangkru Phrapadaeng, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

Specification for Product		ASTM A234/A234M-24/ASME SA234/SA234M-23, ASME Section II Part A 2023										MFG No.		67K10M052-2		Seamless or Weld		SEAMLESS		Quantity		20							
Specification for Inspection		NACE MR0175-2021/ISO 15156-2 : 2020 & MR0103-ISO 17945-2015 (R2023) Sour service.										Product Description		TWPB 6 S80															
Starting Material		Heat No.		04464										Pipe or Plate		PIPE										Steel making Process		ELECTRIC FURNACE	
% Chemical content		C	SI	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	B	Ti	Al	Ca	CE												
Required Maximum		x100	x100	x100	x1000	x1000	x100	x100	x100	x100	x1000	x10000	x10000	x1000	x10000	x10000	x100												
Required Minimum		20		106	20	10	40	40	40	15	20	10	5	20			40												
Heat Analysis		13	20	105	11	2	3	2	8	2	3	2	4	13	25	5	33												
For each reduction of 0.01 % below the specified carbon maximum an increase of 0.06 % manganese above the specified maximum will be permitted up to a maximum of 1.65 % % CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15																													
Tension test		Gauge length		50 mm.																		Hardness test							
TP Direction : Longitudinal																						HBW		1 2 3					
MPa		Req. Min.	Req. Max.	Actual results																		Fitting		134 137 136					
Yield Strength		240	440	309																									
Tensile Strength		415		447																									
% Elongation		30		49																									
Impact test		10 x 7.5 x 2V		Supplementary Note :																									
TP Direction : Transverse		Temp. -29 °C		MESC SPEC 76/200 Rev. February 2024																									
		J	1	2	3	AVE																							
		Base	215	223	233	224																							
		Steel is vacuum degassed, fully killed and fine grain practice"																											
		The fittings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements.																											
		100% MT performed for all accessible surface in acc ASME Sec VIII D1, Appendix 6 : GOOD																											
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct. Akemitsu Kondo Quality Assurance Manager Thai Benkan Co., Ltd. Form No. TZ-62V/0																													

BKAN 093124

#185



erne titlings gmbh
A-6824 Schöns
Hauptstrasse 48
Austria/Europe
Telefon +43/5524 501-0
Telefax +43/5524 501-930



Reg. No.
12 100 3054

Abnahmeprüfzeugnis Inspection Certificate EN 10204 - 3.1

Ihre Bestellnummer [your order no.]
STC/VV-0920-07/ERN

Ihre Artikelnummer [your item no.]

Menge [quantity]
Artikelbezeichnung [designation]

350
elbows
LR-45-S-WPL6-2"-S160

Hersteller [manufacturer]
Voestalpine

Dichtheitsprüfung [leakage test]
Bar 172

Zeugnisnummer [certificate no.]
009098/08-EM

Rev.
Datum [date]
25/02/2008

Unsere Auftrags.Nr. [our order no.]
96946-SS-0060

Schmelze Nr [heat no.]
475804

Ident Nr. [ident no.]

Anforderungen [requirements]
ASME B16.9-2003 LR WPL6, ASME Sect. II part D table Y-1, ASTM A 420/A 420M-05, ASME SA-420M-ED, 04/A06, NACE MR-01-75-2001, EN 10204/3.1, Manufacturers standard

Vormaterial [base material]
Rohrzeugnisnr. [tube work's cert. no.]
Z45807

Analyse [analysis]	Schmelze Nr. [heat no.]	Erschmelzungsart [melting process]	1 = Schmelzeanalyse [heat analysis] 2 = Produktanalyse [product analysis]										J-Faktor [J-Factor]: (Si + Mn) * (P + Sn) * 10000 CEQ [CEQ]: C + (Mn / 6) + (Cr + Mo + V) / 5 + (Cu + Ni) / 15							
			C	Si	Mn	P	S	Cr	Mo	Ni	Cu	V	Nb	Al	B	Ti	N	Ceq	Sn	CEQ
1	475804	0.1761	0.2744	0.0053	0.0090	0.0026	0.0239	0.0065	0.0145	0.0155	0.0044	0.0023	0.0314	0.0002	0.0031	0.0074	0.34	0.0015	0.34	134.4
2	475804	0.160	0.280	0.897	0.008	0.001	0.019	0.009	0.014	0.012	0.001	0.003	0.028	0.00030	0.003	0.007	0.317	0.002	0.32	117.7

Mech.-technologische Prüfung [mech. technological test]

Proben Nr. [test no.]	Zugversuch [tensile test]					Kerbschlagbiegeversuch [notched bar impact test] Form: Charpy-V notch				Härteprüfung [hardness test]
	Pr.-Lage [pos. of sample]	Temp.	Dehng. [yield str.] Rp 0,2	Zugfestigkeit [tensile str.] Rm (N/mm²)	Dehnung [elongation] 2" (%)	PR-Lage [pos. of sample]	Temp.	Querschnitt [cross sec.]	Kerbschlagarbeit [impact values] (J)	
3012-1156/07	L	+20 °C	358	518	29,9	L	-50°C	60	158-136-148	Wärmebehandlung [heat treatment]



Kennzeichnung [marking] **E** **OS**

Mat./475804/DN"wall

Besichtigung und Ausmessung [visual inspection and dimensional check] o.B./o.K.

Zusatzmarkierung [add. mark.]

Bemerkungen [remarks]
hot formed over mandrel
Hardness test and stamping acc. to NACE MR-01-75. Stamped with round nosed tools. Hardness test, visual and dimensional test are checked on 10%.
Die gestellten Anforderungen wurden erfüllt [Manufacturing requirements are satisfied]
Der Werksachverständige [the Works Inspector]
25/02/08 Ender Mathias
Dieses Dokument wurde elektronisch erstellt und ist ohne Unterschrift gültig. [The certificate is issued by the computerized system and is valid without signature.]

P.O.No.	ALPO-24070032
ITEM No.	05 1 06
QTY.	04 1 02

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B



THAI BENKAN CO., LTD. **BENKAN**
 5th Moo 13 560 Suksewal 70, Bangkru Phrapadeng, Samutprakarn 10130, THAILAND
 Telephone : 66 (0) 2463 0074, 66 (0) 463 6735-7 FAX/EMAIL: 66 (0) 463 6238, 66 (0) 463 8241

Purchaser Name : TECHNOFT ME FZCO

TBC PO No. : TB-019

Customer PO No. : TTFPGB2022

Benkan No. :

JOB No. :

D/M/Y 17/01/2023 Certificate No. : T202309670064 Rev. No. : 0

Specification for Product		ASTM A234/234M-19/ASME SA234/SA234M-21, ASME Section II Part A 2021		MFG NO.		6SK10M072		Seamless or Weld		SEAMLESS		Quantity		50	
Specification for Inspection		NACE MR0175/ISO 15156-2: 2015 & MR0103-ISO 17493-2015 - Sour service		Product Description		T WPS 3 S80									
Starting Material		Heat No. 521432		Pipe or Plate		PIPE		Heat treatment		Normalizing 910 C X 60 Minutes Cooled in Still Air					
% Chemical content		C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	CE			
x100		x100	x100	x1000	x1000	x100	x100	x100	x100	x1000	x100				
Required Maximum		21	135	50	10	40	40	40	15	80	39				
Required Minimum		10	29												
Heat Analysis		13	24	108	11	2	6	4	8	1	10	34			
For each reduction of 0.01 % below the specified carbon maximum increase of 0.05 % manganese above the specified maximum will be permitted up to a maximum of 1.65 % % CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15															
Tension test		Gauge length 50 mm.		Impact test		10 x 12V		Hardness test							
TP Direction : Longitudinal		TP Direction : Longitudinal		Temp. C		C		HRW		Min Max		197			
MPa		Req. Min.	Req. Max.	Actual results	Joule	1	2	3	AVE	Fitting	128	135			
Yield Strength 0.2%		240	332	Base											
Tensile Strength		415	475												
% Elongation		30	30												
Impact test		10 x 5.0 x 2V		Supplementary Note :											
TP Direction : Transverse		Temp. -29 C		Basic steel making process "E" (Electric furnace)											
Joule		1	2	3	AVE										
Base		70	93	67	79										
Starting Material type : ASTM A333/333M-2018, Specimen type : Strip specimen															
100% MT performed at butt weld ends and full body (OD&ID) in acc ASME Sec VIII D, Appendix E : GOOD															



We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

Quality Assurance Manager
 Thai Benkan Co., Ltd.



Form No. TZ-02/V0

4175

INSPECTION CERTIFICATE

(EN10204 2004 3.1 / ISO 10474:1991 3.1B)

1499-1, SONG
JUNG-DONG
GANGSEO-GU
BUSAN, KOREA
Tel: 82-51-831-6550
Fax: 82-51-831-6886

Customer	STEEL TRADING GROUP	Certificate No	20130407520	Date	2013/04/27
P.O. No.	STC-VV-1004-12-TK-STK	Project Name			
Job No.					
Specification for Material	ASTM/ASME A/SA234 WPB10 Ed & 11 Add INACE MR0175 03	Starting Material	SEAMLESS PIPE		
Specification for Inspection	ASME B16.9-2007	Dimension and Visual Inspection	GOOD		
Heat Code No [HCN]	No	Descriptions	Q'ty (Pcs)	Heat Treatment	NDE (GOOD)
CD978	0054	REDUCING TEE SCH80 B.W. 16" x 10"	1	N 910°C	MT
BP209	0064	CON REDUCER XX-S B.W. 3" x 1-1/2"	37	N 910°C	-
BP209	0066	CON REDUCER XX-S B.W. 3" x 2"	100	N 910°C	-

CHEMICAL COMPOSITION (%)

Heat Code No [HCN]	Spec	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Co	B	CE	Raw Heat No
	Max	0.20	-	1.06	0.015	0.010	0.40	0.40	0.15	0.40	0.080	0.020	0.0005	0.40	
	Min	-	0.10	0.29	-	-	-	-	-	-	-	-	-	-	
CD978	L	0.13	0.18	1.20	0.010	0.005	0.02	0.03	0.01	0.01	0.00	0.00	0.0001	0.340	33004
	P	0.12	0.19	1.18	0.012	0.004	0.03	0.01	0.02	0.01	0.002	0.000	0.0002	0.325	
BP209	L	0.12	0.23	1.30	0.012	0.003	0.02	0.11	0.01	0.02	0.000	0.000	0.0002	0.361	J01.C246
	P	0.11	0.25	1.28	0.013	0.002	0.03	0.10	0.01	0.02	0.003	0.001	0.0004	0.349	
BP209	L	0.12	0.23	1.30	0.012	0.003	0.02	0.11	0.00	0.02	0.000	0.000	0.0002	0.361	J01.C246
	P	0.11	0.25	1.28	0.013	0.002	0.03	0.10	0.01	0.02	0.003	0.001	0.0004	0.349	

MECHANICAL PROPERTIES

Heat Code No [HCN]	Spec	Y.S Ksi	T.S Ksi	EL (%)	Hardness Test HB
	Max	-	95	-	197
	Min	35	80	30	-
CD978	P	46.3	68.5	37.6	142
BP209	P	44.3	68.5	53.2	147
BP209	P	44.3	68.5	53.2	147

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

Remark: *FULLY KILLED AND FINE GRAIN

Legend:
HB Brinell
ST Solution Treatment
SR Stress Relieving
N Normalized
T Tempered
A Annealed
Q Quenched
Y S 0.2% Offset Method
(G) Hot-Dip Galvanized Coating
AC Air Cool
OC Oil Cool
WO Water Quenched
WC Water Cool
B Base
W Weld
H Haz
L Lapis
P Product

* For each reduction of 0.01% below the specified carbon maximum, an increase of 0.01% in tensile strength above the specified maximum will be permitted, up to a maximum of 1.35%.

☐ Reviewed by

☐ Witnessed by

Approved by:

Head of Quality Control Dept



[Handwritten signature]
22/04/13

27/13

CHERO PIPING

RACORDERIA FORGIATA / FORGED STEEL FITTINGS
Località: Pieve di Cadore 37 - 28013 CARPIANO PIACENTINO - PC
Tel: +39 0523 859807 - Fax: +39 0523 860113 - info@cheropiping.com



CUSTOMER
STEEL TRADING COMPANY L.T.C.

CERTIFICATE N°
222/2007
DATE
19/01/2007
SHEET
1

INTERNAL ORDER NUMBER
1563/2006
DATE
31/07/2006

CUSTOMER ORDER REF.
STC/SS-0618-06/CHE - 18/06/2006

TEST CERTIFICATE ACCORDING TO EN 10204 3.1 - EXTENT OF MATERIAL DELIVERY

PRIMA INFORMATICA - PIACENZA

POS.	TEST NO.	HEAT CODE	Q.TY	DESCRIPTION	MAT. ACQUISITION / TAG N° / ITEM CODE / COMPUTER CODE / IUB	ENCLOSURE / NOTES
10 1	23953/2005	18135	50	WELDOLET BW SCH. 40/STD LF2 1/2x3/4-36		
20 1	24112/2005	76901	50	WELDOLET BW SCH. 40/STD LF2 3/4x1-36		
30 1	22831/2004	70781	100	WELDOLET BW SCH. 40/STD LF2 1x1/4-36		
40 1	23557/2005	19195	50	WELDOLET BW S40/STD LF2 1/2x2-36		
50 1	23557/2005	19195	100	WELDOLET BW S40/STD LF2 2x2/2-36		
60 1	25049/2006	ADS *	50	WELDOLET BW 40/STD LF2 3/4x4-36		
70 1	25668/2006	AGY	30	WELDOLET BW 40/STD LF2 4"x4"-36		
80 1	26131/2007	AGL	20	WELDOLET BW 40/STD LF2 6"x8"-36		
90 1	26131/2007	AGL	10	WELDOLET BW 40/STD LF2 8"-10"-36		
100 1	23953/2005	18135	100	WELDOLET BW S80/XS LF2 1/2x3/4-36		
110 1	24112/2005	76901	100	WELDOLET BW S80/XS LF2 3/4x1-36		
120 1	22831/2004	70781	100	WELDOLET BW S80/XS LF2 1x1/4-36		
130 1	23557/2005	19195	50	WELDOLET BW S80/XS LF2 1/2x2-36		
140 1	23557/2005	19195	200	WELDOLET BW S80/XS LF2 2"x2/2-36		
150 1	25049/2006	ADS	50	WELDOLET BW SCH. 80/XS LF2 3"x4"-36		
160 1	25668/2006	AGY	30	WELDOLET BW SCH. 80/XS LF2 4"x5"-36		
170 1	26130/2007	ABG	100	WELDOLET BW S160/160 LF2 1/2"x3/4"-36		
180 1	26130/2007	ABG	100	WELDOLET BW S160/160 LF2 1"x1/4"-36		
190 1	26133/2007	ACF	100	WELDOLET BW S160/160 LF2 1/2"x2-36		
200 1	26133/2007	ACF	50	WELDOLET BW S160/160 LF2 1/2"x2-36		
210 1	26130/2007	ABG	100	WELDOLET BW SCH. XXS/XS LF2 1/2x3/4-36		
220 1	26132/2007	ACF	100	WELDOLET BW SCH. XXS/XS LF2 1"x1/4"-36		
230 1	26133/2007	ACF	100	WELDOLET BW SCH. XXS/XS LF2 1"x1/4"-36		
240 1	26134/2007	AGP	50	WELDOLET BW SCH. XXS/XS LF2 1/2"x3/4"-36		
250 1	20269/2002	59076	100	WELDOLET BW SCH. XXS/XS LF2 1/2"x3/4"-36		
260 1	21009/2003	143652	200	WELDOLET BW SCH. XXS/XS LF2 1/2"x3/4"-36		
270 1	19108/2001	ECF	129	WELDOLET BW SCH. XXS/XS LF2 1"x1/4"-36		
280 1	22831/2004	70781	71	WELDOLET BW SCH. XXS/XS LF2 1"x1/4"-36		
290 1	21307/2003	376227	60	WELDOLET BW SCH. XXS/XS LF2 1/2"x2-36		
300 1	23557/2005	19195	50	WELDOLET BW SCH. XXS/XS LF2 2"x2/2-36		
300 1	23953/2005	18135	100	WELDOLET BW SCH. XXS/XS LF2 1/2"x3/4"-36		

NOTES

VISUAL, DIMENSIONAL AND MARKING CHECK HAVE BEEN CARRIED OUT WITH
SATISFACTORY RESULTS ACCORDING TO ANSI B16.9 & B16.11
MATERIAL ACC. TO NACE MR 01.75 ED.99 + ASME SECTION II ED.2003 AD.2005

THIRD PARTS

CUSTOMER INSPECTOR

QUALITY CONTROL

PIACENZA GHISSONI
CHERO PIPING S.P.A.



452

CHERO PIPING

RACCORDERIA FORGIATA / FORGED STEEL FITTINGS
Locata Pinerolo, 37 - 28013 CARATE PIACENTIA (PV)
Tel +39 0523 859307 - Fax +39 0523 859433 - Info@cheropiping.com



CUSTOMER
STEEL TRADING COMPANY L.T.C.

CERTIFICATE N°

222/2007

DATE

19/01/2007

SHEET

2

INTERNAL ORDER NUMBER

1563/2006

DATE

31/07/2006

CUSTOMER ORDER REF.

STC/SS-0618-06/CHE - 18/06/2006

TEST CERTIFICATE ACCORDING TO EN 10204 3.1 - EXTENT OF MATERIAL DELIVERY

PRIMA INFORMATICA - PIACENZA

POS.	TEST NO.	HEAT CODE	Q.TY	DESCRIPTION	MATERIAL REQUISITION / TAG N° / ITEM CODE / COMPUTER CODE / U.B	ENCLOSURE / NOTES
310 1	22831/2004	70781	100	THREADOLET NPT S/6000 LF2 3/4X1"-36"		
320 1	22831/2004	70781	100	THREADOLET NPT S/6000 LF2 1X1 1/4-36		
330 1	23557/2005	19195	50	THREADOLET NPT S/6000 LF2 1 1/2X2"-36"		
340 1	20269/2002	59076	100	SOCKOLET SW S/3000 LF2 1/2X3/4"-36"		
350 1	21009/2003	143652	200	SOCKOLET SW S/3000 LF2 3/4X1"-36"		
360 1	21306/2003	385678	200	SOCKOLET SW S/3000 LF2 1X1 1/4"-36"		
370 1	21307/2003	376227	100	SOCKOLET SW 3000 LF2 1 1/2X2"-36"		
380 1	23557/2005	19195	50	SOCKOLET SW S/3000 LF2 2X2 1/2-36		
390 1	23953/2005	18135	100	SOCKOLET SW 6000 LF2 1/2X3/4"-36"		
400 1	27213/2007	76593	100	SOCKOLET SW S/6000 LF2 3/4X1"-36"		
410 1	22831/2004	70781	100	SOCKOLET SW S/6000 LF2 1X1 1/4"-36"		
420 1	23557/2005	19195	100	SOCKOLET SW S/6000 LF2 1 1/2X2"-36"		
430 1	21305/2003	396521	100	NIPOLET PE 3000 S80 LF2 1 1/2X3/4"-36"		
440 1	17316/1999	EBV	100	NIPOLET PE 3000 S80 LF2 1 1/2X2"-36"		
450 1	24145/2005	22998	100	NIPOLET PE 3000 S80 LF2 3/4X1"-36"		
460 1	25051/2006	76900	20	NIPOLET PE 3000 S80 LF2 1 1/2X2"-36"		
470 1	23557/2005	19195	25	NIPOLET PE 3000 S80 LF2 2X2 1/2-36"		
480 1	17316/1999	EBV	100	NIPOLET PE 6000 S160 LF2 2X2 1/2-36"		
490 1	21305/2003	396521	100	NIPOLET PE 6000 S160 LF2 1/2X3/4"-36"		
500 1	24145/2005	22998	100	NIPOLET PE 6000 S160 LF2 3/4X1"-36"		
510 1	25051/2006	76900	20	NIPOLET PE 6000 S160 LF2 1 1/2X2"-36"		
520 1	21307/2003	376227	25	NIPOLET PE 6000 S160 LF2 1 1/2X2"-36"		
530 1	25051/2006	76900	100	NIPOLET PE 9000 SXXS LF2 1/2X3/4"-36"		
540 1	27213/2007	76593	100	NIPOLET PE 9000 SXXS LF2 3/4X1"-36"		
550 1	22831/2004	70781	100	NIPOLET PE 9000 SXXS LF2 1X1 1/4"-36"		
560 1	25888/2006	79687	20	NIPOLET PE 9000 SXXS LF2 1 1/2X2"-36"		
570 1	24294/2006	158617	25	NIPOLET PE 9000 SXXS LF2 2X2 1/2-36"		

NOTES

VISUAL, DIMENSIONAL AND MARKING CHECK HAVE BEEN CARRIED OUT WITH
SATISFACTORY RESULTS ACCORDING TO ANSI B16.9 & B16.11
MATERIAL ACC. TO NACE MR 01.75 ED.99 + ASME SECTION II ED.2003 AD.2005

THIRD PARTS

CUSTOMER INSPECTOR

QUALITY CONTROL



PIACENZA GHISSONI
CHERO PIPING S.P.A.

CUSTOMER
 STEEL TRADING COMPANY L.L.C.

CERTIFICATE N° DATE
 222/2007 19/01/2007 SHEET
 3

INTERNAL ORDER NUMBER DATE
 1563/2006 31/07/2006

CUSTOMER ORDER REF.
 STC/SS-0618-06/CHE - 18/06/2006

TEST N°	MATERIAL SPECIFICATION AND GRADE	HEAT NUMBER	TABLE ANALYSIS (%)													
			C	Mn	Si	P	S	Cr	Mo	Ni	Ti	Cu	V	Fa	Al	Co
22952/2005	ASTM A350 GR. LF2	1718135	0.180	0.080	0.250	0.004	0.003	0.030	0.020	0.000	0.190	0.001	0.001	0.000	0.000	0.000
24112/2005	ASTM A350 GR. LF2	0507801	0.185	0.070	0.190	0.013	0.009	0.070	0.010	0.040	0.140	0.016	0.023	0.000	0.023	0.000
22031/2004	ASTM A350 GR. LF2	0407001	0.280	0.030	0.210	0.009	0.010	0.000	0.010	0.050	0.130	0.030	0.022	0.000	0.010	0.002
23551/2005	ASTM A350 GR. LF2	18185	0.145	0.090	0.210	0.010	0.004	0.180	0.000	0.130	0.280	0.005	0.010	0.002	0.022	0.001
26048/2005	ASTM A350 GR. LF2	0407003	0.185	0.090	0.220	0.007	0.010	0.170	0.010	0.000	0.220	0.022	0.037	0.001	0.037	0.001
26048/2005	ASTM A350 GR. LF2	A13119	0.190	0.090	0.250	0.010	0.010	0.080	0.010	0.000	0.190	0.022	0.028	0.001	0.028	0.001
26134/2001	ASTM A350 GR. LF2	A13119	0.185	0.110	0.210	0.010	0.010	0.110	0.020	0.000	0.190	0.022	0.028	0.001	0.028	0.001
26134/2001	ASTM A350 GR. LF2	0207000	0.180	0.080	0.220	0.011	0.010	0.140	0.010	0.070	0.200	0.020	0.023	0.000	0.025	0.001
26134/2001	ASTM A350 GR. LF2	0407003	0.185	0.080	0.220	0.011	0.010	0.140	0.010	0.070	0.200	0.020	0.023	0.000	0.025	0.001
26134/2001	ASTM A350 GR. LF2	0407003	0.185	0.080	0.220	0.011	0.010	0.140	0.010	0.070	0.200	0.020	0.023	0.000	0.025	0.001

TEST N°	TENSILE TEST [Mpa]	IMPACT TEST [Joule]	HARDNESS TEST	HYDROSTATIC TEST	FLUORINE TEST	BENDING TEST	FLATTENING TEST	Eddy Current	Spectroscopy
22952/2005	523	356	30.00	55.00	45	46	45	RV	10 X 10.0 L
24112/2005	501	311	33.30	58.20	48	49	50	RV	10 X 10.0 L
22031/2004	521	322	32.10	56.30	48	49	50	RV	10 X 10.0 L
23551/2005	502	391	34.00	59.00	43	44	45	RV	10 X 10.0 L
26048/2005	513	318	32.60	56.90	43	44	45	RV	10 X 10.0 L
26048/2005	527	360	29.00	67.00	86	79	81	RV	10 X 10.0 L
26134/2001	535	399	30.00	66.00	90	92	94	RV	10 X 10.0 L
26134/2001	507	315	32.90	57.60	142	145	148	RV	10 X 10.0 L
26134/2001	502	312	33.20	58.10	66	67	70	RV	10 X 10.0 L
26134/2001	515	319	32.50	56.70	45	47	49	RV	10 X 10.0 L

PRIMA INFORMATION - PACCORFERIA

TEST N°	H.T.	SCALE	MAX T	BELOW TO	COOLING	H.T.	SCALE	MAX T	BELOW TO	COOLING	BASE MATERIAL CERTIFICATION REF.	STEEL WORKS
22952/2005	NORMAL.	°C	920	AIR	AIR	AS02476/2005	43731	150.0	HB	150.0	LEAL SPA	PO. BOX 18259
24112/2005	NORMAL.	°C	920	AIR	AIR	44504	32714	150.0	HB	150.0	RIVA	ABE AL - DUBAI
22031/2004	NORMAL.	°C	900	AIR	AIR	2938	23004	150.0	HB	150.0	ABE ACCIAIERIE BENTON SAVAU	UAE
23551/2005	NORMAL.	°C	900	AIR	AIR	23004	23004	150.0	HB	150.0	ARCOSTEEL	* VERIFIED TRUE COPY
26048/2005	NORMAL.	°C	920	AIR	AIR	7068	7798	150.0	HB	150.0	ARCOSTEEL	
26134/2001	NORMAL.	°C	920	AIR	AIR	5186		150.0	HB	150.0	RIVA	
26134/2001	NORMAL.	°C	920	AIR	AIR			150.0	HB	150.0	RIVA	

NOTES

(7) V+Hb+Ti<0.10%; Cu+Ni+Ce+Mo<1%; B<0.0001 C.E.-C+Hb+6+(C+Hb+V)/5+(Cu+ Ni)/15

THIRD PARTY

CUSTOMER INSPECTOR

QUALITY CONTROL

CHERO PIPING S.P.A.

CUSTOMER
STEEL TRADING COMPANY L.L.C.

