AUG 18 2010 3" S40 pipe HT→1288-1

"NIKOPOL STEEL PIPE"
"YTIST",CJSCo
56,TRUBNIKOV AV.,NIKOPOL
CITY DNIPROPETROVSK
REG.,UKRAINE,53201
FAX:+38-05652-25062
WWW.STEELPROM. COM

MILL TEST REPORT

No 84

IN ACCORDANCE WITH EN 10204/3. 1B

BUYER:

DATE: 01.09.2008

SIZE: 3" SCH 40 SMLS (3.500" x 0.216")

PURCHASE ORDER # 200735

SPECIFICATION:	API 5L/ASTM A-106-06/ASME SA 106-06, NACE MR - 0175/94
GRADE:	X 42 / B

LADLE ANALYSIS-STEEL

PRODUCT CHEMISTRY %

OTHER VALUES

HEAT NUMBER	C	Si	Mn	S	P	Cr	Ni	Cu	Mo	V	CE 0.40 max	Mn/C	Cr+Cu+Mo+Ni+V max 1
1288-1	0,09	0,24	0,41	0,011	0,008	0,07	0,06	0,10	<0,01	<0,01	0,17	4,56	0,23

MECHANICAL PROPERTIES

HEAT NUMBER	Beat No	YIELD STRENGTH (PSI)	TENSILE STRENGTH (PSI)	Elongation%	FLATTENING TEST	BEND TEST	HYDROSTATIC TEST (PSI)	NON-DESTRUCTIVE TEST METHOD USED	HARDNESS TEST
1288-1	219	45400	61500	34	GOOD	NONE	3000	EDDY CURRENT	<22HRC

Nominal size of longitudinal strip sample for stretching test: width, mm: 25,4 calculated length, mm: 50,8.

* I CERTIFY THAT THE MATERIAL HEREIN DESCRIBED HAS BEEN MANUFACTURED WITH THE ORDERED SPECIFICATION AND THAT. THE TEST INFORMATION IS CORRECT AND CONTAINED IN THE RECORDS OF THE COMPANY.

Quality Management System is certified acc.to ISO 9001:2000 TUV CERT certificate №76 100 3367.

Senior control foreman

Prepared by

HT #57444 · ½" x 1¼"-36" 6M# Thrd. Elbow Olet.

CERTIFIED MILL TEST REPORT

The Best Value - *Price, Quality, Service* All The Time.

LOG NO. F00000000008336

BONNEY FORGE CORPORATION
P.O. BOX 330 • 14496 CROGHAN PIKE • MOUNT UNION, PA 17066-033
(814) 542-2545 • (800) 345-7546 • FAX (814) 542-4906
www.bonneyforge.com

CUSTOMER: CCTF CORPORATION

DATE 11/23/2010

CUSTOMER ORDER NO.: 4888906-00

BONNEY ORDER NO. B000086165

SHIP TO: CCTF CORPORATION (EDMONTON)
5407 - 53RD AVE.
EDMONTON AB T6B 3G2
Canada

ITEM	QUANTITY	LOT NO.	GRADE OR SPECIFICATION NO. CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:
35	150	58140	10 -3 X 3/4 6000 A105N SOCK S SA/A105N
7552645			Al 0.004 C 0.200 Cb 0.000 Co 0.000 Cr 0.074 Cu 0.200 Mn 1.000 Mo 0.018 N 0.009 Nb 0.008 Ni 0.073 P 0.013 S 0.020 Si 0.230 V 0.026
			CE(Long Formula) = 0.41
			T/S(PSI) 78,750 Y/S(PSI) 54,000 EL(%) 31.85 RA(%) 56.20
			Brinell 147 BHN 147 BHN
		58067	10 -3 X 3/4 6000 A105N SOCK S SA/A105N
7552645			Al 0.026 C 0.200 Cb 0.000 Co 0.005 Cr 0.060 Cu 0.170 Mn 1.070 Mo 0.010 N 0.006 Nb 0.012 Ni 0.050 P 0.014 S 0.019 Si 0.190 V 0.005
			CE(Long Formula) = 0.41
			T/S(PSI) 75,000 Y/S(PSI) 48,750 EL(%) 32.50 RA(%) 67.45
			Brinell 135 BHN 139 BHN
		57958	10 -3 X 3/4 6000 A105N SOCK S SA/A105N
7552645			Al 0.026 C 0.210 Co 0.002 Cr 0.030 Cu 0.070 Mn 1.050 Mo 0.010 Nb 0.014 Ni 0.030 P 0.006 S 0.020 Si 0.200 V 0.004
			CE(Long Formula) = 0.40
			T/S(PSI) 73,014 Y/S(PSI) 47,343 EL(%) 34.90 RA(%) 68.10
			Brinell 143 BHN 143 BHN
36	25	57444	36-3/4X1/2 6M A105N LREO T SA/A105N
7552360			Al 0.025 C 0.210 Co 0.003 Cr 0.050 Cu 0.160 Mn 1.000 Mo 0.020 Nb 0.014 Ni 0.040 P 0.018 S 0.018 Si 0.210 V 0.000
			CE(Long Formula) = 0.40
			T/S(PSI) 76,000 Y/S(PSI) 51,500 EL(%) 30.00 RA(%) 63.00
			Brinell 141 BHN 139 BHN

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by Brenda Garlock
BRENDA GARLOCK
QUALITY PROCESS MANAGER

CMTR: REV2

CERTIFIED MILL TEST REPORT

The Best Value - *Price, Quality, Service* All The Time.

LOG NO. F00000000008336

BONNEY FORGE CORPORATION
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(814) 542-2545 • (800) 345-7546 • FAX (814) 542-4906
www.bonneyforge.com

CUSTOMER: CCTF CORPORATION

DATE 11/23/2010

CUSTOMER ORDER NO.: 4888906-00

BONNEY ORDER NO. B000086165

SHIP TO: CCTF CORPORATION (EDMONTON)
5407 - 53RD AVE.
EDMONTON AB T6B 3G2
Canada

ITEM	QUANTITY	LOT NO	GRADE OR SPECIFICATION NO CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS.

1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.
2. THE MATERIAL SUPPLIED IDENTIFIED AS A105N WAS NORMALIZED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.
3. THE MATERIAL SUPPLIED AS A105N MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO175/ISO 15156-2.
4. CERTIFYING ASTM A105-09 / ASME SA105-07 EDITION.
5. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
6. THE UNIT OF MEASURE FOR TENSILE AND YIELD (0.2%) STRENGTH ARE IN REPORTED IN PSI.
7. ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by Brenda Garlock
BRENDA GARLOCK
QUALITY PROCESS MANAGER

CMTR: REV2

3"S40 ELBOW

0Z030

RECEIVED
MAR 1 - 2011

INSPECTION CERTIFICATE

AWAJI MATERIA (THAILAND) CO.,LTD.

81,MOO4, PRAKASA ROAD, TAMBOL BANGMUANG, AMPHUR MUANG
SAMUTPRAKARN THAILAND 10270, Tel : (662)701-5226

Date : DECEMBER 22, 2010

Purchaser : THE BROADHEAD GROUP/MCJUNKIN CANADA

MADE FROM SEAMLESS STEEL PIPE

Certificate No. : T10-Z795

Order No.	Job No.	Product	Raw Material Pipe Maker
CS759-074521/WPB/4		CARBON STEEL BUTT WELDING FITTINGS	SUMITOMO METAL INDUSTRIES, LTD.

Inspection Standard	Material Standard						
ASME B16.9-07 ASTM A960-08a NACE MR-0175-03, MR-0103-05	ASTM A234-07 WPB ASME SA234-07 WPB except nuclear usage CSA Z245.11-09, GR.241 CAT.I	Appearance	GOOD	Dimension	GOOD		*3 U.T. W.T. INSPECTED

Manufacturing No.	Product code	Material	Article & Size	Quantity	Note.
0Z030		WPB	STD 90 LONG RADIUS ELBOW 3"	1,400 Pcs.	"ALL FITTING MANUFACTURED BY AWAJI MATERIA (THAILAND) CO.,LTD. ARE PRODUCED FROM A106 GR.B SEAMLESS PIPE"

Specification	Chemical Composition (%)																	*1 Mechanical Test			Hardness
	C	Si	*2Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Ti	B	Ca	N	Al	C.E.	Y.S.	T.S.	E	
Min.	X100	X100	X100	X1000	X1000	X100	X100	X100	X100	X100	X100	X100	X10000	X10000	X1000	X1000	X100	MPa		%	HB
Max.	-	10	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240	415	25.5	-
Pipe Charge No.	30	-	106	50	58	40	40	40	15	8	2	2	5	65	8	-	-	-	655	-	197
J0K9381	21	28	68	23	9	2	2	7	1	0	0	0	1	17	7	13	35	347	510	54	146

$$C.E. = C + \frac{Mn}{6} + \frac{Cr+Mo+V}{5} + \frac{Ni+Cu}{15}$$

Inspection Certificate : ACCORDING TO EN 10204, 3.1 : 2004

ISO 9001: 2008 Manufacturing Company
Certified by BV, Certificate No. TH10000101

*1 Y.S.= Yield Strength, T.S. = Tensile Strength, E = Elongation,

*3 UT = Ultrasonic thickness inspection,

*2 For each reduction of 0.01% below the specified carbon(C) Maximum, an increase of 0.06% manganese(Mn) above specified maximum will be permitted, up to a maximum of 1.35% as per foot note D of ASTM A234/A234M-07 Table 1.

ELBOW / Forming temperature 780°C— 930°C and cooled in still air

TEE, REDUCER & CAP / Normalizing : 900°C

AT-24(2)12

"We hereby certify that the material described herein has been duly inspected and conforms to the standard as specified above.

Surveyor to

Chief of Inspection Section S.MAEKAWA

2" CL 600 W/N FLANGE RF XH BORE A105N

2" S80 600 31283 FLANGE

P.O.# 6553/4015 Item# 3
Heat Number: 10/31283 - 9
Trans Am piping Products Ltd.
Shipment/Seq #: S10 - 5194

METALFAR
PRODOTTI INDUSTRIALI S.P.A.
STAMPAGGIO A CALDO DI ACCIAI COMUNI - LEGATI E INOSSIDABILI
SALA PROVE E ANALISI MATERIALI / MATERIAL TEST DEPARTMENT

SEDE AMMINISTRATIVA E STABILIMENTO:
23861 CESANA BRIANZA (LC) - Italy
Via G. Parini, 28
Tel. +39 031.655441
Fax +39 031.655149
quality.mff@farmas.com

COMPANY WITH QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV
= ISO 9001:2008 =

CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE

TRANS AM PIPING PRODUCTS LTD
9335 ENDEAVOR DRIVE S.E.
T3S 0A1 CALGARY, ALBERTA CA

Certif. N. 4993 Del/Dated 14.12.2010
Fattura / Invoice N. 3498 Del/Dated 09.12.2010
DDT / Del Note N. 6565 Del/Dated 09.12.2010
Ns.Ord. / Our ref. N. Del/Dated

COD. COL. COLATA / HEAT CODE HEAT: 10/72708 | POS. ITEM: 007 | VS.ORDINE YOUR REFERENCE: PI-10-35098 | Q.TA' Q.TY: 1,00 | DESCRIZIONE DESCRIPTION: W/N 600 RF 2" STD A105 | DIM.IN ACC. A / DIM. ACCORDANCE TO: ASME/ANSI B16.5 | VISIVO E DIMENS. / VIS. & DIMENS.: SATISFACTORY

MATERIALE / MATERIAL	C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
ASTM A105	0,195	0,200	1,080	0,009	0,013	0,090	0,040	0,010	0,023	0,180	0,003	0,001	0,000	0,025	0,410

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns.Rif. OUR REF.
126,60	50,80	1	341,0	552,0	32,0	57,0	166,0 - 170,0	KV	20	90	83	90	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 09 CSA Z245.12 GRADE 248 CAT.I
TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR
FORNO / FURNACE: ELECTRIC FURNACE
ORIGINE / ORIGIN: EUROPE

COD. COL. COLATA / HEAT CODE HEAT: 10/39288 | POS. ITEM: 008 | VS.ORDINE YOUR REFERENCE: PI-10-35098 | Q.TA' Q.TY: 1,00 | DESCRIZIONE DESCRIPTION: W/N 600 RF 4" STD A105 | DIM.IN ACC. A / DIM. ACCORDANCE TO: ASME/ANSI B16.5 | VISIVO E DIMENS. / VIS. & DIMENS.: SATISFACTORY

MATERIALE / MATERIAL	C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
ASTM A105	0,180	0,230	1,120	0,010	0,008	0,090	0,050	0,010	0,017	0,150	0,021	0,000	0,000	0,030	0,404

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns.Rif. OUR REF.
126,60	50,80	1	370,0	525,0	30,0	59,0	159,0 - 163,0	KV	20	88	88	85	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 09 CSA Z245.12 GRADE 248 CAT.I
TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR
FORNO / FURNACE: ELECTRIC FURNACE
ORIGINE / ORIGIN: EUROPE

COD. COL. COLATA / HEAT CODE HEAT: 10/31283 | POS. ITEM: 009 | VS.ORDINE YOUR REFERENCE: PI-10-35098 | Q.TA' Q.TY: 13,00 | DESCRIZIONE DESCRIPTION: W/N 600 RF 2" XS A105 | DIM.IN ACC. A / DIM. ACCORDANCE TO: ASME/ANSI B16.5 | VISIVO E DIMENS. / VIS. & DIMENS.: SATISFACTORY

MATERIALE / MATERIAL	C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
ASTM A105	0,205	0,240	1,090	0,010	0,009	0,070	0,060	0,010	0,018	0,130	0,003	0,001	0,000	0,026	0,416

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns.Rif. OUR REF.
126,60	50,80	1	357,0	540,0	30,0	58,0	156,0 - 163,0	KV	20	82	84	88	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 09 CSA Z245.12 GRADE 248 CAT.I
TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR
FORNO / FURNACE: ELECTRIC FURNACE
ORIGINE / ORIGIN: EUROPE

NOTE MANUFACTURING IN ACCORDANCE WITH ORDER AND SPECIFICATION
NOTES MATERIAL IN ACCORDANCE WITH NACE MR-0175/2003 ISO 15156
MATERIAL IN ACCORDANCE WITH NACE MR-0103/2007

UFFICIO CONTROLLO QUALITA' QUALITY CONTROL DEPARTEMENT	ENTE UFFICIALE DI COLLAUDO INSPECTION AUTHORITY	MARCHIO PRODUZIONE MANUFACTURER'S SYMBOL
S. Corti		MFF

3+2 Tee STD/XS

RECEIVED MAR 1 - 2011

53H10106-1

INSPECTION CERTIFICATE

TO EN10204 3.1

Thai Benkan Co., Ltd.
58 Soi Watkrunai, Bangkru, Prapadaeng,
Samutprakarn, 10130 Thailand.

Purchaser : MIDFIELD SUPPLY ULC

E-No.	Purchase Order No.	Job No.	D M Y Certificate No.
MC-150	S759066421		07/12/2010 T- 2010140729

No.		MFG. No. (Heat Identification No.)	Specification for Material Made from Seamless Pipe: ASTA A234-10/ASME SA234-07 Gr.WPB CSA Z245.11-09 Gr.241 CAT I SS NACE MR0175/ISO15156-2 :2003&MR0103-07	Specification for Inspection	Visual Examination	Dimensional Inspection
			Product & Size (T:*1)	Quantity	Heat Treatment (Note 1)	Hardness Actual Data / Item No.
1		53H10106	T WPB 3 X 2 STD/XS	25/130	N	HB : 115 - 145 / 6103000200423
2		53H10106-1	T WPB 3 X 2 STD/XS	74/130	N	HB : 115 - 145 / 6103000200423
3		10G10813	T WPB 4 X 3 S40	18/65	N	HB : 115 - 145 / 510400030042
4		10K10838	T WPB 4 S80	20/110	N	HB : 120 - 150 / 41040043
5		10K10808	T WPB 3 X 2 S40	209/540	N	HB : 115 - 145 / 510300020042

Good (Visual Examination) — Good (Dimensional Inspection)

		Chemical Composition %												Tension Test *2			
	Specification	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.		%	HARDNESS MAX
	Max.		10	29										240	415	30	197 HB : GOOD
	Material Heat No.	30		106	50	58	40	40	40	15	80	20	42		585		
1	J0K5087	19	26	86	14	6	1	2	6	8	0	0	36	359	521	37	
2	35310	18	24	83	10	5	6	3	4	2	3	1	34	317	474	34	
3	38884	18	18	78	10	2	3	2	2	1	0	0	32	284	453	39	
4	J8L3650	19	21	82	12	6	2	2	5	1	0	1	34	297	484	41	
5	15519K	16	21	70	9	5	6	2	4	0.4	<3	<3	29	274	416	41	

(Note 1) A : Hot formed with final temperature between 620 °C-980°C, Air Cooling N : Normalizing 910°Cx0.5 HR. Air Cooling *N : Normalizing 910°Cx0.5 HR. Air Cooling (Specification for material made from plate) S : Stress Relieving 675° Cx0.5 HR. Air Cooling

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 : 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.