CERTIFICATE N°	DATE	SHEET
222/2007	19/01/2007	4
INTERNAL ORDER NUMBER	DATE	
1563/2006	31/07/2006	
CUSTOMER ORDER REF.		
STC/SS-0618-06/CHE - 18/06/2006		

[illegible]

TEST N°	TENSILE TEST [Mpa]				IMPACT TEST [Joule]				HARDNESS TEST				HYDROSTATIC TEST		FLASING TEST		BENDING TEST		FLATTENING TEST		Eddy Current	Specification Number
	Temp	Yield	Tensile	Elongation	Temp	Charpy	Temp	Rockwell	Temp	Rockwell	Temp	Rockwell	Temp	Pressure	Temp	Pressure	Temp	Radius	Temp	Radius		
2013/2007	+ 20 °C	502	312	31,20	58,10	- 46 °C	66	67	70 HV	10 X 10,0 L	158,0	HB										
2013/2007	+ 20 °C	515	319	32,50	56,70	- 46 °C	43	47	49 HV	10 X 10,0 L	160,0	HB										
2008/2002	+ 20 °C	515	319	32,46	56,60	- 46 °C	43	44	46 HV	10 X 10,0 L	160,0	HB										
2109/2003	+ 20 °C	525	360	29,00	62,00	- 50 °C	180	180	190 HV	10 X 10,0 L	170,0	HB										
19/08/2001	+ 20 °C	505	370	25,00	62,00	- 54 °C	175	171	178 HV	10 X 10,0 L	172,0	HB										
21/03/2003	+ 20 °C	490	320	38,00	74,00	- 50 °C	88	75	78 HV	10 X 10,0 L	164,0	HB										
21/03/2003	+ 20 °C	520	326	30,90	61,50	- 50 °C	58	50	60 HV	10 X 10,0 L	158,0	HB										
24/04/2005	+ 20 °C	536	338	32,20	60,50	- 46 °C	61	65	62 HV	10 X 10,0 L	162,0	HB										
12/01/1996	+ 20 °C	519	322	31,50	56,40	- 50 °C	84	81	87 HV	10 X 10,0 L	162,0	HB										
	+ 20 °C	530	383	27,00	70,00	- 46 °C	70	75	72 HV	10 X 10,0 L	170,0	HB										
TEST N°	HT	SCALE	SA	MAX T	BELOW TO	COOLING MEDIA	H.T.	SCALE	MAX T	BELOW TO	COOLING MEDIA	BASE MATERIAL CERTIFICATION REF.	STEEL WORKS									
26/12/2007	NOMINAL	°C	820			AIR						7790	ATAVA									
26/12/2007	NOMINAL	°C	820			AIR						5166	ATAVA									
20/08/2002	NOMINAL	°C	920			AIR						36848	ATAVA									
21/09/2003	NOMINAL	°C	920			AIR						125239	ATAVA									
19/08/2001	NOMINAL	°C	920			AIR						HS 49	LOCCHINI									
21/03/2003	NOMINAL	°C	920			AIR						3700/98-C	SIOBERROTHERA									
21/03/2003	NOMINAL	°C	920			AIR						5478	ACCIAIERIE VALERIANA									
24/04/2005	NOMINAL	°C	920			AIR						5477	FORGIATURA MODERNA ARCES									
12/01/1996	NOMINAL	°C	900			AIR						30550	FORGIATURA MODERNA ARCES									

P.O. BOX
JEBEL AL-
U.A.E.

* VER *

(7) $V+Nb+Ti < 0,10\%$; $Cu+Ni+Cr+Mo < 1\%$; $B < 0,005\%$

NOTES

THIRD PARTY

CUSTOMER INFORMATION

QUALITY CONTROL

CHERO PIPING S.P.A

P.O. BOX 18259
 JEBEL ALI - DUBAI,
 U.A.E.

CHERO PIPING

MACCONDERIA FONDATA / FORGED STEEL FITTINGS
 11-131057 P. 4447 / 11-131057 P. 4447 / 11-131057 P. 4447

BO SIERREI

CUSTOMER
 STEEL TRADING COMPANY L.L.C.

CERTIFICATE N°
 222/2007
 DATE
 19/01/2007
 SHEET
 5

INTERNAL ORDER NUMBER
 1563/2006
 DATE
 31/07/2006

CUSTOMER ORDER REF.
 STC/SS-0618-06/CHE - 18/06/2006

TEST N°	MATERIAL SPECIFICATION AND GRADE	HEAT NUMBER	LAQUE ANALYSIS (%)													
			C	Mn	Si	P	S	Cr	Mo	Ni	Ti	Cu	V	Fe	Al	CS
2106/2003	ASTM A350 GR. LF2	306331	0.100	0.60	0.210	0.018	0.008	0.100	0.030	0.130	0.130	0.150	0.002	0.030	0.030	0.030
2106/2003	ASTM A350 GR. LF2	329846	0.171	0.580	0.240	0.070	0.002	0.150	0.040	0.150	0.150	0.277	0.002	0.030	0.030	0.030
2506/2006	ASTM A350 GR. LF2	04/06/03	0.100	0.530	0.230	0.010	0.010	0.080	0.030	0.050	0.050	0.140	0.010	0.030	0.030	0.030
2506/2006	ASTM A350 GR. LF2	79647	0.107	0.150	0.231	0.010	0.005	0.104	0.020	0.116	0.116	0.237	0.010	0.030	0.030	0.030
2406/2006	ASTM A350 GR. LF2	150817	0.170	0.185	0.235	0.010	0.007	0.082	0.011	0.075	0.075	0.180	0.007	0.025	0.025	0.025

TEST N°	TENSILE TEST [Mpa]	TEMPERATURE	IMPACT TEST [Joules]							
			Temp	Temp	Temp	Temp	Temp	Temp	Temp	Temp
2106/2003	312	+ 20 °C	32.80	61.50	- 54 °C	60	58	61	61	10 X 10.0 L
2106/2003	492	+ 20 °C	34.00	71.00	- 50 °C	98	101	102	102	10 X 10.0 L
2506/2006	506	+ 20 °C	31.4	33.00	- 50 °C	58	60	62	62	10 X 10.0 L
2506/2006	510	+ 20 °C	30.00	38.40	- 50 °C	56	60	76	76	10 X 10.0 L
2406/2006	535	+ 20 °C	316	26.00	- 50 °C	104	106	108	108	10 X 10.0 L

TEST N°	H.T. ①	SCALE	MAX T	BELOW TO	COOLING	H.T. ②	SCALE	MAX T	BELOW TO	COOLING	BASE MATERIAL CERTIFICATION REF.	
2105/2003	NORMAL	°C	320	AIR	AIR						5476	FOREIGN TOWN MODERN APERT
2406/2005	NORMAL	°C	320	AIR	AIR						20716	AS ACCIAIERIE BENTOLI SINT
2505/2006	NORMAL	°C	300	AIR	AIR						7666	ACCIAIERIE VERETE
2506/2006	NORMAL	°C	300	AIR	AIR						13555	ACCIAIERIE VERETE
2406/2006	NORMAL	°C	300	AIR	AIR						85999	ACCIAIERIE VERETE

NOTES

(7) V+Hb+Ti<0.10%; Cu+Ni+Cr+Mo<1%; B<0.0001 C.E.=C+Mn/5+ (Cr+Mo+V)/5+ (Cu+Ni)/15

THIRD PARTS

CUSTOMER INSPECTOR

QUALITY CONTROL

CHERO PIPING S.P.A.





erne fittings gmbh
A-6824 Schölns
Hauptstrasse 48
Austria/Europe
Telefon +43/5524 501-0
Telefax +43/5524 501-930
Reg. No.
12 100 3064



Abnahmeprüfzeugnis Inspection Certificate EN 10204 - 3.1

Ihre Bestellnummer [your order no.]
STC/VV-0516-07/ERN

Ihre Artikelnummer [your item no.]

Menge [quantity] Artikelbezeichnung [designation]

116 reducers
KO-S-WPL6-2"1"-XXS/XXS

Hersteller [manufacturer]
PB

Dichtheitsprüfung [leakage test]
ASTM E309

Zeugnisnummer [certificate no.]
038461/07-LD

Rev.

Datum [date]
29/08/2007

Unsere Auftrags.Nr. [our order no.]
93824-SS-0010

Schmelze Nr [heat no.]
531015

Ident Nr. [ident no.]

Anforderungen [requirements]
ASME B16.9-2003, WPL6, ASTM A 420/A 420M-05, ASME
SA-420M-Ed.04/A06, NACE MR-01-75-2001, EN
10204/3.1, Manufacturers standard

P.O.Box 18259
SA- Jebel Ali, Dubai

Vormaterial [base material]
Rohrzeugnisnr. [tube work's cert.no.]
65-302108/001/E

Analyse [analysis]	Schmelze Nr. [heat no.]	Erschmelzungsart [melting process]	1 = Schmelzeanalyse [heat analysis] 2 = Produktanalyse [product analysis]										J-Faktor [J-Factor]: (Si + Mn) * (P + Sn) * 10000 CEQ [CEQ]: C + (Mn / 6) + (Cr + Mo + V) / 5 + (Cu + Ni) / 15						
			C	Si	Mn	P	S	Cr	Mo	Ni	Cu	V	Nb	Al	B	Ti	N	As	CEQ
1	531015	0.14	0.20	1.19	0.008	0.002	0.13	0.04	0.08	0.13	0.032	0.012		0.0001	0.003	0.0103		0.39	
2	531015	0.14	0.194	1.223	0.008	0.001	0.126	0.045	0.074	0.126	0.034	0.016	0.025	0.00017	0.003	0.009		0.4	

Mech.-technologische Prüfung [mech. technological test]

Proben [test no.]	Zugversuch [tensile test]					Kerbschlagbiegeversuch [notched bar impact test] Form:					Härteprüfung [hardness test]	
	Pr.-Lage [pos. of sample]	Temp. [°C]	Dehng. [yield str.] Rp 0.2	Zugfestigkeit [tensile str.] Rm [N/mm²]	Dehnung [elongation] 2" (%)	Pr.-Lage [pos. of sample]	Temp. [°C]	Querschnitt [cross sec.]	Kerbschlagarbeit [impact values] (J)		141-146 HB	Wärmebehandlung [heat treatment]

M050509/06	L	+20 °C	374		505							normalised temperature 900 °C Holding Time 20 min. Cooling in still air
------------	---	--------	-----	--	-----	--	--	--	--	--	--	--

Kennzeichnung [marking] **E0S** Mat./531015/DN"wall

Besichtigung und Ausmessung [visual inspection and dimensional check] o.B./o.K.

Bemerkungen [remarks]
cold formed
Hardness test and stamping acc. to NACE MR-01-75. Stamped with round nosed tools. Hardness test, visual and dimensional test are checked on 10%.

Die gestellten Anforderungen wurden erfüllt [Manufacturing requirements are satisfied]
Der Werksachverständige [the Works Inspector]
29/08/07 Lins David
Dieses Dokument wurde elektronisch erstellt und ist ohne Unterschrift gültig. [The certificate is issued by the computerized system and is valid without signature.]

Zertifiziert nach DGR 97/23/EG Anhang I - Absatz 4.3 durch TÜV Süddeutschland CE 0036, Zertifikat-Nr. DGR-0036-QM-WH-104-01 [Certified acc. to PED 97/23/EC by TÜV Cert CE 0036, certificate no. DGR-0036-QM-WH-104-01. Certified acc. to EN ISO 9001]



Handwritten signature and date: 22/01/25

#149



erne fittings gmbh
A-6824 Schöns
Hauptstrasse 48
Austria/Europe
Telefon +43/5524 501-0
Telefax +43/5524 501-930



Abnahmeprüfzeugnis Inspection Certificate EN 10204 - 3.1

Ihre Bestellnummer [your order no.]
STC/VV-0920-07/ERN

Zeugnisnummer [certificate no.]
009094/08-EM

Rev.

Datum
[date]
25/02/2008

Kunde [customer]

M/S Arabian Pipeline Supply FZCO
Steel Trading Company L.L.C.

Ihre Artikelnummer [your item no.]

Menge [quantity]
Artikelbezeichnung [designation]

Unsere Auftrags-Nr. [our order no.]
96946-SS-0030

Ident Nr. [ident no.]

P.O.Box 18259

UAE- Jebel Ali, Dubai

433

elbows
LR-90-S-WPL6-2"-XXS

Vormaterial [base material]
Rohzeugnisnr. [tube work's cert. no.]
18081SV07

Hersteller [manufacturer]
V&M

Dichtheitsprüfung [leakage test]
ASTM E309

Analyse [analysis]
Schmelze Nr. [heat no.]
Erschmelzungsart [melting process] Y

1 = Schmelzeanalyse [heat analysis]
2 = Produktanalyse [product analysis]

J-Faktor [J-Factor]: (Si + Mn) * (P + Sn) * 10000
CEQ [CEQ]: C + (Mn / 6) + (Cr + Mo + V) / 5 + (Cu + Ni) / 15

Index

	C	Si	Mn	P	S	Cr	Mo	Ni	Cu	V	Nb	Al	B	Ti	N	Ceq	CEQ	J-Fact.
1	356579	0.14	0.18	1.04	0.013	0.001	0.11	0.01	0.03	0.03	0.00	0.030	0.0002	0.01	0.007	0.34		
2	356579	0.144	0.184	1.106	0.014	<0.000	0.101	0.010	0.031	0.027	0.002	0.003	0.034	0.00039	0.014	0.008		0.35

Mech.-technologische Prüfung [mech. technological test]

Proben Nr. [test no.]

Zugversuch [tensile test]

Kerbschlagbiegeversuch [notched bar impact test]
Form: ISO V

Härteprüfung [hardness test]

Pr.-Lage [pos. of sample]
Temp. [temp.]
Rp 0.2
Rm (N/mm²)

Dehngr. [yield str.]
Zugfestigkeit [tensile str.]
Dehnung [elon- gation] 2^e (%)

PR-Lage [pos. of sample]
Temp. [temp.]
Querschnitt [cross sec.]

Kerbschlagarbeit [impact values] (J)

ISO-1564-152

138-143 HB

Wärmebehandlung [heat treatment]
normalized
temperature 920 °C
Holding Time 30 min.
Cooling in still air

Kennzeichnung [marking] E10S

Mat./356579/DN"wall

Besichtigung und Ausmessung [visual inspection and dimensional check] o.B./o.K.

Bemerkungen [remarks]
cold formed

Hardness test and stamping acc. to NACE MR-01-75. Stamped with round nosed tools. Hardness test, visual and dimensional test are checked on 10%.

Die gestellten Anforderungen wurden erfüllt [Manufacturing requirements are satisfied]
Der Werksachverständige [the Works Inspector]
25/02/08 Ender Matthias
Dieses Dokument wurde elektronisch erstellt und ist ohne Unterschrift gültig. [The certificate is issued by the computerized system and is valid without signature.]



INSPECTION CERTIFICATE ACCORDING TO EN 10204 3.1

No: 07/05629

Date: 07 May 2007

Specifica di collaudo - Test Specification

ASTM/ASME A/SA420M-05

Comm. / Job
2007 0491

Item Allied Int
6

Pos. / Item N°
6

Cliente / Customer
STEEL TRADING COMPANY L.L.C.

Ordine Cliente / P.O.
STC/TV-0410-07/ALL

ASME B16.9-03/B16.25-03

Descrizione - Description
ELB 90° LR 2° SCH XXS

Codice Prod. / Tag Number

Materiale / Material
WPL6

Q.tà - Qty
40

Tensione - Tension

Durezza - Hardness
Tipo - Type

Resilienza - Impact Test
KV - 46° C

Colata / Heat

Direzione / Direction

Snervamento RT 0,2
Yield Point
N/mm2

Rottura Rm
Tensile Strength
N/mm2

Allungamento
Elongation
%

Rt0,5/Rm

Valore Ottenuto

Values Found

Diff. / Dif.

Direzione - Direction

Posizione - Location

Dimensione
Dimension
mm

Energia Ottenuta
Obtained Energy

Joule

Valore / Values

Media / Average

Area Duttile
Shear Area

mm

Valore / Values

74681

L

338

471

35

136

L

10x10

142

146

154

C %	Mn %	P %	S %	Si %	Ti %	V %	Al %	Nb %	Sn %	Ni %	Cu %	Mo %	Cr %	C %	X1	X2
0.160	1.030	0.013	0.002	0.300	0.001	0.000	0.024	0.001	0.000	0.020	0.010	0.010	0.060	0.348	0.00	0.10
0.152	1.060	0.012	0.001	0.309	0.002	0.001	0.023	0.001	0.001	0.017	0.006	0.022	0.059	0.347	0.00	0.10

Analisi Chimica Di Colata - Ladle analysis

Analisi Chimica di Controllo - Product analysis

L = Long./Longitud
T = Trans./Transv.
W = Solidarity/Welds
H = Z.T.A./H.A.Z
M = Met. Base/Base Mat
A = Att. Solid./Through Weld
C = C+Mn/S+V+Mo/S+Cu+Ni/S
X1 = P+M+Nb
X2 = Ni+Cr+Mo+Cu%

Note / Remarks :

Melting Process: / Basic oxygen; / X / Electric Furnace A.O.D.

Manufacturing Method: / X / Cold Formed; / / Hot Forming at ends temperatures between 780°C and 980 °C still air cooling

Heat Treatment: Normalizing at 920 °C still air cooling

Type of Construction: Seamless produced by pipe

Visual and Dimensional examination in accordance with order requirements

Mechanical test carried out on finished fittings

Raw material see certificate n°: 26-05-238004 VALLOUREC & MANNESMANN

The chemical values and tensile properties are a true and correct copy of the certificate issued by the supplier of the raw material or by the laboratory which has determined them.

We hereby certify that the a/m products are made and inspected strictly in accordance with the standard and specification mentioned in the P.O.

TRADE MARK

EA



Rappresentante del cliente - Customer inspector

Ente di collaudo - Third party inspector



H110
22P5

#152

TK corporation

INSPECTION CERTIFICATE

(EN10204:2004 3.1 / ISO 10474:1991 3 1B)

1499-1, SONG
JUNG-DONG
GANGSEO-GU
BUSAN, KOREA
Tel : 82-51-831-6550
Fax : 82-51-831-6886

Customer	STEEL TRADING GROUP		Certificate No.	20130407520	Date	2013/04/27	
P.O No.	STC-VV-1004-12-TK-STK		Project Name				
Job No.			Starting Material	SEAMLESS PIPE			
Specification for Material	ASTM/ASME A/SA234 WPB(10 Ed. & 11 Add.) NACE MR0175-03		Dimension and Visual Inspection	GOOD			
Specification for Inspection	ASME B16.9-2007						
Heat Code No [HCN]	No	Descriptions			Qty (Pcs)	Heat Treatment	N.D.E (GOOD)
CD978	0054	REDUCING TEE SCH80 B W 16" x 10"			1	N 910°C	MT
BP209	0064	CON REDUCER XX-S B W 3" x 1-1/2"			37	N 910°C	-
BP209	0066	CON REDUCER XX-S B W 3" x 2"			100	N 910°C	-

CHEMICAL COMPOSITION(%)

Heat Code No [HCN]	Spec	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Co	B	CE	Raw Heat No
	Max	0.20	-	1.06	0.015	0.010	0.40	0.40	0.15	0.40	0.080	0.020	0.0005	0.40	
	Min	-	0.10	0.29	-	-	-	-	-	-	-	-	-	-	
CD978	L	0.13	0.18	*1.20	0.010	0.005	0.02	0.03	0.01	0.01	0.00	0.00	0.0001	0.340	33004
	P	0.12	0.19	*1.18	0.012	0.004	0.03	0.01	0.02	0.01	0.002	0.000	0.0002	0.326	
BP209	L	0.12	0.23	*1.30	0.012	0.003	0.02	0.11	0.00	0.02	0.000	0.000	0.0002	0.361	J0LC246
	P	0.11	0.25	*1.28	0.013	0.002	0.03	0.10	0.01	0.02	0.003	0.001	0.0004	0.349	
BP209	L	0.12	0.23	*1.30	0.012	0.003	0.02	0.11	0.00	0.02	0.000	0.000	0.0002	0.361	J0LC246
	P	0.11	0.25	*1.28	0.013	0.002	0.03	0.10	0.01	0.02	0.003	0.001	0.0004	0.349	

MECHANICAL PROPERTIES

Heat Code No [HCN]	Spec	Y.S	T.S	EL	Hardness Test
		Ksi		(%)	HB
	Max	-	95	-	197
	Min	35	60	30	-
CD978	P	46.3	68.5	37.6	142 144
BP209	P	44.3	68.5	53.2	147 149
BP209	P	44.3	68.5	53.2	147 149

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.

Remark: *FULLY KILLED AND FINE GRAIN

Legend:
HB Brinell
ST Solution Treatment
SR Stress Relieving
N Normalized
T Tempered
A Annealed
Q Quenched
Y S 0.2% Offset Method
(G) Hot-Dip Galvanized Coating
AC Air Cool
OC Oil Cool
WQ Water Quenched
WC Water Cool
B Base
W Weld
H Haz
L Laffle
P Product

* For each reduction of 0.01% below the specified carbon maximum, an increase of 0.00% in elongation at break is permitted, up to a maximum of 1.35%.

☐ Reviewed by

☐ Witnessed by

Approved by:

Head of Quality Control Dept



22/01/28

TK 27/13

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B

DIN 50049/3.1

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TB-652
Customer PO No. : APO-240800150
JOB No. :

D/M/Y 02/12/2024 Certificate No. : T202409483754 Rev. No. : 0

THAI BENKAN CO., LTD. **BENKAN**
58 Moo 13 Soi Sukawat 70, Bangkru Phrapadaeng, Samutprakam 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

Specification for Product	ASTM A234M/234M-2/ASME SA234M/SA234M-23 ASME Section II Part A 2023										MFG No.	67K00M032		Seamless or Weld	SEAMLESS		Quantity	150																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
	NACE MR0175-2021/ISO 15156-2 : 2020 & MR0103-ISO 17945-2015 (R2023) Sour service.										Product Description	90EL WPB 2 XXS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
Specification for Inspection	ASME B16.9-2018, B16.25-2022																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Starting Material	Heat No.	J4K1384										Pipe or Plate		PIPE		Steel making Process	BASIC OXYGEN																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Heat treatment												Normalizing 910 C X 60 Minutes, Cooled in Still Air																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
% Chemical content	C x100	Si x100	Mn x100	P x1000	S x1000	Cu x100	Ni x100	Cr x100	Mo x100	V x1000	Nb x1000	B x10000	Ti x1000	Al x1000	Ca x10000	CE x100																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

For each reduction of 0.01 % below the specified carbon maximum an increase of 0.06 % manganese above the specified maximum will be permitted up to a maximum of 1.65 %
% CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15

Tension test		Gauge length		50 mm.						Hardness test																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
--------------	--	--------------	--	--------	--	--	--	--	--	---------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--



Akenitsu Kondo
Quality Assurance Manager
Thai Benkan Co., Ltd.

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

Bkn 440/24

MATERIAL INSPECTION CERTIFICATE

TO EN10204 3.1/ISO 10474 3.1B
DIN 50049/3.1

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TB-652
Customer PO No. : AIPO-2408001510
Benkan No. :
JOB No. :

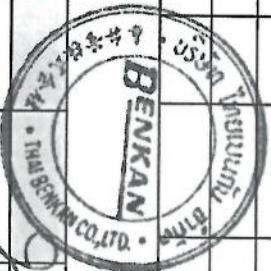
THAI BENKAN CO., LTD. **BENKAN**
58 Moo 13 Soi Sukswat 70, Bangkru Phrapadaeng, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

D/M/Y 02/12/2024 Certificate No. : T202409483779 Rev. No. : 0

Specification for Product		ASTM A234/A234M-24/ASME SA234/SA234M-23 ASME Section II Part A 2023										Mfg No.		67K20M038		Seamless or Weld		SEAMLESS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
		NACE MR0175-2021/ISO 15156-2 : 2020 & MR0103-ISO 17945-2015 (R2023) Sour service.										Product Description		RC WPB 3 x 2 S160		Quantity		20																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Specification for Inspection		ASME B16.9-2018,B16.25-2022																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
Starting Material		Heat No.		035344		Pipe or Plate		PIPE		Steel making Process		ELECTRIC FURNACE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
						Heat treatment		Normalizing 910 C X 60 Minutes.Cooled in Still Air																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
% Chemical content		C x100	SI x100	Mn x100	P x1000	S x1000	Cu x100	NI x100	Cr x100	Mo x100	V x1000	Nb x1000	B x10000	TI x1000	Al x1000	Ca x10000	CE x100																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																

For each reduction of 0.01 % below the specified carbon maximum an increase of 0.06 % manganese above the specified maximum will be permitted up to a maximum of 1.65 %
% CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15

Tension test		Gauge length		50 mm.		Hardness test		HBW		1		2		3		Visual Examination		Dimensional Inspection	
TP Direction : Longitudinal						Fitting		143		147		145				GOOD		GOOD	
MPa		Req. Min.		Req. Max.		Actual results													
Yield Strength		240		440		289													
Tensile Strength		415				446													
% Elongation		30				47													
Impact test				10 x 7.5 x 2V		Supplementary Note :													
TP Direction : Transverse		Temp.		-29 °C		MESC SPEC 76200 Rev. February 2024													
		J		1		2		3		AVE									
		Base		135		105		134		131									



We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.



Akenitsu Kondo
Quality Assurance Manager
Thai Benkan Co., Ltd.
Form No. TZ-62V/0

MATERIAL INSPECTION CERTIFICATE
To EN10204 3.1/ISO 10474 3.1B
DIN 50049/3.1

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TB-652
Customer PO No. : APO-240800150
JOB No. :

THAI BENKAN CO.,LTD. **BENKAN**
58 Moo 13 Soi Suksewat 70, Bangkok Phrapadaeng, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

D/M/Y 25/11/2024 Certificate No. : T202409483668 Rev. No. : 0

Specification for Product	ASTM A234/234M-24/ASME SA234/SA234M-23, ASME Section II Part A 2023										MFG No.	67K10M047-1		Seamless or Weld	SEAMLESS		Quantity	20																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	NACE MR0175-2021/ISO 15156-2 : 2020 & MR0103-ISO 17945-2015 (R2023) Sour service.										Product Description		T WPB 4 S80																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
Specification for Inspection	ASME B16.9-2018, B16.25-2022																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
Starting Material	Heat No.	541033										Pipe or Plate		PIPE		Steel making Process	ELECTRIC FURNACE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
												Heat treatment		Normalizing 910 C X 60 Minutes, Cooled in Still Air																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
% Chemical content	C x100	SI x100	Mn x100	P x1000	S x1000	Cu x100	NI x100	Cr x100	Mo x100	V x1000	Nb x1000	B x10000	TI x1000	Al x1000	Ca x10000	CE x100																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					</

For each reduction of 0.01 % below the specified carbon maximum,an increase of 0.05 % manganese above the specified maximum will be permitted up to a maximum of 1.65 %
% CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15

Tension test		Gauge length		50 mm.						Hardness test											
TP Direction : Longitudinal										HBW			1			2			3		
MPa	Req.Min.	Req.Max.	Actual results								Fitting		136		143		139				
Yield Strength	240	440	301																		
Tensile Strength	415		446																		
% Elongation	30		46																		



We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.



Akornitsu Kondo

Quality Assurance Manager
Thai Benkan Co.,Ltd.

BKAN 659/24

A176

THAI BENKAN CO., LTD.
58 Moo 13 Soi Suksawat 70, Bangkru Phrapadaeng, Samutprakarn 10130 THAILAND

Telephone : 66 (0) 2463 0074. 66 (0) 463 6235-7

	SEAMLESS	Seamless or Weld
ASTM A 312	X	
ASTM A 316	X	
ASTM A 318	X	
ASTM A 320	X	
ASTM A 334	X	
ASTM A 350	X	
ASTM A 359	X	
ASTM A 367	X	
ASTM A 387	X	
ASTM A 403	X	
ASTM A 409	X	
ASTM A 424	X	
ASTM A 454	X	
ASTM A 479	X	
ASTM A 500		X
ASTM A 501		X
ASTM A 502		X
ASTM A 503		X
ASTM A 504		X
ASTM A 507		X
ASTM A 508		X
ASTM A 509		X
ASTM A 510		X
ASTM A 511		X
ASTM A 512		X
ASTM A 513		X
ASTM A 514		X
ASTM A 515		X
ASTM A 516		X
ASTM A 517		X
ASTM A 518		X
ASTM A 519		X
ASTM A 520		X
ASTM A 521		X
ASTM A 522		X
ASTM A 523		X
ASTM A 524		X
ASTM A 525		X
ASTM A 526		X
ASTM A 527		X
ASTM A 528		X
ASTM A 529		X
ASTM A 530		X
ASTM A 531		X
ASTM A 532		X
ASTM A 533		X
ASTM A 534		X
ASTM A 535		X
ASTM A 536		X
ASTM A 537		X
ASTM A 538		X
ASTM A 539		X
ASTM A 540		X
ASTM A 541		X
ASTM A 542		X
ASTM A 543		X
ASTM A 544		X
ASTM A 545		X
ASTM A 546		X
ASTM A 547		X
ASTM A 548		X
ASTM A 549		X
ASTM A 550		X
ASTM A 551		X
ASTM A 552		X
ASTM A 553		X
ASTM A 554		X
ASTM A 555		X
ASTM A 556		X
ASTM A 557		X
ASTM A 558		X
ASTM A 559		X
ASTM A 560		X
ASTM A 561		X
ASTM A 562		X
ASTM A 563		X
ASTM A 564		X
ASTM A 565		X
ASTM A 566		X
ASTM A 567		X
ASTM A 568		X
ASTM A 569		X
ASTM A 570		X
ASTM A 571		X
ASTM A 572		X
ASTM A 573		X
ASTM A 574		X
ASTM A 575		X
ASTM A 576		X
ASTM A 577		X
ASTM A 578		X
ASTM A 579		X
ASTM A 580		X
ASTM A 581		X
ASTM A 582		X
ASTM A 583		X
ASTM A 584		X
ASTM A 585		X
ASTM A 586		X
ASTM A 587		X
ASTM A 588		X
ASTM A 589		X
ASTM A 590		X
ASTM A 591		X
ASTM A 592		X
ASTM A 593		X
ASTM A 594		X
ASTM A 595		X
ASTM A 596		X
ASTM A 597		X
ASTM A 598		X
ASTM A 599		X
ASTM A 600		X
ASTM A 601		X
ASTM A 602		X
ASTM A 603		X
ASTM A 604		X
ASTM A 605		X
ASTM A 606		X
ASTM A 607		X
ASTM A 608		X
ASTM A 609		X
ASTM A 610		X
ASTM A 611		X
ASTM A 612		X
ASTM A 613		X
ASTM A 614		X
ASTM A 615		X
ASTM A 616		X
ASTM A 617		X
ASTM A 618		X
ASTM A 619		X
ASTM A 620		X
ASTM A 621		X
ASTM A 622		X
ASTM A 623		X
ASTM A 624		X
ASTM A 625		X
ASTM A 626		X
ASTM A 627		X
ASTM A 628		X
ASTM A 629		X
ASTM A 630		X
ASTM A 631		X
ASTM A 632		X
ASTM A 633		X
ASTM A 634		X
ASTM A 635		X
ASTM A 636		X
ASTM A 637		X

BENKAN
Takam 10130, THAILAND
+663 0074, 66 (0) 463 6235-7
3801 Rev. No. : 0



ARABIAN PIPELINE SUPPLY
P.O. BOX 18268
JEBEL ALI - DUBAI
U.A.E.
VERIFIED TRUE COPY



We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

Form No. TZ-6ZV/0

Quality Assurance Manager
Thai Benkan Co.,Ltd.

Akemitsu Kondo

Akondu

Blen 487/24

MATERIAL INSPECTION CERTIFICATE

TO EN10204 3.1/ISO 10474 3.1B

THAI BENKAN CO.,LTD. **BENKAN**
58 Moo 13 Soi Suksewatt 70, Bangkru Pinrappaeng, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TB-652
Customer PO No. : APO-24080015/0
Benkan No. :
JOB No. :

D/M/Y 02/12/2024 Certificate No. : T202409483779 Rev. No. : 0

Specification for Product		ASTM A234/A234M-24/ASME SA234/SA234M-23, ASME Section II Part A 2023										Mfg No.		67K20M038		Seamless or Weld		SEAMLESS			
Specification for Inspection		NACE MR0175-2021/ISO 15156-2 : 2020 & MR0103-ISO 17945-2015 (F2023) Sour service.										Product Description		RC WPB 3 x 2 S160		Quantity		20			
		ASME B16.9-2018, B16.25-2022																			
Starting Material		Heat No.		035344										Pipe or Plate		PIPE		Steel making Process		ELECTRIC FURNACE	
														Heat treatment		Normalizing 910 C X 60 Minutes Cooled in Still Air					
% Chemical content		C	SI	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	B	Ti	Al	Ca	CE				
x100		x100	x100	x1000	x1000	x1000	x100	x100	x100	x1000	x1000	x10000	x10000	x1000	x10000	x100000	x100				
Required Maximum		20		106	20	10	40	40	40	15	20	10	5	20			40				
Required Minimum				10	29										20						
Heat Analysis		13	25	106	12	2	3	2	9	3	<3	<2	<3	16	29	6	33				
For each reduction of 0.01 % below the specified carbon maximum, an increase of 0.05 % manganese above the specified maximum will be permitted up to a maximum of 1.65 %																					
% CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15																					
Tension test		Gauge length		50 mm.																	
TP Direction : Longitudinal																					
MPa		Req,Min.		Req,Max		Actual results															
Yield Strength		240		440		289															
Tensile Strength		415				446															
% Elongation		30				47															
Hardness test																					
		HBW		1		2		3													
				Req. Max.		197															
		Fitting		143		147		145													
Impact test		10 x 7.5 x 2V																			
		TP Direction : Transverse		Temp.		-29 °C															
		J		1		2		3		AVE											
		Base		155		105		134		131											
Supplementary Note : MESC SPEC 76200 Rev. February 2024 Steel is vacuum degassed, fully killed and fine grain practice The fittings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements.																					
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.																					
Form No. TZ-62-V0 Quality Assurance Manager Thai Benkan Co., Ltd. Akenitsu Kondo <i>(Signature)</i> QR Code																					

BKN 465124

153
154

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B

DIN 50049/3.1

THAI BENKAN CO.,LTD.

BENKAN

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TB-652

Customer PO No. : AIP0-24080015/0

Benkan No. :

JOB No. :

D/M/Y 25/11/2024

Certificate No. : T202409483585

Rev. No. : 0

58 Moo 13 Soi Sukawat 70, Bangkok Phrapadaeng, Samutprakram 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

Specification for Product		ASTM A234/A234M-24/ASME SA234SA234M-23, ASME Section II Part A 2023										MFG No.		67K00M033		Seamless or Weld		SEAMLESS			
Specification for Inspection		NACE MR0175-2021/ISO 15156-2: 2020 & MR0103-ISO 17945-2015 (P2023) Sour service.										Product Description		90EL WPB 3 SR0		Quantity		51			
Starting Material		Heat No.		036487										Pipe or Plate		PIPE		Steel making Process		ELECTRIC FURNACE	
% Chemical content		C	SI	Mn	P	S	Cu	NI	Cr	Mo	V	Nb	B	TI	Al	Ca	CE				
Required Maximum		x100	x100	x100	x1000	x1000	x100	x100	x100	x100	x1000	x10000	x10000	x1000	x10000	x100000	x100				
Required Minimum		20		106	20	10	40	40	40	15	20	10	5	20			40				
Heat Analysis		15	27	82	12	4	3	2	5	1	2	2	4	15	24	9	30				
For each reduction of 0.01 % below the specified carbon maximum, an increase of 0.06 % manganese above the specified maximum will be permitted, up to a maximum of 1.65 % % CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15																					
Tension test		Gauge length		50 mm.		Hardness Test															
TP Direction : Longitudinal						HBW															
MPa		Req. Min.	Req. Max.	Actual results		1 2 3															
Yield Strength		240	440	304		Req. Max. 197															
Tensile Strength		415		477		Fitting 128 132 130															
% Elongation		30		47																	
Impact test				10 x 5.0 x 2V		Supplementary Note :															
TP Direction : Transverse		Temp. -29 °C				MESC SPEC 76/200 Rev. February 2024															
		J	1	2	3	AVE		Steel is vacuum degassed, fully killed and fine grain practiced"													
		Base	47	46	38	44		The fillings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements.													
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.																					
Quality Assurance Manager Akemitsu Kondo Thai Benkan Co., Ltd.																					



A Kondo

Form No. TZ-62/V/0

Ben 576124

#12

MATERIAL INSPECTION CERTIFICATE

TO EN10204 3.1/ISO 10474 3.1B

DIN 50049/3.1

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TB-652
Customer PO No. : APO-24080015/0
JOB No. :

D/M/Y 02/12/2024 Certificate No. : T202431483870 Rev. No. : 0

THAI BENKAN CO.,LTD. **BENKAN**
58 Moo 13 Soi Suksawat 70, Bangkru Phraepadaeng, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

Specification for Product		ASTM A420A/20M-24/ASME SA420SA/20M-23/ASME 23MSS SP-75-2019, ASME Section II Part A 2023		MFG No.		67K08M004		Seamless or Weld		SEAMLESS		Pipe/Plate		PIPE			
Specification for Inspection		ASME B16.9-2018, B16.25-2022		Product Description		90EL WPL6WPHY52 3 S160		Quantity		20							
Starting Material		Heat No. 131461		Steel Making Process		ELECTRIC FURNACE											
% Chemical content		C x100	SI x100	Mn x100	P x1000	S x1000	Cu x100	NI x100	Cr x100	Mo x100	V x1000	Nb x1000	TI x1000	B x10000	Al x1000	Ca x10000	CE x100
Required Maximum		20	40	135	20	10	35	40	30	12	20	10	20	5	60		40
Required Minimum			15	100											20		
Heat Analysis		18	24	103	6	4	6	4	3	1	1	3	3	1	26	28	37
% CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15																	
Tension test		Gauge length 50 mm.		Impact test		10 x 10.0 x2V		Hardness test									
TP Direction : Longitudinal				TP Direction : Longitudinal		Temp. -50 ° C		HBW		1 2 3							
MPa		Req.Min.	Req.Max.	Actual results	Joule	1	2	3	AVE	Fitting	144	146	145				
Yield Strength		380	531	388	Base	402	421	433	419								
Tensile Strength		455	625	542													
% Elongation		32		43													
Supplementary Note : MESC SPEC 76/201 Rev. February 2023 Steel is vacuum degassed, fully killed and fine grain practiced The fillings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements. Grain size determination as per ASTM E112-13: 7 or finer.																	
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.																	



Form No. TZ-62V/0
Quality Assurance Manager
Thai Benkan Co.,Ltd.

BEN 656/24

#11
1995

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B

DIN 50049/3.1

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TB-652
Customer PO No. : AIP0-240800150
Benkan No. :
JOB No. :

D/M/Y 02/12/2024 Certificate No. : T202411483828 Rev. No. : 0

THAI BENKAN CO., LTD.
58 Moo 13 Soi Sukswat 70, Banckru Phraopadaeng, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

Specification for Product		ASTM A420M/A420M-24/ASME SA420SA420M-23 ASME Section II Part A 2023										MFG No.		67K01M020		Seamless or Weld		SEAMLESS		Pipe/Plate		PIPE											
Specification for Inspection		ASME B16.9-2018,B16.25-2022										Product Description		90EL WPL6 3 S160																			
Starting Material		Heat No.		131461																		Steel Making Process		ELECTRIC FURNACE									
% Chemical content		C		Si		Mn		P		S		Cu		Ni		Cr		Mo		V		Nb		Ti		B		Al		Ca		CE	
Required Maximum		20		40		135		20		10		40		40		30		12		20		10		20		5				40			
Required Minimum		15		50																								20					
Heat Analysis		18		24		103		6		4		6		4		3		1		1		3		3		1		26		28		37	
$\% CE = C + Mn/5 + (Cr + Mo + V)/5 + (Ni + Cu)/15$																																	
Tension test		Gauge length		50 mm.		Impact test		10 x 10.0 x2V		Hardness test		1		2		3																	
TP Direction : Longitudinal		Req.Min.		Req.Max		Actual results		Joule		1		2		3		AVE		Fitting		137		144		140									
Yield Strength		240				310		Base		292		274		297		288																	
Tensile Strength		415				655		453																									
% Elongation		30				46																											
Supplementary Note : MESC SPEC 76201 Rev:February 2023 Steel is vacuum degassed, fully killed and fine-grain practice The fittings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements. Grain size delamination as per ASTM E112-13 : 7 or finer.																																	
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.																																	



Form No. TZ-62X/0

Quality Assurance Manager

Thai Benkan Co., Ltd.

Akenitsu Kondo

Benkan 514/24

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B

DIN 50049/3.1

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TB-652
Customer PO No. : APO-240800150
JOB No. :

THAI BENKAN CO., LTD. **BENKAN**
58 Moo 13 Soi Sukawat 70, Bangkru Phrapadeeng, Samutprakam 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

D/M/Y 02/12/2024 Certificate No. : T202409483754 Rev. No. : 0

Specification for Product		ASTM A234/A234M-24/ASME SA234/SA234M-23 ASME Section II Part A 2023										MFG No.		67/K00M032		Seamless or Weld		SEAMLESS			
Specification for Inspection		NACE MR0175-2021/ISO 15156-2 : 2020 & MR0103-ISO 17945-2015 (R2023) Sour service.										Product Description		90EL WPB 2 XXS		Quantity		150			
Starting Material		Heat No.		J4K1384										Pipe or Plate		PIPE		Steel making Process		BASIC OXYGEN	
% Chemical content		C x100	SI x100	Mn x100	P x1000	S x1000	Cu x100	Ni x100	Cr x100	Mo x100	V x1000	Nb x1000	B x10000	Ti x1000	Al x1000	Ca x10000	CE x100				
Required Maximum		20		106	20	10	40	40	40	15	20	10	5	20			40				
Required Minimum																					
Heat Analysis		11	27	128	9	2	2	2	11	1	0	0	2	1	33	30	35				

For each reduction of 0.01 % below the specified carbon maximum, an increase of 0.06 % manganese above the specified maximum will be permitted up to a maximum of 1.65 %
% CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15

Tension test		Gauge length		50 mm.		Hardness test		HBW			1			2			3		
TP Direction : Longitudinal								Req. Max. 197											
MPa		Req. Min.	Req. Max.	Actual results		Fitting		129			135			132					
Yield Strength		240	440	307															
Tensile Strength		415		459															
% Elongation		30		50															

Supplementary Note :
MESC SPEC 76200 Rev. February 2024
Steel is vacuum degassed, fully killed and fine grain practice.
The fittings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements.

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

Akemiitsu Kondo
Quality Assurance Manager
Thai Benkan Co., Ltd.

Form No. T2-62/0

QR Code

ARABIAN PIPELINE SUPPLY FZCO * VERIFIED TRUE COPY *
P.O. BOX 168269
JEBEL ALI - DUBAI
U.A.E.

BENKAN
THAI BENKAN CO., LTD.

10

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B

DIN 50049/3.1

THAI BENKAN CO.,LTD.

BENKAN

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TB-652
Customer PO No. : APO-24080015/0

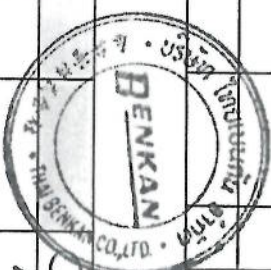
Benkan No. :

JOB No. :

D/M/Y 02/12/2024 Certificate No. : T202411483839 Rev. No. : 0

58 Moo 13 Soi Sukhawatt 70, Banokru Phrapadaena, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

Specification for Product		ASTM A420/A420M-24/ASME SAA420/SA420M-23, ASME Section II Part A 2023										MEG No.		67K01M041		Seamless or Weld		SEAMLESS		Pipe/Plate		PIPE													
Specification for Inspection		ASME B16.9-2018,B16.25-2022										Product Description		90EL WPL6 10 S30										Quantity		3									
Starting Material		Heat No.		23608613										Steel Making Process		BASIC OXYGEN																			
% Chemical content		C		SI		Mn		P		S		Cu		Ni		Cr		Mo		V		Nb		Ti		B		Al		Ca		CE			
Required Maximum		20		40		135		20		10		40		40		30		12		20		10		20		5				40					
Required Minimum		15		50																						20									
Heat Analysis		13		30		106		12		1		1		2		1		0		0		1		20		2		40		26		31			
% CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15																																			
Tension test		Gauge length		50 mm.		Impact test		10 x 7.5 x2V										Hardness test																	
TP Direction : Longitudinal		Reg.Min.		Reg.Max		Actual results		Joule		1		2		3		AVE		Fitting		136		139		138											
Yield Strength		240				296		Base		225		187		217		210																			
Tensile Strength		415				655		440																											
% Elongation		30				44																													
Supplementary Note : MESC SPEC 76201 Rev. February 2023 Steel is vacuum degassed, fully killed and fine grain practiced The fillings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements. Grain size determination as per ASTM E112-13 : 7 or finer.																																			
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.																																			
Akemitsu Kondo Quality Assurance Manager Thai Benkan Co.,Ltd.																																			



Handwritten signature and date: 22/12/2024

Handwritten text: BUK 525/24

MATERIAL INSPECTION CERTIFICATE

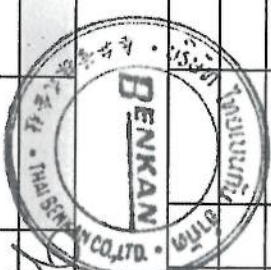
TO EN10204 3.1/ISO 10474 3.1B
DIN 50049/3.1

Purchaser Name : ARABIAN PIPELINE SUPPLY FCZO
TBC PO No. : TB-652
Customer PO No. : AIPO-2408001510
Benkan No. :
JOB No. :

D/M/Y 02/12/2024 Certificate No. : T202411483838 Rev. No. : 0

THAI BENKAN CO., LTD. **BENKAN**
58 Moo 13 Soi Sukswat 70, Bandkru Phraodeena, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

Specification for Product		ASTM A420/A420M-24/ASME SA420/SA420M-23, ASME Section II Part A 2023 NACE MR0175-2021/ISO 15156-2 : 2020 & MR0103-ISO 17945-2015 (R2023) Sour service.										MFG No.	67K01M040	Seamless or Weld	SEAMLESS	Pipe/Plate	PIPE	Quantity	6		
Specification for Inspection		ASME B16.9-2018, B16.25-2022										Product Description		90EL WPL 6 10 S20		Steel Making Process		ELECTRIC FURNACE			
Starting Material		Heat No.		134936										Heat treatment		Normalizing 910 C X 60 Minutes Cooled in Still Air					
% Chemical content		C x100	SI x100	Mn x100	P x1000	S x1000	Cu x100	NI x100	Cr x100	Mo x100	V x1000	Nb x1000	TI x1000	B x1000	Al x1000	Ca x10000	CE x100				
Required Maximum		20	40	135	20	10	40	40	30	12	20	10	20	5			40				
Required Minimum			15	50											20						
Heat Analysis		14	23	105	9	2	5	2	8	1	4	1	13	4	24	5	34				
$\% CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15$																					
Tension test		Gauge length		50 mm.		Impact test		10 x 2.5 x2V		Hardness test											
TP Direction : Longitudinal						TP Direction : Longitudinal		Temp. -50 °C		HBW		1		2		3					
MPa		Req.Min.	Req.Max	Actual results		Joule		1		2		3		AVE		Fitting		130 134 132			
Yield Strength		240		307		Base		34		36		40		37							
Tensile Strength		415		447																	
% Elongation		30		41																	
Supplementary Note : MESIC SPEC 76/201 Rev. February 2023 Steel is vacuum degassed, fully killed and fine grain practiced* The fillings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements. Grain size determination as per ASTM E112-13 : 7 or finer.																					



We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

Akernitsu Kondo
Quality Assurance Manager
Thai Benkan Co., Ltd.



Form No. TZ-62N/0

Benkan 524/24

BENKAN

Telephone : 66 (0) 2463 0074. 66 (0) 463 6235-7

Rev. No.: 0

For each reduction of 0.01 % below the specified carbon maximum, an increase of 0.06 % manganese above the specified maximum will be permitted up to a maximum of 1.65 %

Bkn 445124

#20

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B

DIN 50049/3.1

THAI BENKAN CO., LTD. **BENKAN**

58 Moo 13 Soi Suktasat 70, Bangkru Phrapadeeng, Samprakan 10130. THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO

TBC PO No. : TB-347

Customer PO No. : AIPO-23070014/0

Benkan No. : SOUR SERVICE

JOB No. :

D/M/Y 01/11/2023 Certificate No. : T202309483402 Rev. No. : 0

Specification for Product		ASTM A234/A234M-23/ASME SA234/SA234M-23, ASME Section II Part A 2023												MFG No.		66H00M224		Seamless or Weld		SEAMLESS		Quantity		30	
Specification for Inspection		ASME B16.9-2018 B16.25-2017												Product Description		90EL WPB 8 S60									
Starting Material		Heat No.		532595										Pipe or Plate		PIPE		Steel making Process		ELECTRIC FURNACE					
				Heat treatment										Normalizing 910 C X 60 Minutes.Cooled in Still Air											
% Chemical content		C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	B	Ti	Al	Ca	CE								
		x100	x100	x100	x1000	x1000	x100	x100	x100	x100	x1000	x1000	x10000	x1000	x1000	x10000	x100								
Required Maximum		20		106	20	10	40	40	40	15	20	10	5	20			40								
Required Minimum				10	29										20										
Heat Analysis		13	22	102	10	2	3	2	8	3	<3	<2	<3	14	30	12	33								

For each reduction of 0.01 % below the specified carbon maximum an increase of 0.06 % manganese above the specified maximum will be permitted up to a maximum of 1.65 %
% CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15

Tension test		Gauge length		50 mm.		Hardness test		HBW			1 2 3									
									Req. Max. 197											
TP Direction : Longitudinal									Fitting			127 130 129								
MPa		Req.Min.	Req.Max	Actual results																
Yield Strength		240	440	272																
Tensile Strength		415		434																
% Elongation		30		49																
Impact test				10 x 10.0 x 2V		Supplementary Note :														
		TP Direction : Transverse		Temp. -29 °C		MESC SPEC 76/200 Rev. February 2023														
		J		1 2 3 AVE		Steel is vacuum degassed, fully killed and fine grain practice"														
		Base		237 233 222 237		The fittings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements.														

APPS CALLOC OK

ARABIAN PIPELINE SUPPLY FZCO

P.O. BOX 18239 JEBEL ALI - DUBAI. U.A.E.

BENKAN

THAI BENKAN CO., LTD.

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

Akemitsu Kondo
Quality Assurance Manager
Thai Benkan Co., Ltd.

Form No. TZ-62V/0

22/10/23

22/10/23

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B

DIN 50049/3.1

Purchaser Name : ARABIAN PIPELINE SUPPLY FCZO
TBC PO No. : TB-652
Customer PO No. : AIPO-240800150
Benkan No. :
JOB No. :

THAI BENKAN CO., LTD. **BENKAN**
58 Moo 13 Soi Suksawat 70, Bangkru Phrapadaeng, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

D/M/Y 02/12/2024 Certificate No. : T202409483758 Rev. No. : 0

Specification for Product		ASTM A234/A234M-24/ASME SA234/SA234M-23 ASME Section II Part A 2023										MFG No.		67K00M049		Seamless or Weld		SEAMLESS			
Specification for Inspection		NACE MR0175-2021/ISO 15156-2 : 2020 & MR0103-ISO 17945-2015 (R2023) Sour service.										Product Description		90EL WPB 8 S40		Quantity		100			
Starting Material		Heat No.		24603549										Pipe or Plate		PIPE		Steel making Process		BASIC OXYGEN	
% Chemical content		C x100	Si x100	Mn x100	P x1000	S x1000	Cu x100	NI x100	Cr x100	Mo x100	V x1000	Nb x1000	B x10000	Ti x1000	Al x1000	Ca x10000	CE x100				
Required Maximum		20		106	20	10	40	40	40	15	20	10	5	20			40				
Required Minimum			10	29											20						
Heat Analysis		13	24	105	12	2	1	1	2	0	0	1	1	2	40	41	31				

For each reduction of 0.01 % below the specified carbon maximum an increase of 0.06 % manganese above the specified maximum will be permitted, up to a maximum of 1.65 %
% CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15

Tension test		Gauge length		50 mm.		Hardness test		HBW			1 2 3			Req. Max. 197					
TP Direction : Longitudinal								Fitting			130 134 132								
MPa		Req. Min.	Req. Max.	Actual results															
Yield Strength		240	440	329															
Tensile Strength		415		480															
% Elongation		30		44															

Impact test 10 x 7.5 x 2V
TP Direction : Transverse Temp. -29 ° C
J 1 2 3 AVE
Base 83 102 93 93

Supplementary Note :
MESC SPEC 76/200 Rev. February 2024

Steel is vacuum degassed, fully killed and fine grain processed.
The fittings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements.

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

AKEMITSU KONDO
Quality Assurance Manager
Thai Benkan Co., Ltd.

Form No. TZ-62V/0

BKAN 444/24

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B

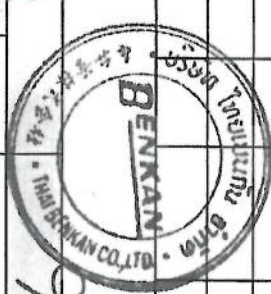
DIN 50049/3.1

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TB-652
Customer PO No. : AIPC-24080015/0
Benkan No. :
JOB No. :

D/M/Y 02/12/2024 Certificate No. : T202409483777 Rev. No. : 0

THAI BENKAN CO., LTD.
58 Moo 13 Soi Sukasawat 70, Bangkru Phrapadaeng, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

Specification for Product		ASTM A234/A234M-24/ASME SA234/SA234M-23, ASME Section II Part A 2023										MFG No.		67K00M091		Seamless or Weld		SEAMLESS	
Specification for Inspection		NACE MR0175-2021/ISO 15156-2 : 2020 & MR0103-ISO 17945-2015 (P2023) Sour service.										Product Description		45EL WPB 6 S120		Quantity		6	
Starting Material		Heat No.		032497		Pipe or Plate		PIPE		Steel making Process		ELECTRIC FURNACE							
% Chemical content		C x100	Si x100	Mn x100	P x1000	S x1000	Cu x100	Ni x100	Cr x100	Mo x100	V x1000	Nb x1000	B x10000	TI x1000	Al x1000	Ca x10000	CE x100		
Required Maximum		20		106	20	10	40	40	40	15	20	10	5	20			40		
Required Minimum			10	29											20				
Heat Analysis		13	23	106	8	2	5	2	9	2	4	2	3	13	24	6	33		
For each reduction of 0.01 % below the specified carbon maximum, an increase of 0.06 % manganese above the specified maximum will be permitted, up to a maximum of 1.65 % % CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15																			
Tension Test		Gauge length		50 mm.		Hardness test		HBW		1		2		3					
TP Direction : Longitudinal								Fitting		146		150		148					
MPa		Req. Min.	Req. Max.	Actual results															
Yield Strength		240	440	297															
Tensile Strength		415		444															
% Elongation		30		46															
Impact test		10 x 10.0 x 2V		Supplementary Note :															
TP Direction : Transverse		Temp. -29 ° C		MESC SPEC 76/200 Rev. February 2024															
		J		1		2		3		AVE									
		Base		315		288		314		306									



We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

Akeritsu Kondo
Quality Assurance Manager
Thai Benkan Co., Ltd.



Form No. TZ-62V/0

Benkan 463 | 24

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B

DIN 50049/5.1A

THAI BENKAN CO., LTD.

BENKAN

58 Moo 13 Soi Sukswat 70, Bangkru Pirapadaeng, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO

TBC PO No. : TB-347

Customer PO No. : AIPCO-2307001410

Benkan No. : SOUR SERVICE

JOB No. :

D/M/Y 13/01/2024 Certificate No. : T202409480135 Rev. No. : 0

Specification for Product		ASTM A234/A234M-23a/ASME SA234/SA234M-23, ASME Section II Part A 2023										MFG No.		66H00M228		Seamless or Weld		SEAMLESS		Quantity		2	
Specification for Inspection		ASME B16.9-2018,B16.25-2017										Product Description		90EL WPB 10 S40		Steel making Process		ELECTRIC FURNACE					
Starting Material		Heat No.		030797										Pipe or Plate		PIPE		Heat treatment		Normalizing 910 C X 60 Minutes Cooled in Still Air			
% Chemical content		C x100	Si x100	Mn x100	P x1000	S x1000	Cu x100	Ni x100	Cr x100	Mo x100	V x1000	Nb x1000	B x10000	Ti x1000	Al x1000	Ca x10000	CE x100						
Required Maximum		20		106	20	10	40	40	40	15	20	10	5	20			40						
Required Minimum				10	29										20								
Heat Analysis		15	24	107	11	2	3	2	8	1	10	2	3	14	23	8	35						
For each reduction of 0.01 % below the specified carbon maximum an increase of 0.06 % manganese above the specified maximum will be permitted up to a maximum of 1.65 % % CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15																							
Tension test		Gauge length		50 mm.																			
TP Direction : Longitudinal																							
MPa		Req.Min.	Req.Max.	Actual results																			
Yield Strength		240	440	298																			
Tensile Strength		415		481																			
% Elongation		30		43																			
Impact test		10 x 7.5 x 2V		Supplementary Note :																			
TP Direction : Transverse		Temp. -29 ° C		MESC SPEC 76/200 Rev February 2023																			
		3	1	2	3	AVE																	
						109																	
		Steel is vacuum degassed, fully killed and fine grain practice*																					
		The fillings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements.																					