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

2" 900/1500 561TO
S80 Flange

CLIENTE / Customer / Client

MRC MIDFIELD SUPPLY
502 - 25TH AVENUE
NISKU, AB T9E 0X9
CANADA

CERTIFICADO DE INSPECCION

Inspection Certificate - Certificat de Réception

DIN EN 10204 / 3.1
ISO 10474 / 3.1

FECHA / Date: 15/11/2010 — N.º / No.: 134055 — HOJA / Page: 2

ULMA FORJA, S.COOP.

B.º Zubillaga, 3 - Apdo. 14
20560 OÑATI (Gipuzkoa) SPAIN
Tel.: 34 - 943 780552
Fax: 34 - 943 781800
E-mail: ulma@ulmapiping.com

78716

PRODUCTO / Article - Produit: FLANGES

SU PEDIDO N.º / Your Order No. / Votre Cde. N.º: D000111 - MIDFIELD

DE / cf. - de: 15/09/2010

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

NORMAS APLICABLES / Requirements - Normes Applicables: ASME B16.5-09

MARCA DEL FABRICANTE / Mark of factory / Marque du fabricant:

MATERIAL CORRESPONDIENTE / Material Correspondant - Qualité: ASTM A105N-09 / ASME SA105N-09

MODO DE FUSION (*) / Steel Making - Elaboration de l'acie: E = Elec. Y = Oxigeno básico

NACE MR0103/03 & MR0175/03
CAN/CSA-Z245.12 Gr.248 CAT 1
(WN & BLIND FLANGES ONLY)

DEPARTAMENTO / Section / Département: QUALITY ASSURANCE

PARTIDA / Item / Poste	CANTIDAD / Quantity / Quantité	DESCRIPCION / Description / Description	OBSERVACIONES / Remarks / Observations (*)	COLADA N.º / Heat No / N.º Coulée	RESISTENCIA T.Strength / Rental Rupt / N/mm2	LIMITE ELAST. Y.Strength 0.2 % / N/mm2	ALARGAM. Elongation / Allongement Lo: 4 d %	ESTRICCION Red. Area / Striction %	RESILIENCIA / Impact test / Résilience / Joules MEDIA / Average / Moyenne	°C	DUREZA / Hardness / Dureté HB
42 01F014201	5	BLIND 10 300LB RF A105N	NE	531A0	502	311	30,30	54,00			147 153
49 01A008311	70	WN 3 600LB S40 RF A105N	NE	385T0	518	305	28,60	52,80			150 157
52 01A012311	15	WN 6 600LB STD/40 RF A105N	NE	394T0	513	304	28,30	52,60			149 156
76 01A008821	105	WN 2 1500LB S80 RF A105N	NE	561T0	519	303	29,00	54,60			152 158
83 01A008533	15	WN 2 1500LB XXS RTJ A105N	NE	525T0	515	303	28,70	54,00			148 156
85 01A008481	25	WN 3 600LB S160 RF A105N	NE	514T0	516	303	27,80	51,00			149 157
86 01A010481	5	WN 4 600LB S160 RF A105N	NE	385T0	518	305	28,60	52,80			150 157
87 01A008423	5	WN 3 900LB S80 RTJ A105N	NE	275A0	517	323	31,60	59,00			150 157
91 01F008401	3	BLIND 3 900LB RF A105N	NE	100T0	513	302	28,60	53,00			148 155
91 01F008401	7	BLIND 3 900LB RF A105N	NE	237V0	511	322	32,00	58,30			147 155

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

COLADA N.º / Heat No / N.º Coulée	C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	Nb %	V %	Cu %	Al %	Ti %	N %	CEq %
100T0	0,180	0,180	0,820	0,011	0,014	0,050	0,130	0,010	0,005	0,001	0,320	0,000	0,000	0,000	0,359
237V0	0,180	0,200	0,860	0,018	0,010	0,100	0,030	0,005	0,001	0,004	0,080	0,035	0,000	0,000	0,374
275A0	0,200	0,240	0,840	0,009	0,004	0,060	0,080	0,030	0,006	0,001	0,240	0,040	0,000	0,000	0,384
385T0	0,180	0,210	0,980	0,010	0,018	0,050	0,120	0,020	0,000	0,003	0,380	0,000	0,000	0,000	0,406
394T0	0,190	0,180	0,950	0,010	0,018	0,050	0,110	0,020	0,000	0,002	0,240	0,000	0,000	0,000	0,388
514T0	0,220	0,180	0,880	0,020	0,011	0,050	0,120	0,030	0,004	0,001	0,320	0,000	0,000	0,000	0,412
525T0	0,190	0,170	0,880	0,017	0,015	0,060	0,120	0,020	0,005	0,001	0,300	0,000	0,000	0,000	0,391
531A0	0,180	0,210	0,820	0,010	0,008	0,050	0,080	0,008	0,002	0,005	0,160	0,027	0,000	0,000	0,344
561T0	0,200	0,150	0,870	0,018	0,014	0,070	0,100	0,020	0,004	0,001	0,280	0,000	0,000	0,000	0,389

- Las dimensiones y la condición superficial se hallaron satisfactorias
- Dimension and surface condition were found acceptable
- Les dimensions et état 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 COOP
Dpto. de Garantía de calidad
Quality Assurance Dept.

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

SEP 0 8 2010
RJV

2" 1500/900 XXS HT 381A9
Flange

CLIENTE / Customer / Client

CCTF CORPORATION (EDMONTON)
5407 - 53 AVENUE NW
EDMONTON, AB T6B 3G2
CANADA

CERTIFICADO DE INSPECCION

Inspection Certificate - Certificat de Réception

DIN EN 10204 / 3.1
ISO 10474 / 3.1

FECHA / Date: 02/02/2010
N.º / No.: 129892
HOJA / Page: 1

SGS 1922164 SGS 5000236

ULMA FORJA, S.COOP.
B° Zubillaga, 3 - Apdo. 14
20560 OÑATI (Gipuzkoa) SPAIN
Tel.: 34 - 943 780562
Fax: 34 - 943 781806
E-mail: ulma@ulmapiping.com

PRODUCTO / Article - Produit: FLANGES

SU PEDIDO N.º / Your Order No. / Votre Cde. N.º: 4887141-00

DE / of. - de: 01/12/2009

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

NORMAS APLICABLES / Requirements - Normes Applicables: ASME B16.5-09

MATERIAL CORRESPONDIENTE / Material Correspondent - Qualité: ASTM A105N-05 / ASME SA105N-05

MODO DE FUSION (*) / Steel Making - Elaboration de l'acier: E = Elec. Y = Oxigeno básico

NACE MR0175 / ISO15156-2 : 2005
NACE MR0103 : 2007
CSA-Z245.12-05 GR246 CAT I

MARCA DEL FABRICANTE / Mark of factory / Marque du fabricant: 76564

DEPARTAMENTO / Section / Département: QUALITY ASSURANCE

PARTIDA / Item / Poste	CANTIDAD / Quantity / Quantité	DESCRIPCION / Description / Description	OBSERVACIONES / Remarks / Observations (*)	COLADA N.º / Heat No / N.º Coulée	RESISTENCIA / T.Strength / Resist Rupt. N/mm2	LIMITE ELAST. / Y.Strength / Limite Elast. N/mm2	ALARGAM. / Elongation / Allongement Lo 4 d %	ESTRICCION / Red. Area / Striction %	RESILIENCIA / Impact test / Résilience Joules	PROBETA / SPECIMEN MEDIA / Average / Moyenne	°C	DUREZA / Hardness / Dureté HB
10 7530309	2	WN 15 150LB STD/30 FF A105N	NE	4A0	515	317	30,60	58,00				149 156
52 7531591	8	WN 6 900LB S160 RF A105N	NE	311A9	512	306	28,40	53,20				149 155
55 7531745	12	BLIND 6 900LB RF A105N	NE	248A9	497	303	28,60	52,70				147 154
57 7531915	33	WN 2 1500LB XXS RTJ A105N	NE	381A9	518	314	30,00	55,80				149 155
62 7532431	36	BLIND 3 1500LB RTJ A105N	NE	9T0	518	297	28,20	51,30				150 156
66 7532377	17	WN 3 1500LB XXS RTJ A105N	NE	162A9	519	316	30,40	56,40				150 155
66 7532377	31	WN 3 1500LB XXS RTJ A105N	NE	2T0	523	310	28,60	53,00				150 157

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

COLADA N.º / Heat No / N.º Coulée	C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	Nb %	V %	Cu %	Al %	Ti %	N %	CEq %
162A9	0,210	0,200	0,870	0,007	0,001	0,110	0,100	0,040	0,007	0,001	0,310	0,034	0,000	0,000	0,413
248A9	0,190	0,230	0,830	0,015	0,007	0,070	0,070	0,010	0,003	0,005	0,140	0,024	0,000	0,000	0,359
2T0	0,210	0,180	0,850	0,013	0,016	0,060	0,110	0,010	0,005	0,001	0,370	0,000	0,000	0,000	0,398
311A9	0,160	0,180	0,910	0,018	0,002	0,060	0,080	0,010	0,002	0,002	0,230	0,027	0,000	0,000	0,367
381A9	0,200	0,300	0,820	0,010	0,004	0,050	0,100	0,040	0,007	0,001	0,280	0,029	0,000	0,000	0,386
4A0	0,210	0,230	0,840	0,010	0,003	0,070	0,060	0,030	0,007	0,001	0,220	0,032	0,000	0,000	0,380
9T0	0,190	0,170	0,820	0,015	0,020	0,050	0,060	0,010	0,005	0,001	0,340	0,000	0,000	0,000	0,367

- Las dimensiones y la condición superficial se hallaron satisfactorias.
- Dimension and surface condition were found acceptable.
- Les dimensions et état 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 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

CERTIFIED MILL TEST REPORT

The Best Value - *Price, Quality, Service* All The Time.

LOG NO. F00000000008333 Page 1 of 1

BONNEY FORGE CORPORATION
P.O. BOX 330 • 14496 CROGHAN PIKE • MOUNT UNION, PA 17066-033
(814) 542-2545 • (800) 345-7546 • FAX (814) 542-4906
www.bonneyforge.com

CUSTOMER: CCTF CORPORATION **DATE** 11/23/2010

CUSTOMER ORDER NO.: 4888822-00 **BONNEY ORDER NO.** B000084748

SHIP TO: CCTF CORPORATION (EDMONTON)
5407 - 53RD AVE.
EDMONTON AB T6B 3G2
Canada

ITEM	QUANTITY	LOT NO.	GRADE OR SPECIFICATION NO. CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:
26	7	57547	21/2X2 3M A105N THRD T SA/A105N
7553153			Al 0.027 C 0.200 Co 0.003 Cr 0.050 Cu 0.170 Mn 1.020 Mo 0.010 Nb 0.017 Ni 0.040 P 0.008 S 0.020 Si 0.230 V 0.000
			CE(Long Formula) = 0.40
			T/S(PSI) 73,441 Y/S(PSI) 48,716 EL(%) 33.60 RA(%) 67.90
			Brinell 139 BHN 139 BHN
46	75	58038	36-3/4 X 1/2 3M A105N LREO T SA/A105N
7552203			Al 0.021 C 0.210 Cb 0.000 Co 0.004 Cr 0.040 Cu 0.140 Mn 1.000 Mo 0.010 N 0.005 Nb 0.013 Ni 0.040 P 0.008 S 0.018 Si 0.210 Sn 0.010 V 0.004
			CE(Long Formula) = 0.40
			T/S(PSI) 72,500 Y/S(PSI) 49,375 EL(%) 33.65 RA(%) 65.85
			Brinell 137 BHN 135 BHN

1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.
2. THE MATERIAL SUPPLIED IDENTIFIED AS A105N WAS NORMALIZED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.
3. THE MATERIAL SUPPLIED AS A105N MEETS THE REQUIREMENTS OF BOTH NACE MRO103-2007 AND NACE MRO175/ISO 15156-2.
4. CERTIFYING ASTM A105-09 / ASME SA105-07 EDITION.
5. THE PRODUCT SUPPLIED WAS INSPECTED IN ACCORDANCE WITH EN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT. (EUROPEAN STANDARD)
6. THE UNIT OF MEASURE FOR TENSILE AND YIELD (0.2%) STRENGTH ARE IN REPORTED IN PSI.
7. ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.

1/2" OLET

RECEIVED JAN 10 2011

58038

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by Brenda Garlock
BRENDA GARLOCK
QUALITY PROCESS MANAGER

CMTR: REV2

2" 90° 160 Elbow

6J4676

PURCHASER : SEYBOLD

STANDARD : ASTM A234 WPB-06
ASME SA234 WPB-01

MATERIALS : ASTM A106 Gr.B (SEAMLESS PIPE)

INSP. SPEC. : ASME B16.9 - 03

INSPECTION CERTIFICATE

RIGID INDUSTRIES CO., LTD.
8, MEI-CHUNG RD. NIAO-SONG,
KAOHSIUNG HSIEN, 83301 TAIWAN
TEL: 886-77310527~8
FAX: 886-77315887

ACCORDING TO EN10204/DIN50049/3.1

DATE: 2007 - 04 - 19

ORDER NO: 6110/10951964

P.I. NO: 6J19-3

CERTIFI. NO: 201

ITEM NO.	PRODUCT & SIZE		QUANTITY PCS	MFG NO.	VISUAL & DIMENTIONAL INSPECTION	HARDNESS MAX. 197 HB	HEAT TREATMENT (NOTE)	MAGNETIC PARTICLE EXAMINATION	IMPACT TEST (J)
1	ELL 90 LR 2"	160	164	6J4676	GOOD	131 - 139	A		
2	ELL 90 LR 8"	XH	30	6H4728	GOOD	135 - 136	A		
3	ELL 180 LR 4"	STD	45	6H4809	GOOD	137 - 138	A		
4	TEE 2"	160	192	6L0876	GOOD	145 - 158	N	GOOD	
5	TEE 3"	160	17	6I0281	GOOD	169 - 174	N	GOOD	

ITEM NO.	MATERIAL CHARGE NO.		CHEMICAL COMPOSITION %											PHYSICAL TEST			
			C x100	Si x100	Mn x100	P x1000	S x1000	Cu x100	Ni x100	Cr x100	Mo x100	V x100	Nb x1000	Y S KSI	T S KSI	E %	C.E. X100
	STANDARD	MIN.		10	29									35.0	60.0		
		MAX.	30		135	50	58	40	40	40	15	8	20		95.0		50
1	0613076		15	20	67	13	5	5	3	2	2	<1	<1	63.8	71.2	30.0	27
2	313128		19	27	56	12	2	5	2	2	<1	<1	1	44.3	68.2	42.5	29
3	307709		14	16	81	9	3	7	3	3	1	<1	1	43.0	65.6	39.5	28
4	0613076		15	20	67	13	5	5	3	2	2	<1	<1	63.8	71.2	30.0	27
5	J6L4981		11	25	128	13	3	2	2	10	<1	<1	1	45.4	68.2	45.9	34

(NOTE): A: HOT FORMED WITH FINAL TEMPERATURE BETWEEN 620℃-980℃,AIR COOLING.
N: NORMALIZING AT TEMPERATURE 880℃X0.5HR,AIR COOLING.
NACE MR-01-75 & NACE MR 0103 : SATISFACTORY

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.

98826 Ou C Lan

MANAGER OF Q.A. DEPT.