Form No. TZ-62V/0

Akenitsu Kondo
Quality Assurance Manager
Thai Benkan Co., Ltd.

A. Kondo

2024/01/25

#2

INSPECTION CERTIFICATE

(EN10204:2004 3.1 / ISO 10474:1991 3.1B)

117-12, Noksan Saneop Daero,
Gangseo-gu, Busan,
46752 Korea
Tel : 82-51-970-6666
Fax : 82-51-831-6886

Customer	ARABIAN PIPELINE SUPPLY FZCO					Certificate No	20190103972	Date	2019/01/17
P.O No.	AIPO-18090007/1					Project Name	STOCK		
Job No.									
Specification for Material	ASTM A234WPB-17 NACE MR0175/ISO 15156-2015					Starting Material	SEAMLESS PIPE		
Specification for Inspection	ASME B16.9-2012 & B16.25-2012					Dimension and Visual Inspection		GOOD	
Heat Code No [HCN]	No.	Descriptions				Q'ty (Pcs)	Heat Treatment	N.D.E (GOOD)	
DM431	0062	45° ELBOW LONG	XX-S	B.W	1"	30	N: 910℃	MT	

CHEMICAL COMPOSITION (%)

Heat Code No [HCN]	Spec.	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Cb	Ti	B	C.E	Raw Heat No
	Max.	0.20	-	1.06	0.015	0.010	0.40	0.40	0.15	0.40	0.08	-	-	0.0005	0.40	
	Min.	-	0.10	0.29	-	-	-	-	-	-	-	-	-	-	-	
DM431	L	0.120	0.270	1.04	0.007	0.001	0.02	0.09	0.01	0.02	0.001	0.001	-	0.0001	0.316	601387
	P	0.10	0.25	1.03	0.009	0.004	0.01	0.06	0.01	0.01	0.002	0.003	0.004	0.0001	0.287	



MECHANICAL PROPERTIES

Heat Code No [HCN]	Spec	Y.S		T.S		E.L		Hardness Test		
		ksi				(%)		HBW		
	Max.	-		-		-		197		
	Min.	35		60		30		-		
DM431	P	41.8		65.4		59.1		129 131 133		

REVISED ISSUE
2019.01.21

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order. Any forgery or falsification of this certificate will be subjected to the full extent of the criminal prosecution. Please contact us by the below Fax or E-mail if you have any inquiries on this certificate.

Fax: +82 831 6886 / E-mail: tkqaqc@tkbend.co.kr

Remark: *V+Cb+B: Max 0.03
-ACTL: 0.0021
*V+Ti+Cb: Max 0.09
-ACTL: 0.002
*Fully Killed and Fine Grain Practiced
*Steel making process: Basic oxygen
*Used Gauge Length: 50mm
*Vacuum Degassed
*Heat Treatment Cooling Medium: Still Air
*ASME SECT II PART A(2017Ed)



Legend
HB Brinell
ST Solution Treatment
SR Stress Relieving
N Normalized
T Tempered
A Annealed
Q Quenched
YS: 0.2% Offset Method
(G) Hot-Dip Galvanized Coating
AC Air Cool
OC Oil Cool
WQ Water Quenched
WC Water Cool
B Base
W Weld
H Haz
L Ladle
P Product

Reviewed by:

Witnessed by:

Approved by:

Head of Quality Control Dept

W. S. Kim, TK 175/19



Purchaser : ARABIAN PIPELINE SUPPLY FZCO

INSPECTION CERTIFICATE

Thai Benkan Co., Ltd.
58 Soi Warkorn, Bangkok, Prapachong,
Samprakarn, 101 80 Thailand.

TO EN10204 3.1

E.No. Purchase Order No. Job No.

MO-122 STCM-03M-20KLS-STR

D M Y Certificate No.
05/10/2013 T- 2013460574

No.	Material Heat No	MFG No.	Specification for Material										Specification for Inspection			Visual Examination	Dimensional Inspection
			Made from Seamless Pipe										Heat Treatment (Note 1)				
			ASTM A213-1982E SPS4 GR WPB 316.25-2007										ASME B16.9-2007 316.25-2007				
			W.P.B 316.25-2007														
			Product & Size										Quantity				
			Tolerance														
1	28433	58C10083-1	T WPB 4 X 2 S80	0.003	40/100	N	HB : 145.147 148	0.0002									
2	50545	58C10048	T WPB 6 X 4 S40	0.002	200	N	HB : 127.130 136	0.0002									
3	J3L3628	58C10067	T WPB 10 X 6 S80	0.000	6	N	HB : 129.131 136	0.0001									
4																	
5																	
Specification			Chemical Composition %										Tension Test *2				
			C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	C.E.	YS	TS	E
Min.			X 100	X 100	X 100	X 1000	X 1000	X 100	X 100	X 100	X 100	X 1000	X 1000	X 100	MPa		%
Max.				10	29										240	415	30
Material Heat No.			20	108	20	10	40	40	40	40	15	80	20	40	240	415	30
1	28433	15	24	98	13	1	4	2	4	2	2	1	32	334	482	38	
2	50545	16	23	83	11	1	9	4	12	6	3	1	35	340	477	35	
3	J3L3628	20	20	82	16	4	1	2	5	1	0	0	35	324	482	47	
4																	
5																	
			HARDNESS MAX										197 HB : GOOD				
ARABIAN PIPELINE SUPPLY FZCO P.O. BOX 18259 JEBEL ALI - DUBAI U.A.E. VERIFIED TRUE COPY																	

Figure 11 A: Noted with final inspection between 10°C and 30°C. The company is responsible for the inspection of the product. The company is responsible for the inspection of the product. The company is responsible for the inspection of the product.

MAGNETIC PARTICLE EXAMINATION FOR TLE ONLY

GOOD

QA/QC

Thailand Assurance Manager

Thai Benkan Co., Ltd.



#192

28 So. Wabash, Chicago, Ill.
 September, 1913. Ireland.

08/01/2013 T- 2013480031



TO EN10204 3.1/ISO 10474 3.1B

BENKAN

58 Moo 13 Soi Suksawat 70, Bangkru Phrapadaeng, Samutprakarn 10130. THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

JOB NO.:

D/M/Y 13/01/2024 Certificate No.: T202409480176 Rev. No.: 0

[illegible]

MATERIAL INSPECTION CERTIFICATE

TO EN10204 3.1/ISO 10474 3.1B
DIN 50049/3.1

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TB-347
Benkan No. : SOUR SERVICE

Customer PO No. : APO-23070014/0
JOB No. :

D/M/Y 19/02/2024 Certificate No. : T202409480504 Rev. No. : 0

THAI BENKAN CO.,LTD. **BENKAN**
58 Moo 13 Soi Sukswat 70, Bangkru Phrapadaeng, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

Specification for Product		ASTM A234/A234M-23/ASME SA234/SA234M-23, ASME Section II Part A 2023										Mfg No.		66H10M244		Seamless or Weld		SEAMLESS		Quantity		10															
Specification for Inspection		NACE MR0175-2021/ISO 15156-2 : 2020 & MR0103-ISO 17945-2015 (R2023)										Product Description		T WPB 6 x 3 S160																							
Starting Material		Heat No.		036430										Pipe or Plate		PIPE										Steel making Process		ELECTRIC FURNACE									
% Chemical content		C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	B	Ti	Al	Ca	CE																				
Required Maximum		x100	x100	x100	x1000	x1000	x100	x100	x100	x1000	x1000	x1000	x10000	x1000	x1000	x10000	x100																				
Required Minimum		20		106	20	10	40	40	40	15	20	10	5	20			40																				
Heat Analysis		16	26	110	10	2	4	2	9	1	3	2	4	13	22	16	37																				
For each reduction of 0.01 % below the specified carbon maximum an increase of 0.05 % manganese above the specified maximum will be permitted up to a maximum of 1.55 % % CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15																																					
Tension test		Gauge length		50 mm.																		Hardness test		HBW		1		2		3							
TP Direction : Longitudinal																		Fitting		132		136		135													
MPa		Req.Min	Req.Max	Actual results																																	
Yield Strength		240	440	341																																	
Tensile Strength		415		499																																	
% Elongation		30		47																																	
Impact test		10 x 10.0 x 2V																				Supplementary Note :															
TP Direction : Transverse		Temp.		-28 ° C																		MESO SPEC 76200 Rev February 2023															
		J		1		2		3		AVE												Steel is vacuum degassed, fully killed and fine grain practice															
		Base		33		31		31		32												The fittings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements															
																						100% MT performed for all accessible surface in acc ASME Sec VIII D1, Appendix 6 : GOOD															



We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

Quality Assurance Manager
Thai Benkan Co.,Ltd.

Akemitsu Kondo

Form No. TZ-62V/0

Rev. 2007/2016

TK corporation

INSPECTION CERTIFICATE

(EN10204:2004 3.1 / ISO 10474:1991 3.1B)

117-12, Noksan Saneop Daero,
Gangseo-gu, Busan,
46752 Korea
Tel : 82-51-970-6666
Fax : 82-51-831-6886

Customer	STEEL TRADING COMPANY L.L.C		Certificate No.	20160403843	Date	2016/04/18
P.O No.	STC-VV-1128-16-TK-STK		Project Name	STOCK		
Job No.						
Specification for Material	ASTM/ASME A/SA420 WPL6(2015Ed.)NACE MR0175/ISO 15156		Starting Material	FORGED STEEL		
Specification for Inspection	ASME B16.9-2012		Dimension and Visual Inspection	GOOD		
Heat Code No [HCN]	No.	Descriptions	Qty (Pcs)	Heat Treatment		
CY969	0362	REDUCING TEE XX-S B.W 2" x 1"	100	N: 910°C		

CHEMICAL COMPOSITION (%)

Heat Code No [HCN]	Spec.	C	SI	Mn	P	S	Ni	Cr	Mo	Cu	V	Co	B	C.E	Raw Heat No
	Max.	0.20	0.40	1.35	0.020	0.010	0.40	0.30	0.12	0.40	0.060	0.020	0.0005	0.40	
	Min.	-	0.15	0.50	-	-	-	-	-	-	-	-	-	-	
CY969	L	0.181	0.206	1.045	0.00780	0.0021	0.056	0.072	0.021	0.059	0.001	0.00210	0.0002	0.382	S18471
	P	0.17	0.17	0.97	0.008	0.004	0.06	0.09	0.03	0.072	0.016	0.00250	0.0001	0.368	

MECHANICAL PROPERTIES

Heat Code No [HCN]	Spec	Y.S	T.S	E.L	Hardness Test	Impact Test(J)		
		ksi		(%)	HB	Temp.(°C)	Size(2mm-v)	
	Max.	-	85	-	237	-50		
	Min.	35	60	30	-			
CY969	P	42.2	69.6	30.5	138 140 137	37.7 56.1 61.7	Act. Ave.	51.8

REVISED ISSUE
2015.12.08

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order. Any forgery or falsification of this certificate will be subjected to the full extent of the criminal prosecution. Please contact us by the below Fax or E-mail if you have any inquiries on this certificate.

Fax: +82 51 6656 / E-mail: tkqac@tkbend.co.kr

Remark: *V+Cb+Ti: Max.0.10% ACT: 0.0031

*V+Cb+B: Max.0.10% ACT: 0.0033

*Fully Killed & fine grain practice

*Refining process & Vacuum degassed

*Forming method: Hot formed

Size	Min	Ave
CY969 10X10X55mm	14.0	21.0



Legend:
HB: Brinell
ST: Solution Treatment
SR: Stress Relieving
N: Normalized
T: Tempered
A: Annealed
Q: Quenched
YS: 0.2% Offset Method
(G): Hot-Dip Galvanized Coating

AC: Air Cool
OC: Oil Cool
WQ: Water Quenched
WC: Water Cool
B: Base
V: Weld
H: Heat
L: Lead
P: Product

Reviewed by:

Witnessed by:

Approved by:

Head of Quality Control Dept



22/01/25

Tk 106/16

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1

DIN 50049/3.1

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
 TPC PO No. : TA-799
 Customer PO No. : AIP0-211000070
 Bankan No. :
 JOB No. :

THAI BENKAN CO., LTD.
 58 Moo 13 Soi Suksewar 70, Bangkru Phraadeng, Samutprakan 10130, THAILAND
 Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7 FACSIMILE: 66 (0) 463 6236, 66 (0) 463 8241



Specification for Product		ASTM A234/A234M-19/ASME SA234/SA234M-19 ASME Section II part A 2019		MFG No.		64M20M248		Seamless or Weld		SEAMLESS		Quantity		3		
Specification for Inspection		NACE MR0175/ISO 15156-2 : 2015 & MR0103-2015 ASME B16.9-2018, B16.25-2017		Product Description		RE WPB 10 x 8 S30										
Starting Material		Heat No. 291831		Pipe or Plate		PIPE		Steel making Process		ELECTRIC FURNACE						
% Chemical content		C x100	Si x100	Mn x100	P x1000	S x1000	Cu x100	NI x100	Cr x100	Mo x100	V x1000	Nb x1000	U x10000	TI x10000	Al x1000	CE x100
Required Maximum		20		106	20	10	40	40	40	15	30	10	5			40
Required Minimum		10		29											20	
Heat Analysis		15	21	111	8	2	4	2	6	3	10	10	4	0	31	36
For each reduction of 0.01 % below the specified carbon maximum, an increase of 0.05 % manganese above the specified maximum will be permitted up to a maximum of 1.65 % % CE = C + Mn/3 + (Cr + Mo + V)/5 + (Ni + Cu)/15																
Tension test		Gauge length 50 mm.		Hardness test		HBW		1		2		3				
TP Direction : Longitudinal						Req. Max. 197										
MPa		Req.Min.	Req.Max.	Actual results												
Yield Strength		240	440	294												
Tensile Strength		415		466												
% Elongation		30		39												
Supplementary Note : "Steel is vacuum degassed, fully killed and fine grain practice" The fittings was manufacture, sampled, tested and inspected in accordance with the specification and was found to meet the requirements."																
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.																
Grain Size		ASTM E112		Visual Examination		GOOD		Dimensional Inspection		GOOD						



Form No. TZ-62/0

Quality Assurance Manager
 Thai Benkan Co., Ltd.

Akemiisu Kondo

Akemiisu Kondo



22/10/25

167

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TA-991
Customer PO No. : A/PO-22060004/0
JOB No. :

MATERIAL INSPECTION CERTIFICATE
To EN10204 3.1/ISO 10674 3.1B
DIN 50049/3.1

THAI BENKAN CO.,LTD. **BENKAN**
58 Moo 13 Soi Suksewat 70, Bangkru Phrapadeng, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7 FACSIMILE: 66 (0) 463 6236, 66 (0) 463 8241

D/M/Y 30/08/2022 Certificate No. : T202209481365 Row No. : 0

Specification for Product	ASTM A234/A234M-19/ASME SA234/SA234M-21 ASME Section II Part A 2021		MFG No.	66G20M088	Seamless or Weld	SEAMLESS	Quantity	20										
Specification for Inspection	ASME B16.9-2018 B16.25-2017		Product Description	RC WPB 8 x 6 S80														
Starting Material	Heat No.	83257	Pipe or Plate	PIPE		Steel making Process	BASIC OXYGEN											
% Chemical content	C x100	SI x100	Mn x100	P x1000	S x1000	Cu x100	NI x100	Cr x100	Mo x100	V x1000	Nb x1000	Bi x10000	TI x1000	Al x1000	CE x100			
Required Maximum	20		106	20	10	40	40	15	30	10	5			20	40			
Required Minimum			10	29														
Heat Analysis	20	20	39	16	5	1	1	0	8	0	0	8	6	27				
For each reduction of 0.01 % below the specified carbon maximum increase of 0.05 % manganese above the specified maximum will be permitted up to a maximum of 1.65 % % CE = C + Mn/6 + Cr + Mo + V/5 + (Ni + Cu)/15																		
Tension test	Gauge length	50 mm.	Hardness test		HBW			1 2 3			Req. Max. 197							
TP Direction : Longitudinal					Fitting			149 155 152										
MPa	Req.Min.	Req.Max.	Actual results															
Yield Strength	240	440	276															
Tensile Strength	415		453															
% Elongation	30		42															
Supplementary Note : Steel is vacuum degassed, fully killed and fine grain practice. The fittings were manufactured, sampled, test, and inspected in accordance with the specification, and were found to meet the requirements.																		
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.																		
Form No. TZ-62/V/0																		

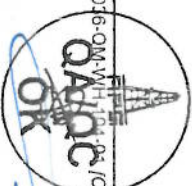
Akemietsu Kondo
Quality Assurance Manager
Thai Benkan Co.,Ltd.



41165

 erne fittings gmbh A-6824 Sölling Hauptstrasse 48 Austria/Europe Telefon +43-5524 501-0 Telefax +43-5524 501-930 Reg. Nr. 12 110 2024		Abnahmeprüfzeugnis Inspection Certificate EN 10204 - 3.1		Zeugnisnummer [certificate no.] 032664/08-GM		Rev 18/07/2008		Datum [date] 18/07/2008	
Kunde [customer] M/S Arabian Pipeline Supply FZCO Steel Trading Company L.L.C. P.O.Box 18259 UAE - Jebel Ali, Dubai		Ihre Bestellnummer [your order no.] STC/VV-0920-07/ERN		Unsere Auftrags-Nr. [our order no.] 96946-SS-0250		Schmelze Nr [heat no.] 26938		Ident Nr. [ident no.] 10204/3.1, Manufacturers standard	
Menge [quantity] 50		Artikelbezeichnung [designation] reducers KO-S-WPL6-6"1/4"-XXS/XXS		Anforderungen [requirements] ASME B16.9-2003 WPL6 ASTM A 420/A 420M-05, ASME SA-420M-Ed 04/A06, NACE MR-01-75-2001, EN 10204/3.1, Manufacturers standard		Dichtheitsprüfung [leakage test]		Hersteller [manufacturer] V&M	
Vormaterial [base material] Rohrzeugnisnr. [tube work's cert.no.] 26919Mu07		Herstellernr. [heat analysis] 1 = Schmelzeanalyse [heat analysis]		J-Faktor [J-Factor] CEQ [CEQ]: C + (Mn / 6) + (Cr + Mo + V) / 5 + (Cu + Ni) / 15		Dichtheitsprüfung [leakage test]		Form: ISO-V	
Analyse [analysis] Schmelze Nr. [heat no.] 26938		Erschmelzungsart [melting process] E		Chemische Zusammensetzung [chemical composition] C Si Mn P S Cr Mo Ni Cu V Nb Al B Ti N Ceq CEQ J-Fact.		Index 1		Wärmebehandlung [heat treatment] 138-143 HB normalised temperature 920 °C Holding Time 12 min. Cooling in still air	
Mech.-technologische Prüfung [mech. technological test]									
Proben Nr. [test no.] M061681		Zugversuch [tensile test] Temp. [°C] 336 Dehngr. [yield str.] Rp 0.2 311 Zugfestigkeit [tensile str.] Rm (N/mm²) 466.9 Dehnung [elongation] 2" (%) 30.73		Kerbschlagbiegeversuch [notched bar impact test] Temp. [°C] -50 Querschnitt [cross sec.] 80 Kerbschlagarbeit [impact values] (J) 64-72-46		Härteprüfung [hardness test] 138-143 HB		Wärmebehandlung [heat treatment] 138-143 HB	
Kennzeichnung [marking] E05		Mat./26938/DN"wall		Zusatzmarkierung [add. mark.]		Die gestellten Anforderungen wurden erfüllt [Manufacturing requirements are satisfied]		Der Werksachverständige [the Works Inspector] 18/07/08 Geiger Martin	
Bemerkungen [remarks] cold formed		o.B./o.K.		Dieses Dokument wurde elektronisch erstellt und ist ohne Unterschrift gültig [The certificate is issued by the computerized system and is valid without signature.]		322		18/07/08	

Zertifiziert nach DGR 97/23/EG Anhang I - Absatz 4.3 durch TÜV SÜD Deutschland CE 0036, Zertifikat-Nr. DGR-0036-QM-WH-104-01, Certified acc. to EN ISO 9001



CE 0036
 18/07/08
 Geiger Martin
 322



H159



Vallourec Fittings

Vallourec Fittings = former Interfit (Name Change 01/10/2013)

B.P 10132 59602 MAUBEUGE FRANCE

Tél : 03 27 69 11 01

Raccords sans soudure à Souder

Seamless Butt Welding Fittings

Nahtlose Schweissformstücke

Client : ARABIAN PIPELINE SUPPLY FZCO

Consignee STEEL TRADING GROUP

Besteller PO BOX 18259

JEBEL ALI, DUBAI

DUBAI ISLAMIC BANK

A/C ARABIAN PIPELINE SUPPLY FZCO

PO BOX 18259

United Arab Emirates

GO-0001

N° de Cde Usine

Mill Ref 1600745 003

Werks-Nr

1700421

N° Certificat

Certificate Nr

Zeugnis Nr

17-01065

INSPECTION CERTIFICATE

EN 10204 3.1

Cde Client N° : STC/VV-1220-16/INT-STK

Your Order Nr

Bestell-Nr

Spécifications :

Specifications :

Spezifikationen

Acier et Normes
Steel and Standard
Werkstoff und Norm

WPL6 ASTM A420 (2015) ASTM SA420(2015) ASTM A900(2015)

ASME SA420 SII - Part A (2015)

ASME B16.9 (2012) ASME B16.25 (2012)

NACE MR0175 / ISO 15156 (2015) NACE MR0103 (2012)

PE1 2014/68/UE

Certificate No 01 202 F/Q-02 0035

ASME SA 420 Section II - Part D - Table Y1 (2013)

Matière de départ
Raw Material / Werkstoff

Tubes sans soudure / Seamless Tube / Nahtlose Rohre
Acier procédé Oxygène / Oxygen Steel / Sauerstoff Stahl

VALLOUREC DEUTSCHLAND - Mulheim
Acier calmé / Killed Steel / beruhigter Stahl

Etat de livraison

Delivery Condition / Lieferzustand

Formés à chaud entre / Hot formed between / Warm verformt / 780°C - 980°C

Normalisé / Normalized / Normalisierend 920°C

Marquage

Marking / Stempelung

Sur pièces en creux low stress

Low stress hard stamp

Kennzeichnung auf dem Fitting durch kerbfreie Einprägung

If 6" X 3" XS WPL6 GERMANY XY24

If = Starting April 2014

Poste N°

Item Nr

Pos Nr

Nombre

Number

Stückzahl

N° Certificat Matière

Raw Material

Rohrzeugnis Nr

Code

Marking

Markierung

Coulée N°

Heat Nr

Schmelze

Dimensions / Sizes / Abmessungen

CONCENTRIC REDUCER 6" X 3" XS

PT C2 168.3 98.9 11.0 8.0 1265N

CARACTERISTIQUES CHIMIQUES - CHEMICAL ANALYSIS - SCHMELZENANALYSE

Sur Tube
On pipe analysis

Coulée N° Heat Nr Schmelze	C	Si	Mn	P	S	Cr	Mo	Ni	Cu	V	Al	Su	Ti	Nb	B
mini	0.20	0.100	0.290	0.025	0.010	0.400	0.150	0.400	0.400	0.08	0.020		0.04	0.020	0.0005
maxi	0.20	0.100	1.35	0.025	0.010	0.400	0.150	0.400	0.400	0.08	0.020		0.04	0.020	0.0005
SP6839	0.150	0.180	0.920	0.008	0.001	0.070	0.010	0.050	0.030	0.001	0.026	0.002	0.004	0.001	

Carbone équivalent / Carbon equivalent / Kohlenstoffäquivalent

C F : C + (Mn / 6) = 0.303

(Maxi 0.41)

L F : C + (Mn / 6) + ((Cr + V + Mo) / 5) + ((Cu + Ni) / 15) = 0.325

CARACTERISTIQUES MECANQUES MECHANICAL PROPERTIES - MECHANISCHE EIGENSCHAFTEN

Sur Matière de départ
from Raw Material
vom Vormaterial

Essais de Traction / Tensile Tests / Zugversuch

(longitudinal direction)

Limite Elastique
Yield Point / Streckgrenze
Re ≥ 240 MPa

Résistance Rupture
Tensile strength / Zugfestigkeit
415 ≤ Rm ≤ 585 MPa

Allongement
Elongation / Dehnung
2" A% ≥ 30

Dureté
Hardness test on fittings
Harte
HBW

270 MPa

454 MPa

2" 41,5 %

146 143
146

Résilience / Impact Test / Kerbschlagarbeit :

Sur pièces / On fittings / am Fittings

Essai Test Versuch	Test 1	Test 2	Test 3	Moyenne Mean Mittelwert	Unité Units Einheit	Type : KV Specimen Muster	Température -46° Celsius or -50.8°F
Kvc 10x7.5	≥ 10	≥ 10	≥ 10	≥ 13			
Kvc 10x10	≥ 13	≥ 13	≥ 13	≥ 17			
16-00388	113	112	114	113.0	Joules	10 x 7.5 mm	Long / Long / Längs
16-00388	150.7	149.3	152	150.7	Joules	10 x 10 mm	Long / Long / Längs



Date : 08/02/2017

LE RESPONSABLE
QUALITE

V. FAËS

WE CERTIFY THAT THE DELIVERED PRODUCTS WERE
MANUFACTURED, SAMPLED, TESTED AND INSPECTED IN
ACCORDANCE WITH THE SPECIFICATION OF THE ORDER

Steel made by low Sulphur & Phosphorus
Yield strength determined with
min 0.2% offset method
Carbon < 0.0005% guaranteed



22/01/25

Purchaser : ARABIAN PIPELINE SUPPLY FZCO

INSPECTION CERTIFICATE

BENKAN.

TO EN10204 3.1 / DIN 50049 3.1

Thai Benkan Co., Ltd.
58 Soi Watkrumai, Bangkok, Prapadaeng,
Samutprakan, 10130 Thailand.

Purchase Order No. AIPQ-18090008/1 Job No.

D M Y Certificate No.
14/05/2019 T-2019480038 Rev.1

E-No.		Specification for Material Made from Seamless Pipe				Specification for Inspection				Visual Examination		Dimensional Inspection					
ME-760		ASTM A436/18ASME SA436-17 Or WPL6/MASS SP-15-1014 Or WPL15.1 ASTM A860 NACE MR0175/ISO15156-2:2015/MSR0103:2015				ASME B16.9-2018, B16.25-2017				Good		Good					
MFG. No.		Product & Size (T.*1)				Quantity											
61N28006-1		RC WPL6/WPHY52 6 x 3 S80				23/25											
		Material Heat No.		Boron (%) : Max 0.0005		TI (%) Max 0.05		Hardness Actual Data									
		86068		0.0002		0.03		HBW :153,160,174									
Specification	Chemical Composition %													*2 Tension Test		HARDNESS MAX 197 HB : GOOD	
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Al	V	Nb	C.E.	Y S	TS	E	Impact Test (J) 10 x 7.5 x 2V AT -50C
	X	X	X	X	X	X	X	X	X	X	X	X	X	Mpa.		%	
	100	100	100	1000	1000	100	100	100	100	1000	1000	1000	100				
	Min.	15	50												360	455	30
Max.	20	40	135	20	10	35	40	30	12	60	80	20	40	497	585		285
	12	23	108	7	2	3	2	5	3	30	0	0	32	437	553	38	290
																	294
AVE.																	
FIRELINE																	

SOAKING TEMP. 910 X 30 MINUTES. QUENCHING (Q). TEMPERING 700 X 30 MINUTES.