GD206
2" S160
ELBOW

INSPECTION CERTIFICATE

PANTECH

Certificate No. : KLR 0403926
QMS STD : ISO 9001:2000

Purchaser : ALLIED FITTING CORP
Order No : 100507 APS - 2

Date : 24-Oct-07
Certificate No : PSI 48735

Job No.	Specification for Material: Made from Seamless Pipe	Specification for Inspection		
E 4675	ASTM A234 - 06 / ASME SA 234 (WPB)	ASME B16.9 - 2003 & B16.28		
Heat No	Product & Size (*1)	Quantity	Visual Examination	Dimensional Inspection
HE 401 C	6" x 6" STD CON RED	36	GOOD	GOOD
GD 206	2" LR 90 DEG S160 ELBOW	657	GOOD	GOOD
HC 601	3" x 2" STD RED TEE	178	GOOD	GOOD

Material Manufacturer	Material Heat No.	Heat Treatment (Note)	Magnetic Particle Examination
YANTAI HENGYUAN INDUSTRY	07C3052	S	N.A
YANTAI GENERAL STEEL PIPE	T206 - 3795	H	N.A
WUXI NANFANG STEEL TUBE	505 - 061	S	GOOD

Specification	Chemical Composition %												*2 Tension Test			HARDNESS TEST	
	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	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		KPSI / Mpa / N/mm²		%	HB MAX	197
Min		10	29										240	415	30		
Heat No Max	30		106	50	58	40	40	15	40	80	20			585			
HE 401 C	18	25	58	12	8	4	2	2	10	12	2	0.32	300	480	32.5		150
GD 206	17	21	40	13	8	2	6	0.1	5	1	1	0.26	280	450	32.0		181
HC 601	20	19	58	12	7	1	3	5	6	1.6	0	0.32	295	500	31.0		146

WE CONFIRM TO COMPLY IN NACE MR0175-2003
SPECIMEN SIZE : A370 LONGITUDINAL, GAUGE LENGTH = 2"
CERTIFY ACCORDING TO EN10204 3.1B

NOTE:
H:HOT FORMED WITH FINAL TEMPERATURE BETWEEN 620 °C AND 980°C AIR COOL
S :STRESS RELIEVED TEMPERATURE BETWEEN 595°C TO 690°C,AIR COOL

We herby 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: The symbol "I" after wall thickness means mm as unit
*2 YS = Yield strength YP = Yield point TS=Tensile strength E = Elongation

Manager of Quality Assurance Section

PANTECH STEEL INDUSTRIES SDN. BHD.(50977-A)
Tel: 603-3393 1833 Fax: 603-3393 1731

100823

3"600 FLANGE

1109F

MUNISH FORGE PVT. LTD
VILL. GOBINDGARH ADJOINING PHASE -VII FOCAL POINT
LUDHIANA- 141 010 INDIA. TEL:- +91 161 2673 307 2673 407 Fax: +91 161 2676 036
AN ISO 9001 : 2000 CERTIFIED COMPANY
(CERTIFICATE No. 25436-2008-AQ-IND-RVA)
CERTIFICATE AS PER BS EN 10204 3.1)

INVOICE NO. & DATE		CERTIFICATE NO.	2280/09
CUSTOMER'S NAME		DATE	22-08-09
PART NO. / NAME	3"-600 WNRF STD	P.O. NO. & DATE	
MATERIAL SPECIFICATION	ASTM A105N/ASME SA 105N – NACE MR 0175		
STANDARD	ASME B16.5-2003 (REVISON OF ASME B16.5-1996)	LAB REF. NO.	1109F
QUANTITY	100 Pcs		

CHEMICAL COMPOSITION

DESCRIPTION	QTY (PCS)	HEAT NO.	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Cb		CE%
SPECIFIED	100	-	0.25 MAX	1.05 MAX	0.035 MAX	0.040 MAX	0.10 0.35 MAX	0.40 MAX	0.40 MAX	0.30 MAX	0.12 MAX	0.05 MAX	0.02 MAX	-	0.43 MAX
MILL TEST REPORT		6102079	0.23	0.91	0.027	0.038	0.26								
OBSERVED BY US	100	1109F	0.22	1.04	0.012	0.011	0.33	0.029	0.002	0.027	0.002	0.001			0.39

MECHANICAL PROPERTIES

HEAT NO.	DESCRIPTION	YIELD STRENGTH PSI	TENSILE STRENGTH PSI	% ELONGATION	% REDUCTION	HARDNESS BHN
-	SPECIFIED	36000	70000	22 MIN	30 MIN	137-237
1109F	OBSERVED	41220.9	74730.6	24.40	37.59	143-146

SPECIAL REMARKS: - WE CERTIFY THAT THE MATERIAL SUITS THE REQUIREMENT OF P.O. / RELEVANT SPECIFICATION.
CARBON STEEL FLANGES ARE FORGED, NORMALIZED & FULLY MACHINED WITH SERRATED FINISH.
FLANGES ARE PAINTED WITH BLACK PAINT & MARKED AS :

MUNISH 3 WNRF STD 600 A 105N B16.5 H1109 F INDIA

MADE BY	A.Q.C.M.. (MACHINE)	FLANGE SHOP (D.G.M.)	D.G.M. (Q.C) FOR MUNISH FORGE LTD.

RECEIVED
MAR 1 - 2011

41390

BHD TUBULAR
"Infinite Value"

EDMONTON HEAD OFFICE
PHONE: (780) 434-7850 FAX: (780) 436-3768

DATE ______

BUNDLES ______

ORDER LOC. 8" XXH A106

LOOSE ______ CROPS ______

PULLED BY ______

CUSTOMER/MFG RJV - Vegreville

PO# 114428

BHD REF # 60311

PAGE 1 OF 1

MTR ATTACHED ____ YES ____ NO

504' Nikopol

MAT SPEC. A106 - SRL STD

SIZE	3" X	216 W
PCE	LENGTH	HEAT#
1	24 pcs @	293-1
2	21'	1288-1
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	5040	TOTALS

MAT SPEC. ______

SIZE	X	W
PCE	LENGTH	HEAT#
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		TOTALS

MAT SPEC. ______

SIZE	X	W
PCE	LENGTH	HEAT#
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		TOTALS

MAT SPEC. ______

SIZE	X	W
PCE	LENGTH	HEAT#
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25		
		TOTALS

Tuesday, 17-Aug-2010

From:

BHD TUBULAR
6903 72 Ave
EDMONTON, ALBERTA, CANADA
T6B 3A5
Phone : 780-434-7850
Fax : 780-4363768
Email : marcel.doolittle@bhd.ca
Web Site : www.bhd.ca

To:

RJV GAS FIELD SERVICES
KATHY
4901 - 47 STREET
VEGREVILLE, AB
T9C 1C3
Phone : (780) 632-7774
Fax : (780) 632-6820

RE:

Document Summary Page

The MTR's are printed in the following order:

#	Heat	Sku	Description
1	293-1	P3216S6SB	3" STD SMLS A106B SRL BE
2	1288-1	P3216S6SB	3" STD SMLS A106B SRL BE

2" A106B Sch 80 pipe

736435

BENTELER
Stahl/Rohr

Benteler Stahl/Rohr GmbH
Postfach 13 40
33043 Paderborn
Deutschland
Tel.: +49.5254.81-0 Fax: +49.5254.13666

ABNAHMEPRÜFZEUGNIS EN 10204-3.1

INSPECTION CERTIFICATE EN 10204-3.1
CERTIFICAT DE RECEPTION EN 10204-3.1
EN 10204:2005-01

Benteler Stahl/Rohr GmbH - Postfach 1340 - 33043 Paderborn - Deutschland

Westlund - Edmonton
5105 - 75th Street
EDMONTON, AB T6E 5S5
KANADA

Dokument-Nr.: **Document No.:** No. du document: 65-269977/001/P

Kunden-Bestell-Nr.: **Purchase Order No.:** No. de commande du client: 05-5421

Benteler Auftrags-Nr.: **Benteler Order No.:** No. de commande Benteler: 1127218

Versandanzeigen-Nr.: **Dispatch Note No.:** No. d'avis d'expédition: 6558262

Produkt: NAHTLOSE STAHLROHRE
Product: SEAMLESS STEEL TUBES
Produit: TUBES D' ACIER SANS SOUDURE

Prüf-Nr.: **Inspection No.:** No. du certificat:

Blatt: 1 /
Page:
Page:

Hersteller: Warmrohrwerk Dinslaken
Manufacturer: ISO/TS 16949 (ISO 9001) DNV CERT-13765-2003
Producteur: PED 97/23/EC TÜV Cert 07 202 4111/Z/5001/1/H

Herstellerzeichen: **Manufacturer's brand:** Marque du producteur:

Stempel des Abnahmebeauftragten: WA
Stamp of the inspection representative:
Timbre du contrôleur:

Stahlerschmelzungsverfahren: ELEKTROSTAHL
Steelmaking process: ELECTRIC FURNACE
Procédé d'élaboration de l'acier: FOUR ELECTRIQUE

Lieferbedingungen: **Terms of delivery:** Conditions de livraison: CSA Standard Z245.1-02 Category I, API Specification 5L Forty-Third Edition, March 2004, PSL 1, ASTM-A 106-2004b, S5, ASME SA-106, ASME Section II Part A Edition 2004, S5, NACE MR0175-03

Maße - Toleranzen: **Dimensions-tolerances:** Dimensions-tolérances: ASME B36.10M-1996, ASME SA-530, ASME Section II Part A Edition 2004, ASTM-A 530-2003

Stahlsorte: **Steel grade:** Nuance d'acier: GRADE 290, GRADE B, GRADE X 42

Lieferzustand: **Delivery condition:** État de livraison: Hot rolled

Produktkennzeichnung: **Product marking:** Marquage du produit: see attachment product marking

Pos. Item Poste	Stück Number Nombre	Maße Dimensions Dimensions	Länge Length Longueur feet	Gewicht Weight Poids lbs	Schmelzen-Nr. Heat No. No. de coulée	Prüfdruck Test pressure Pression d'épreuve PSI	s	Rohr-Nr.-Gruppe Tube number group Série de no. des tubes	Vielfact Multiple I Longueu
0002	162	1 1/2" NPS * Sched. 40 18 FT - 22 FT 2520249	3307,12	8794	527031	3000	5		
0003	100	3" NPS * Sched. 40 38 FT - 42 FT 2520031	4120,70	31149	736199	3000	5		

Benteler Stahl/Rohr GmbH
Postfach 13 40
33043 Paderborn
Deutschland
Tel.: +49.5254.81-0 Fax: +49.5254.13666

BENTELER
Stahl/Rohr

ABNAHMEPRÜFZEUGNIS EN 10204-3.1

INSPECTION CERTIFICATE EN 10204-3.1
CERTIFICAT DE RECEPTION EN 10204-3.1

Dokument-Nr.: / **Document No.:** / No. du document: 65-269977/001/P

Prüf-Nr.: / **Inspection No.:** / No. du certificat:

Blatt: 2 / **Page:** / Page:

Pos. / Item / Poste	Stück / Number / Nombre	Maße / Dimensions / Dimensions	Länge / Length / Longueur feet	Gewicht / Weight / Poids lbs	Schmelzen-Nr. / Heat No. / No. de coulée	Prüfdruck / Test pressure / Pression d'épreuve PSI	s	Rohr-Nr.-Gruppe / Tube number group / Série de no. des tubes	Vielfachl / Multiple le / Longueurs
0007	77	1 1/2" NPS * Sched. 80 18 FT - 22 FT 2520397	1590,58	5829	527032	3000	5		
0008	750	2" NPS * Sched. 80 18 FT - 22 FT 2520400	14799,87	74285	736435	3000	5		
0009	111	2" NPS * Sched. 80 38 FT - 42 FT 2520046	4540,22	22950	736436	3000	5		
0010	38	4" NPS * Sched. 80 38 FT - 42 FT 2520050	1462,34	21854	736410	3000	5		
0011	170	1" NPS * Sched. 160 18 FT - 22 FT 2520524	3518,67	10188	736390	3000	5		
0012	73	2" NPS * Sched. 160 18 FT - 22 FT 2520540	1564,57	11737	527218	3000	5		

Schmelzenanalyse [%] / Heat analysis [%] / Analyse sur coulée [%]

Pos. / Item / Poste	Schmelzen-Nr. / Heat No. / No. de coulée	C	SI	MN	P	S	CR	MO	NI	CU	V	NB	TI	B
0002	527031	0,130	0,210	0,80	0,006	0,002	0,07	0,03	0,07	0,12	0,001	0,010	0,002	0,
0003	736199	0,135	0,215	0,81	0,007	0,003	0,08	0,03	0,07	0,13	0,001	0,010	0,003	0,
0007	527032	0,140	0,220	0,82	0,007	0,003	0,08	0,03	0,06	0,14	0,001	0,010	0,003	0,
0008	736435	0,130	0,220	0,83	0,010	0,003	0,13	0,04	0,14	0,17	0,001	0,010	0,003	0,
0009	736436	0,120	0,220	0,82	0,009	0,004	0,15	0,04	0,14	0,20	0,001	0,010	0,003	0,
0010	736410	0,140	0,195	0,81	0,012	0,004	0,18	0,04	0,15	0,17	0,001	0,010	0,003	0,
0011	736390	0,135	0,205	0,84	0,007	0,003	0,11	0,03	0,12	0,19	0,001	0,010	0,003	0,
0012	527218	0,160	0,180	0,80	0,013	0,003	0,20	0,04	0,15	0,16	0,001	0,010	0,003	0,

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BENTELER
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ABNAHMEPRÜFZEUGNIS EN 10204-3.1
INSPECTION CERTIFICATE EN 10204-3.1
CERTIFICAT DE RECEPTION EN 10204-3.1

Dokument-Nr.: 65-269977/001/P
Document No.:
No. du document:

Prüf-Nr.:
Inspection No.:
No. du certificat:

1. Formel: CE IIW=C+(Mn/6)+((Cr+Mo+V)/5)+((Cu+Ni)/15)<=0,40 %
2. Formel: CEV=C+F*((Mn/6)+(Si/24)+(Cu/15)+(Ni/20)+((Cr+Mo+V+Nb)/5) +(5*B)) <=0,40
3. Formel: Mn/C>=3/1
4. Formel: Cr+Cu+Mo+Ni+V<=1,00 %

Formelergebnisse / Formula results / Résultats des formules

Pos. / Item / Poste	Schmelzen-Nr / Heat No. / No. de coulée	1. Formel / 1. Formula / 1. Formule	2. Formel / 2. Formula / 2. Formule	3. Formel / 3. Formula / 3. Formule	4. Formel / 4. Formula / 4. Formule
0002	527031	0,296	0,271	6,154	0,291
0003	736199	0,306	0,289	6,000	0,311
0007	527032	0,312	0,295	5,857	0,311
0008	736435	0,323	0,292	6,385	0,481
0009	736436	0,318	0,275	6,833	0,531
0010	736410	0,341	0,317	5,786	0,541
0011	736390	0,324	0,303	6,222	0,451
0012	527218	0,362	0,353	5,000	0,551

Produktanalyse [%] / Product analysis [%] / Analyse sur produit [%]

Pos. / Item / Poste	Schmelzen-Nr. / Heat No. / No. de coulée	C	SI	MN	P	S	CR	MO	NI	CU	V	NB	TI	B
0002	527031	0,140	0,200	0,81	0,007	0,001	0,08	0,03	0,07	0,11	0,001	0,010	0,002	0,
0002	527031	0,140	0,200	0,81	0,007	0,001	0,08	0,03	0,07	0,11	0,001	0,010	0,002	0,
0003	736199	0,130	0,240	0,80	0,008	0,005	0,10	0,01	0,09	0,11	0,001	0,010	0,003	0,
0003	736199	0,140	0,240	0,82	0,008	0,005	0,09	0,01	0,09	0,12	0,001	0,010	0,003	0,
0007	527032	0,130	0,200	0,82	0,007	0,002	0,09	0,03	0,07	0,13	0,001	0,010	0,002	0,
0007	527032	0,130	0,200	0,82	0,007	0,002	0,08	0,03	0,07	0,13	0,001	0,010	0,002	0,
0008	736435	0,130	0,190	0,81	0,009	0,002	0,12	0,04	0,15	0,19	0,001	0,010	0,002	0,
0008	736435	0,130	0,200	0,81	0,009	0,002	0,12	0,04	0,15	0,19	0,001	0,010	0,002	0,
0009	736436	0,130	0,190	0,81	0,009	0,002	0,12	0,04	0,15	0,19	0,001	0,010	0,002	0,

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Dokument-Nr.: / **Document No.:** / No. du document: 65-269977/001/P

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Produktanalyse [%] / Product analysis [%] / Analyse sur produit [%]

Pos. / Item / Poste	Schmelzen-Nr. / Heat No. / No. de coulée	C	SI	MN	P	S	CR	MO	NI	CU	V	NB	TI	B
0009	736436	0,130	0,200	0,81	0,009	0,002	0,12	0,04	0,15	0,19	0,001	0,010	0,002	0,(
0010	736410	0,140	0,200	0,83	0,011	0,005	0,17	0,04	0,14	0,16	0,002	0,010	0,002	0,(
0010	736410	0,130	0,190	0,82	0,011	0,005	0,16	0,04	0,14	0,16	0,002	0,010	0,002	0,(
0011	736390	0,130	0,200	0,84	0,007	0,002	0,08	0,03	0,07	0,17	0,001	0,010	0,002	0,(
0011	736390	0,130	0,200	0,83	0,007	0,002	0,08	0,03	0,07	0,17	0,001	0,010	0,002	0,(
0012	527218	0,140	0,190	0,82	0,011	0,005	0,16	0,04	0,14	0,16	0,002	0,010	0,002	0,(
0012	527218	0,130	0,190	0,82	0,011	0,004	0,16	0,04	0,14	0,16	0,002	0,010	0,002	0,(

1. Formel: CE IIW=C+(Mn/6)+((Cr+Mo+V)/5)+((Cu+Ni)/15)<=0,40 %
2. Formel: CEV=C+F*((Mn/6)+(Si/24)+(Cu/15)+(Ni/20)+((Cr+Mo+V+Nb)/5) +(5*B)) <=0,40
3. Formel: Mn/C>=3/1
4. Formel: Cr+Cu+Mo+Ni+V<=1,00 %

Formelergebnisse / Formula results / Résultats des formules

Pos. / Item / Poste	Schmelzen-Nr / Heat No. / No. de coulée	1. Formel / 1. Formula / 1. Formule	2. Formel / 2. Formula / 2. Formule	3. Formel / 3. Formula / 3. Formule	4. Formel / 4. Formula / 4. Formule	Formel / Formula / Formule
0002	527031	0,309	0,292	5,786	0,291	
0002	527031	0,309	0,292	5,786	0,291	
0003	736199	0,299	0,274	6,154	0,311	
0003	736199	0,311	0,295	5,857	0,311	
0007	527032	0,304	0,277	6,308	0,321	
0007	527032	0,302	0,275	6,308	0,311	
0008	736435	0,320	0,289	6,231	0,501	
0008	736435	0,320	0,289	6,231	0,501	
0009	736436	0,320	0,289	6,231	0,501	
0009	736436	0,320	0,289	6,231	0,501	
0010	736410	0,341	0,318	5,929	0,512	

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Formelergebnisse / **Formula results** / Résultats des formules

Pos. **Item** Poste	Schmelzen-Nr **Heat No.** No. de coulée	1. Formel **1. Formula** 1. Formule	2. Formel **2. Formula** 2. Formule	3. Formel **3. Formula** 3. Formule	4. Formel **4. Formula** 4. Formule	Formel **Formula** Formule
0010	736410	0,327	0,295	6,308	0,502	
0011	736390	0,308	0,281	6,462	0,351	
0011	736390	0,307	0,279	6,385	0,351	
0012	527218	0,337	0,314	5,857	0,502	
0012	527218	0,327	0,295	6,308	0,502	

Prüfergebnisse / **Test results** / Résultats des essais

Die Rohre sind auf Dichtheit geprüft durch:
The tubes have been submitted to a leak tightness test by:
Les tubes ont passé un contrôle d'étanchéité par:
Hydrostatic test: acc. to CSA Z245.1, holding time min 5 seconds, Test pressure/Time-record — PASSED

Augensichtkontrolle: PASSED
Visual inspection:
Examen visuel:

Biegeversuch: PASSED
Bending test:
Essai de cintrage:
Pos. / **Item** / Poste: 0002, 0007, 0008, 0009, 0011, 0012

Maßkontrolle: PASSED
Dimensions examination:
Vérification des dimensions:

Ringfaltversuch: PASSED
Flattening test:
Essai d'aplatissement:
Pos. / **Item** / Poste: 0003, 0010

Ergebnisse der mechanischen Prüfung / **Results of mechanical testing** / Résultats des essais mécaniques

Die Probenahme erfolgte an Vielfachlängen.
The sampling was carried out on multiple lengths.
L'echantillonage etait realise aux longueurs multiples.