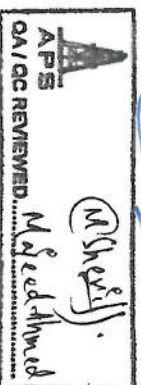
"Steel is Fully Killed and Fine Grain Practiced" Steel making process : Basic Oxygen, Chemical Composition % : Product Analysis
The fittings was manufactured, sampled, tested and inspected in accordance with the specification, and was found to meet the requirements

C.E. = C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY :

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

* 1 : "T" symbolized wall thickness in mm. * 2 : YS Yield strength TS = Tensile strength E = Elongation
Form T7-61/1



Rungnapo Kampranon

Quality Assurance Manager

Thai Benkan Co., Ltd.

BKN 1058119 R.1



Purchaser : ARABIAN PIPELINE SUPPLY FZCO

INSPECTION CERTIFICATE

TO EN10204 3.1 / DIN 50049 3.1

Thai Benkan Co., Ltd.
58 Soi Watkrumai, Bangkru, Prapadaeng,
Samutprakan, 10130 Thailand.

Purchase Order No. AIPQ-18090008/1

Job No.

D M Y Certificate No.
14/05/2019 T-2019480037 Rev.1

E-No.		Specification for Material Made from Seamless Pipe						Specification for Inspection				Visual Examination		Dimensional Inspection			
ME-760		AS TM A201 18ASME SA201 17 GR WP L BNS-S-SP-75-2014 GR WP HY52 ASTM A860 NACE MRO175/ISO15156-2:2015AMRO103:2015						ASME B16.9-2018,B16.25-2017				Good		Good			
MFG. No.		Product & Size (T.*1)						Quantity									
61N28006		RC WPL6/WPHY52 6 x 3 S80						2/25									
		Material Heat No.		Boron (%) : Max 0.0005		Ti (%) Max 0.05		Hardness Actual Data									
		J7L9636		0.0001		0.01		HBW : 135, 137, 140									
Chemical Composition %														*2 Tension Test		HARDNESS MAX 197 HB : GOOD	
Specifi- cation	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Al	V	Nb	C.E.	Y S	T S	E	Impact Test (J) 10 x 7.5 x 2V AT -50C
	X	X	X	X	X	X	X	X	X	X	X	X	X	Mpa.			
Min.		15	50											360	455	30	299
Max.	20	40	135	20	10	35	40	30	12	60	80	20	40	497	585		274
	11	27	125	11	1	1	2	12	1	36	0	0	35	443	552	40	284
														AVE.		286	

SOAKING TEMP. 910 X 30 MINUTES, QUENCHING(Q), TEMPERING 700 X 30 MINUTES.

Steel is Fully Killed and Fine Grain Practiced Steel making process : Basic Oxygen, Chemical Composition % : Product Analysis

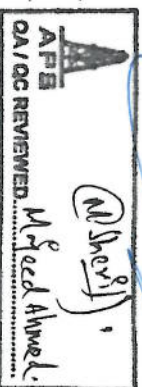
The fittings was manufactured, sampled, tested and inspected in accordance with the specification, and was found to meet the requirements.

C.E. = C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

MAGNETIC PARTICLE EXAMINATION FOR TEE ONLY :

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

* 1 : "T" symbolized wall thickness in mm. * 2 : YS Yield strength TS = Tensile strength E = Elongation Form TZ-6//1



Quality Assurance Manager

Thai Benkan Co., Ltd.

BKN 1053/19 R.1



7159
200

Purchaser: ARABIAN PIPELINE SUPPLY FZCO

INSPECTION CERTIFICATE

TO EN10204 3.1

Thai Benkan Co., Ltd.
58 Soi Watsirum, Bangkru, Bangkok,
Samutprakan, 10130 Thailand



Purchase Order No. Job No.

D M Y Certificate No.
10/10/2014 T-2014100054

E-No.	Specification for Material Made from Seamless Pipe										Specification for Inspection				Visual Examination	Dimensional Inspection	
MD-352	ASTM/ASME A53-13 GR WPL-60/50-13 WPHY 52 NACE MR0175/ISO 15156-2:2009										ASME B16.9-2012 B16.25-2012				Good	Good	
MFG. No.	Product & Size										Quantity						
57B28055	RC WPL6/WPHY52 6 x 3 S80										23/25						
		Material Heat No				Boron (%) Max 0.0005		Hardness Actual Data									
		06146				0.0001		140 144 150									
Specification	Chemical Composition %												Tension Test		Hardness Max 197 HB GOOD		
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Al	V	Nb	C.E.	YS	TS	E	Impact Test (J) 10 x 10 x 2V AT -46 C
X	X	X	X	X	X	X	X	X	X	X	X	X	X	Mpa		%	
100	100	100	1000	1000	1000	100	100	100	100	1000	1000	1000	100				
Min.	15	100												360	435	32	345
Max.	20	40	130	30	10	35	40	30	12	60	80	20	40	465	655		355
14	20	113	20	3	2	2	4	1	25	0	0	34	34	374	503	43	355
AVE																	

ANIAN PIPELINE SC

2017

480

NORMALIZING 910 C x 0.5 HR. WQT

"Steel is Fully Killed and Fine Grain Practiced"

Steel making process Basic Oxygen

The fittings was manufactured, sampled, tested and inspected in accordance with the specification, and was found to meet the requirements.

CE = C, Mn = Mn, Mo = Mo, V = V, Ni = Ni, Cu = Cu

MAGNETIC PARTICLE EXAMINATION FOR ALL ONLY

We hereby certify that the product described herein has been manufactured in accordance with the specification and also with the purchaser's requirements and that the test results shown herein are correct.

* 1: "T" symbolized wall thickness in mm * 2: "YS" Yield strength TS = Tensile strength E = Elongation

Quality Assurance Manager

Thai Benkan Co., Ltd.

22/01/14



Benkan Kongsatien



#159
5065

Purchaser: ARABIAN PIPELINE SUPPLY FZCO

INSPECTION CERTIFICATE

TO EN10204 3.1

Thai Benkan Co., Ltd.
58 Soi Wutthavit, Bangkok, Prapachong,
Samutprakan, 10130 Thailand



Purchase Order No.

Job No.

D M Y Certificate No.
10/10/2014 T-2014100056

E-No	Specification for Material Made from Seamless Pipe										Specification for Inspection				Visual Examination		Dimensional Inspection	
MD-352	ASTM A53 420-13 GR B WPL-60/60-13 WPHY 60 NACE MR0175/ISO 15156-2:2009										ASME B16.9-2012 B16.25-2012				Good		Good	
MEG. No.	Product & Size										(11*1)		Quantity					
57B20057	RC WPL6M/PHY52 8 x 3 XXS												10					
		Material Heat No.				Boron (%) Max 0.0005				Hardness Actual Data								
		J2L9105				0.0001				118,124,129								
Specification	Chemical Composition %														Tension Test		Hardness Max 197 HB (0.001)	
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Al	V	Nb	C.F.	YS	TS	E	Impact Test (J) 10 x 10 x 2V AT -46 C	
	X	X	X	X	X	X	X	X	X	X	X	X	X			%		
	100	100	100	1000	1000	100	100	100	100	100	1000	1000	100	Mpa				
Min.	15	100												360	435	32	356	
Max.	20	40	130	30	10	35	40	30	12	60	80	20	40	465	655		357	
	11	25	128	18	5	1	2	11	1	32	0	0	35	378	477	50	357	
PIPELINE SUP																		

NORMALIZING 910 C X 0.5 HR. W.O.T

"Steel is Fully Rolled and Fine Grain Processed"

Steel making process: Basic Oxygen

The Rings were manufactured, sampled, tested and inspected in accordance with the specification, and was found to meet the requirements

C.E. = C-Mn-6-Cr-Mo-V-5-Ni-Cu-15

MAGNETIC PARTICLE EXAMINATION FOR THE ONLY

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

* L: "T" symbolized wall thickness in mm * 2 AS Yield strength TS - Tensile strength E - Elongation

Quality Assurance Manager

Thai Benkan Co., Ltd.

Signature



MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B

DIN 50049/3.1

THAI BENKAN CO., LTD. **BENKAN**

58 Moo 13 Soi Sukasawat 70, Bangkok Phraepadaeng, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TB-347
Customer PO No. : AIP0-230700140
Benkan No. : SOUR SERVICE
JOB No. :

D/M/Y 06/12/2023 Certificate No. : T202309484040 Rev. No. : 0

Specification for Product		ASTM A234/A234M-23a/ASME SA234/SA234M-23 ASME Section II Part A 2023										MFG No.		66H20M190		Seamless or Weld		SEAMLESS		Quantity		150			
Specification for Inspection		NACE MR0175-2021/ISO 15156-2 : 2020 & MR0103-ISO 17945-2015 (R2023)										Product Description		RC WPB 4 x 3 S80											
Starting Material		Heat No.		036053										Pipe or Plate		PIPE									
														Heat treatment		Normalizing 910 C X 60 Minutes Cooled in Still Air									
														Steel making Process		ELECTRIC FURNACE									
% Chemical content		C x100	Si x100	Mn x100	P x1000	S x1000	Cu x100	Ni x100	Cr x100	Mo x100	V x1000	Nb x1000	B x10000	Ti x1000	Al x1000	Ca x10000	CE x100								
Required Maximum		20		106	20	10	40	40	40	15	20	10	5	20			40								
Required Minimum			10	29										20											
Heat Analysis		13	27	107	12	2	3	5	10	2	10	2	4	15	29	15	34								

For each reduction of 0.01 % below the specified carbon maximum an increase of 0.06 % manganese above the specified maximum will be permitted, up to a maximum of 1.65 %
% CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15

Tension test		Gauge length		50 mm.		Hardness test			
TP Direction : Longitudinal						HBW		1 2 3	
Mpa	Req.Min	Req.Max	Actual results			Fitting		135 139 137	
Yield Strength	240	440	295						
Tensile Strength	415		459						
% Elongation	30		49						

Impact test 10 x 5.0 x 2V
TP Direction : Transverse Temp. -29 ° C
MESC SPEC 76/200 Rev February 2023

Supplementary Note :
Steel is vacuum degassed, fully killed and fine grain practiced
The fittings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements.

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

Form No. TZ-62V/0

Quality Assurance Manager
Thai Benkan Co., Ltd.

AKENITSU KONDO
21/12/23

THAI BENKAN PIPELINE SUPPLY FZCO
P.O. BOX 18259
JIBEL ALI - DUBAI
U.A.E.
VERIFIED TRUE COPY

BENKAN
THAI BENKAN CO., LTD.



Purchaser : ARABIAN PIPELINE SUPPLY FZCO

INSPECTION CERTIFICATE

TO EN10204 3.1

E.No. Purchase Order No. Job No.

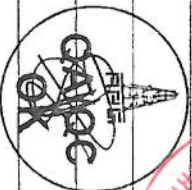
D M Y Certificate No.

MB-545 TR/BW/0608/0093

04/03/2009 T- 2009480254

Thai Benkan Co., Ltd.
58 Soi Watkrutai, Bangkok, Prapadung,
Samutprakan, 10130 Thailand.

No.	Material Heat No.	MFG. No. (Heat Identification No.)	Specification for Material										Specification for Inspection		Visual Examination	Dimensional Inspection			
			Made from Seamless Pipe										ASME B16.9-2007						
			ASTM A234-07/ASME SA234-07 Gr. WPB NACE MR0175-2003																
			Product & Size (T*1)										Quantity	Heat Treatment (Note 1)	Hardness Actual Data	Good			
1	J6K8153	08B20148	RE WPB 3 X 1 1/2 XXS										10	N	HB : 136, 139, 147				
2	60912	04H20114	RE WPB 6 X 5 XXS										5	N	HB : 126, 132, 141				
3	61131	08A20138	RE WPB 6 X 3 XXS										5	N	HB : 140, 148, 162				
4	22156	51M20038	RE WPB 8 X 4 S160/XXS										3	N	HB : 141, 145, 151				
5																			
Specification			Chemical Composition %													Tension Test *2			
			C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	C.E.	YS	TS	E		
			X 100	X 100	X 100	X 1000	X 1000	X 100	X 100	X 100	X 100	X 1000	X 1000	X 1000	X 100	MPa.			%
			Min.																
Max.				10	29										240	415	30		
Material Heat No.			22		106	25	10	40	40	40	15	80	20	41		655			
1	J6K8153	19	20	69	11	9	2	2	5	0	0	0	32	269	469	44			
2	60812	19	18	67	9	1	5	3	3	3	1	1	32	305	461	50			
3	61131	21	20	65	9	2	5	3	4	3	2	1	34	328	480	38			
4	22156	17	27	66	9	1.7	15	5	7	3.4	0	0	31	299	444	30			
5																			



ARABIAN PIPELINE SUPPLY CO. LLC
P.O. BOX 18259
JEBEL ALI - DUBAI
U.A.E.

* VERIFIED TRUE COPY



WILGIFF
MECCANICA S.r.l.



COMPANY
WITH QUALITY SYSTEM
CERTIFIED BY DIN
= ISO 9001/2000 =

Single sample of representative:

VIA DEL SALICICCO, 11/A 21040 SIRMINGO (VA) - ITALY
PHONE +39 0331 271011 fax - FAX +39 0331 908669
http://www.wilgiff.it - E-Mail: info@wilgiff.it

Cert. N° : 1806 Rev. N° : 0
DATA/Date: 03/11/2006
Client: M/s. Arabian Pipeline Supply FZCO
Customer: ARABIAN PIPELINE SUPPLY FZCO.
PO BOX 18259
JEBEL ALI - DUBAI - UAE () -

CERTIFICATO DI ANALISI CHIMICA E PROVE MECCANICHE
CHEMICAL COMPOSITION AND TENSILE PROPERTIES CERTIFICATE
Our job N° 80975
Ordine N° 000345-REV.1
Del 18/07/2008

UN EN 10204 / 3.1
SHEET 1 OF 11
Del 25/07/2008
PO NO.: STCMV-0710-08/MIA-STK

Pos. Item	Q. la Qty	Description	Cod. Cliente Client code number	Colata n° Heat n°	Cod colata Heat code	Tratt. Termico Heat Treatment	Cert. originale Mill. certifi.	Acciaieria Steel plant
1	295	VIAR WELD 36"-1" X 3/4" XS/SCH.80 SAA105N		0730523	30523	NORMALIZED	073083	PAPANI
2	1.000	VIAR WELD 36"-1" X 3/4" XS/SCH.80 SAA105N		1124369	E-A-OC	NORMALIZED	AS04869/2006	LEALI
3	200	VIAR WELD 36"-2 1/2" X 2" STD/SCH.40 SAA105N		176688	E-ASR	NORMALIZED	113322	ACC. VENETE
4	500	VIAR WELD 36"-2 1/2" X 2" XS/SCH.80 SAA105N		1130472	E-AVA	NORMALIZED	AS05227/2007	LEALI
5	382	VIAR WELD 36"-2 1/2" X 2" XS SAA105N		08/73914	E-APU	NORMALIZED	21266	RIVA
6	118	VIAR WELD 36"-2 1/2" X 2" XS SAA105N		07/75768	E-ARW	NORMALIZED	10898	RIVA
6	500	VIAR WELD 36"-4" X 3" STD/SCH.40 SAA105N		1133084	E-ARW	NORMALIZED	10896	RIVA
							AS05322/2008	LEALI

ANALISI CHIMICA / CHEMICAL COMPOSITION

Colata n° Heat n°	C	Mn	Si	P	S	Cr	NI	Mo	Cu	V	Nb/Cb	Sn	Al	Ca	N	Pb	TI	W	Fe	Co	B	Ta	C.E.	PRE	Zr	PCM	Nb+Ta
0730523	0.185	0.950	0.250	0.0110	0.0090	0.130	0.007	0.020	0.170	0.0130	0.0010	0.0090	0.0250				0.0180						0.39				
07/75768	0.195	0.880	0.210	0.0140	0.0050	0.150	0.060	0.010	0.180	0.0180	0.0010	0.0090	0.0280				0.0190						0.39				
08/73914	0.200	0.910	0.230	0.0110	0.0060	0.070	0.050	0.010	0.100	0.0190	0.0010	0.0070	0.0240				0.0180						0.38				
176688	0.173	1.050	0.255	0.0130	0.0020	0.117	0.151	0.030	0.216	0.0010	0.0020	0.0110	0.0360				0.0040						0.40				
1124369	0.190	0.870	0.230	0.0090	0.0080	0.040	0.140	0.030	0.350	0.0010	0.0010	0.0230	0.0200				0.0020						0.38				
1130472	0.200	0.870	0.290	0.0140	0.0080	0.120	0.100	0.020	0.170	0.0010	0.0020	0.0190	0.0270				0.0020						0.39				
1133084	0.180	0.890	0.260	0.0090	0.0150	0.060	0.060	0.010	0.130	0.0010	0.0020	0.0080	0.0230				0.0030						0.35				

CARATTERISTICHE MECCANICHE / MECHANICAL PROPERTIES

Colata n° Heat n°	Res.Rm [N/mm²]	Sn.0.2% [N/mm²]	A1 % & elong.2"	Z % -Str. ref. area	Impact Test - Charpy KV 27 / 20 Joule -50° F / -40° C.	HB	HB	HB	HB	HB	HB	HYDR. TEST	Ratio YS/TS
0730523	495	337	28.0	54.0		155	151						
07/75768	508	314	30.0	54.0		155	153						
08/73914	515	318	27.0	51.0		156	163						
176688	538	385	23.0	64.0		155	151						
1124369	523	361	26.0	51.0		155	158						
1130472	531	339	27.0	51.0		155	153						
1133084	528	367	25.0	51.0		148	151						

NOTE/Notes: ACCORDING TO ASME B31.1/B31.3/B16.25/MSS-SP-97-ED 95

A105-NORMALIZATION AT 890/20°C.FOR 2HRS. FOLLOWED BY CALM AIR COOLING-NACE MR0175-H2S 15156-1/23

ACCORDING TO ASME SECTION II PART A ED. 2004 ADD.2006-VISUAL AND DIMENSIONAL CHECKING: SATISFACTORY

ENTE COLLAUD. / Inspection Agency



A127
128
136



VIA DEL SILENZIO, 11/A - 20145 LONDRATE (VA) - ITALY
PHONE: +39 0331 71811 - FAX: +39 0331 71810
INFO: info@wigor.it e-mail: info@wigor.it

Cert. N° 1293
Data: 07/09/2007

CLIENTE: STEEL TRADING COMPANY L.L.C.
P.O. BOX 5406
DUBAI - UAE

CERTIFICATO DI ANALISI CHIMICA E PROVE MECCANICHE
CHEMICAL COMPOSITION AND TENSILE PROPERTIES CERTIFICATE

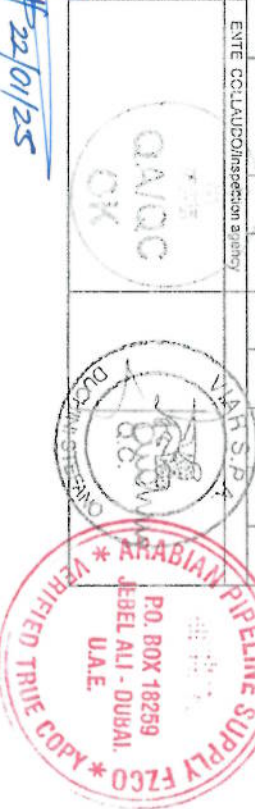
UNI EN 10204 / 3.1
SHEET 1 OF 1
Del: 15/05/2007
DOT N° 1047 del 27/07/2007

Posiz. Item	Qta. Qty.	Descrizione Description	CODE Client	Colonna no. Heat no.	Colonna Heat code	Tratt. Termico Heat Treatment	Rev. N°
1	202	VAR NIP 36"-1.127" X 1" XXS PE SA/AS50 LF2	NACE	449304		NORM. A TEMPERING	0
2	503	VAR NIP 36"-1.127" X 1" SCH. 160 BW SA/AS50 LF2	NACE	449804		NORM. A TEMPERING	0
3	250	VAR WELD 36"-2.127" X 2" XXS SA/AS50 LF2	NACE	0775766		NORM. A TEMPERING	0
4	502	VAR WELD 36"-2.127" X 2" SCH. 160 SA/AS50 LF2	NACE	0775768		NORM. A TEMPERING	0
5	25	VAR WELD 36"-8" X 6" XXS SA/AS50 LF2	NACE	739809		NORM. A TEMPERING	0
6	8	VAR WELD 36"-8" X 6" SCH. 160 SA/AS50 LF2	NACE	739809		NORM. A TEMPERING	0
9	23	VAR WELD 36"-10" X 8" SCH. 130 SA/AS50 LF2	NACE	0337065		NORM. A TEMPERING	0

Colonna n° Heat n°	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	V	Nb/Co	Sr	Al	Ca	N	Ti	Fe	Co	B	Ta	C.E	PRE	J-F	PCN	V+NB	Nb+Ta
0337086	0.190	1.052	0.210	0.0110	0.0100	0.100	0.050	0.010	0.150	0.0220	0.0010	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
0775766	0.195	0.880	0.210	0.0140	0.0050	0.150	0.050	0.010	0.180	0.0180	0.0010	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
449804	0.170	0.942	0.160	0.0080	0.0050	0.080	0.110	0.022	0.200	0.0012	0.0010	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
739909	0.200	0.933	0.205	0.0130	0.0040	0.110	0.018	0.005	0.029	0.0010	0.0002	0.0002	0.0002	0.0010	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002

Colonna n° Heat n°	Cert.Origin.	Acchiata Steel plant	Rm [MPa] [N/mm²]	Ys-0.2% [MPa] [N/mm²]	AP _{0.2} %	Z P _{0.2} %	Charpy max. test KV -50°F/-40°C - 2719 Joulis	Durezza / HB / Hardness Test
0337086	Mill cert.	ACC. RIVA	505	345	27.03	35.0	62	93
0775766	10096	ACC. RIVA	511	317	21.00	69.0	81	87
449804	ACC. VENETE	2004 01381	527	371	28.00	33.0	45	51
739909	PAPANI	07 4101	527	359	31.00	73.6	88	80

NOTE / NOTES
ACCORDING TO ASME 331.1 - B16.25 - B31.3 - B16.1 - MSS-SP-97 ED.95
LF2 NORMALIZATION AT 890±20°C - TEMPERING AT 640°C - THEN CALM AIR COOLING
ACCORDING TO ASME SECTION II PART A ED. 2004 ADD. 2005 - VISUAL AND DIMENSIONAL CHECKING SATISFACTORY
NACE MR 0175 - ISO 15156-1/2/3
TENSILE TEST HAS BEEN CARRIED OUT USING STANDARD ROUND SPECIMENS (AND GAGE LENGTH) AS PER ASTM A370



Handwritten signature and date: 22/01/25

Handwritten number: 1285



Ufficio e stabilimento
Offices & Plant

VIA DEL SALICCIO, 11/A
21040 SUMIRAGO (VA) - ITALY
Phone +39 0331 271011
Fax +39 0331 908669
http://www.viar.it - E-Mail: info@viar.it

COMPANY WITH INTEGRATED
MANAGEMENT
SYSTEM CERTIFIED BY DNV
ISO 9001:2015

Cert. No. DV 212781
Rev: 1
Data/Date: 07/02/2022

Cliente
Customer

ARABIAN PIPELINE SUPPLIES FZCO.
P.O. BOX 18259
JEBEL ALI, DUBAI
UAE - UNITED ARAB EMIRATES

CERTIFICATO DI ANALISI CHIMICA E PROVE MECCANICHE
CHEMICAL COMPOSITION AND TENSILE PROPERTIES CERTIFICATE

Our Job No. IT 211524

Ordine / Order No.
ALPO-21100002/0
Del / Of 07/10/2021

UNI EN 10204 / 3.1
SHEET 11 / 68

Pos. Item	Q.la Qty	Descrizione Description	Classe materiale	Cod.Cliente Client code number	Colata n° Heat number	Cod.colata Heat code	Certificato Mill. certif.	Acciaieria Steel plant	Trait. termico Heat Treatment
11	200	VIAR WELD 48" 2.1/2" X 2" STD/SCH.40 SA/A105N	SA/A105N		21179734	1486		RIVAACCIAIO S.P.A.	Normalizzazione

ANALISI CHIMICA / CHEMICAL COMPOSITION

Colatan° Heat n°	C %	Mn %	Si %	P %	S %	Cr %	Ni %	Mo %	Cu %	V %	Nb/Cb %	Sn %	Al %	Ca %	N %	Pb %	Ti %	W %	Fe %	Co %	B %	Ta %	Zr %	Zn %	Sb %	As %	H %	O %
	0,1600	0,9100	0,1900	0,0130	0,0050	0,1800	0,0600	0,0100	0,1900	0,0020	0,0020	0,0070	0,0210	0	0,0091		0,0060				0						0,00022	0,0018
21/79734																												
	Ceq %	PCM %	PREN %	Xbar ppm	Jfact %	CCfact %	Creq %	Al/N %																				
	0,37																											

CARATTERISTICHE MECCANICHE / MECHANICAL PROPERTIES

Colata n° Heat n°	YS 0.2% [MPa]	YS 0.5% [MPa]	TS [MPa]	EI %	RA %	YR/S %	Prove di resistenza Single Value	Ave [J]	Shear Area [mm]	Lat. Exp. [mm]	Durezza HB	Hydro Test
21/79734	334.00		529.00	37.60	61.80						162 164 166	

ACCORDING TO ASME B31.1/B31.3/B16.25/MSS-SP97-ED.2019
NORMALIZATION AT 920°C. FOLLOWED BY CALM AIR COOLING - NACE MR-0175 / ISO 15156 ED.2015 - NACE MR0103 ED.2016
ACCORDING TO ASME SECTION II PART A ED. 2021 - VISUAL AND DIMENSIONAL CHECKING: SATISFACTORY
MATERIAL FULLY KILLED & FINE GRAINED - STEEL MAKING PROCESS: EAF
FOR PRODUCT CHEMICAL ANALYSIS REPORT SEE "VIAR" CERTIFICATE N° 2038/21/V
ASTM EDITION 2021
MATERIAL PRODUCED BY LOW SULPHUR & PHOSPHORUS REFINING PROCESS
TENSILE SPECIMEN SIZE: Ø12.5mm X 122.7mm X 50.0mm



ENTE COLLAUD. / Inspection Agency



VIA 180/22

#121



WILGOF S.p.A.
COMPANY WITH QUALITY MANAGEMENT
CERTIFIED ISO 9001:2008
= 150 500132008 =

SEDE SOCIALE E AMMINISTRAZIONE:
VIA DEL SALLUSTO, 41/A 20124 SERRAVALLE (PV) - ITALY
TELEFONO: +39 0341 270111 - FAX: +39 0341 270110
E-MAIL: info@wilgof.it - <http://www.wilgof.it>

SEDE OPERATIVA:
VIA DEL SALLUSTO, 41/A 20124 SERRAVALLE (PV) - ITALY
TELEFONO: +39 0341 270111 - FAX: +39 0341 270110
E-MAIL: info@wilgof.it - <http://www.wilgof.it>

Cert. N°	1293	CERTIFICATO DI ANALISI CHIMICA E PROVE MECCANICHE	UNI EN 10204 / 3.1
Clienti	STEEL TRADING COMPANY L.L.C.	CHEMICAL COMPOSITION AND TENSILE PROPERTIES CERTIFICATE	SHEET 1 OF 1
Customer	P.O. BOX 5636 DUBAI - UAE	Ord. N°	VV-0514-07-VIA-ORD
		Del	15/05/2007
		DDT N°	1047
		Del	27/07/2007
		Ord. job N°	70548
		Del	17/05/2007