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Zugversuch / Tensile test / Essai de traction

Pos. Item Poste	Proben-Nr. Specimen No. No. de l'éprouvette	Schmelzen-Nr. Heat No. No. de coulée	Probenabmessung Specimen dimensions Dimensions de l'éprouv.	Streckgrenze Yield strength Limite élastique	Zugfestigkeit Tensile strength Résistance à la traction	Dehnung Elongation Allongement		Einschnürung Area reduction Coefficient de striction	Re Re/ Re/
Anforderungen Requirements Exigences			mm	ReH MPa 290-495	Rm MPa 415-760	A2" % MIN 30	1. Formel 1. Formula 1. Formule		
0002	000001	527031	12,70 X 3,60	400	511	34,00			
0002	000002	527031	12,70 X 3,60	417	507	34,00			
0003	000001	736199	25,40 X 5,50	327	452	43,00			
0003	000002	736199	25,40 X 5,50	324	451	42,00			
0007	000001	527032	12,70 X 5,10	347	472	36,00			
0007	000002	527032	12,70 X 5,10	345	473	35,00			
0008	000001	736435	19,00 X 5,50	349	475	37,00			
0008	000002	736435	19,00 X 5,50	353	474	39,00			
0009	000001	736436	19,00 X 5,50	353	480	38,00			
0009	000002	736436	19,00 X 5,50	348	479	37,00			
0010	000001	736410	25,40 X 8,40	337	485	38,00			
0010	000002	736410	25,40 X 9,20	354	496	38,00			
0010	000003	736410	25,40 X 8,40	339	487	38,00			
0011	000001	736390	12,70 X 7,20	340	468	34,00			
0011	000002	736390	12,70 X 7,20	334	460	32,00			
0012	000001	527218	19,00 X 8,70	345	489	38,00			
0012	000002	527218	19,00 X 8,70	349	492	38,00			

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Prüf-Nr.: / **Inspection No.:** / No. du certificat:

Härteprüfung / **Hardness test** / Essai de dureté

Pos. / **Item** / Poste	Proben-Nr. / **Specimen No.** / No. de l'éprouv.	Schmelzen-Nr. / **Heat No.** / No. de coulée	Härte / **Hardness** / Dureté			
Anforderungen / **Requirements** / Exigences			HRC	HB	HV	HRB
				MAX 200		
0002	000001	527031		156		
0003	000001	736199		136		
0007	000001	527032		138		
0008	000001	736435		150		
0009	000001	736436		149		
0010	000001	736410		137		
0011	000001	736390		141		
0012	000001	527218		137		

Restmagnetismus / **Demagnetize** / Démagnétiser

residual magnetic field intensity max 3,5 millitesla

Pos. / **Item** / Poste	Ihr Zeichen / **Your reference** / Votre référence	Kundenmaterial / **Customer's Material No.** / No. de matière du client	Kundenbestell-Nr. / **Purchase Order No.** / No. de commande du client
0002		P.O. 9100941-2520249	05-5421
0003		P.O. 9100941-2520031	05-5421
0007		P.O. 9100941-2520397	05-5421
0008		P.O. 9100941-2520400	05-5421
0009		P.O. 9100941-2520046	05-5421
0010		P.O. 9100941-2520050	05-5421
0011		P.O. 9100941-2520524	05-5421
0012		P.O. 9100941-2520540	05-5421

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Vermerk / **Remark** / Remarque

Pos. / **Item** / Poste: 0002, 0008, 0011, 0009, 0012, 0007, 0011, 0012, 0009, 0008, 0007, 0008, 0011, 0012, 0007, 0009, 0012, 0007, 0011, 0012, 0007, 0009, 0008
NACE Standard: hardness acc. to NACE Standard MR0175 HRC max 22, The material meets the requirements of NACE MR0103; Certificate remarks: This is to confirm that the seamless linepipe supplied by Benteler and verified to CSA Standard Z245.1-02 meets the requirement for micro hardness of max. 248 HV 500.; Bend test: mandrel diameter 12D, bending angle 90 degree

Pos. / **Item** / Poste: 0003, 0010, 0010, 0010
NACE Standard: hardness acc. to NACE Standard MR0175 HRC max 22, The material meets the requirements of NACE MR0103; Certificate remarks: This is to confirm that the seamless linepipe supplied by Benteler and verified to CSA Standard Z245.1-02 meets the requirement for micro hardness of max. 248 HV 500.

Beiblatt Produktkennzeichnung / **Attachment product marking** / Supplément marquage du produit

Pos. / **Item** / Poste	Produktkennzeichnung / **Produktkennzeichnung** / Marquage du produit	
0002	FS:	BENTELER Z.245.1, Spec.5L-PSL1, A/SA-106 S5 B/X42/290 HEAT-NO. TEST PRESSUR E DIMENSIONS SCHEDULE WA GERMANY P.O. 9100941-2520249
0003	FS:	BENTELER Z.245.1, Spec.5L-PSL1, A/SA-106 S5 B/X42/290 HEAT-NO. TEST PRESSUR E DIMENSIONS SCHEDULE WA GERMANY P.O. 9100941-2520031
0007	FS:	BENTELER Z.245.1, Spec.5L-PSL1, A/SA-106 S5 B/X42/290 HEAT-NO. TEST PRESSUR E DIMENSIONS SCHEDULE WA GERMANY P.O. 9100941-2520397
0008	FS:	BENTELER Z.245.1, Spec.5L-PSL1, A/SA-106 S5 B/X42/290 HEAT-NO. TEST PRESSUR E DIMENSIONS SCHEDULE WA GERMANY P.O. 9100941-2520400
0009	FS:	BENTELER Z.245.1, Spec.5L-PSL1, A/SA-106 S5 B/X42/290 HEAT-NO. TEST PRESSUR E DIMENSIONS SCHEDULE WA GERMANY P.O. 9100941-2520046
0010	FS:	BENTELER Z.245.1, Spec.5L-PSL1, A/SA-106 S5 B/X42/290 HEAT-NO. TEST PRESSUR E DIMENSIONS SCHEDULE WA GERMANY P.O. 9100941-2520050
0011	FS:	BENTELER Z.245.1, Spec.5L-PSL1, A/SA-106 S5 B/X42/290 HEAT-NO. TEST PRESSUR E DIMENSIONS SCHEDULE WA GERMANY P.O. 9100941-2520524
0012	FS:	BENTELER Z.245.1, Spec.5L-PSL1, A/SA-106 S5 B/X42/290 HEAT-NO. TEST PRESSUR E DIMENSIONS SCHEDULE WA GERMANY P.O. 9100941-2520540

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FK = Farbkennzeichnung, colour marking, marquage par couleur FS = Farbschablonierung, paint stencilling, marquage par peinture FSD = Farbstrahldrucker, Colour jet printer, Imprimante à jet d'encre de couleur LS = Längsschablonierung, longitudinal stencilling, longitudinal par peinture PKE = Etikettenkennzeichnung, tag marking, marquage sur étiquette PS = Prägestempel, die stamp, marquage par poinçonnage TS = Tintenstrahlkennzeichnung, Ink jet spray marking, imprimante à jet d'encre

Verkäufer(in) / **Salesman/ woman in charge** / Personne chargée : Mr Seelbach, Tel.: 05254/81-4281, Fax: 4289

Dinslaken, 13.05.2005, TEL.: 02064.623-571 FAX: 02064.623-575

BENTELER QUALITÄTSSTELLE

Abnahmebeauftragter
Inspection representative
Contrôleur
JAN FREERKS / WIL

Es wird bestätigt, daß die gelieferten Erzeugnisse den techn. Lieferbedingungen des Auftrages entsprechen.Dieses Dokument wurde mittels EDV erstellt und ist ohne Unterschrift rechtsgültig.
We certify that the supplied products comply with the order specification.This document was prepared by means of electronic data processing and is valid without signature.
Nous attestons que les produits livrés sont conformes aux stipulations de la commande.Ce document a été établi par traitement électronique de l'information et est valide sans signature.

Husky - 10-4634-1 2" XXS HT→518053

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ABNAHMEPRÜFZEUGNIS EN 10204-3.1.B

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CERTIFICAT DE RECEPTION EN 10204-3.1.B
EN 10204 - 1991 +A1: 1995

Benteler Stahl/Rohr GmbH - Postfach 1340 - 33043 Paderborn - Deutschland

BHD Tubular Ltd.
6903 - 72nd Ave.,
EDMONTON, AB T6B 3A5
KANADA

Dokument-Nr.: **Document No.:** No. du document: 65-189714/001/P

Kunden-Bestell-Nr.: **Purchase Order No.:** No. de commande du client: 04-5198

Benteler Auftrags-Nr.: **Benteler Order No.:** No. de commande Benteler: 1106904

Versandanzeigen-Nr.: **Dispatch Note No.:** No. d'avis d'expédition: 6516757

Produkt: NAHTLOSE STAHLROHRE
Product: SEAMLESS STEEL TUBES
Produit: TUBES D' ACIER SANS SOUDURE

Prüf-Nr.: **Inspection No.:** No. du certificat:

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Hersteller: Warmrohrwerk Dinslaken
Manufacturer: EN ISO 9001 DNV Cert.-11141-2001
Producteur: PED 97/23/EG TÜV Cert 072024111/Z/6001/1/H

Herstellerzeichen: **Manufacturer's brand:** Marque du producteur:

Stempel des Sachverständigen: WA
Inspector's stamp: Poinçon de l'expert:

Stahlerschmelzungsverfahren: ELEKTROSTAHL
Steelmaking process: ELECTRIC FURNACE
Procédé d'élaboration de l'acier: FOUR ELECTRIQUE

Lieferbedingungen: **Terms of delivery:** Conditions de livraison:	ASTM-A 333-1999-HF, ASME SA-333-HF, ASME Section II Part A Edition 2001 Addenda 2003, CSA Z245.1-98 Category II, NACE Standard MR0175-03
Maße - Toleranzen: **Dimensions-tolerances:** Dimensions-tolérances:	ASME B36.10M-1996, ASME SA-530, ASME Section II Part A Edition 2001 Addenda 2003, ASTM-A 530-2003
Stahlsorte: **Steel grade:** Nuance d'acier:	GRADE 290, GRADE 6
Lieferzustand: **Delivery condition:** État de livraison:	Normalized
Produktkennzeichnung: **Product marking:** Marquage du produit:	see attachment product marking

Pos. Item Poste	Stück Number Nombre	Maße Dimensions Dimensions	Länge Length Longueur feet	Gewicht Weight Poids lbs	Schmelzen-Nr. Heat No. No. de coulée	Prüfdruck Test pressure Pression d'épreuve PSI	s	Rohr-Nr.-Gruppe Tube number group Série de no. des tubes	Vielfachläng Multiple length Longueurs mul
0001	230	2" NPS * Sched. 40 18 FT - 22 FT	4948,75	17908	726828	3000	5		
0002	127	2" NPS * Sched. 40 38 FT - 42 FT	5263,42	18995	726827	3000	5		

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No. du document:

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Pos. **Item** Poste	Stück **Number** Nombre	Maße **Dimensions** Dimensions feet	Länge **Length** Longueur feet	Gewicht **Weight** Poids lbs	Schmelzen-Nr. **Heat No.** No. de coulée	Prüfdruck **Test pressure** Pression d'épreuve PSI	s	Rohr-Nr.-Gruppe **Tube number group** Série de no. des tubes	Vielfachläng **Multiple length** Longueurs mul
0003	269	2" NPS * Sched. 80 18 FT - 22 FT	5302,40	26202	726797	3000	5		
0004	101	2" NPS * Sched. 80 38 FT - 42 FT	4215,52	20845	726796	3000	5		
0006	53	2" NPS * Sched. 160 38 FT - 42 FT	2210,73	16327	518096	3000	5		
0007	40	2" NPS * XXS 38 FT - 42 FT	1655,97	14753	518053	3000	5		
0009	102	3" NPS * Sched. 40 38 FT - 42 FT	4225,07	31348	726808	3000	5		
0011	50	3" NPS * Sched. 80 38 FT - 42 FT	2053,12	20726	517791	3000	5		
0012	107	3" NPS * Sched. 160 18 FT - 22 FT	2133,69	29965	518053	3000	5		
0013	51	3" NPS * Sched. 160 38 FT - 42 FT	2047,57	28777	518053	3000	5		
0014	38	3" NPS * XXS 38 FT - 42 FT	1573,52	28834	726667	3000	5		
0016	76	4" NPS * Sched. 40 38 FT - 42 FT	3054,17	33217	517900	3000	5		
0018	21	4" NPS * Sched. 80 38 FT - 42 FT	848,62	12516	726753	3000	5		
0019	9	4" NPS * Sched. 160 38 FT - 42 FT	374,51	8298	518053	3000	5		
0020	29	4" NPS * XXS 32 FT - 36 FT	1033,07	27802	726681	3000	5		

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ABNAHMEPRÜFZEUGNIS EN 10204-3.1.B

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Kerbschlagbiegeversuch / Notched bar impact test / Essai de flexion par choc (résilience) [CHARPY-V]

Pos. / Item / Poste	Proben-Nr. / Specimen No. / No. de l'éprouv.	Schmelzen-Nr. / Heat No. / No. de coulée	Probenabmessung / Specimen dimensions / Dimensions de l'éprouvette			Probenlage / Specimen position / Position de l'éprouvette	Prüftemperatur / Test temperature / Température d'essai	Kerbschlagarbeit / Absorbed energy / Energie absorbée		Kerbschlagzähigkeit / Impact strength / Résistance au choc		Verf.-Bruchante / Shear fracture / Rupture ductile	
			Länge / Length / Longueur	Breite / Width / Largeur	Höhe / Height / Hauteur	längs (L) / longitudinal (L) / longitudinal (L)		einzel / single / individuelle	mittel / average / moyenne	einzel / single / individuelle	mittel / average / moyenne	single	average
Anforderungen / Requirements / Exigences						quer (Q) / transversal (Q) / transversal (Q)	GRAD °C	J	J	J/cm²	J/cm²	%	
			mm	mm	mm			MIN 027				min.50%	min.
			55	10,00	8,00								
0007	000001	518053	55	10,00	8,00	L	-0045	187				70	
				10,00	8,00			164				70	
				10,00	8,00			174	175			70	70
0012	000001	518053	55	10,00	8,00	L	-0045	175				85	
				10,00	8,00			155				85	
				10,00	8,00			168	166			85	85
0013	000001	518053	55	10,00	8,00	L	-0045	197				85	
				10,00	8,00			197				85	
				10,00	8,00			198	197			85	85
0014	000001	726667	55	10,00	8,00	Q	-0045	146				70	
				10,00	8,00			143				70	
				10,00	8,00			169	153			85	75
0019	000001	518053	55	10,00	8,00	Q	-0045	126				85	
				10,00	8,00			89				85	
				10,00	8,00			121	112			85	85
0020	000001	726681	55	10,00	8,00	Q	-0045	152				85	
				10,00	8,00			154				85	
				10,00	8,00			147	151			85	85

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Kerbschlagbiegeversuch / Notched bar impact test / Essai de flexion par choc (résilience) [CHARPY-V]