Post. Item	Qta.	Descrizione	CODE Client	Colonna no. Heat no.	Doc. certifica Heat code	Treat Termico Heat Treatment	Rev. N°
1	200	VAR NIP 35-1.1/2" X 1" XXS PE SAA350 LF2	NACE	443904		NORMAL & TEMPERING	0
2	500	VAR NIP 35-1.1/2" X 1" SCH. 160 BW SAA350 LF2	NACE	443904		NORMAL & TEMPERING	0
3	250	VAR WELD 35-2.1/2" X 2" XXS SAA350 LF2	NACE	0775765		NORMAL & TEMPERING	0
4	500	VAR WELD 35-2.1/2" X 2" SCH. 160 SAA350 LF2	NACE	0775765		NORMAL & TEMPERING	0
5	20	VAR WELD 35-8" X 6" XXS SAA350 LF2	NACE	739929		NORMAL & TEMPERING	0
6	8	VAR WELD 35-8" X 6" SCH. 160 SAA350 LF2	NACE	739929		NORMAL & TEMPERING	0
8	20	VAR WELD 35-10" X 8" SCH. 130 SAA350 LF2	NACE	0337085	37095	NORMAL & TEMPERING	0

ANALISI CHIMICA / CHEMICAL ANALYSIS																										
Colonna n°	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	V	LBODS	Sn	Al	Ca	N	Ti	Fe	Co	B	Ta	C.E.	PRE	-F	PCM	V+NB	Nb+Ta
Heat n°	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
03327086	0.190	1.052	0.210	0.0110	0.0100	0.100	0.050	0.010	0.150	0.0234	0.0010	0.0092	0.0280								0.41					
0775765	0.195	0.882	0.210	0.0140	0.0050	0.150	0.050	0.012	0.180	0.0200	0.0310	0.0010	0.0280			0.0190					0.39					
443904	0.170	0.940	0.160	0.0080	0.0090	0.080	0.10	0.022	0.200	0.0310	0.0310	0.0010	0.0280								0.37					
739929	0.220	0.920	0.205	0.0130	0.0040	0.110	0.018	0.005	0.029	0.0010	0.0020	0.0010	0.0350								0.38					
CARATTERISTICHE MECCANICHE / MECHANICAL PROPERTIES																										

Colonna n°	Cert.Origin.	Acchieta	Rm	Ys-0.2%	A100	Z (%)	Charpy impact test KV-50FL46°C - 27/19 Joule	Hardness Test
Heat n°	Heat n°	Steel plant	[MPa] [N/mm²]	[MPa] [N/mm²]	440	77.00	55.0	156
0337086	443904	ACC. RIVA	505	345		51.00	66.0	165
0775765	10595	ACC. RIVA	511	317		53.0	66.0	165
443904	ACC. VENETE	2504 01391	527	371		53.0	66.0	165
739929	PAPANI	07 4101	527	369		73.0	66.0	165

NOTE / NOTES
ACCORDING TO ASME B31.1 - B31.3 - B31.5 - MSS-SP-97 ED.95
LFP NORMALIZATION AT 800/920°C - TEMPERING AT 640°C - THEN CALM AIR COOLING
ACCORDING TO ASME SECTION II PART A ED. 2004 ADD. 2005 - VISUAL AND DIMENSIONAL CHECKING SATISFACTORY
NACE MR 0175 - ISO 15156-1/2/3
TENSILE TEST HAS BEEN CARRIED OUT USING STANDARD ROUND SPECIMENS (AND GAGE LENGTH) AS PER ASTM A370



Handwritten signature and date: 22/01/25



WILGOT S.p.A.
COMPANY WITH QUALITY MANAGEMENT
SYSTEM CERTIFIED BY UNI EN ISO 9001:2008

Steel Supply of components:
Pipes and fittings - Flanges and valves
http://www.wilgot.it e-mail: info@wilgot.it

Cert. N° 1235
Date: 27/07/2007
Client: STEEL TRADING COMPANY L.L.C.
P.O. BOX 5656
DUBAI - UAE

**CERTIFICATO DI ANALISI CHIMICA E PROVE MECCANICHE
CHEMICAL COMPOSITION AND TENSILE PROPERTIES CERTIFICATE**

UNI EN 10204 / 3.1

SHEET 1 OF 1

Del: 17/05/2007

Ord. N° VV-0514-07-VIA-OR3
Del: 15/05/2007
DOT N° 1047 del: 27/07/2007

Posiz. Item	Qty.	Description	Code Client	Colata no. Heat no.	Ord. celata Heat code	Trat. termico Heat Treatment	Rev. N°
1	200	VAR NIP 35"-1 1/2" X 1" XXS PE SAA35C LF2	NACE	448904		WARM & TENSILING	0
2	500	VAR NIP 35"-1 1/2" X 1" SCH. 160 BW SAA35C LF2	NACE	448904		WARM & TENSILING	0
3	250	VAR WELD 35"-2 1/4" X 2" XXS SAA350 LF2	NACE	0775768		WARM & TENSILING	0
4	500	VAR WELD 35"-2 1/2" X 2" SCH. 160 SAA35C LF2	NACE	0775768		WARM & TENSILING	0
5	20	VAR WELD 35"-8" X 8" XXS SAA350 LF2	NACE	739904		WARM & TENSILING	0
6	8	VAR WELD 35"-8" X 8" SCH. 160 SAA350 LF2	NACE	739904		WARM & TENSILING	0
8	20	VAR WELD 35"-7" X 8" SCH. 160 SAA350 LF2	NACE	0327085	37085	WARM & TENSILING	0

ANALISI CHIMICA / CHEMICAL ANALYSIS

Colata n° Heat n°	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	V	Nb+Cb	Sn	Al	Ca	N	Ti	Fe	Co	B	Ta	C.E.	PRE	-F	PCM	V+Nb	Nb+Ta
0327086	0.190	1.050	0.210	0.010	0.010	0.100	0.050	0.010	0.150	0.020											0.41					
0775768	0.185	0.980	0.210	0.010	0.0050	0.150	0.050	0.010	0.180	0.0010						0.0190					0.39					
448904	0.170	0.940	0.160	0.0080	0.0590	0.380	0.10	0.022	0.200	0.0010	0.0010										0.37					
739904	0.220	0.930	0.205	0.010	0.0740	0.110	0.018	0.005	0.028	0.0010	0.0020	0.0020	0.0380								0.38					

CARATTERISTICHE MECCANICHE / MECHANICAL PROPERTIES

Colata n° Heat n°	Cert.Origin.	Acceiaia	Rm [MPa] [N/mm²]	Ys-0.2% [MPa] [N/mm²]	Alfa	Z [Pa]	Charpy impact test KV 50°F/45°C - 27/19 Joule	Durezza / HB / Hardness Test:
0327086	10886	ACC. RIVA	505	345	27.00	55.0	62	57
0775768	10886	ACC. RIVA	511	317	31.00	66.0	81	35
448904	ACC. VENETE 2804 01381		527	371	28.00	53.0	45	52
739904	PAPANI 07 401		527	360	31.00	73.0	88	77

Note / Notes

ACCORDING TO ASME B31.1 - B16.25 - B31.3 - B16.11 - MSS-SP-97 - ED.95
L72 NORMALIZATION AT 890°C - TEMPERING AT 640°C - THEN CALM AIR COOLING
ACCORDING TO ASME SECTION II PART A ED. 2004 ADD. 2005 - VISUAL AND DIMENSIONAL CHECKING SATISFACTORY
NACE MR 0175 - ISO 15156-1/2/3
TENSILE TEST HAS BEEN CARRIED OUT USING STANDARD ROUND SPECIMENS (AND GAGE LENGTH) AS PER ASTM A370

ENTE COLLAUDOPROSPETTIVAZIONE

QA/QC
CK



Handwritten signature and initials in blue ink.

MATERIAL INSPECTION CERTIFICATE

TO EN10204 3.1/ISO 10474 3.1B
DIN 50049/3.1

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TB-347
Benkan No. : SOUR SERVICE 3

Customer PO No. : AIPO-230700140
JOB No. :

D/M/Y 01/11/2023 Certificate No. : T202309483408 Rev. No. : 0

THAI BENKAN CO., LTD. **BENKAN**
58 Moo 13 Soi Sukawat 70, Bangkru Phrapadeng, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

Specification for Product		ASTM A234/A234M-23a/ASME SA234/SA234M-23 ASME Section II Part A 2023										MFG No.		66H00M28-3		Seamless or Weld		SEAMLESS		Quantity		55	
Specification for Inspection		NACE MR0175-2021/ISO 15156-2 : 2020 & MR0103:ISO 17945-2015 (R2023)										Product Description		90EL WPB 10 S40									
Starting Material		Heat No.		031189										Pipe or Plate		PIPE		Steel making Process		ELECTRIC FURNACE			
% Chemical content		C	SI	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	B	TI	Al	Ca	CE						
Required Maximum		x100	x100	x100	x1000	x1000	x100	x100	x100	x100	x1000	x1000	x10000	x1000	x1000	x10000	x100						
Required Minimum		20		106	20	10	40	40	40	15	20	10	5	20			40						
Heat Analysis		14	24	109	3	2	3	1	9	1	4	2	3	15	22	11	35						

For each reduction of 0.01 % below the specified carbon maximum an increase of 0.06 % manganese above the specified maximum will be permitted up to a maximum of 1.65 %
% CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15

Tension test		Gauge length		50 mm.		Hardness test		HBW			1 2 3										
TP Direction : Longitudinal								Req. Max.			197										
MPa		Req. Min.	Req. Max.	Actual results		Fitting		137			139			136							
Yield Strength		240	440	329																GOOD	
Tensile Strength		415		468																	
% Elongation		30		45																	

Impact test : 10 x 7.5 x 2V
Temp. -29 ° C
MESC SPEC 76/200 Rev February 2023
Steel is vacuum degassed, fully killed and fine grain practice"

Supplementary Note :
The fittings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements.

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

Quality Assurance Manager
Thai Benkan Co., Ltd.

Form No. TZ-62V/0

#27

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B
DIN 50049/3.1

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TB-347
Customer PO No. : AIPO-23070014/0
Benkan No. : SOUR SERVICE
JOB No. :

D/M/Y 01/11/2023 Certificate No. : T202309483402 Rev. No. : 0

THAI BENKAN CO., LTD. **BENKAN**
58 Moo 13 Soi Sukswai 70, Bangkru Pirapadaeng, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

Specification for Product		ASTM A234/A234M-23a/ASME SA234/SA234M-23, ASME Section II Part A 2023										MFG No.	66H00M224		Seamless or Weld	SEAMLESS	Quantity	30	
Specification for Inspection		NACE MR0175-2021/ISO 15156-2 : 2020 & MR0103-ISO 17945-2015 (R2023)										Product Description		90EL WPB 8 S60					
		ASME B16.9-2018/B16.25-2017																	
Starting Material	Heat No.	532595										Pipe or Plate	PIPE		Steel making Process	ELECTRIC FURNACE			
												Heat treatment		Normalizing 910 C X 60 Minutes Cooled in Still Air					
% Chemical content	C x100	SI x100	Mn x100	P x1000	S x1000	Cu x100	Ni x100	Cr x100	Mo x100	V x1000	Nb x1000	B x10000	Ti x1000	Al x1000	Ca x10000	CE x100			
Required Maximum	20		106	20	10	40	40	40	15	20	10	5	20			40			
Required Minimum			10	29										20					
Heat Analysis	13	22	102	10	2	3	2	8	3	<3	<2	<3	14	30	12	33			
For each reduction of 0.01 % below the specified carbon maximum an increase of 0.06 % manganese above the specified maximum will be permitted up to a maximum of 1.65 % % CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15																			
Tension test	Gauge length	50 mm.		Hardness test															
TP Direction : Longitudinal		HBW 1 2 3 Req. Max. 197																	
MPa	Req. Min.	Req. Max.	Actual results	Fitting 127 130 129															
Yield Strength	240	440	272																
Tensile Strength	415		434																
% Elongation	30		49																
Impact test		10 x 10.0 x 2V		Supplementary Note :															
TP Direction : Transverse		Temp.	-29 ° C	MESC SPEC 76/200 Rev. February 2023															
	J	1	2	3	AVE														
	Base	237	233	222	237														
Steel is vacuum degassed, fully killed and fine grain practice. The fittings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements.																			

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

Akemiitsu Kondo

Quality Assurance Manager
Thai Benkan Co., Ltd.



Form No. TZ-62/V0

Blot 128/23

425

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B
DIN 50049/3.1

THAI BENKAN CO.,LTD. **BENKAN®**

58 Moo 13 Soi Sukswat 70, Bangkru Phrapadeeng, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TB-347 Customer PO No. : AIPO-23070014/0
Benkan No. : SOUR SERVICE JOB No. :

D/M/Y 01/11/2023 Certificate No. : T202309483436 Rev. No. : 0

Specification for Product		ASTM A234/A234M-23a/ASME SA234/SA234M-23, ASME Section II Part A 2023										MFG No.		66H00W264		Seamless or Weld		SEAMLESS		Quantity		10	
Specification for Inspection		NACE MR0175-2021/ISO 15156-2 : 2020 & MR0103-ISO 17945-2015 (R2023)										Product Description		45EL WPB 6 S120									
Starting Material		Heat No.		526429		Pipe or Plate		PIPE		Steel making Process		ELECTRIC FURNACE											
% Chemical content		C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	B	Ti	Al	Ca	CE						
Required Maximum		x100	x100	x100	x1000	x1000	x100	x100	x100	x100	x1000	x1000	x10000	x1000	x1000	x10000	x100						
Required Minimum		20		106	20	10	40	40	40	15	20	10	5	20			40						
Heat Analysis		13	25	110	15	2	4	3	7	1	10	10	5	17	24	11	34						

For each reduction of 0.01 % below the specified carbon maximum an increase of 0.06 % manganese above the specified maximum will be permitted up to a maximum of 1.65 %
% CE = C + Mn/6 + (Cr + Mo + V)/5 - (Ni - Cu)/15

Tension test		Gauge length		50 mm.		Hardness test		HBW		1		2		3							
TP Direction : Longitudinal								Req. Max.		197											
MPa		Req.Min.	Req.Max	Actual results		Fitting		136		141		138									
Yield Strength		240	440	317																	
Tensile Strength		415		479																	
% Elongation		30		48																	

Impact test 10 x 10.0 x 2V
TP Direction : Transverse Temp. -28 ° C
MESC SPEC 76/200 Rev February 2023
Steel is vacuum degassed, fully killed and fine grain practice
The fittings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements.

Supplementary Note :

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

PO BOX 18259
JEBEL ALI - DUBAI.
U.A.E.
VERIFIED TRUE COPY

AKENTSU KONDO
Quality Assurance Manager
Thai Benkan Co.,Ltd.

Form No. TZ-62X/0

215

INSPECTION CERTIFICATE

TO EN10204 3.1/ISO 10474 3.1B

Thai Bank Co., Ltd.
58 Soi Wattana, Bangpra, Prapatsong
Samprakan, 10130 Thailand.

E-No.	Purchase Order No.	Job No.
-------	--------------------	---------

D M Y Certificate No.

MD-976 STCMV-1027-15/BKL-STK

21/05/2016 T-2016480480

Base Material Heat No.	MFG. No.	Specification for Material Made from Seamless Pipe										Specification for Inspection		Visual Examination	Dimensional Inspector
		ASTM A234-15/ASME SA234 Gr WPB Section II part A 2015 NACE MR0175RCO 15-SC-2, 2009 & MR0103-2012										ASME B16.9-2012 B16.25-2012			
		Product & Size		TI (%) (T ₁ /T ₂)		Quantity		Heat Treatment (NOTE 1)		Hardness Actual Data		Boron (%)			
1	J3L6364	58N00034	90 EL WPB 1/2 XXS	0.000		25		A		HB : 128,131,135	0.0001				
2	J3LA015	58N00037	90 EL WPB 1 XXS	0.000		88/300		A		HB : 136,140,147	0.0001				
3	J4KA887	58N00035	90 EL WPB 3/4 S40	0.000		1/1,000		A		HB : 118,123,125	0.0001				
4	J4KC597	58N00032	45 EL WPB 5 S160	0.000		10		A		HB : 166,167,170	0.0001				
5	J5KA9A93	58N00029	45 EL WPB 4 S160	0.000		15		A		HB : 157,164,166	0.0001				

Specification	Chemical Composition %										Tension Test *2		E		
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	C.E.		YS	TS
Min.	X 100	X 100	X 100	X 1000	X 1000	X 100	X 100	X 100	X 100	X 1000	X 1000	X 100	MPa.		
Max.		10	29										240	415	30

Base Material Heat No.	20	106	20	10	40	40	40	15	80	20	40		655		
1	J3L6364	19	18	85	11	3	1	3	5	1	0	0	282	445	45
2	J3LA015	18	18	82	14	5	2	2	6	2	0	0	34	298	41
3	J4KA887	18	18	77	13	6	1	2	4	1	0	0	32	278	43
4	J4KC597	20	23	84	14	5	1	2	4	11	0	0	37	287	44
5	J5KA9A93	19	21	83	18	7	6	2	4	10	0	0	36	258	44

ARABIAN PIPELINE

P.O. BOX 18
JEBEL ALI - U.A.E.

* VERIFIED TRUE

Q512C

100%

100%

(Pine 1) A hot formed wall with initial temperature between 850–C/950–C, Air cooling. Normalizing 910–C X 0.5 HR, Air cooling. Specification of Boron composition is max. 0.0035 wt.-%. The forgings were manufactured, examined, tested and associated in accordance with the specifications. Steel is vacuum melt-refined by the C-1/Mg-0.04(C+Mn+V)-5-(Al+Cu)-15 C-1. Γ symbolized wall thickness in mm. σ = Tensile strength. $\sigma_{0.2}$ = Yield strength. $\sigma_{0.01}$ = Elongation.

Rungtapa-Kamphiran

Quality Assurance Manager

BMW 660/16

and also with the purchaser's requirements and that the test results shown herein are correct.

For WPCB carbon reduction of 0.01 % below the specified carbon maximum increase of 0.46 % manganese above the specified maximum will be permitted up to a maximum of 1.65 %.



71

TO EN10204 3.1/ISO 10474 3.1B

BENKAY

DIN 50049/3.1

Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7 FACSIMILE: 66 (0) 463 6238 66 (0) 463 8241

D/M/Y 27/12/2022 Certificate No.: T202209482620 Rev. No.: 0

Specification for Product		ASTM A234/A234M-19/ASME SA234/SA234M-21 ASME Section II Part A 2021														MFG No.		D/M/Y 27/12/2022		Certificate No. : T202209482620		Rev. No. : 0	
Specification for Inspection		NACE MR0175/ISO 15156-2 : 2015 & MR0103-2015														65G00M092		Seamless or Weld		SEAMLESS			
		ASME B16.9-2018,B16.25-2017														Product Description		90EL WPB 4 S80		Quantity		200	
Starting Material		Heat No.		024131		Pipe or Plate		PIPE		Steel making Process		ELECTRIC FURNACE											
% Chemical content		C	SI	Mn	P	S	Cu	NI	Cr	Mo	V	Nb	B	TI	Al	CE							
Required Maximum		x100	x100	x100	x1000	x1000	x100	x100	x100	x1000	x1000	x1000	x10000	x1000	x1000	x100							
Required Minimum		20		106	20	10	40	40	40	15	30	10	5			40							
Heat Analysis		15	22	77	10	3	8	3	5	2	10	1	3	14	27	30							
For each reduction of 0.01 % below the specified carbon maximum an increase of 0.06 % manganese above the specified maximum will be permitted up to a maximum of 1.65 %																							
% CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15																							
Tension test		Gauge length		50 mm.		Hardness test		HBW		1		2		3									
TP Direction : Longitudinal								Req. Max. 197															
MPa		Req. Min.		Actual results		Fitting		124		139		129											
Yield Strength		240		440		288																	
Tensile Strength		415				455																	
% Elongation		30				46																	
Supplementary Note : Steel is vacuum degassed, fully killed and fine grain practice"																							
The filings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements.																							
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.																							
P.O. BOX 18259 JEDDAH DUBAI U.A.E. ARABIAN PIPELINE SUPPLY FCZCO VERIFIED TRUE COPY																							
QR Code																							
Form No. 17-62/V0																							
Quality Assurance Manager Thai Benkan Co., Ltd.																							

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TA-799
Benkan No. :
Customer PO No. : APO-211000070
JOB No. :

MATERIAL INSPECTION CERTIFICATE
To EN10204 3.1/ISO 10474 3.1B
DIN 50049/3.1

THAI BENKAN CO., LTD.
58 Moo 13 Soi Sukswat 70, Bangkru Phrapadaeng, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7 FACSIMILE: 66 (0) 463 6238, 66 (0) 463 8241
Rev. No. : 0

Specification for Product	ASTM A234/A234M-19/ASME SA234/SA234M-21, ASME Section II part A 2021.		MPG No.	64MD0M201-1		Seamless or Weld	SEAMLESS	Quantity	21						
Specification for Inspection	ASME B16.9-2018, B16.25-2017		Product Description	90EL WPB 3/4 XXS											
Starting Material	Heat No.	J5KC179	Pipe or Plate	PIPE		Steel making Process	BASIC OXYGEN								
% Chemical content	C x100	SI x100	Mn x100	P x1000	S x1000	Cu x100	NI x100	Cr x100	Mo x100	V x1000	Nb x1000	B x10000	TI x1000	Al x1000	CE x100
Required Maximum	20		106	20	10	40	40	15	30	10	5				40
Required Minimum		10	29											20	
Heat Analysis	12	29	124	13	1	2	4	12	1	0	0	0	10	33	36

For each reduction of 0.01 % below the specified carbon maximum an increase of 0.06 % manganese above the specified maximum will be permitted up to a maximum of 1.65 %
% CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15

Tension test	Gauge length	50 mm.	Hardness test	Haw			1	2	3	Req. Max.	197
TP Direction : Longitudinal											
MPa	Req.Min.	Req.Max.	Actual results								
Yield Strength	240	440	276								
Tensile Strength	415		438								
% Elongation	30		47								

Supplementary Note :
"Steel is vacuum degassed, fully killed and fine grain practiced"
The fittings was manufacture sampled, tested, and inspected in accordance with the specification and was found to meet the requirements.

Form No. TZ-62/00

Quality Assurance Manager
Thai Benkan Co., Ltd.

AKENTISU KONDO

22/01/25

Form No. TZ-62/00

THAI BENKAN CO., LTD.

ARABIAN PIPELINE SUPPLY FZCO

P.O. BOX 18269
JEBEL ALI - DUBAI
U.A.E.

VERIFIED TRUE COPY

MATERIAL INSPECTION CERTIFICATE

TO EN10204 3.1/ISO 10474 3.1

DIN 50049/3.1

THAI BENKAN CO., LTD.

BENKAN

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TA-739
Customer PO No. : AIP0-211000070
JOB No. :

D/M/Y 19/03/2022 Certificate No. : T202209480446 Rev. No. : 0

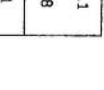
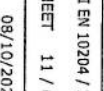
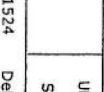
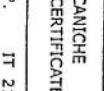
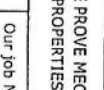
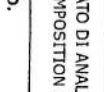
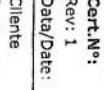
58 Moo 13 Soi Sukswat 70, Bangkru Phrapadaeng, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7 FACSIMILE: 66 (0) 463 6238, 66 (0) 463 8241

Specification for Product		ASTM A234/A234M-19/ASME SA234/SA234M-21 ASME Section II part A 2021.										MFG No.		64M00N201		Seamless or Weld		SEAMLESS							
Specification for Inspection		NACE MR0175/ISO 15156-2 : 2015 & MR0103-2015 ASME B16.9-2018.B16.25-2017										Product Description		90EL WPB 3/4 XXS		Quantity		29							
Starting Material		Heat No.		J5KC179										Pipe or Plate		PIPE		Steel making Process		BASIC OXYGEN					
% Chemical content		C x100	SI x100	Mn x100	P x1000	S x1000	Cu x100	NI x100	Cr x100	Mo x100	V x1000	Nb x1000	B x10000	TI x1000	Al x1000	CE x100									
Required Maximum		20		106	20	10	40	40	40	15	30	10	5			40									
Required Minimum				10	29										20										
Heat Analysis		12	29	124	13	1	2	4	12	1	0	0	0	10	33	36									
For each reduction of 0.01 % below the specified carbon maximum an increase of 0.05 % manganese above the specified maximum will be permitted up to a maximum of 1.55 % $\% CE = C + Mn/6 + Cr + Mo + V/5 + Ni + Cu/75$																									
Tension test		Gauge length		50 mm.																					
TP Direction : Longitudinal																									
MPa		Req.Min.	Req.Max.	Actual results																					
Yield Strength		240	440	276																					
Tensile Strength		415		438																					
% Elongation		30		47																					
Hardness test																									
		HBW			1			2			3														
					Req. Max.			197			126														
		Fitting			124			129			126														
Supplementary Note :		*Steel is vacuum degassed, fully killed and fine grain practice* The fittings was manufacture, sampled tested and inspected in accordance with the specification and was found to meet the requirements.																							
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.		Grain Size ASTM E112 Visual Examination Dimensional Inspection GOOD																							



Quality Assurance Manager
Thai Benkan Co., Ltd.

[Handwritten signature]



Ufficio e stabilimento
Offices & Plant

VIA DEL SALICCIO, 11/A
21040 SUMIRAGO (VA) - ITALY
Phone +39 0331 271011
Fax +39 0331 908669
http://www.viar.it - E-Mail: info@viar.it

COMPANY WITH INTEGRATED
MANAGEMENT
SYSTEM CERTIFIED BY DNV
ISO 9001:2015

Cert.N°: DV 212781
Rev: 1
Data/Date: 07/02/2022

CERTIFICATO DI ANALISI CHIMICA E PROVE MECCANICHE
CHEMICAL COMPOSITION AND TENSILE PROPERTIES CERTIFICATE

UNI EN 10204 / 3.1
SHEET 11 / 68

Cliente
Customer

ARABIAN PIPELINE SUPPLIES FZCO.
P.O. BOX 18259
JEBEL ALI, DUBAI
UAE - UNITED ARAB EMIRATES

Our job N° IT 211524 Del 08/10/2021

Ordine / Order N°
ATPO-21100002/0
Del / Of 07/10/2021

Pos. Item	Q.tà Qty	Descrizione Description	Classe materiale	Cod.Cliente Client code number	Colata n° Heat number	Cod.colata Heat code	Cert originale Mill certif.	Acciaieria Steel plant	Trat.Termico Heat Treatment
11	200	VIAR WELD 48"-2.1/2" X 2" STD/SCH 40 SA/A105N	SA/A105N		21/79734	1486		RIVAACCAIO S.P.A.	Normalization

ANALISI CHIMICA / CHEMICAL COMPOSITION

Colatan° Heat n°	C %	Mn %	Si %	P %	S %	Cr %	Ni %	Mo %	Cu %	V %	Nb/Cb %	Sn %	Al %	Ca %	N %	Pb %	Ti %	W %	Fe %	Co %	B %	Ta %	Zr %	Zn %	Sb %	As %	H %	O %
21/79734	0,1600	0,9100	0,1900	0,0130	0,0050	0,1800	0,0600	0,0100	0,1900	0,0020	0,0020	0,0070	0,0210	0	0,0091		0,0060					0					0,00022	0,0018
Ceq %	PCM %	PREN %	Xbar ppm	Jfact %	Cfact %	Creq %	AI/N																					
0,37																												

CARATTERISTICHE MECCANICHE / MECHANICAL PROPERTIES

Colata n° Heat n°	YS,0.2% [MPa]	YS,0.5% [MPa]	TS [MPa]	EI %	RA %	YS/TS %	Prove di resistenza Single Value	Ave [J]	Shear Area [mm]	LatExp. [mm]	Durezza HB	Hydro Test
21/79734	334.00		529.00	37.60	61.80						162 164 166	

ACCORDING TO ASME B31.1/B31.3/B16.25/MSS-SP97-ED.2019
NORMALIZATION AT 920°C. FOLLOWED BY CALM AIR COOLING - NACE MR-0175 / ISO 15156 ED.2015 - NACE MR0103 ED.2016
ACCORDING TO ASME SECTION II PART A ED. 2021 - VISUAL AND DIMENSIONAL CHECKING: SATISFACTORY
MATERIAL FULLY KILLED & FINE GRAINED - STEEL MAKING PROCESS: EAF
FOR PRODUCT CHEMICAL ANALYSIS REPORT SEE "VIAR" CERTIFICATE N° 2038/21/V
ASTM EDITION 2021
MATERIAL PRODUCED BY LOW SULPHUR & PHOSPHOROUS REFINING PROCESS
TENSILE SPECIMEN SIZE: Ø12.5mm X 122.7mm2 X 50.0mm



ENTE COLLAUD. / Inspection Agency

22/01/22



VIA 180/22

#55

49

TK corporation

INSPECTION CERTIFICATE

(EN10204:2004 3.1 / ISO 10474:1991 3.1B)

117-12, Noksan Saneop Daero,
Gangseo-gu, Busan,
46752 Korea
Tel : 82-51-870-6668
Fax : 82-51-831-6886

Customer	STEEL TRADING COMPANY L.L.C		Certificate No.	20160403843	Date	2016/04/18
P.O No.	STC-VV-1128-15-TK-STK		Project Name	STOCK		
Job No.						
Specification for Material	ASTM/ASME A/SA420 WPL6(2015Ed.)NACE MR0175/ISO 15156		Starting Material	FORGED STEEL		
Specification for Inspection	ASME B16.9-2012		Dimension and Visual Inspection	GOOD		
Heat Code No [HCN]	No.	Descriptions	Q'ty (Pcs)	Heat Treatment		
CY969	0362	REDUCING TEE XX-S B.W 2" x 1"	100	N: 910°C		

CHEMICAL COMPOSITION(%)

Heat Code No [HCN]	Spec.	C	SI	Mn	P	S	NI	Cr	Mo	Cu	V	Cb	B	C.E	Raw Heat No
	Max.	0.20	0.40	1.35	0.020	0.010	0.40	0.30	0.12	0.40	0.080	0.020	0.0005	0.40	
	Min.	-	0.15	0.50	-	-	-	-	-	-	-	-	-	-	
CY969	L	0.181	0.206	1.045	0.00780	0.0021	0.056	0.072	0.021	0.059	0.001	0.00210	0.0002	0.382	S18471
	P	0.17	0.17	0.97	0.008	0.004	0.06	0.09	0.03	0.072	0.016	0.00250	0.0001	0.388	

MECHANICAL PROPERTIES

Heat Code No [HCN]	Spec	Y.S	T.S	E.L	Hardness Test	* Impact Test(J)			
		ksi		(%)	HB	Temp.(°C)	Size(2mm-v)		
	Max.	-	85	-	237	-50			
	Min.	35	60	30	-	Act.	Ave.		
CY969	P	42.2	69.6	30.5	138 140 137	37.7	56.1	61.7	51.8

REVISED ISSUE
2016.12.08

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order. Any forgery or falsification of this certificate will be subjected to the full extent of the criminal prosecution. Please contact us by the below Fax or E-mail if you have any inquiries on this certificate.