Pos. / Item / Poste	Proben-Nr. / Specimen No. / No. de l'éprouv.	Schmelzen-Nr. / Heat No. / No. de coulée	Probenabmessung / Specimen dimensions / Dimensions de l'éprouvette			Probenlage / Specimen position / Position de l'éprouvette	Prüftemperatur / Test temperature / Température d'essai	Kerbschlagarbeit / Absorbed energy / Energie absorbée		Kerbschlagzähigkeit / Impact strength / Résistance au choc		Verf.-Bruchant / Shear fracture / Rupture ductile	
			Länge / Length / Longueur	Breite / Width / Largeur	Höhe / Height / Hauteur	längs (L) / longitudinal (L) / longitudinal (L)		einzel / single / individuelle	mittel / average / moyenne	einzel / single / individuelle	mittel / average / moyenne	single	averag
Anforderungen / Requirements / Exigences						quer (Q) / transversal (Q) / transversal (Q)	GRAD °C	J	J	J/cm²	J/cm²	%	
			mm	mm	mm								
			55	7,50	8,00	transversal (Q)	-0045	MIN 020				min.50%	min.
0006	000001	518096	55	7,50	8,00	L	-0045	141				85	
				7,50	8,00			140				70	
				7,50	8,00			131	137			70	75
0018	000001	726753	55	7,50	8,00	L	-0045	119				85	
				7,50	8,00			135				85	
				7,50	8,00			129	128			85	85

Kerbschlagbiegeversuch / Notched bar impact test / Essai de flexion par choc (résilience) [CHARPY-V]

Pos. / Item / Poste	Proben-Nr. / Specimen No. / No. de l'éprouv.	Schmelzen-Nr. / Heat No. / No. de coulée	Probenabmessung / Specimen dimensions / Dimensions de l'éprouvette			Probenlage / Specimen position / Position de l'éprouvette	Prüftemperatur / Test temperature / Température d'essai	Kerbschlagarbeit / Absorbed energy / Energie absorbée		Kerbschlagzähigkeit / Impact strength / Résistance au choc		Verf.-Bruchant / Shear fracture / Rupture ductile	
			Länge / Length / Longueur	Breite / Width / Largeur	Höhe / Height / Hauteur	längs (L) / longitudinal (L) / longitudinal (L)		einzel / single / individuelle	mittel / average / moyenne	einzel / single / individuelle	mittel / average / moyenne	single	averag
Anforderungen / Requirements / Exigences						quer (Q) / transversal (Q) / transversal (Q)	GRAD °C	J	J	J/cm²	J/cm²	%	
			mm	mm	mm								
			55	6,67	8,00	transversal (Q)	-0045	MIN 018				min.50%	min.6
0011	000001	517791	55	6,67	8,00	L	-0045	95				70	
				6,67	8,00			87				70	
				6,67	8,00			68	83			60	66

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Pos. Item Poste	Proben-Nr. Specimen No. No. de l'éprouv.	Schmelzen-Nr. Heat No. No. de coulée	Probenabmessung Specimen dimensions Dimensions de l'éprouvette			Probenlage Specimen position Position de l'éprouvette	Prüftemperatur Test temperature Température d'essai	Kerbschlagarbeit Absorbed energy Energie absorbée		Kerbschlagzähigkeit Impact strength Résistance au choc		Verf.-Bruchant Shear fracture Rupture ductile	
	Anforderungen Requirements Exigences		Länge Length Longueur	Breite Width Largeur	Höhe Height Hauteur	längs (L) longitudinal (L) longitudinal (L)		einzel single individuelle	mittel average moyenne	einzel single individuelle	mittel average moyenne	single	avera
			mm	mm	mm	quer (Q) transversal (Q) transversal (Q)	GRAD °C	J	J	J/cm²	J/cm²	%	
			55	7,50	8,00			MIN 020				min.50%	min.
0016	000001	517900	55	5,00	8,00	L	-0045	84				70	
				5,00	8,00			76				70	
				5,00	8,00			72	77			70	70

Kerbschlagbiegeversuch / Notched bar impact test / Essai de flexion par choc (résilience) [CHARPY-V]

Pos. Item Poste	Proben-Nr. Specimen No. No. de l'éprouv.	Schmelzen-Nr. Heat No. No. de coulée	Probenabmessung Specimen dimensions Dimensions de l'éprouvette			Probenlage Specimen position Position de l'éprouvette	Prüftemperatur Test temperature Température d'essai	Kerbschlagarbeit Absorbed energy Energie absorbée		Kerbschlagzähigkeit Impact strength Résistance au choc		Verf.-Bruchant Shear fracture Rupture ductile	
	Anforderungen Requirements Exigences		Länge Length Longueur	Breite Width Largeur	Höhe Height Hauteur	längs (L) longitudinal (L) longitudinal (L)		einzel single individuelle	mittel average moyenne	einzel single individuelle	mittel average moyenne	single	averag
			mm	mm	mm	quer (Q) transversal (Q) transversal (Q)	GRAD °C	J	J	J/cm²	J/cm²	%	
			55	3,33	8,00			MIN 009				min.50%	min.
0003	000001	726797	55	3,33	8,00	L	-0056	49				70	
				3,33	8,00			43				70	
				3,33	8,00			46	46			70	70
0004	000001	726796	55	3,33	8,00	L	-0056	40				70	
				3,33	8,00			44				70	
				3,33	8,00			46	43			85	75
0009	000001	726808	55	3,33	8,00	L	-0056	59				85	
				3,33	8,00			57				85	
				3,33	8,00			58	58			70	80

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Pos. / Item / Poste	Proben-Nr. / Specimen No. / No. de l'éprouv.	Schmelzen-Nr. / Heat No. / No. de coulée	Probenabmessung / Specimen dimensions / Dimensions de l'éprouvette			Probenlage / Specimen position / Position de l'éprouvette	Prüftemperatur / Test temperature / Température d'essai	Kerbschlagarbeit / Absorbed energy / Energie absorbée		Kerbschlagzähigkeit / Impact strength / Résistance au choc		Verf.-Bruchante / Shear fracture / Rupture ductile	
			Länge / Length / Longueur	Breite / Width / Largeur	Höhe / Height / Hauteur	längs (L) / longitudinal (L) / longitudinal (L)		einzel / single / individuelle	mittel / average / moyenne	einzel / single / individuelle	mittel / average / moyenne	single	avera
Anforderungen / Requirements / Exigences						quer (Q) / transversal (Q) / transversal (Q)	GRAD / °C	J	J	J/cm²	J/cm²	%	
			mm	mm	mm			MIN 007				min.50%	min.
0001	000001	726828	55	2,50	8,00	L	-0056	36				85	
				2,50	8,00			34				85	
				2,50	8,00			36	35			85	85
0002	000001	726827	55	2,50	8,00	L	-0056	34				85	
				2,50	8,00			31				85	
				2,50	8,00			32	32			85	85

Wärmebehandlung / Heat treatment / Traitement thermique

Pos. / Item / Poste: 0001, 0014, 0013, 0019, 0009, 0018, 0003, 0020, 0007, 0016, 0002, 0006, 0012, 0004, 0011, 0003, 0016, 0004, 0006, 0012, 0011, 0007, 0002, 0019, 0020, 0014, 0013, 0018, 0009
Normalized: 890 °C; Holding time: 10 min

Pos. / Item / Poste	Ihr Zeichen / Your reference / Votre référence	Kundenmaterial / Customer's Material No. / No. de matière du client	Kundenbestell-Nr. / Purchase Order No. / No. de commande du client
0001		P.O. 103173	04-5198
0002		P.O. 103173	04-5198
0003		P.O. 103173	04-5198
0004		P.O. 103173	04-5198
0006		P.O. 103173	04-5198
0007		P.O. 103173	04-5198
0009		P.O. 103173	04-5198
0011		P.O. 103173	04-5198

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Pos. / Item / Poste	Ihr Zeichen / Your reference / Votre référence	Kundenmaterial / Customer's Material No. / No. de matière du client	Kundenbestell-Nr. / Purchase Order No. / No. de commande du client
0012		P.O. 103173	04-5198
0013		P.O. 103173	04-5198
0014		P.O. 103173	04-5198
0016		P.O. 103173	04-5198
0018		P.O. 103173	04-5198
0019		P.O. 103173	04-5198
0020		P.O. 103173	04-5198

Vermerk / Remark / Remarque

Pos. / Item / Poste: 0001, 0002, 0003, 0004, 0006, 0009, 0011, 0012, 0013, 0016, 0018, 0019 , 0007, 0014, 0020

NACE Standard: hardness according to NACE Standard MR0175 HRC max 22; Certificate remarks: The seamless line pipes meet the requirement for micro hardness of max 248 HV 500

Beiblatt Produktkennzeichnung / Attachment product marking / Supplément marquage du produit

Pos. / Item / Poste	Produktkennzeichnung / Produktkennzeichnung / Marquage du produit
0001, 0002, 0003, 0004, 0006, 0009, 0011, 0012, 0013, 0016, 0018, 0019	FS: BENTELER Z.245.1-A/SA-333 6/290 CAT II HEAT-NO. M45C S HN DIMENSIONS SCHE DULE WA GERMANY P.O. 103173
0007, 0014, 0020	FS: BENTELER Z.245.1-A/SA-333 6/290 CAT II HEAT-NO. M45C S HN DIMENSIONS WEIG HT CLASS WA GERMANY P.O. 103173

FK = Farbkennzeichnung, colour marking, marquage par couleur FS = Farbschablonierung, paint stencilling, marquage par peinture FSD = Farbstrahldrucker, Colour jet printer, imprimante à jet d'encre de couleur LS = Längsschablonierung, longitudinal stencilling, mar longitudinal par peinture PKE = Etikettenkennzeichnung, tag marking, marquage sur étiquette PS = Prägestempel, die stamp, marquage par poinçonnage TS = Tintenstrahlkennzeichnung, ink jet spray marking, imprimante à jet d'encre

Verkäufer(in) / Salesman/ woman in charge / Personne chargée : Mr Seelbach, Tel.: 05254/81-4281, Fax: 4289

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Dinslaken, 18.03.2004, TEL.: 02064.623-572 FAX: 02064.623-575

Der Werkssachverständige
Work's inspector
L'expert d'usine
JAN FREERKS / WAG

BENTELER QUALITÄTSSTELLE 29633 DINSLAKEN

Es wird bestätigt, daß die gelieferten Erzeugnisse den techn. Lieferbedingungen des Auftrages entsprechen.Dieses Dokument wurde mittels EDV erstellt und ist ohne Unterschrift rechtsgültig.
We certify that the supplied products comply with the order specification.This document was prepared by means of electronic data processing and is valid without signature.
Nous attestons que les produits livrés sont conformes aux stipulations de la commande.Ce document a été établi par traitement électronique de l'information et est valide sans signature.

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Schmelzenanalyse [%] / Heat analysis [%] / Analyse sur coulée [%]

Pos. Item Poste	Schmelzen-Nr. Heat No. No. de coulée	C	SI	MN	P	S	CR	MO	NI	CU	V	NB	TI	B
0001	726828	0,125	0,205	0,81	0,012	0,003	0,15	0,03	0,10	0,15	0,001	0,010	0,004	0,000
0002	726827	0,125	0,200	0,81	0,012	0,003	0,15	0,03	0,10	0,19	0,001	0,010	0,003	0,000
0003	726797	0,125	0,195	0,82	0,011	0,004	0,14	0,03	0,09	0,19	0,001	0,010	0,004	0,000
0004	726796	0,125	0,197	0,82	0,011	0,004	0,13	0,03	0,09	0,19	0,001	0,010	0,004	0,000
0006	518096	0,130	0,260	1,17	0,009	0,003	0,10	0,03	0,09	0,11	0,060	0,013	0,019	0,000
0007	518053	0,130	0,260	1,25	0,007	0,002	0,11	0,04	0,08	0,08	0,058	0,015	0,019	0,000
0009	726808	0,125	0,195	0,81	0,010	0,003	0,14	0,03	0,08	0,17	0,001	0,010	0,003	0,000
0011	517791	0,130	0,210	0,82	0,010	0,004	0,13	0,03	0,09	0,21	0,001	0,010	0,003	0,000
0012	518053	0,130	0,260	1,25	0,007	0,002	0,11	0,04	0,08	0,08	0,058	0,015	0,019	0,000
0013	518053	0,130	0,260	1,25	0,007	0,002	0,11	0,04	0,08	0,08	0,058	0,015	0,019	0,000
0014	726667	0,120	0,270	1,22	0,013	0,003	0,11	0,05	0,09	0,15	0,060	0,014	0,020	0,000
0016	517900	0,130	0,200	0,81	0,010	0,004	0,11	0,02	0,08	0,16	0,001	0,010	0,003	0,000
0018	726753	0,125	0,260	1,23	0,009	0,003	0,11	0,04	0,09	0,12	0,058	0,014	0,019	0,000
0019	518053	0,130	0,260	1,25	0,007	0,002	0,11	0,04	0,08	0,08	0,058	0,015	0,019	0,000
0020	726681	0,125	0,260	1,23	0,009	0,003	0,11	0,04	0,09	0,12	0,058	0,014	0,019	0,000

1. Formel: CEV=C+(Mn/6)+((Cr+Mo+V)/5)+((Cu+Ni)/15)<=0,42 %
2. Formel: CEV=C+F*((Mn/6)+(Si/24)+(Cu/15)+(Ni/20)+((Cr+Mo+V+Nb)/5) +(5*B)) <=0,40
3. Formel: Mn/C>=3/1
4. Formel: Cr+Cu+Mo+Ni+V<=1,00 %

Formelergebnisse / Formula results / Résultats des formules

Pos. Item Poste	Schmelzen-Nr Heat No. No. de coulée	1. Formel 1. Formula 1. Formule	2. Formel 2. Formula 2. Formule	3. Formel 3. Formula 3. Formule	4. Formel 4. Formula 4. Formule
0001	726828	0,313	0,283	6,480	0,431
0002	726827	0,316	0,285	6,480	0,471
0003	726797	0,315	0,284	6,560	0,451

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Formelergebnisse / Formula results / Résultats des formules

Pos. / Item / Poste	Schmelzen-Nr / Heat No. / No. de coulée	1. Formel / 1. Formula / 1. Formule	2. Formel / 2. Formula / 2. Formule	3. Formel / 3. Formula / 3. Formule	4. Formel / 4. Formula / 4. Formule
0004	726796	0,313	0,282	6,560	0,441
0006	518096	0,376	0,337	9,000	0,390
0007	518053	0,391	0,349	9,615	0,368
0009	726808	0,311	0,281	6,480	0,421
0011	517791	0,319	0,289	6,308	0,461
0012	518053	0,391	0,349	9,615	0,368
0013	518053	0,391	0,349	9,615	0,368
0014	726667	0,383	0,327	10,167	0,460
0016	517900	0,307	0,279	6,231	0,371
0018	726753	0,386	0,344	9,840	0,418
0019	518053	0,391	0,349	9,615	0,368
0020	726681	0,386	0,344	9,840	0,418

Produktanalyse [%] / Product analysis [%] / Analyse sur produit [%]

Pos. / Item / Poste	Schmelzen-Nr. / Heat No. / No. de coulée	C	SI	MN	P	S	CR	MO	NI	CU	V	NB	TI	B
0001	726828	0,140	0,180	0,80	0,014	0,005	0,14	0,03	0,11	0,18	0,001	0,010	0,002	0,000
0002	726827	0,140	0,180	0,80	0,014	0,005	0,14	0,03	0,11	0,18	0,001	0,010	0,002	0,000
0003	726797	0,130	0,190	0,81	0,010	0,003	0,14	0,04	0,09	0,20	0,002	0,010	0,002	0,000
0004	726796	0,120	0,190	0,79	0,010	0,003	0,15	0,05	0,08	0,19	0,001	0,010	0,003	0,000
0006	518096	0,130	0,240	1,16	0,010	0,003	0,10	0,04	0,10	0,10	0,063	0,014	0,018	0,000
0007	518053	0,120	0,240	1,24	0,008	0,001	0,11	0,05	0,09	0,08	0,062	0,016	0,019	0,000
0009	726808	0,130	0,170	0,78	0,010	0,002	0,15	0,05	0,07	0,16	0,001	0,010	0,002	0,000
0011	517791	0,140	0,190	0,84	0,011	0,003	0,16	0,04	0,10	0,19	0,002	0,010	0,002	0,000
0012	518053	0,120	0,230	1,22	0,008	0,001	0,11	0,05	0,09	0,08	0,061	0,016	0,018	0,000
0013	518053	0,130	0,240	1,23	0,008	0,001	0,11	0,05	0,09	0,07	0,063	0,017	0,019	0,000

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BENTELER
Stahl/Rohr

ABNAHMEPRÜFZEUGNIS EN 10204-3.1.B
INSPECTION CERTIFICATE EN 10204.3.1.B
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Produktanalyse [%] / Product analysis [%] / Analyse sur produit [%]

Pos. / Item / Poste	Schmelzen-Nr. / Heat No. / No. de coulée	C	SI	MN	P	S	CR	MO	NI	CU	V	NB	TI	B
0014	726667	0,130	0,240	1,20	0,010	0,003	0,11	0,05	0,09	0,14	0,060	0,014	0,019	0,000
0016	517900	0,140	0,180	0,83	0,009	0,003	0,10	0,02	0,07	0,15	0,001	0,009	0,004	0,001
0018	726753	0,130	0,230	1,23	0,008	0,001	0,11	0,05	0,09	0,08	0,061	0,015	0,019	0,000
0019	518053	0,120	0,240	1,22	0,008	0,002	0,11	0,05	0,09	0,08	0,061	0,015	0,018	0,000
0020	726681	0,130	0,240	1,25	0,008	0,001	0,11	0,05	0,09	0,08	0,061	0,017	0,019	0,000

1. Formel: CEV=C+(Mn/6)+((Cr+Mo+V)/5)+((Cu+Ni)/15)<=0,42 %
2. Formel: CEV=C+F*((Mn/6)+(Si/24)+(Cu/15)+(Ni/20)+((Cr+Mo+V+Nb)/5) +(5*B)) <=0,40
3. Formel: Mn/C>=3/1
4. Formel: Cr+Cu+Mo+Ni+V<=1,00 %

Formelergebnisse / Formula results / Résultats des formules

Pos. / Item / Poste	Schmelzen-Nr / Heat No. / No. de coulée	1. Formel / 1. Formula / 1. Formule	2. Formel / 2. Formula / 2. Formule	3. Formel / 3. Formula / 3. Formule	4. Formel / 4. Formula / 4. Formule	Formel / Formula / Formule
0001	726828	0,327	0,306	5,714	0,461	
0002	726827	0,327	0,306	5,714	0,461	
0003	726797	0,321	0,290	6,231	0,472	
0004	726796	0,310	0,269	6,583	0,471	
0006	518096	0,377	0,338	8,923	0,403	
0007	518053	0,382	0,326	10,333	0,392	
0009	726808	0,316	0,285	6,000	0,431	
0011	517791	0,340	0,318	6,000	0,492	
0012	518053	0,379	0,323	10,167	0,391	
0013	518053	0,390	0,349	9,462	0,383	
0014	726667	0,389	0,347	9,231	0,450	
0016	517900	0,317	0,302	5,929	0,341	
0018	726753	0,391	0,348	9,462	0,391	

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Formelergebnisse / Formula results / Résultats des formules

Pos. / Item / Poste	Schmelzen-Nr / Heat No. / No. de coulée	1. Formel / 1. Formula / 1. Formule	2. Formel / 2. Formula / 2. Formule	3. Formel / 3. Formula / 3. Formule	4. Formel / 4. Formula / 4. Formule	Formel / Formula / Formule
0019	518053	0,379	0,324	10,167	0,391	
0020	726681	0,394	0,352	9,615	0,391	

Prüfergebnisse / Test results / Résultats des essais

Die Rohre sind auf Dichtheit geprüft durch: **The tubes have been submitted to a leak tightness test by:** Les tubes ont passé un contrôle d'étanchéité par:	Hydrostatic test: acc. to CSA Z245.1, holding time min 5 seconds, Test pressure/Time-record — PASSED
Die Rohre wurden zerstörungsfrei geprüft: **The tubes are non destructive tested:** Les tubes ont passé un essai non destructif:	ET-imperfections: eddy current test acc. to CSA Standard Z245.1 — PASSED

Augensichtkontrolle: / Visual inspection: / Examen visuel:	Maßkontrolle: / Dimensions examination: / Vérification des dimensions:	Ringfaltversuch: / Flattening test: / Essai d'aplatissement:
PASSED	PASSED	PASSED

Ergebnisse der mechanischen Prüfung / Results of mechanical testing / Résultats des essais mécaniques

Die Probenahme erfolgte an Vielfachlängen.
The sampling was carried out on multiple lengths.
L'echantillonage etait realise aux longueurs multiples.

Zugversuch / Tensile test / Essai de traction

Pos. / Item / Poste	Proben-Nr. / Specimen No. / No. de l'éprouvette	Schmelzen-Nr. / Heat No. / No. de coulée	Probenabmessung / Specimen dimensions / Dimensions de l'éprouv.	Streckgrenze / Yield strength / Limite élastique	Zugfestigkeit / Tensile strength / Résistance à la traction	Dehnung / Elongation / Allongement		Einschnürung / Area reduction / Coefficient de striction	Re/Rr / Re/Rm / Re/Rm
Anforderungen Requirements Exigences			mm	ReH PSI MIN 42061	Rm PSI MIN 60191	A2" % MIN 30	1. Formel 1. Formula 1. Formule		
0001	000001	726828	19,00 X 3,80	54679	72519	35,00			
0001	000002	726828	19,00 X 3,80	53374	70924	35,00			
0002	000001	726827	18,90 X 4,00	52939	70198	34,00			
0002	000002	726827	18,90 X 3,90	58885	72954	36,00			

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ABNAHMEPRÜFZEUGNIS EN 10204-3.1.B

INSPECTION CERTIFICATE EN 10204.3.1.B
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Zugversuch / Tensile test / Essai de traction

Pos. Item Poste	Proben-Nr. Specimen No. No. de l'éprouvette	Schmelzen-Nr. Heat No. No. de coulée	Probenabmessung Specimen dimensions Dimensions de l'éprouv.	Streckgrenze Yield strength Limite élastique	Zugfestigkeit Tensile strength Résistance à la traction	Dehnung Elongation Allongement		Einschnürung Area reduction Coefficient de striction	Re/Rr Re/Rm Re/Rm
Anforderungen Requirements Exigences			mm	ReH PSI MIN 42061	Rm PSI MIN 60191	A2" % MIN 30	1. Formel 1. Formula 1. Formule		
0002	000003	726827	18,90 X 4,10	53374	70198	34,00			
0003	000001	726797	19,20 X 5,20	51779	70924	36,00			
0003	000002	726797	19,20 X 5,20	50038	68458	36,00			
0004	000001	726796	19,00 X 5,40	51198	68893	36,00			
0004	000002	726796	19,00 X 5,40	51343	70053	36,00			
0006	000001	518096	19,30 X 8,50	61786	77595	36,00			
0006	000002	518096	19,30 X 9,00	57290	76435	40,00			
0007	000001	518053	19,30 X 11,00	54099	73534	40,00			
0007	000002	518053	19,30 X 11,40	61786	76435	40,00			
0009	000001	726808	24,90 X 5,40	49893	66862	36,00			
0009	000002	726808	24,90 X 5,10	49748	67878	38,00			
0009	000003	726808	24,90 X 5,50	49748	67298	40,00			
0009	000004	726808	24,90 X 5,60	50618	66862	38,00			
0009	000005	726808	25,00 X 5,50	47282	65702	36,00			
0009	000006	726808	25,00 X 5,40	48298	66717	38,00			
0011	000001	517791	24,40 X 7,70	50038	68893	40,00			
0011	000002	517791	24,40 X 7,60	48588	67878	42,00			
0011	000003	517791	24,40 X 7,60	47717	67298	38,00			
0012	000001	518053	25,40 X 10,90	57725	74985	41,00			
0012	000002	518053	25,40 X 10,90	57725	75130	41,00			
0013	000001	518053	25,10 X 10,90	60336	76580	40,00			
0013	000002	518053	25,50 X 10,60	61206	78611	38,00			
0013	000003	518053	25,50 X 10,70	58740	75855	40,00			

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Zugversuch / Tensile test / Essai de traction

Pos. **Item** Poste	Proben-Nr. **Specimen No.** No. de l'éprouvette	Schmelzen-Nr. **Heat No.** No. de coulée	Probenabmessung **Specimen dimensions** Dimensions de l'éprouv.	Streckgrenze **Yield strength** Limite élastique	Zugfestigkeit **Tensile strength** Résistance à la traction	Dehnung **Elongation** Allongement		Einschnürung **Area reduction** Coefficient de striction	Re/Rr **Re/Rm** Re/Rm
Anforderungen **Requirements** Exigences			mm	ReH PSI MIN 42061	Rm PSI MIN 60191	A2" % MIN 30	1. Formel **1. Formula** 1. Formule		
0014	000001	726667	25,40 X 15,80	63962	78175	46,00			
0014	000002	726667	25,40 X 15,00	59611	76725	46,00			
0014	000003	726667	25,40 X 15,30	59320	76145	48,00			
0016	000001	517900	25,40 X 6,10	48878	65847	39,00			
0016	000002	517900	25,40 X 6,10	48733	66717	40,00			
0016	000003	517900	25,40 X 6,10	48008	67008	40,00			
0016	000004	517900	25,40 X 6,10	49023	67298	38,00			
0016	000005	517900	25,40 X 6,10	49313	67298	40,00			
0018	000001	726753	25,10 X 8,40	67008	82527	32,00			
0018	000002	726753	25,40 X 8,50	64107	79191	34,00			
0018	000003	726753	25,40 X 8,50	65557	80351	34,00			
0019	000001	518053	25,40 X 13,60	53229	72229	44,00			
0019	000002	518053	25,40 X 12,90	52359	71359	42,00			
0020	000001	726681	25,00 X 16,80	51924	72229	56,00			
0020	000002	726681	25,20 X 16,20	51343	72084	54,00			

Härteprüfung / Hardness test / Essai de dureté

Pos. **Item** Poste	Proben-Nr. **Specimen No.** No. de l'éprouv.	Schmelzen-Nr. **Heat No.** No. de coulée	Härte **Hardness** Dureté			
Anforderungen **Requirements** Exigences			HRC	HB MAX 200	HV	HRB
0001	000001	726828		147		
0001	000002	726828		146		

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Dokument-Nr.: **Document No.:** No. du document: 65-189714/001/P

Prüf-Nr.: **Inspection No.:** No. du certificat:

Härteprüfung / Hardness test / Essai de dureté

Pos. Item Poste	Proben-Nr. Specimen No. No. de l'éprouv.	Schmelzen-Nr. Heat No. No. de coulée	Härte Hardness Dureté HRC	HB	HV	HRB
Anforderungen Requirements Exigences				MAX 200		
0002	000001	726827		144		
0002	000002	726827		149		
0002	000003	726827		145		
0003	000001	726797		137		
0003	000002	726797		138		
0004	000001	726796		137		
0004	000002	726796		137		
0006	000001	518096		157		
0006	000002	518096		156		
0007	000001	518053		159		
0007	000002	518053		159		
0009	000001	726808		147		
0009	000002	726808		146		
0009	000003	726808		148		
0009	000004	726808		147		
0009	000005	726808		148		
0009	000006	726808		147		
0011	000001	517791		147		
0011	000002	517791		148		
0011	000003	517791		147		
0012	000001	518053		159		
0012	000002	518053		158		
0013	000001	518053		156		

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Härteprüfung / Hardness test / Essai de dureté

Pos. **Item** Poste	Proben-Nr. **Specimen No.** No. de l'éprouv.	Schmelzen-Nr. **Heat No.** No. de coulée	Härte **Hardness** Dureté			
Anforderungen **Requirements** Exigences			HRC	HB MAX 200	HV	HRB
0013	000002	518053		159		
0013	000003	518053		157		
0014	000001	726667		163		
0014	000002	726667		164		
0014	000003	726667		161		
0016	000001	517900		145		
0016	000002	517900		147		
0016	000003	517900		146		
0016	000004	517900		146		
0016	000005	517900		145		
0018	000001	726753		176		
0018	000002	726753		175		
0018	000003	726753		176		
0019	000001	518053		151		
0019	000002	518053		152		
0020	000001	726681		149		
0020	000002	726681		150		

RECEIVED

NOV 0 5 2010

3"600 S40 FLange

273T0

CLIENTE / Customer / Client

MRC MIDFIELD SUPPLY
502 - 25TH AVENUE
NISKU, AB T9E 0K6
CANADA

CERTIFICADO DE INSPECCION

Inspection Certificate - Certificat de Réception

DIN EN 10204 / 3.1
ISO 10474 / 3.1

FECHA: Date: 10/09/2010 | N.° No. 132963 | HOJA: Page: 1

ULMA

ULMA FORJA, S.COOP.
Bº Zubillaga, 3 - Apdo. 1
20560 OÑATI (Gipuzkoa) SPAIN
Tel.: 34 - 943 780552
Fax: 34 - 943 781808
E-mail: ulma@ulmapiping.com

PRODUCTO Article - Produit: FLANGES

SU PEDIDO N.° Your Order No. Votre Cde. N.°: D000903 - MIDFIELD

DE of. - du: 20/08/2010

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

NORMAS APLICABLES Requirements - Normes Applicables: ASME B16.5-09

MARCA DEL FABRICANTE Mark of factory Marque du fabricant: 78859

MATERIAL CORRESPONDIENTE Material Correspondent - Qualité: ASTMA105N-09, ASME SA105N-09

MODO DE FUSION (*) Steel Making - Elaboration de l'acier: E = Elec. Y = Oxigeno básico

NACE MR0103/03 & MR0175/03
CAN/CSA-Z245.12 Gr.248 CAT 1
(WN & BLIND FLANGES ONLY)

DEPARTAMENTO Section Département: QUALITY ASSURANCE

PARTIDA Item Poste	CANTIDAD Quantity Quantité	DESCRIPCION Description Description	OBSERVACIONES Remarks Observations (*)	COLADA N.° Heat No N.°Coulée	RESISTENCIA T.Strength Resist Rupt N/mm2	LIMITE ELAST. Y.Strength 0.2 % N/mm2	ALARGAM. Elongation Allongement Lo 4 d %	ESTRICCION Red. Area Striction %	RESILIENCIA Impact test Résilience Joules	MEDIA Average Moyenne	°C	DUREZA Hardness Dureté HB
1 0ND003101	5	WN 6 1500LB S160 RTJ A105N	NE	160A0	508	312	28,80	54,00				149 156
3 01A008221	1.440	WN 2 300LB S80 RF A105N	NE	384T0	517	305	29,00	53,40				149 157
8 01A008211	210	WN 3 300LB S40 RF A105N	NE	288T0	519	305	29,30	54,00				150 157
9 01A008221	510	WN 3 300LB S80 RF A105N	NE	361T0	518	304	28,60	52,00				150 155
10 01A008311	26	WN 3 600LB S40 RF A105N	NE	115T0	508	302	28,80	52,70				147 155
10 01A008311	280	WN 3 600LB S40 RF A105N	NE	273T0	516	302	28,60	54,00				150 155
10 01A008311	9	WN 3 600LB S40 RF A105N	NE	9T0	518	297	28,10	51,20				150 156

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

COLADA N.° Heat No N.°Coulée	C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	Nb %	V %	Cu %	Al %	Ti %	N %	CEq %
115T0	0,180	0,160	0,820	0,016	0,014	0,080	0,090	0,020	0,005	0,001	0,330	0,000	0,000	0,000	0,365
160A0	0,200	0,160	0,840	0,012	0,006	0,080	0,110	0,020	0,002	0,005	0,260	0,027	0,000	0,000	0,386
273T0 •	0,180	0,170	0,840	0,010	0,014	0,050	0,130	0,020	0,003	0,001	0,360	0,000	0,000	0,000	0,367
288T0	0,200	0,180	0,830	0,016	0,016	0,060	0,130	0,020	0,004	0,001	0,380	0,000	0,000	0,000	0,389
361T0	0,180	0,180	0,830	0,015	0,018	0,060	0,120	0,020	0,000	0,002	0,330	0,000	0,000	0,000	0,391
384T0	0,200	0,190	0,850	0,012	0,016	0,040	0,100	0,020	0,000	0,002	0,220	0,000	0,000	0,000	0,392
9T0	0,190	0,170	0,820	0,015	0,020	0,050	0,080	0,010	0,005	0,001	0,340	0,000	0,000	0,000	0,367

- Las dimensiones y la condición superficial se hallaron satisfactoria
- Dimension and surface condition were found acceptable
- Les dimensions et état 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
ULMA FORJAS 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

MILL TEST REPORTS

Bonney Forge
14496 Croghan Pike
Mt. Union, PA 17066

CERTIFIED MILL TEST REPORT

Midfield 11/05/10

LOT NO.	CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS
4698	1" 6M A105N Hexagon Plug Threaded

C	0.200	MN	0.990	P	0.010	S	0.021	SI	0.210
NI	0.050	CR	0.040	MO	0.010	CU	0.150	CO	0.004
V	0.004	AL	0.023	N	0.004	Sn	0.010		
CE(LONG FORMULA) = 0.389									
T/S(PSI) 71250 Y/S(PSI) 50625 EL(%) 33.850 RA(%) 65.400									
BRINELL HARDNESS(BHN): 135									

1. THE MATERIAL SUPPLIED MEETS THE REQUIREMENTS OF NACE MR0175/ISO 15156-2.
2. THE MATERIAL SUPPLIED WAS INSPECTED AND MANUFACTURED IN ACCORDANCE WITH EN DIN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT.
3. CERTIFYING ASTM A105-09 / ASME SA105-07 EDITION.
4. THE MATERIAL SUPPLIED IDENTIFIED AS A105N WAS NORMALIZED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.

THIS DOCUMENT HAS BEEN ELECTRONICALLY SUBMITTED.