Fax: +82 831 6886 / E-mail: tkqaqc@tkbend.co.kr

Remark: *V+Cb+Ti: Max.0.10% ACT: 0.0031

*V+Cb+B: Max.0.10% ACT: 0.0033

*Fully Killed & fine grain practice

*Refining process & Vacuum degassed

*Forming method: Hot formed

Size Min Ave
CY969 10X10X55mm 14.0 21.0



Legend:
HB: Brinell
ST: Solution Treatment
SR: Stress Relieving

N: Normalized
T: Tempered
A: Annealed
Q: Quenched
Y.S: 0.2% Offset Method
(G): Hot-Dip Galvanized Coating

AC: Air Cool
OC: Oil Cool
WC: Water Quenched
WC: Water Cool
B: Base
W: Weld
H: Heat
L: Lead
P: Product

Reviewed by:

Witnessed by:

Approved by:

W. S. Kim
Head of Quality Control Dept



Tk 106/16

22/01/24

MATERIAL INSPECTION CERTIFICATE

TO EN10204 3.1/ISO 10474 3.1B

DIN 50049/3.1

THAI BENKAN CO.,LTD. **BENKAN.**

58 Moo 13 Soi Sukswat 70, Bangkru Phrapadaeng, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7 FACSIMILE: 66 (0) 463 6238, 66 (0) 463 8241

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TA-799 Customer PO No. : AIP0-21100007/0
Benkan No. : JOB No. :

D/M/Y 20/06/2022 Certificate No. : T202209481058 Rev. No. : 0

Specification for Product		ASTM A234/A234M-19/ASME SA234/SA234M-21 ASME Section II part A 2021.										Mfg No.		64M10M152		Seamless or Weld		SEAMLESS				
Specification for Inspection		ASME B16.3-2018, B16.25-2017										Product Description		TWPB 6 X 3 S80		Quantity		6				
Starting Material		Heat No.		1102095										Pipe or Plate		PIPE		Steel making Process		BASIC OXYGEN		
% Chemical content		C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	B	Ti	Al	CE						
Required Maximum		x100	x100	x100	x1000	x1000	x100	x100	x100	x100	x1000	x1000	x10000	x1000	x1000	x100						
Required Minimum		20		106	20	10	40	40	40	15	30	10	5			40						
Heat Analysis		16	25	104	13	6	1	1	1	0	0	0	0	0	24	34						
For each reduction of 0.01 % below the specified carbon maximum an increase of 0.06 % manganese above the specified maximum will be permitted up to a maximum of 1.95 % % CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15																						
Tension test		Gauge length		50 mm.																		
TP Direction : Longitudinal																						
Mpa		Req. Min.	Req. Max.	Actual results																		
Yield Strength		240	440	277																		
Tensile Strength		415		447																		
% Elongation		30		40																		
Hardness test																						
HBW		2			2			3														
Fitting		139			139			139														
Supplementary Note :		"Steel is vacuum degassed, fully killed and fine grain practice" The fittings was manufacture, sampled, tested and inspected in accordance with the specification and was found to meet the requirements. 100% MT performed for all accessible surface in acc ASME Sec VIII, D1 Appendix 8 : GOOD																				
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.		Form No. TZ-62V/0 Quality Assurance Manager Thal Benkan Co., Ltd.																				



Akemiatsu Kondo

THAI BENKAN CO., LTD.

418

BENKAN
THAI BENKAN CO., LTD.

BENKAN

22F
22P

58 Moo 13 Soi Suksawat 70, Bangkru Phrapadaeng, Samutprakarn 10130. THAILAND
Telephone : 65 (0) 2463 0074 65 (0) 463 6735-7

Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

D/M/Y 19/02/2024 Certificate No.: T202431480531 Rev. No.: 0

Rev. No.: 0

SEAMLESS	Pipe/Plate	PIPE
	Quantity	10



7

injection	CON
-----------	-----

Inspection	Good
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
31	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	
51	
52	
53	
54	
55	
56	
57	
58	
59	
60	
61	
62	
63	
64	
65	
66	
67	
68	
69	
70	
71	
72	
73	
74	
75	
76	
77	
78	
79	
80	
81	
82	
83	
84	
85	
86	
87	
88	
89	
90	
91	
92	
93	
94	
95	
96	
97	
98	
99	
100	

oped herein has been

s and that the test

7

—The Road—

Insurance Manager

Bank of China Co., Ltd.



A. Kondra

Quality Assurance Manager
Thai Benkan Co.,Ltd.

Blind 436/22

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TB-347
Benkan No. : SOUR SERVICE

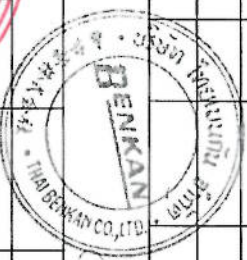
MATERIAL INSPECTION CERTIFICATE
To EN10204 3.1/ISO 10474 3.1B
DIN 50049/3.1

THAI BENKAN CO.,LTD.
58 Moo 13 Soi Sukswat 70, Bancku Phraoadeano, Samutprakam 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

Customer PO No. : AIP0-230700140
JOB No. :
D/M/Y 01/11/2023 Certificate No. : T202311483540 Rev. No. : 0

Specification for Product		ASTM A420/A420M-22/ASME SA420/SA420M-23, ASME Section II Part A 2023										MFG No.		66H21M089		Seamless or Weld		SEAMLESS		Pipe/Plate		PIPE																					
Specification for Inspection		ASME B16.5-2018/B16.25-2017										Product Description		RC WPL6 6 x 4 S120										Quantity		10																	
Starting Material		Heat No.		025718																		Steel Making Process		ELECTRIC FURNACE																			
Heat treatment		Normalizing 910 C X 60 Minutes Cooled in Still Air																																									
% Chemical content		C x100		SI x100		Mn x100		P x1000		S x1000		Cu x100		NI x100		Cr x100		Mo x100		V x1000		Nb x1000		TI x1000		B x1000		Al x1000		Ca x10000		CE x100											
Required Maximum		20		40		135		20		10		40		40		30		12		20		10		20		5				40													
Required Minimum				15		50																						20															
Heat Analysis		13		25		107		8		2		6		3		10		2		10		1		15		5		31		9		34											
Tension test																																											
Gauge length		50 mm.		Impact test		10 x 10.0 x2V		Hardness test		HBW		1		2		3																											
TP Direction : Longitudinal		TP Direction : Longitudinal		Temp. -50 °C		Joule 1		2		3		AVE		Fitting		143		148		145																							
MPa		Req.Min.		Req.Max		Actual results																																					
Yield Strength		240				310		Base		150		123		44		106																											
Tensile Strength		415		655		482																																					
% Elongation		30				52																																					
Supplementary Note : MESC SPEC 76/201 Rev. February 2023 Steel is vacuum degassed, fully killed and fine grain practice The fillings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements. Grain size determination as per ASTM E112-13 : 7 or finer.																																											
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.																																											
Visual Examination GOOD																																											
Dimensional Inspection GOOD																																											

Akentsu Kondo
Quality Assurance Manager
Thai Benkan Co.,Ltd.



#22
1pc

To EN10204 3.1/ISO 10474 3.1B

THAI BENKAN CO.,LTD.

BENKAN

58 Moo 13 Soi Suksawat 70, Bangkru Phrapadaeng, Samutprakarn 10130. THAILAND

Telephone : 66 (0) 2463 0074. 66 (0) 463 6235-7

JOB No.:

D/M/Y 01/11/2023 Certificate No.: T202309483408 Rev. No.: C

Specification for Product	MFG No.	Seamless or Weld	Quantity
ASTM A234/A234M-23a/ASME SA234/SA234M-23, ASME Section II Part A, 2023	66H00M/22B-3	SEAMLESS	
NACE MR0175-2021/ISO 15156-2 : 2020 & MR0103-ISO 17945-2015 (R2023)	90EL WPB 10 S40		55

Specification for Inspection
ASME B16.9-2018, B16.25-2017

Starting Material	Heat No.	Pipe or Plate	Process
	031189	PIPE	

Heat treatment
Normalizing 910 C X 60 Minutes; Cooled in Still Air

% Chemical content	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	B	Ti	Al	Ca	Ue
x100	x1000	x100	x1000	x1000	x1000	x1000	x1000	x1000	x1000	x1000	x10000	x10000	x10000	x10000	x10000	x100

Required	Maximum
20	40
106	20
20	10
40	40
40	40
15	20
20	10
5	20
40	

Required Minimum
10
29
20

[illegible]

For each reduction of 0.01 % below the specified carbon maximum, an increase of 0.06 % manganese above the specified maximum will be permitted up to a maximum of 1.55 %.



TP Direction : Longitudinal

HBW	S		
	1	2	3
100			
105			
110			
115			
120			
125			
130			
135			
140			
145			
150			
155			
160			
165			
170			
175			
180			
185			
190			
195			
200			
205			
210			
215			
220			
225			
230			
235			
240			
245			
250			
255			
260			
265			
270			
275			
280			
285			
290			
295			
300			
305			
310			
315			
320			
325			
330			
335			
340			
345			
350			
355			
360			
365			
370			
375			
380			
385			
390			
395			
400			
405			
410			
415			
420			
425			
430			
435			
440			
445			
450			
455			
460			
465			
470			
475			
480			
485			
490			
495			
500			
505			
510			
515			
520			
525			
530			
535			
540			
545			
550			
555			
560			
565			
570			
575			
580			
585			
590			
595			
600			
605			
610			
615			
620			
625			
630			
635			
640			
645			
650			
655			
660			
665			
670			
675			
680			
685			
690			
695			
700			
705			
710			
715			
720			
725			
730			
735			
740			
745			

MPa	Reqd Min.	Reqd Max.	Actual results
	Fitting	137	139
		136	

[illegible][illegible]

% Elongation	30	45

Impact test 10 x 7.5 x 2V

Supplementary Note : I hereby certify that the product described herein has been manufactured in accordance with the specifications concerned

TP Direction : Temp. -29 ° C
MESC SPEC 76/200 Rev.February 2023

	Ave	3	2	1	J
Steel is vacuum degassed, fully killed and fine grain practiced*					

Base	238	241	253	244	The filings were manufactured, sampled, tested, and inspected in accordance with the specification.
------	-----	-----	-----	-----	---

and were found to meet the requirements.

[illegible]

Form No. TZ-6ZV/0

Quality Assurance Manager

Akemitsu Kondo

A. K. K. K.

12/27/2013

4/10

To EN10204 3.1/ISO 10474 3.1B

58 Moo 13 Soi Suksawat 70, Bangkru Phrapadaeng, Samutprakarn 10130, THAILAND

BENKAN

rapadaeng, Samutprakarn 10130. THAILAND

Customer PO No.: AIPQ-23070014/0
JOB No.:

D/M/Y 01/11/2023 Certificate No. : T202309483408 Rev. No. : 0

For each reduction of 0.01 % below the specified carbon maximum, an increase of 0.06 % manganese above the specified maximum will be permitted up to a maximum of 1.05 %.



FO. BOX 18259
JEBEL ALI - DUBAI,
U.A.E.

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.



A. K. K.

Quality Assurance Manager
Thai Benkan Co.,Ltd.

1929/30

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1B
DIN 50049/3.1

THAI BENKAN CO.,LTD. **BENKAN**

58 Moo 13 Soi Sukswat 70, Bangkru Phrapadeeng, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO
TBC PO No. : TB-347
Customer PO No. : AIPO-23070014/0
Benkan No. : SOUR SERVICE
JOB No. :

D/M/Y 01/11/2023 Certificate No. : T202309483405 Rev. No. : 0

Specification for Product		ASTM A234/A234M-23a/ASME SA234/SA234M-23, ASME Section II Part A 2023										MFG No.	66H00W228		Seamless or Weld	SEAMLESS	Quantity	7			
Specification for Inspection		NACE MR0175-2021/ISO 15156-2 : 2020 & MR0103-ISO 17945-2015 (R2023)										Product Description		90EL WPB 10 S40							
		ASME B16.9-2018,B16.25-2017																			
Starting Material	Heat No.	030797										Pipe or Plate	PIPE		Steel making Process	ELECTRIC FURNACE					
		Heat treatment										Normalizing 910 C X 60 Minutes.Cooled in Still Air									
% Chemical content	C x100	Si x100	Mn x100	P x1000	S x1000	Cu x100	Ni x100	Cr x100	Mo x100	V x1000	Nb x1000	B x10000	Ti x1000	Al x1000	Ca x10000	CE x100					
Required Maximum	20		106	20	10	40	40	40	15	20	10	5	20			40					
Required Minimum		10	29																		
Heat Analysis	15	24	107	11	2	3	2	8	1	10	2	3	14	23	8	35					
For each reduction of 0.01 % below the specified carbon maximum an increase of 0.06 % manganese above the specified maximum will be permitted up to a maximum of 1.65 % % CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15																					
Tension test	Gauge length	50 mm.		Hardness test																	
TP Direction : Longitudinal		HBW																			
		1 2 3																			
		Req. Max. 197																			
MPa	Req.Min.	Req.Max	Actual results	Fitting															138	140	139
Yield Strength	240	440	298																		
Tensile Strength	415		481																		
% Elongation	30		43																		
Impact test				10 x 7.5 x 2V																	
TP Direction : Transverse				Temp. -29 ° C																	
				J 1 2 3 AVE																	
				Base 197 192 179 189																	
				Steel is vacuum degassed, fully killed and fine grain practiced																	
				The fittings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements.																	
				Supplementary Note :																	
				MESC SPEC 76200 Rev February 2023																	
				We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.																	



Akemitsu Kondo
Quality Assurance Manager
Thai Benkan Co.,Ltd.

Form No. TZ-62/V/0

Benkan 14/11/23

#9
has

MATERIAL INSPECTION CERTIFICATE

TO EN10204 3.1/ISO 10474 3.1B

DIN 50049/3.1

THAI BENKAN CO., LTD. **BENKAN**

58 Moo 13 Soi Sukswat 70, Bangkru Phrapadaeng, Samutprakarn 10130, THAILAND

Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7

Purchaser Name : ARABIAN PIPELINE SUPPLY FZCO

TBC PO No. : TB-347

Customer PO No. : A/P0-23070014/0

Benkan No. : SOUR SERVICE

JOB No. :

D/M/Y 06/12/2023 Certificate No. : T202309484029 Rev. No. : 0

Specification for Product		ASTM A234/A234M-23a/ASME SA234/SA234M-23 ASME Section II Part A 2023										MFG No.		66H00M262		Seamless or Weld		SEAMLESS		Quantity		23	
Specification for Inspection		NACE MR0175-2021/ISO 15156-2 : 2020 & MR0103-ISO 17945-2015 (R2023)										Product Description		45EL WPB 6 S40		Steel making Process		BASIC OXYGEN					
Starting Material		Heat No.		23802250										Pipe or Plate		PIPE		Heat treatment		Normalizing 910 C X 60 Minutes Cooled in Still Air			
% Chemical content		C	SI	Mn	P	S	Cu	NI	Cr	Mo	V	Nb	B	Ti	Al	Ca	CE						
Required Maximum		x100	x100	x100	x1000	x1000	x100	x100	x100	x100	x1000	x10000	x10000	x1000	x10000	x10000	x100						
Required Minimum		20		106	20	10	40	40	40	15	20	10	5	20			40						
Heat Analysis		15	22	78	13	3	1	1	3	1	0	0	2	0	30	0	29						

For each reduction of 0.01 % below the specified carbon maximum, an increase of 0.06 % manganese above the specified maximum will be permitted up to a maximum of 1.65 %
 % CE = C + Mn/6 + (Cr + Mo + V)/5 + (Nb + Cu)/15

Tension test		Gauge length		50 mm.		Hardness test		HBW			1 2 3						
TP Direction : Longitudinal								Req. Max. 197									
MPa		Req. Min.	Req. Max.	Actual results		Fitting		123 128 126									
Yield Strength		240	440	319													
Tensile Strength		415		479													
% Elongation		30		47													
Impact test		10 x 7.5 x 2V		Supplementary Note :													
TP Direction : Transverse		Temp. -29 ° C		MESO SPEC 76/200 Rev. February 2023													
		J 1 2 3 AVE		Steel is vacuum degassed, fully killed and fine grain practice"													
		Base 106 88 130 106		The fittings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements.													

We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.

Akemitsu Kondo
 Quality Assurance Manager
 Thai Benkan Co., Ltd.

Form No. TZ-62V/0

Blind 205/24

453

DELCORTE s.a.s
FORGED STEEL & STAINLESS STEEL
Quality system certified ISO9001:2008 by BSI-Q05524



17, Avenue du Corbeau - CS10597
59605 MAUBEUGE CEDEX FRANCE
Tél : +33 (0)327 891 414 Fax : +33 (0)327 642 569
info@delcorte.com

CERTIFICAT DE RECEPTION - ACCEPTANCE CERTIFICATE EN 10204 3.1 (Ex EN 10204 3.1.b)

Customer : ARABIAN PIPELINE SUPPLY FZCO
JEBEL ALI FREE ZONE
PO BOX 18259
DUBAI - UAE

Order : VV-0625-15/DEL-S

Certificate n° : 190078 / 4

03/08/2015

Dispatch note 190078

31/07/2015

Material specification

ASTM/ASME A/SA105/14 - CONFORMITY NACE MR 0175-09

Heat Treatment

NORMALIZED T° 843°-927° COOLED IN STILL AIR

DESCRIPTION

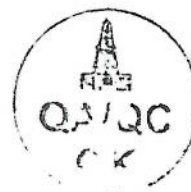
Item	Qty	Designation	Heat N°	Identification	Spec dimension	Localisation
2	100	WELDOLET S XXS 3/4" X 1-36	216632	EQE	ASME B31.1-3-2008 - ASME B16.25-2007	05/13 29305
4	100	WELDOLET SCH 40 1 1/2" X 2-36	223294	GHB	ASME B31.1-3-2008 - ASME B16.25-2007	11/14 31520
5	25	WELDOLET S XXS 1 1/2" X 2-36	1178290	ASA	ASME B31.1-3-2008 - ASME B16.25-2007	10/11 26029
6	220	WELDOLET SCH 40 2" X 2 1/2-36	228044	GPN	ASME B31.1-3-2008 - ASME B16.25-2007	02/15 32158
6	280	WELDOLET SCH 40 2" X 2 1/2-36	228044	GPN	ASME B31.1-3-2008 - ASME B16.25-2007	02/15 32158
7	450	WELDOLET SCH 80 2" X 2 1/2-36	228044	GPN	ASME B31.1-3-2008 - ASME B16.25-2007	02/15 32158
7	50	WELDOLET SCH 80 2" X 2 1/2-36	228044	GPN	ASME B31.1-3-2008 - ASME B16.25-2007	02/15 32158
8	50	WELDOLET S XXS 2" X 2 1/2-36	1376110	ETE	ASME B31.1-3-2008 - ASME B16.25-2007	11/13 29680
12	10	WELDOLET S 160 6" X 8"-36"	1136573	AML	ASME B31.1-3-2008 - ASME B16.25-2007	06/11 25540
14	5	WELDOLET S 160 8" X 10"-36"	44048	YL2	ASME B31.1-3-2008 - ASME B16.25-2007	11/10 24633
17	10	WELDOLET SCH 40 12" X 14"-48"	32007	ZU5	ASME B31.1-3-2008 - ASME B16.25-2007	01/11 24865
18	5	WELDOLET STD 12" X 14"-48"	32007	ZU5	ASME B31.1-3-2008 - ASME B16.25-2007	01/11 24865
23	200	SOCKLETOE 6000 1 1/2" X 3-36	1178924	DGH	MSS SP 97/2012	06/13 26757
25	300	THREADED 6000 1 1/2" X 3/4-36	216632	EQE	MSS SP 97/2012	05/13 29005
26	37	TR "OLET" NPT 30003/4" X 1-36	219474	FAF	MSS SP 97/2012	05/14 30736

CHEMICAL ANALYSIS

Item	Identif.	C %	Si %	Mn %	P %	S %	Cr %	Mo %	V %	Ni %	Cu %	Cb %	Ce %	Cr+Mo	Cu+Ni+Cr+Mo
mini		0.250	0.100	0.600											
maxi		0.350	1.350	0.035	0.040	0.300	0.120	0.080	0.400	0.400					1.000
2	EQE	0.161	0.214	1.020	0.007	0.005	0.098	0.022	0.004	0.128	0.238	0.001	0.38	0.120	0.486
4	GHB	0.172	0.191	1.042	0.008	0.004	0.106	0.026	0.005	0.107	0.100	0.003	0.39	0.132	0.339
5	ASA	0.155	0.236	0.880	0.015	0.007	0.120	0.010	0.019	0.050	0.150	0.002	0.38	0.130	0.330
6	GPN	0.165	0.250	1.250	0.010	0.003	0.130	0.020	0.002	0.110	0.140	0.004	0.42	0.150	0.400
6	GPN	0.165	0.250	1.250	0.010	0.003	0.130	0.020	0.002	0.110	0.140	0.004	0.42	0.150	0.400
7	GPN	0.165	0.250	1.250	0.010	0.003	0.130	0.020	0.002	0.110	0.140	0.004	0.42	0.150	0.400
7	GPN	0.165	0.250	1.250	0.010	0.003	0.130	0.020	0.002	0.110	0.140	0.004	0.42	0.150	0.400
8	ETE	0.190	0.250	0.950	0.015	0.007	0.120	0.010	0.027	0.050	0.180	0.003	0.40	0.130	0.360
12	AML	0.160	0.190	1.260	0.018	0.002	0.190	0.005	0.006	0.020	0.068	0.002	0.42	0.195	0.283
14	YL2	0.175	0.230	0.870	0.013	0.002	0.150	0.030	0.002	0.110	0.170	0.001	0.38	0.180	0.460
17	ZU5	0.200	0.220	0.980	0.008	0.010	0.100	0.010	0.010	0.060	= 0.000	= 0.000	0.39	0.110	0.170
18	ZU5	0.200	0.220	0.980	0.008	0.010	0.100	0.010	0.010	0.060	= 0.000	= 0.000	0.39	0.110	0.170
23	DGH	0.160	0.230	0.850	0.015	0.009	0.140	0.010	0.018	0.060	0.180	0.002	0.35	0.150	0.390
25	EQE	0.161	0.214	1.020	0.007	0.005	0.098	0.022	0.004	0.128	0.238	0.001	0.38	0.120	0.486
26	FAF	0.163	0.212	1.049	0.007	0.002	0.139	0.039	0.005	0.185	0.185	0.001	0.40	0.178	0.548

MECHANICAL TESTS

Item	Identif.	Re 0.2% N/mm²	Rm N/mm²	A %	Z %	HB
mini		250.0	485.0	22.0	30.0	
maxi						187.0
2	EQE	371.0	519.0	32.0	68.0	158 - 158
4	GHB	375.0	525.0	31.0	68.0	154 - 155
5	ASA	319.0	511.0	33.6	56.5	162 - 162
6	GPN	413.6	551.5	27.0	65.0	158 - 160
6	GPN	413.6	551.5	27.0	65.0	158 - 160
7	GPN	413.6	551.5	27.0	65.0	158 - 160
7	GPN	413.6	551.5	27.0	65.0	158 - 160
8	ETE	321.0	519.0	33.1	56.9	157 - 157
12	AML	352.0	518.0	23.4	38.3	138
14	YL2	364.0	504.0	32.5	71.0	138 - 152
17	ZU5	352.0	514.0	29.1	58.2	154 - 154
18	ZU5	352.0	514.0	29.1	58.2	154 - 154
23	DGH	303.0	485.0	35.1	60.3	162 - 162
25	EQE	371.0	519.0	32.0	68.0	158 - 158
26	FAF	384.0	537.0	31.0	67.0	159 - 159



Others

STEEL FULLY KILLED TO FINE GRAIN PRACTICE

Nous certifions que les produits énumérés ci-dessous sont conformes aux prescriptions de la commande et des spécifications et ont subi, sans objection, les contrôles d'aspect et de dimensions.
We hereby certify that above mentioned products are in accordance with the requirements of the order and specifications and have been checked without objection for surface and dimensional control.