1" Cn Hex Plug
HT 4698

I.M.L.
INDUSTRIA MECCANICA LIGURE SPA

INSPECTION CERTIFICATE EN 10204:2004 / 3.1

COMPANY WITH QUALITY SYSTEM ISO 9001-2000
CERTIFIED BY RINA

SEYBOLD INTERNATIONAL CORP.
20 Holly Street, Unit 205
TORONTO M4S 3B1 CANADA CA

Certificate Nr 15608 Dated 27.07.2005
Invoice Nr 880 Dated 25.07.2005
Del. Note Nr 1350 Dated 25.07.2005

16030 CASARZA LIGURE - Genova - Italy - P.zza Marco Cappelli,4 - Tel.0185.467661 - Fax 0185.466510 / MATERIAL TEST DEPARTMENT This certificate has been generated by computer and need not to be signed for validity according to DIN EN 10204

HEAT CODE	HEAT	ITEM	YOUR P.O.	OUR REFERENCE	Q.TY	DESCRIPTION	DIM. ACC. TO	VISUAL & DIMENS.
BSC	79326	005	4665	2004-2E209-0003040-005	12	FITTING TEE THRD NPT 2M 2" A105N CODE: 4030	SEE NOTE	SATISFACTORY
N59	77912	008	4665	2004-2E209-0003040-008	2000	FITTING HEX.H.PLUG THRD NPT 1" A105N 3/6M CODE: 4006	SEE NOTE	SATISFACTORY
N55	73094	010	4665	2004-2E209-0003040-010	435	FITTING HEX.H.PLUG THRD NPT 2" A105N 3/6M CODE: 4009	SEE NOTE	SATISFACTORY
TG6	79905	019	4665	2004-2E209-0003040-019	16	FITTING RED.TEE THRD NPT 3M 2"x1" A105N CODE: 11017	SEE NOTE	SATISFACTORY
NZ4	76569	035	4665	2004-2E209-0003040-035	45	FITTING HEX.H.PLUG THRD NPT 2" A350/LF2 3/6M CODE: 8424	SEE NOTE	SATISFACTORY
N55	73094	010	4665	2004-2E209-0003040-010	915	FITTING HEX.H.PLUG THRD NPT 2" A105N 3/6M CODE: 4009	SEE NOTE	SATISFACTORY
TG5	70278	012	4665	2004-2E209-0003040-012	400	FITTING TEE THRD NPT 3M 1" A105N CODE: 4037	SEE NOTE	SATISFACTORY
N58	AK4583	007	4665	2004-2E209-0003040-007	6500	FITTING HEX.H.PLUG THRD NPT 1/2" A105N 3/6M CODE: 4004	SEE NOTE	SATISFACTORY

HEAT CODE	HEAT	ITEM	MATERIAL	C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%	OTHER ELEMENTS
BSC	79326	005	ASTM A105	0,190	0,220	0,940	0,019	0,012	0,120	0,060	0,010	0,014	0,240	0,003	0,001	0,000	0,014	0,393	
N59	77912	008	ASTM A105	0,190	0,160	0,910	0,023	0,009	0,070	0,050	0,010	0,010	0,170	0,002	0,001	0,000	0,005	0,373	
N55	73094	010	ASTM A105	0,195	0,220	1,020	0,014	0,020	0,120	0,060	0,010	0,017	0,200	0,025	0,000	0,000	0,025	0,413	
TG6	79905	019	ASTM A105	0,210	0,210	0,960	0,019	0,020	0,130	0,080	0,010	0,013	0,250	0,003	0,001	0,000	0,006	0,421	
NZ4	76569	035	ASTM A350 LF2 cl.1	0,185	0,220	1,100	0,012	0,009	0,090	0,070	0,010	0,023	0,130	0,023	0,000	0,000	0,025	0,406	
N55	73094	010	ASTM A105	0,195	0,220	1,020	0,014	0,020	0,120	0,060	0,010	0,017	0,200	0,025	0,000	0,000	0,025	0,413	
TG5	70278	012	ASTM A105	0,180	0,210	0,980	0,026	0,014	0,080	0,050	0,010	0,013	0,230	0,003	0,000	0,000	0,006	0,381	
N58	AK4583	007	ASTM A105	0,195	0,240	0,990	0,006	0,010	0,090	0,110	0,030	0,000	0,190	0,000	0,000	0,000	0,005	0,403	

HEAT CODE	HEAT	ITEM	TEST SPECIMEN SECT. mm2	TEST SPECIMEN LENGHT mm	YIELD POINT N/mm2 >=0,2%	TENSILE STRENGHT N/mm2 >=	ELONGATION %>=	REDUCTION OF AREA %>=	HARDNESS Hb	BEND TEST	FLATTENING TEST	IMPACT TEST - JOULE/cm2 TYPE 10x10mm	°C	1	2	3	SHAPE 1=○ 2=□	YIELD POINT N/mm2 >=1,0%
BSC	79326	005	122,65	50,00	334,0	539,0	34,0	58,0	163 - 165	0,0	0,0	KV	20	105	101	104	1	0,0
N59	77912	008	122,65	50,00	361,0	552,0	32,0	56,0	160 - 168	0,0	0,0	KV	20	105	100	109	1	0,0
N55	73094	010	122,65	50,00	378,0	566,0	32,0	56,0	162 - 168	0,0	0,0	KV	20	114	106	109	1	0,0
TG6	79905	019	122,65	50,00	332,0	540,0	33,5	56,5	162 - 169	0,0	0,0	KV	20	103	102	108	1	0,0
NZ4	76569	035	122,65	50,00	367,0	552,0	30,0	54,0	169 - 174	0,0	0,0	KV	-46	60	64	62	1	0,0
N55	73094	010	122,65	50,00	378,0	566,0	32,0	56,0	162 - 168	0,0	0,0	KV	20	114	106	109	1	0,0
TG5	70278	012	122,65	50,00	332,0	529,0	33,5	58,0	154 - 162	0,0	0,0	KV	20	109	106	104	1	0,0
N58	AK4583	007	122,65	50,00	366,0	549,0	32,0	49,0	160 - 164	0,0	0,0	KV	20	104	100	96	1	0,0

HEAT CODE	HEAT	ITEM	MATERIAL IN ACCORDANCE TO	HEAT TREATMENT	FURNACE	STEEL MILL	Our Ref.
BSC	79326	005	ASME SA ASTM A105-03	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	042120
N59	77912	008	ASME SA ASTM A105-03	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	041204
N55	73094	010	ASME SA ASTM A105-03	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	051027
TG6	79905	019	ASME SA ASTM A105-03	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	051022
NZ4	76569	035	ASME SA ASTM A350-04a Gr. LF2 cl.1	Normalized at 900°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	
N55	73094	010	ASME SA ASTM A105-03	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	051027
TG5	70278	012	ASME SA ASTM A105-03	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	041328
N58	AK4583	007	ASME SA ASTM A105-03	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	ORI MARTIN	011206

NOTES ASME B16.11/01 - BS.3799 - ANSI B31.1/B31.3 - IML STD - ANSI B1.1-B18.2.2 - NACE MR0175 ISO 15156/1 - SUPPLIED MATERIAL MEETS SPECIFICATIONS AND P.O. REQUIREMENTS - MSS SP83

INSPECTION AUTORITY	QUALITY CONTROL DEPARTMENT	MANUFACTURER'S SYMBOL	MANUFACTURER'S SYMBOL
00742	BORIS FIZZOTTI	FITTINGS IML	STUDBOLTS

2" Hex Plug. EBP

I.M.L.

INDUSTRIA MECCANICA LIGURE SPA

INSPECTION CERTIFICATE EN 10204:2004 / 3.1

COMPANY WITH QUALITY SYSTEM ISO 9001-2000
CERTIFIED BY RINA

SEYBOLD INTERNATIONAL CORP.
20 Holly Street, Unit 205
TORONTO M4S 3B1 CANADA CA

Certificate Nr 16642 Dated 13.06.2006
Invoice Nr 677 Dated 12.06.2006
Del. Note Nr 1037 Dated 12.06.2006

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HEAT CODE	HEAT	ITEM	YOUR P.O.	OUR REFERENCE	Q.TY	DESCRIPTION	DIM. ACC. TO	VISUAL & DIMENS.
G29	76305	079	5143	2005-2E209-0003058-079	6	FITTING 90 ELB. SW 6M 1.1/2" A105N CODE: 26244	SEE NOTE	SATISFACTORY
GZ6	75945	082	5143	2005-2E209-0003058-082	75	FITTING 90 ELB. THRD NPT 3M 1/2" A350/LF2 CODE: 8419	SEE NOTE	SATISFACTORY
H14	79376	085	5143	2005-2E209-0003058-085	15	FITTING 45 ELB. THRD NPT 3M 1" A350/LF2 CODE: 9079	SEE NOTE	SATISFACTORY
DIF	75751	093	5143	2005-2E209-0003058-093	12	FITTING CROSS THRD NPT 2M 2" A105N CODE: 3915□29.05.06 --> N. 28 PCS NOT SHIPP...	SEE NOTE	SATISFACTORY
BUA	79957	093	5143	2005-2E209-0003058-093	16	FITTING CROSS THRD NPT 2M 2" A105N CODE: 3915□29.05.06 --> N. 28 PCS NOT SHIPP...	SEE NOTE	SATISFACTORY
EBP	70061	094	5143	2005-2E209-0003058-094	375	FITTING HEX.H.PLUG THRD NPT 2" A105N CODE: 4009□29.05.06 --> TOTAL N. 765 PCS N...	SEE NOTE	SATISFACTORY
HC6	79427	010	5143	2005-2E209-0003058-010	100	FITTING 45 ELB. THRD NPT 3M 1/2" A105N CODE: 3976□04.21.2006 : ADDED 50 PCS. NOT...	SEE NOTE	SATISFACTORY
TN3	78749	013	5143	2005-2E209-0003058-013	200	FITTING TEE THRD NPT 2/3M 1/4" A105N CODE: 4033	SEE NOTE	SATISFACTORY

HEAT CODE	HEAT	ITEM	MATERIAL	C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%	OTHER ELEMENTS
G29	76305	079	ASTM A105	0,190	0,180	0,910	0,017	0,010	0,090	0,060	0,010	0,006	0,220	0,001	0,001	0,000	0,010	0,381	
GZ6	75945	082	ASTM A350 LF2 cl.1	0,210	0,200	0,900	0,025	0,020	0,110	0,060	0,010	0,005	0,210	0,002	0,000	0,000	0,013	0,402	
H14	79376	085	ASTM A350 LF2 cl.1	0,190	0,210	0,870	0,023	0,020	0,140	0,070	0,010	0,010	0,280	0,003	0,000	0,000	0,005	0,389	
DIF	75751	093	ASTM A105	0,190	0,190	0,930	0,012	0,017	0,090	0,060	0,010	0,005	0,200	0,010	0,000	0,000	0,011	0,384	
BUA	79957	093	ASTM A105	0,180	0,150	1,030	0,025	0,017	0,110	0,060	0,010	0,010	0,240	0,003	0,001	0,000	0,005	0,396	
EBP	70061	094	ASTM A105	0,190	0,220	0,910	0,025	0,015	0,100	0,070	0,010	0,002	0,230	0,002	0,000	0,000	0,012	0,384	
HC6	79427	010	ASTM A105	0,185	0,190	0,890	0,021	0,010	0,010	0,080	0,050	0,013	0,190	0,002	0,000	0,000	0,006	0,364	
TN3	78749	013	ASTM A105	0,195	0,250	0,990	0,009	0,013	0,090	0,040	0,010	0,021	0,160	0,020	0,000	0,000	0,024	0,397	

HEAT CODE	HEAT	ITEM	TEST SPECIMEN SECT. mm2	TEST SPECIMEN LENGHT mm	YIELD POINT N/mm2 >=0,2%	TENSILE STRENGHT N/mm2 >=	ELONGATION %>=	REDUCTION OF AREA %>=	HARDNESS Hb	BEND TEST	FLATTENING TEST	IMPACT TEST - JOULE/cm2 TYPE 10x10mm	°C	1	2	3	SHAPE 1=○ 2=□	YIELD POINT N/mm2 >=1,0%
G29	76305	079	122,65	50,00	309,0	534,0	34,0	57,0	160 - 164	0,0	0,0	KV	20	105	100	97	1	0,0
GZ6	75945	082	122,65	50,00	349,0	522,0	31,0	57,0	156 - 164	0,0	0,0	KV	-46	55	50	59	1	0,0
H14	79376	085	122,65	50,00	323,0	520,0	34,5	58,5	153 - 160	0,0	0,0	KV	-46	59	62	57	1	0,0
DIF	75751	093	122,65	50,00	330,0	533,0	34,0	60,0	163 - 165	0,0	0,0	KV	20	106	100	96	1	0,0
BUA	79957	093	122,65	50,00	326,0	530,0	40,0	60,0	152 - 160	0,0	0,0	KV	20	106	100	102	1	0,0
EBP	70061	094	122,65	50,00	309,0	546,0	31,0	54,0	160 - 166	0,0	0,0	KV	20	104	100	105	1	0,0
HC6	79427	010	122,65	50,00	306,0	529,0	31,0	54,0	160 - 166	0,0	0,0	KV	20	96	104	105	1	0,0
TN3	78749	013	122,65	50,00	305,0	509,0	30,0	56,0	160 - 168	0,0	0,0	KV	20	106	100	108	1	0,0

HEAT CODE	HEAT	ITEM	MATERIAL IN ACCORDANCE TO	HEAT TREATMENT	FURNACE	STEEL MILL	Our Ref.
G29	76305	079	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	051275
GZ6	75945	082	ASME SA ASTM A350-04a Gr. LF2 cl.1	Normalized at 900°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	051249
H14	79376	085	ASME SA ASTM A350-04a Gr. LF2 cl.1	Normalized at 900°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	041298
DIF	75751	093	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE		052099
BUA	79957	093	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	052023
EBP	70061	094	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	
HC6	79427	010	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	041296
TN3	78749	013	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	

NOTES ASME B16.11/05 - ANSI B31.1/B31.3 - IML STD - ANSI B1.1-B18.2.2 - NACE MR0175 ISO 15156/1 - MSS SP 83 - SUPPLIED MATERIAL MEETS SPECIFICATIONS AND P.O. REQUIREMENTS

INSPECTION AUTORITY

QUALITY CONTROL DEPARTMENT
BORIS FIZZOTTI

MANUFACTURER'S SYMBOL
FITTINGS IML

MANUFACTURER'S SYMBOL
STUDBOLTS

94757

CERTIFIED MILL TEST REPORT

(3)

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LOG NO. 220774 PAGE 1

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www.bonneyforge.com

CUSTOMER: CCTF CORPORATION

Date 07/14/05

CUSTOMER'S Order No.: 4018957-00

Bonney Order No. 1014198

SHIPPED TO: CCTF CORPORATION

311419

1387 CORNWALL RD

OAKVILLE, ONTARIO, L6J7T5 CANA

ITEM	QUANTITY	LOT NO.		GRADE OR SPECIFICATION NO. CHEMICAL ANALYSIS PHYSICAL PROPERTIES REMARKS
				SA/A105N
010	25	56418	7522991	1 3M A105N 45 EL T
				C .180 MN 1.000 P .009 S .018 SI .240
				NI .020 CU .140 CO .003 CR .040 MO .011
				V .023 AL .001 NB .001
				CE(LONG FORMULA) = 0.37
				T/S 76256 Y/S 52513 EL 33.35 RA 67.29
				BRINELL HARDNESS1: 137 HARDNESS2: 144
		56462	7522991	1 3M A105N 45 EL T
				C .190 MN .990 P .008 S .025 SI .250
				NI .040 CU .190 CO .003 CR .070 MO .011
				V .023 AL .001 NB .001
				CE(LONG FORMULA) = 0.39
				T/S 76875 Y/S 52250 EL 32.65 RA 65.60
				BRINELL HARDNESS1: 147 HARDNESS2: 144
017	150	3137	7520131	3/4X1/2 3M A105N REDU T
				C .180 MN 1.040 P .010 S .017 SI .240
				NI .030 CU .100 CO .004 CR .060 MO .010
				V .022 AL .001 NB .002
				CE(LONG FORMULA) = 0.38
				T/S 76375 Y/S 54125 EL 31.80 RA 68.15
				BRINELL HARDNESS1: 144 HARDNESS2: 153
033	25	56342	7520850	11/4 X11/4X1 3000 A105N TEE S
				C .200 MN 1.020 P .008 S .023 SI .260
				NI .020 CU .110 CO .002 CR .030 MO .006
				V .025 AL .001 NB .000
				CE(LONG FORMULA) = 0.39
				T/S 75425 Y/S 51750 EL 32.50 RA 64.70
				BRINELL HARDNESS1: 144 HARDNESS2: 144

***** CONTINUED ON NEXT PAGE *****

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by

Cris Childers

CMTR: REV 1

QUALITY PROCESS MANAGER

Elbow 1= 3M 45° 56462

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LOG NO. 220774 PAGE 2

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CUSTOMER: CCTF CORPORATION **Date** 07/14/05