Quality department

[Signature]
ARABIAN PIPELINE SUPPLY FZCO



[Signature] 22/01/25

Purchaser Name : ARABIAN PIPELINE SUPPLY FCZO
 TBC PO No. : TA-799
 Customer PO No. : AIP0-211000070
 Benkan No. :
 JOB No. :

MATERIAL INSPECTION CERTIFICATE
 TO EN10204 3.1/ISO 10474 3.1B
 DIN 50049 /3.1

THAI BENKAN CO.,LTD. **BENKAN.**
 58 Moo 13 Soi Sukawat 70, Bangkru Phrapadaeng, Samutprakarn 10130, THAILAND
 Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7 FACSIMILE: 66 (0) 463 6238, 66 (0) 463 8241

D/M/Y 20/06/2022 Certificate No. : T202209481058 Rev. No. : 0

Specification for Product		ASTM A234/A234M-19/ASME SA234/SA234M-21, ASME Section II part A 2021.										MFG No.		64M10M152		Seamless or Weld		SEAMLESS		Quantity		6	
Specification for Inspection		NACE MR0175/ISO 15156-2 : 2015 & MR0103-2015 ASME B16.5-2018,B16.25-2017										Product Description		T WPB 6 x 3 S80									
Starting Material		Heat No.		1102095										Pipe or Plate		PIPE		Steel making Process		BASIC OXYGEN			
Heat treatment		Normalizing 910 C X 40 Minutes Cooled in Still Air																					
Chemical content		C x100	SI x100	Mn x100	P x1000	S x1000	Cu x100	NI x100	Cr x100	Mo x100	V x1000	Nb x1000	g x10000	TI x1000	Al x1000	CE x100							
Required Maximum		20		106	20	10	40	40	40	15	30	10	5			40							
Required Minimum				10	29									20									
Heat Analysis		16	25	104	13	6	1	1	1	0	0	0	0	0	24	34							
For each reduction of 0.01 % below the specified carbon maximum an increase of 0.08 % manganese above the specified maximum will be permitted up to a maximum of 1.35 % % CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15																							
Tension test		Gauge length		50 mm.																			
TP Direction : Longitudinal																							
MPa		Req.Min.	Req.Max.	Actual results																			
Yield Strength		240	440	277																			
Tensile Strength		415		447																			
% Elongation		30		40																			
Hardness test																							
		HBW		1 2 3																			
		Fitting		139 139 139																			
Supplementary Note :		"Steel is vacuum degassed, fully killed and fine grain practiced" The fittings was manufacture sampled, tested and inspected in accordance with the specification and was found to meet the requirements. 100% MT performed for all accessible surface in acc ASME Sec VIII D1 Appendix 6 : GOOD																					
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.																							
 Form No. TZ-62V/0 Akemitsu Kondo Quality Assurance Manager Thai Benkan Co.,Ltd.		 P.O. BOX 18259 JEBEL ALI - DUBAI U.A.E. ARABIAN PIPELINE SUPPLY FCZO * VERIFIED TRUE COPY *																					

22/01/25
 2126/22

Purchaser Name : ARABIAN PIPELINE SUPPLY FCZO
TBC PO No. : TA-991
Customer PO No. : A/P-O-2206004/0
Benkan No. :
JOB No. :

MATERIAL INSPECTION CERTIFICATE
To EN10204 3.1/ISO 10474 3.1B
DIN 50049/3.1

THAI BENKAN CO.,LTD. **BENKAN**
58 Moo 13 Soi Sukasawat 70, Bangkok Phrapadeang, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7 FACSIMILE: 66 (0) 463 6236, 66 (0) 463 8241

D/M/Y 30/08/2022 Certificate No. : T202209481366 Rev No. : 0

Specification for Product		ASTM A234/A234M-19/ASME SA234/SA234M-21 ASME Section II Part A 2021										MFG No.		Product Description		RC WFB 10 x 8 S40		Quantity			
Specification for Inspection		ASME B16.9-2018,B16.25-2017																10			
Starting Material		Heat No.		019449										Pipe or Plate		PIPE		Steel making Process		ELECTRIC FURNACE	
% Chemical content		C	SI	Mn	P	S	Cu	NI	Cr	Mo	V	Nb	B	TI	Al	CE					
Required Maximum		x100	x100	x100	x1000	x1000	x100	x100	x100	x100	x1000	x10000	x10000	x1000	x1000	x100					
Required Minimum		20		108	20	10	40	40	40	15	30	10	5			40					
Heat Analysis		14	20	105	9	2	4	2	8	3	10	2	3	15	27	34					
For each reduction of 0.01 % below the specified carbon maximum an increase of 0.06 % manganese above the specified maximum will be permitted up to a maximum of 1.65 % % CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15																					
Tension test		Gauge length		50 mm.		Hardness test															
TP Direction : Longitudinal		HBW																			
MPa		Req.Min.	Req.Max.	Actual results																	
Yield Strength		240	440	Fitting 133 136 134																	
Tensile Strength		415	441																		
% Elongation		30	45																		
Supplementary Note : Steel is vacuum degassed, fully killed and fine grain practice. The fittings were manufactured, sampled, tested, and inspected in accordance with the specification, and were found to meet the requirements.																					
We hereby certify that the product described herein has been manufactured in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct.																					
Form No. TZ-62/V/0																					
Quality Assurance Manager Akemitsu Kondo Thai Benkan Co.,Ltd.																					



22/01/25
800 22 08 77



Datum:
[date]

Analyse [analysis]	Schmelze Nr. [heat no.]	Erschmelzungsart [melting process]	1 = Schmelzeanalyse [heat analysis] 2 = Produktanalyse [product analysis]																	J-Faktor [J-Factor]: CEQ [CEQ]:	
			C + (Mn / 6) + (Cr + Mo + V) / 5 + (Cu + Ni) / 15																		
Index			C	Si	Mn	P	S	Cr	Mo	Ni	Cu	V	Nb	Al	B	Ti	N	Ceq	CEQ	J-Fact.	
1	352024		0.14	0.17	1.02	0.016	0.001	0.11	0.01	0.04	0.03	0.00	0.00	0.034	0.0003	0.01	0.006	0.34			
2	352024		0.128	0.192	1.000	0.01350	<0.0005	0.102	0.015	0.034	0.024	0.003	0.004	0.037	0.000	0.013	0.007	0.322	0.32		

Mech.-technologische Prüfung [mech. technological test]

[illegible]

normalized
temperature 900 °C
Holding Time 15 min.
Cooling in still air

Wärmebehandlung [heat treatment]

Mat./3552024/DN"/wall

Besichtigung und Ausmessung [visual inspection and dimensional check] o.B./o.K.

Bemerkungen [remarks]

magnetic particle examination acc. ASTM E709: o.k.

Zusatzmarkierung [add. mark.]	
Die gestellten Anforderungen wurden erfüllt [Manufacturing requirements are satisfied]	
Der Werksachverständige [the Works Inspector]	
22/02/08	321
Grabherr Harald	
Dieses Dokument wurde elektronisch erstellt und ist ohne Unterschrift gültig. [The certificate is issued by the computerized system and is valid without signature.]	

Zertifiziert nach DGR 97/23/EG Anhang I - Absatz 4.3 durch TÜV Süddeutschland CE 0036, Zertifikat-Nr. DGR-0036-QM-WH-104-01 [Certified acc. to PED 97/23/EC by TÜV Cert CE 0036, certificate no. DGR-0036-QM-WH-104-01. Certified acc. to EN ISO 9001]

173



erne fittings gmbh
A-6824 Schlins
Hauptstrasse 48
Austria/Europe
Telefon +43/5524 501-0
Telefax +43/5524 501-930



Abnahmeprüfzeugnis Inspection Certificate EN 10204 - 3.1

Ihre Bestellnummer [your order no.]
STC/VV-0920-07/ERN

Zeugnisnummer [certificate no.]
009017/08-HG

Rev.

Datum
[date]
22/02/2008

Kunde [customer]

M/S Arabian Pipeline Supply FZCO
Steel Trading Company L.L.C.

P.O.Box 18259
UAE- Jebel Ali, Dubai

Ihre Artikelnummer [your item no.]

Menge [quantity] Artikelbezeichnung [designation]

342 E-S-WPL6-2"x12"-S160/S160
tees

Unsere Auftrags.Nr. [our order no.]
96946-SS-0190

Schmelze Nr [heat no.] Ident.Nr. [ident no.]

Anforderungen [requirements]
ASME B16.9-2003,WPL6,ASTM A 420/A 420M-05,ASME
SA-420M-Ed.04/A06,NACE MR-01-75-2001,EN
10204/3.1,Manufacturers standard

Vormaterial [base material] Rohrzeugnisnr. [tube work's cert. no.]
6835SV07

Hersteller [manufacturer]
V&M

Dichtheitsprüfung [leakage test]
ASTM E309

Analyse [analysis]	Schmelze Nr. [heat no.]	Erschmelzungsart [melting process] Y	1 = Schmelzeanalyse [heat analysis] 2 = Produktanalyse [product analysis]										J-Faktor [J-Factor]: CEQ [CEQ]:		C + (Mn / 6) + (Cr + Mo + V) / 5 + (Cu + Ni) / 15									
			C	Si	Mn	P	S	Cr	Mo	Ni	Cu	V	Nb	Al	B	Ti	N	Ceq	CEQ	J-Fact.				

1	352024		0.14	0.17	1.02	0.016	0.001	0.11	0.01	0.04	0.03	0.00	0.00	0.034	0.0003	0.01	0.006	0.34						
2	352024		0.128	0.192	1.000	0.01350	<0.0005	0.102	0.015	0.034	0.024	0.003	0.004	0.037	0.000	0.013	0.007	0.322	0.32					

Mech.-technologische Prüfung [mech. technological test]

Proben [test no.]	Zugversuch [tensile test]					Kerbschlagbiegeversuch [notched bar impact test] Form: ISO V					Härteprüfung [hardness test]	
	Pr.-Lage [pos. of sample]	Temp.	Dehngg. [yield str.] Rp 0.2	Zugfestigkeit [tensile str.] Rm [N/mm²]	Dehnung [elon- gation] 2" (%)	PR-Lage [pos. of sample]	Temp.	Querschnitt [cross sec.]	Kerbschlagarbeit [impact values] (J)	138-143 HB		

M059738/07	L	+20 °C	354	480	32.4	L	-50 °C	80	136-126-118		Wärmebehandlung [heat treatment] normalized temperature 900 °C Holding Time 15 min. Cooling in still air	
------------	---	--------	-----	-----	------	---	--------	----	-------------	--	--	--

Kennzeichnung [marking] Mat./352024/DN"/wall

Besichtigung und Ausmessung [visual inspection and dimensional check] o.B./o.K.

Bemerkungen [remarks]
cold formed
magnetic particle examination acc. ASTM E709: o.K.

Zusatzmarkierung [add. mark.]
Die gestellten Anforderungen wurden erfüllt [Manufacturing requirements are satisfied]
Der Werksachverständige [the Works Inspector]
22/02/08 Grabherr Harald
Dieses Dokument wurde elektronisch erstellt und ist ohne Unterschrift gültig. [The certificate is issued by the computerized system and is valid without signature.]



Zertifiziert nach DGR 97/23/EG Anhang I - Absatz 4.3 durch TÜV SÜddeutschland CE 0036, Zertifikat-Nr. DGR-0036-QM-WH-104-01 [Certified acc. to PED 97/23/EC by TÜV Cert CE 0036, certificate no. DGR-0036-QM-WH-104-01. Certified acc. to EN ISO 9001]

22/01/08

174

MACCORDERIA FORGIATA / FORGED STEEL FITTINGS
Località Piasente 37 - 20013 CARPI (MO) PIACENTINO - PC
Tel: +39 0523 659887 - Fax: +39 0523 659833 - info@macorderia.com



CUSTOMER
STEEL TRADING COMPANY L.L.C.

CERTIFICATE N° 222/2007 DATE 19/01/2007 SHEET 1
INTERNAL ORDER NUMBER 1563/2006 DATE 31/07/2006
CUSTOMER ORDER REF. STC/SS-0618-06/CHE - 18/06/2006

TEST CERTIFICATE ACCORDING TO EN 10204 3.1 - EXTENT OF MATERIAL DELIVERY

POS.	TEST NO.	HEAT CODE	Q.TY	DESCRIPTION	MAT. REQUIREMENT / TAG N° / ITEM CODE / COMPUTER CODE / UB	ENCLOSURE / NOTES
10 1	23953/2005	18135	50	WELDOLET BW SCH. 40/STD LF2 1/2x3/4-36		
20 1	24112/2005	76901	50	WELDOLET BW SCH. 40/STD LF2 3/4x1"-36		
30 1	22831/2004	70781	100	WELDOLET BW SCH. 40/STD LF2 1x1 1/4-36		
40 1	23557/2005	19195	50	WELDOLET BW S40/STD LF2 1 1/2x2"-36		
50 1	23557/2005	19195	100	WELDOLET BW S40/STD LF2 2X2 1/2-36		
60 1	25049/2006	ADS *	50	WELDOLET BW 40/STD LF2 3"x4"-36		
70 1	25668/2006	AGY	30	WELDOLET BW 40/STD LF2 4"x5"-36		
80 1	26131/2007	AGL	20	WELDOLET BW 40/STD LF2 6"x8"-36		
90 1	23953/2005	18135	100	WELDOLET BW S80/XS LF2 1/2x3/4-36		
100 1	24112/2005	76901	100	WELDOLET BW S80/XS LF2 3/4x1-36		
110 1	22831/2004	70781	100	WELDOLET BW S80/XS LF2 1x1 1/4-36		
120 1	23557/2005	19195	50	WELDOLET BW S80/XS LF2 1 1/2x2"-36		
130 1	23557/2005	19195	100	WELDOLET BW S80/XS LF2 2x2 1/2-36		
140 1	23557/2005	19195	200	WELDOLET BW S80/XS LF2 2"x2 1/2"-36		
150 1	25049/2006	ADS	50	WELDOLET BW SCH. 80/XS LF2 2"x4"-36		
160 1	25668/2006	AGY	30	WELDOLET BW SCH. 80/XS LF2 3"x4"-36		
170 1	26130/2007	ABG	100	WELDOLET BW S160/160 LF2 1"x1 1/4"-36		
180 1	26132/2007	ACK	100	WELDOLET BW S160/160 LF2 1 1/2x2"-36		
190 1	26133/2007	ACF	100	WELDOLET BW S160/160 LF2 3/4"x1"-36		
200 1	26134/2007	AGP	50	WELDOLET BW SCH. XXS/XXS LF2 1/2x3/4-36		
210 1	26130/2007	ABG	100	WELDOLET BW SCH. XXS/XXS LF2 3/4"x1"-36		
220 1	26132/2007	ACK	100	WELDOLET BW SCH. XXS/XXS LF2 1 1/2x2"-36		
230 1	26133/2007	ACF	100	WELDOLET BW SCH. XXS/XXS LF2 3/4"x1"-36		
240 1	26134/2007	AGP	50	WELDOLET BW SCH. XXS/XXS LF2 1 1/2x2"-36		
250 1	20268/2002	59076	100	THREADED NPT S/3000 LF2 1/2"x3/4"-36		
260 1	21009/2003	143652	129	THREADED NPT S/3000 LF2 3/4"x1"-36		
270 1	19108/2001	ECF	71	THREADED NPT S/3000 LF2 1"x1 1/4"-36		
280 1	22831/2004	70781	60	THREADED NPT S/3000 LF2 1 1/2"x2"-36		
290 1	23557/2005	19195	50	THREADED NPT S/3000 LF2 2"x2 1/2"-36		
300 1	23953/2005	18135	100	THREADED NPT S/6000 LF2 1/2"x3/4"-36		

NOTES

VISUAL, DIMENSIONAL AND MARKING CHECK HAVE BEEN CARRIED OUT WITH SATISFACTORY RESULTS ACCORDING TO ANSI B16.9 & B16.11 MATERIAL ACC. TO NACE MR 01.75 ED.99 + ASME SECTION II ED.2003 AD.2005

THIRD PARTS

CUSTOMER INSPECTOR

QUALITY CONTROL



MACCORDERIA FORGIATA
SINGERT
22/01/25
MACCORDERIA FORGIATA S.P.A.

428
20063

RACCORDERIA FORGIATA / FORGED STEEL FITTINGS
Località Pissale, 37 - 20013 C.A. P.A. N.E. (Lodi) - Italy
Tel +39 0523 859927 - Fax +39 0523 850433 - info@cheropiping.com



CUSTOMER
STEEL TRADING COMPANY L.T.C.

CERTIFICATE N°	222/2007	DATE	19/01/2007	SHEET	2
INTERNAL ORDER NUMBER	1563/2006	DATE	31/07/2006		
CUSTOMER ORDER REF. STC/SS-0618-06/CHE - 18/06/2006					

TEST CERTIFICATE ACCORDING TO EN 10204 3.1 - EXTENT OF MATERIAL DELIVERY

POS.	TEST NO.	HEAT CODE	Q.TY	DESCRIPTION	MAT/REQUISITION / TAG N° / ITEM CODE / COMPUTER CODE / UB	ENCLOSURE / NOTES
310 1	22831/2004	70781	100	THREADOLET NPT S/6000 LF2 3/4X1"-36"		
320 1	22831/2004	70781	100	THREADOLET NPT S/6000 LF2 1X11/4-36"		
330 1	23557/2005	19195	50	THREADOLET NPT S/6000 LF2 11/2"x2"-36"		
340 1	20269/2002	59076	100	SOCKOLET SW S/3000 LF2 1/2"x3/4"-36"		
350 1	21009/2003	14352	200	SOCKOLET SW S/3000 LF2 3/4"x1"-36"		
360 1	21306/2003	385678	200	SOCKOLET SW S/3000 LF2 1"x11/4"-36"		
370 1	21307/2003	376227	100	SOCKOLET SW 3000 LF2 11/2"x2"-36"		
380 1	23557/2005	19195	50	SOCKOLET SW S/3000 LF2 1/2"x3/4"-36"		
390 1	23953/2005	18135	100	SOCKOLET SW S/6000 LF2 3/4"x1"-36"		
400 1	27213/2007	76593	100	SOCKOLET SW S/6000 LF2 1"x11/4"-36"		
410 1	22831/2004	70781	100	SOCKOLET SW S/6000 LF2 11/2"x2"-36"		
420 1	23557/2005	19195	100	SOCKOLET SW S/6000 LF2 1/2"x3/4"-36"		
430 1	17316/1999	EBV	100	NIPOLET PE 3000 S80 LF2 3/4"x1"-36"		
440 1	21305/2003	396521	100	NIPOLET PE 3000 S80 LF2 1/2"x3/4"-36"		
450 1	24145/2005	22998	100	NIPOLET PE 3000 S80 LF2 1/2"x3/4"-36"		
460 1	25051/2006	76900	20	NIPOLET PE 3000 S80 LF2 2"x21/2"-36"		
470 1	23557/2005	19195	25	NIPOLET PE 3000 S80 LF2 2"x21/2"-36"		
480 1	17316/1999	EBV	100	NIPOLET PE 6000 S160 LF2 1/2"x3/4"-36"		
490 1	21305/2003	396521	100	NIPOLET PE S/6000 S160 LF2 3/4"x1"-36"		
500 1	24145/2005	22998	100	NIPOLET PE S/6000 S160 LF2 3/4"x1"-36"		
510 1	25051/2006	76900	20	NIPOLET PE 6000 S160 LF2 11/2"x2"-36"		
520 1	21307/2003	376227	25	NIPOLET PE 6000 S160 LF2 11/2"x2"-36"		
530 1	25051/2006	76900	100	NIPOLET PE 9000 SXXS LF2 1/2"x3/4"-36"		
540 1	27213/2007	76593	100	NIPOLET PE 9000 SXXS LF2 3/4"x1"-36"		
550 1	22831/2004	70781	100	NIPOLET PE 9000 SXXS LF2 1"x11/4"-36"		
560 1	25888/2006	79687	20	NIPOLET PE 9000 SXXS LF2 11/2"x2"-36"		
570 1	24294/2006	158617	25	NIPOLET PE 9000 SXXS LF2 2"x21/2"-36"		



NOTES

VISUAL, DIMENSIONAL AND MARKING CHECK HAVE BEEN CARRIED OUT WITH SATISFACTORY RESULTS ACCORDING TO ANSI B16.9 & B16.11 MATERIAL ACC. TO NACE MR 01.75 ED.99 + ASME SECTION II ED.2003 AD.2005

THIRD PARTS

CUSTOMER INSPECTOR

QUALITY CONTROL

PIRELLA GHISSONI
CHERO PIPING S.P.A.

CUSTOMER
STEEL TRADING COMPANY L.L.C.

CERTIFICATE N°	DATE	SHEET
222/2007	19/01/2007	3
INTERNAL ORDER NUMBER	DATE	
1563/2006	31/07/2006	

CUSTOMER ORDER REF.
STC/SS-0618-06/CHE - 18/06/2006

[illegible]

TEST N°	TENSILE TEST [MPa]					IMPACT TEST [Joule]					HARDNESS TEST		HYDROSTATIC TEST [bar]	FLUORANT TEST	BENDING TEST	FLATTENING TEST	Eddy Current	Spotless Number
	Temperature [°C]	Tensile Strength	Tensile Elongation	Reduction Area %	Use Temp	Impact Temp	Type	Specimen Size	Unit	Value	Scale							
23557/2005	+ 20 °C	523	356	30,00	55,00	- 50 °C	45	46	45	10 x 10,0	L	150,0	HB					
24112/2005	+ 20 °C	501	311	31,30	58,20	- 50 °C	48	49	50	10 x 10,0	L	160,0	HB					
22312/2004	+ 20 °C	521	323	32,10	56,30	- 50 °C	48	45	44	10 x 10,0	L	162,0	HB					
23557/2005	+ 20 °C	502	391	34,00	59,00	- 50 °C	43	41	43	10 x 10,0	L	150,0	HB					
25049/2006	+ 20 °C	513	318	32,60	56,90	- 50 °C	46	79	81	10 x 10,0	L	160,0	HB					
25664/2006	+ 20 °C	527	360	29,00	67,00	- 50 °C	90	92	94	10 x 10,0	L	170,0	HB					
26112/2007	+ 20 °C	535	399	32,00	66,00	- 46 °C	142	145	148	10 x 10,0	L	170,0	HB					
26139/2007	+ 20 °C	507	315	30,00	57,60	- 46 °C	46	48	50	10 x 10,0	L	160,0	HB					
26112/2007	+ 20 °C	502	312	33,20	58,10	- 46 °C	66	67	70	10 x 10,0	L	150,0	HB					
26112/2007	+ 20 °C	515	319	32,50	56,70	- 46 °C	45	47	49	10 x 10,0	L	160,0	HB					

TEST N°	R.T.	SCALE	MAX T	BELOW TO	COOLING MEDIA	H.T.	SCALE	MAX T	BELOW TO	COOLING MEDIA	BASE MATERIAL CERTIFICATION REF.	STEEL WORKS
	①	°C				②						
Z395/2005	NORMAL.	°C	920		AIR						AS02476/2005	LEPIL SPA
Z411/2005	NORMAL.	°C	920		AIR						43731	RIVA
Z283/2004	NORMAL.	°C	900		AIR						44504	RIVA
Z355/2005	NORMAL.	°C	900		AIR						32714	ASB ACCIAIERIE BENTOLI SAFUD
Z504/2005	NORMAL.	°C	900		AIR						2935	RIVA
Z566/2005	NORMAL.	°C	920		AIR						ES3A004	ALCOSTEEL
Z813/2007	NORMAL.	°C	920		AIR						ES3A004	ALCOSTEEL
Z613/2007	NORMAL.	°C	920		AIR						7068	RIVA
Z613/2007	NORMAL.	°C	920		AIR						7796	RIVA
Z613/2007	NORMAL.	°C	920		AIR						5186	RIVA

(7) $V/Mb+Ti < 0$, 10%; $Cu+Ni+Cr+Mo < 1\%$; $B < 0$, 0001 C.E. $^{-\infty} Mn/6+(Cr+Mo+V)/5+Cu+Ni/15$

NO. 12	THIRD PARTS	CUSTOMER INSPECTOR	QUALITY CONTROL
(7) VIBD+Ti<0,10%; Cu+Ni+Cr+Mo<1%; BK<0, 0001 C.E.-C+Mn/6+(Cr+Mo+V)/5+(Cu+Ni)/15		92/01/25	CHERO PIPING S.P.A.

CERTIFICATE #	DATE	SHEET
222/2007	19/01/2007	4
INTERNAL ORDER NUMBER	DATE	
1563/2006	31/07/2006	

24C/SS-0618-06/CHE - 18/06/2006

[illegible]
$$V_{\text{IND}} + T_1 < 0, 10\%: \text{Cu} + \text{Ni} + \text{Cr} + \text{Mo} < 1\%?; B_0 < 0, 0001 \text{ C.E.} = \text{C} + \text{Mn} / 6 + (\text{Cr} + \text{Mo} + \text{V}) / 5 + (\text{Cu} + \text{Ni}) / 15$$
$$V_{\text{IND}} + T_1 < 0, 10\%: \text{Cu} + \text{Ni} + \text{Cr} + \text{Mo} < 1\%?; B_0 < 0, 0001 \text{ C.E.} = \text{C} + \text{Mn} / 6 + (\text{Cr} + \text{Mo} + \text{V}) / 5 + (\text{Cu} + \text{Ni}) / 15$$

THIRD PARTS

CUSTOMER INSPECTOR

QUALITY CONTROL

CHERO PIPING S.P.A.

CHERO PIPING

ACCIAIERIA FORGIATA / FORGED STEEL FITTINGS
 11 - 131031 Milano - Italy
 Tel. +39 02 23 80 01 11 Fax +39 02 23 80 01 15
 E-mail: info@chero.it



CUSTOMER
 STEEL TRADING COMPANY L.T.C.

CERTIFICATE N° DATE
 222/2007 19/01/2007
 SHEET 5
 INTERNAL ORDER NUMBER DATE
 1563/2006 31/07/2006
 CUSTOMER ORDER REF.
 STC/SS-0618-06/CHE - 18/06/2006

TEST N°	MATERIAL SPECIFICATION AND GRADE	HEAT NUMBER	LAKE ANALYSIS (%)													
			C	Mn	Si	P	S	Cr	Mo	Ni	Ti	Cu	V	Fa	Al	Co
2135/2003	ASTM A350 GR. LF2	38021	0.100	0.20	0.018	0.008	0.008	0.100	0.000	0.100	0.100	0.150	0.000	0.000	0.000	0.000
2146/2005	ASTM A350 GR. LF2	22508	0.171	0.260	0.010	0.002	0.100	0.000	0.000	0.100	0.100	0.270	0.000	0.000	0.000	0.000
2501/2008	ASTM A350 GR. LF2	0470000	0.100	0.200	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.100	0.010	0.010	0.010	0.010
2508/2008	ASTM A350 GR. LF2	79587	0.107	0.231	0.010	0.010	0.008	0.104	0.000	0.100	0.100	0.237	0.004	0.000	0.000	0.000
2629/2008	ASTM A350 GR. LF2	15817	0.170	0.105	0.230	0.010	0.007	0.002	0.011	0.015	0.015	0.100	0.027	0.000	0.000	0.000

TEST N°	TENSILE TEST [Mpa]	IMPACT TEST [Joule]	HARDNESS TEST				HYDROSTATIC TEST				FLATNESS TEST	BENDING TEST	FLATTENING TEST	Spectrometry
			Yield	Tensile	Reduction of Area	Elongation	HB	HR	HV	Temp [°C]				
2135/2003	20 °C	332	335	32.80	63.50	- 54 °C	60	58	61	10 x 10.0 L	160.0	HB		
2146/2005	20 °C	492	394	39.00	71.00	- 50 °C	98	101	102	10 x 10.0 L	160.0	HB		
2501/2008	20 °C	306	319	33.00	57.70	- 50 °C	58	60	62	10 x 10.0 L	156.0	HB		
2508/2008	20 °C	510	300	38.40	70.20	- 50 °C	56	60	78	10 x 10.0 L	153.0	HB		
2629/2008	20 °C	535	316	26.00	64.00	- 50 °C	104	106	108	10 x 10.0 L	169.0	HB		

PRIMA INFORMATION - PROCEDURA

TEST N°	H.T.	SCALE	MAX T	BELOW TO	COOLING	H.T.	SCALE	MAX T	BELOW TO	COOLING	BASE MATERIAL CERTIFICATION REF.	STEEL WORKS
2135/2003	NORMAL	°C	320		AIR						5476	FORGIATA MODERNA ARRE
2146/2005	NORMAL	°C	320		AIR						20746	AS ACCIAIERIE BENTOLI SAFU
2501/2008	NORMAL	°C	300		AIR						7686	RIVA
2508/2008	NORMAL	°C	300		AIR						13355	ACCIAIERIE VERETE
2629/2008	NORMAL	°C	300		AIR						85999	ACCIAIERIE VERETE

(7) V+Hb+Ti<0.10; Cu+Ni+Cr+Mo<1; As<0.0001 C.E.=C+Mn/6+ (Cr+Mo+V)/5+ (Cu+Ni)/15

NOTES

THIRD PARTS

CUSTOMER INSPECTOR

QUALITY CONTROL

22/01/28

CHERO PIPING S.P.A.