CUSTOMER'S Order No.: 4018957-00 **Bonney Order No.** 1014198

SHIPPED TO: CCTF CORPORATION 311419

1387 CORNWALL RD.

OAKVILLE, ONTARIO, L6J7T5 CANA

ITEM	QUANTITY	LOT NO		GRADE OR SPEC. CRITERIA CHEMICAL ANALYSIS PHYSICAL PROPERTIES REMARKS
				SA/A105N
045	25	1186	7520793	1/8 3M/6M A105N RDPL T C .190 MN .950 P .008 S .023 SI .260 NI .054 CU .110 CR .067 MO .013 V .020 CB .013 CE(LONG FORMULA) = 0.38 T/S 78500 Y/S 55375 EL 34.70 RA 63.25 BRINELL HARDNESS: 146
053	20	56172	7520014	3/4 3M A105N/GALV 45EL T C .200 MN 1.070 P .006 S .026 SI .250 NI .010 CU .060 CO .002 CR .040 MO .005 V .024 AL .001 NB .000 CE(LONG FORMULA) = 0.40 T/S 77425 Y/S 51875 EL 31.90 RA 65.60 BRINELL HARDNESS1: 144 HARDNESS2: 141
055	25	2991	7520024	1/2 3000 A105N/GALV COUP T C .180 MN .980 P .009 S .030 SI .240 NI .040 CU .200 CO .003 CR .050 MO .011 V .025 AL .001 NB .000 CE(LONG FORMULA) = 0.38 T/S 77375 Y/S 54250 EL 29.85 RA 64.50 BRINELL HARDNESS1: 144 HARDNESS2: 141

***** CONTINUED ON NEXT PAGE *****

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by _____
Cris Childers

CMTR: REV 1

QUALITY PROCESS MANAGER

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LOG NO. 020774 PAGE 3

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CUSTOMER: CCTF CORPORATION

Date 07/14/05

CUSTOMER'S Order No.: 4018957-00

Bonney Order No. 1014198

SHIPPED TO: CCTF CORPORATION 311419

1387 CORNWALL RD.

OAKVILLE, ONTARIO, L6J7T5 CANA

ITEM	QUANTITY	LOT NO.	GRADE OR SPECIFICATION OF CHEMICAL ANALYSIS, PHYSICAL PROPERTIES AND REMARKS

1. THE FITTINGS SUPPLIED ARE IN ACCORDANCE WITH PURCHASE ORDER SPECIFICATIONS.

2. THE MATERIAL SUPPLIED IDENTIFIED AS A105N WAS NORMALIZED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.

3. CERTIFYING ASTM A105-03 / ASME SA105-04 EDITION.

4. ELONGATION TEST RESULTS ARE OBTAINED USING STANDARD ROUND SPECIMEN, 2 INCH OR 50 MM GAGE LENGTH.

5. THE MATERIAL SUPPLIED WAS INSPECTED AND MANUFACTURED IN ACCORDANCE WITH EN DIN 10204 3.1.B.

***** END OF CERTIFICATION *****

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by

Cris Childers

CMTR: REV 1

QUALITY PROCESS MANAGER

Elbow HG7
1" 3M 90°

I.M.L.
INDUSTRIA MECCANICA LIGURE SPA

INSPECTION CERTIFICATE EN 10204:2004 / 3.1

COMPANY WITH QUALITY SYSTEM ISO 9001-2000
CERTIFIED BY RINA

SEYBOLD INTERNATIONAL CORP.
20 Holly Street, Unit 205
TORONTO M4S 3B1 CANADA CA

Certificate Nr 16878 Dated 20.09.2006
Invoice Nr 979 Dated 14.09.2006
Del. Note Nr 1502 Dated 14.09.2006

16030 CASARZA LIGURE - Genova - Italy - P.zza Marco Cappelli,4 - Tel.0185.467661 - Fax 0185.466510 / MATERIAL TEST DEPARTMENT This certificate has been generated by computer and need not to be signed for validity according to DIN EN 10204

HEAT CODE	HEAT	ITEM	YOUR P.O.	OUR REFERENCE	Q.TY	DESCRIPTION	DIM. ACC. TO	VISUAL & DIMENS.
UU	16836	027	5246	2005-2E209-0003063-027	1515	FITTING UNION F/F THRD NPT 3M 1" A105N CODE: 5468	SEE NOTE	SATISFACTORY
UP0	74379	029	5246	2005-2E209-0003063-029	645	FITTING UNION F/F THRD NPT 3M 2" A105N CODE: 5609□06.23.2006 : ADDED 200 PCS. N...	SEE NOTE	SATISFACTORY
A391	78041	016	5246	2005-2E209-0003063-016	1125	FITTING 90 ELB. THRD NPT 3M 1" A105N CODE: 3969	SEE NOTE	SATISFACTORY
HG7	79023	016	5246	2005-2E209-0003063-016	390	FITTING 90 ELB. THRD NPT 3M 1" A105N CODE: 3969	SEE NOTE	SATISFACTORY
UP4	73847	028	5246	2005-2E209-0003063-028	30	FITTING UNION F/F THRD NPT 3M 1.1/4" A105N CODE: 5802	SEE NOTE	SATISFACTORY
L12	77951	029	5246	2005-2E209-0003083-029	112	FITTING UNION F/F THRD NPT 3M 2" A105N CODE: 5609□06.23.2006 : ADDED 200 PCS. N...	SEE NOTE	SATISFACTORY
EEA	77178	042	5246	2005-2E209-0003063-042	156	FITTING RED.TEE THRD NPT 3M 2"x1" A105N CODE: 11017	SEE NOTE	SATISFACTORY
	73847	046	5246	2005-2E209-0003083-046	50	FITTING M/F ELB. THRD NPT 3M 3/4" A105N CODE: 3984	SEE NOTE	SATISFACTORY

HEAT CODE	HEAT	ITEM	MATERIAL	C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%	OTHER ELEMENTS
UU	16836	027	ASTM A105	0,202	0,260	0,980	0,002	0,007	0,130	0,130	0,020	0,002	0,140	0,003	0,001	0,000	0,027	0,414	
UP0	74379	029	ASTM A105	0,190	0,220	0,920	0,019	0,013	0,120	0,060	0,010	0,014	0,230	0,002	0,000	0,000	0,005	0,389	
A391	78041	016	ASTM A105	0,190	0,170	0,930	0,019	0,013	0,100	0,050	0,020	0,005	0,160	0,002	0,001	0,000	0,007	0,383	
HG7	79023	016	ASTM A105	0,190	0,290	1,090	0,020	0,010	0,090	0,050	0,010	0,005	0,150	0,002	0,001	0,000	0,023	0,405	
UP4	73847	028	ASTM A105	0,185	0,210	1,010	0,023	0,020	0,150	0,060	0,010	0,013	0,280	0,002	0,001	0,000	0,006	0,408	
L12	77951	029	ASTM A105	0,180	0,210	0,860	0,018	0,013	0,090	0,050	0,010	0,005	0,170	0,001	0,000	0,000	0,011	0,358	
EEA	77178	042	ASTM A105	0,185	0,160	0,890	0,021	0,012	0,080	0,050	0,010	0,005	0,160	0,001	0,000	0,000	0,011	0,366	
	73847	046	ASTM A105	0,185	0,210	1,010	0,023	0,020	0,150	0,060	0,010	0,013	0,280	0,002	0,001	0,000	0,006	0,408	

HEAT CODE	HEAT	ITEM	TEST SPECIMEN SECT. mm2	TEST SPECIMEN LENGHT mm	YIELD POINT N/mm2 >=0,2%	TENSILE STRENGHT N/mm2 >=	ELONGATION %>=	REDUCTION OF AREA %>=	HARDNESS Hb	BEND TEST	FLATTENING TEST	IMPACT TEST - JOULE/cm2 TYPE 10x10mm	°C	1	2	3	SHAPE 1=○ 2=□	YIELD POINT N/mm2 >=1,0%
UU	16836	027	122,65	50,00	306,0	564,0	31,0	54,0	160 - 166	0,0	0,0	KV	20	115	108	109	1	0,0
UP0	74379	029	122,65	50,00	325,0	520,0	34,0	59,0	160 - 165	0,0	0,0	KV	20	96	103	100	1	0,0
A391	78041	016	122,65	50,00	306,0	563,0	31,0	56,0	160 - 166	0,0	0,0	KV	20	105	100	107	1	0,0
HG7	79023	016	122,65	50,00	331,0	563,0	34,0	57,0	162 - 170	0,0	0,0	KV	20	104	109	105	1	0,0
UP4	73847	028	122,65	50,00	364,0	549,0	32,0	56,0	160 - 168	0,0	0,0	KV	20	104	100	108	1	0,0
L12	77951	029	122,65	50,00	308,0	496,0	33,0	58,0	156 - 166	0,0	0,0	KV	20	100	108	104	1	0,0
EEA	77178	042	122,65	50,00	321,0	519,0	32,0	58,0	159 - 163	0,0	0,0	KV	20	89	90	94	1	0,0
	73847	046	122,65	50,00	328,0	529,0	33,5	57,0	159 - 164	0,0	0,0	KV	20	103	109	98	1	0,0

HEAT CODE	HEAT	ITEM	MATERIAL IN ACCORDANCE TO	HEAT TREATMENT	FURNACE	STEEL MILL	Our Ref.
UU	16836	027	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	ABS	
UP0	74379	029	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	051107
A391	78041	016	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	051411
HG7	79023	016	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	061073
UP4	73847	028	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	051045
L12	77951	029	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	062024
EEA	77178	042	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	062067
	73847	046	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	051045

NOTES ASME B16.11/05 - ANSI B31.1/B31.3 - IML STD - ANSI B1.1-B18.2.2 - NACE MR0175 ISO 15156/1 - MSS SP 83 - SUPPLIED MATERIAL MEETS SPECIFICATIONS AND P.O. REQUIREMENTS

INSPECTION AUTORITY	QUALITY CONTROL DEPARTMENT	MANUFACTURER'S SYMBOL	MANUFACTURER'S SYMBOL
95826	BORIS FIZZOTTI	FITTINGS IML	STUDBOLTS

4U6 1" 3M UNION

JUN 15 2010

P.O.# 113456 Item# 4
Heats Number: 4U6 Products Ltd. - Rev'd By: SB
Trans Am Piping S10 - 1048 14
Shipment/Seq #:

1" CL 3000 FS SCRD UNION
A105N

I.M.L.
INDUSTRIA MECCANICA LIGURE SPA

INSPECTION CERTIFICATE EN 10204:2004 / 3.1

COMPANY WITH QUALITY SYSTEM ISO 9001-2000
CERTIFIED BY RINA

TRANS AM PIPING PRODUCTS LTD.
9235 Endeavor Drive S.E.
Calgary, Alberta T3S 0A1 CA

Certificate Nr 20450 Dated 14.01.2010
Invoice Nr Dated
Del. Note Nr 38 Dated 14.01.2010

16030 CASARZA LIGURE- Genova - Italy - Via Giancarlo Farina 25 - Tel.0185.467661 - Fax 0185.466610 / MATERIAL TEST DEPARTMENT This certificate has been generated by computer and need not to be signed for validity according to DIN EN 10204

HEAT CODE	HEAT	ITEM	YOUR P.O.	OUR REFERENCE	Q.TY	DESCRIPTION	DIM. ACC. TO	VISUAL & DIMENS.
5CT	08/74670	007	CI-09 - 482	2009-2E201-0001204-0007		FITTING TEE THRD NPT 2M 3/8" A105N	SEE NOTE	SATISFACTORY
UOX	77173	040	CI-09 - 482	2009-2E201-0001204-0040		FITTING UNION F/F THRD NPT 3M 2" A105N (NUT)	SEE NOTE	SATISFACTORY
1UOX	74536	040	CI-09 - 482	2009-2E201-0001204-0040		FITTING UNION F/F THRD NPT 3M 2" A105N (MALE+FEMALE)	SEE NOTE	SATISFACTORY
1UOX	74536	040	CI-09 - 482	2009-2E201-0001204-0040		FITTING UNION F/F THRD NPT 3M 2" A105N (NUT+MALE+FEMALE)	SEE NOTE	SATISFACTORY
UOX	77173	040	CI-09 - 482	2009-2E201-0001204-0040		FITTING UNION F/F THRD NPT 3M 2" A105N (NUT)	SEE NOTE	SATISFACTORY
1UOX	74536	040	CI-09 - 482	2009-2E201-0001204-0040		FITTING UNION F/F THRD NPT 3M 2" A105N (MALE)	SEE NOTE	SATISFACTORY
UE8	76177	040	CI-09 - 482	2009-2E201-0001204-0040		FITTING UNION F/F THRD NPT 3M 2" A105N (FEMALE)	SEE NOTE	SATISFACTORY
IRO	09/36516	100	CI-09 - 482	2009-2E201-0001204-0100		FITTING 90 ELB. SW 3M 2" A105N	SEE NOTE	SATISFACTORY
IPS	09/78934	099	CI-09 - 482	2009-2E201-0001204-0099		FITTING 90 ELB. SW 3M 1.1/2" A105N	SEE NOTE	SATISFACTORY
4U6	AD1814	039	CI-09 - 482	2009-2E201-0001204-0039		FITTING UNION F/F THRD NPT 3M 1" A105N (NUT+MALE+FEMALE)	SEE NOTE	SATISFACTORY

HEAT CODE	HEAT	ITEM	MATERIAL	C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%	OTHER ELEMENTS
5CT	08/74670	007	ASTM A105	0,200	0,220	0,930	0,010	0,009	0,090	0,070	0 020	0,005	0,120	0,00'	0,000	0,000	0,021	0,395	
UOX	77173	040	ASTM A105	0,205	0,220	0,970	0,015	0,012	0,100	0,070	0 010	0,005	0,220	0,00'	0,001	0,000	0,023	0,408	
1UOX	74536	040	ASTM A105	0,190	0,250	0,970	0,015	0,017	0,140	0,060	0.010	0,008	0,250	0,002	0,000	0,000	0,024	0,403	
1UOX	74536	040	ASTM A105	0,190	0,250	0,970	0,015	0,017	0,140	0,060	0,010	0,008	0,250	0,002	0,000	0,000	0,024	0,403	
UOX	77173	040	ASTM A105	0,205	0,220	0,970	0,015	0,012	0,100	0 070	0,010	0 005	0,220	0,001	0,001	0,000	0,023	0,408	
1UOX	74536	040	ASTM A105	0,190	0,250	0,970	0,015	0,017	0,140	0,060	0,010	0 008	0,250	0,002	0,000	0,000	0,024	0,403	
UE8	76177	040	ASTM A105	0,190	0,210	1,040	0,015	0,008	0,060	0,050	0,010	0 '90	0,170	0,021	0,000	0,000	0,260	0,398	
IRO	09/36516	100	ASTM A105	0,200	0,220	0,970	0,015	0,011	0,110	0,050	0,010	0,008	0,170	0,001	0,001	0,000	0,010	0,401	
IPS	09/78934	099	ASTM A105	0,200	0,220	0,950	0,012	0,009	0,080	0,040	0,010	0,008	0,090	0,001	0,001	0,000	0,025	0,381	
4U6	AD1814	039	ASTM A105	0,200	0,230	0,950	0,006	0,011	0,100	0,080	0,020	0,000	0,100	0,004	0,001	0,000	0,023	0,397	

HEAT CODE	HEAT	ITEM	TEST SPECIMEN SECT. mm2	TEST SPECIMEN LENGHT mm	YIELD POINT N/mm2 >=0.2%	TENSILE STRENGHT N/mm2 >=	ELONGATION %>=	REDUCTION OF AREA %>=	HARDNESS Hb	BEND TEST	FLATTENING TEST	IMPACT TEST - JOULE/cm2 TYPE 10x10mm	°C	1	2	3	SHAPE 1=○ 2=□	YIELD POINT N/mm2 >=1,0%
5CT	08/74670	007	122,65	50,00	321,0	525,0	31,0	57,8	161 - 166	0,0	0,0	KV	-10	77	78	79	1	0,0
UOX	77173	040	122,65	50,00	311,0	518,0	31,2	55 0	153 - 157	0,0	0,0	KV	-10	70	72	73	1	0,0
1UOX	74536	040	122,65	50,00	304,0	528,0	33,0	56 7	155 - 161	0,0	0,0	KV	-10	66	66	64	1	0,0
1UOX	74536	040	122,65	50,00	304,0	528,0	33,0	56 7	155 - 161	0,0	0,0	KV	-10	66	66	64	1	0,0
UOX	77173	040	122,65	50,00	311 0	518,0	31,2	55 0	153 - 157	0,0	0,0	KV	-10	70	72	73	1	0,0
1UOX	74536	040	122,65	50,00	304 0	528,0	33,0	56.7	155 - 161	0,0	0,0	KV	-10	66	66	64	1	0,0
UE8	76177	040	122,65	50,00	348 0	567,0	32,0	54.0	160 - 162	0,0	0,0	KV	-10	74	74	78	1	0,0
IRO	09/36516	100	122,65	50,00	349 0	525,0	31,0	58,0	158 - 159	0,0	0,0	KV	-10	75	72	77	1	0,0
IPS	09/78934	099	122,65	50,00	335 0	540,0	33,0	59,0	164 - 166	0,0	0,0	KV	-10	72	71	78	1	0,0
4U6	AD1814	039	122,65	50,00	351 0	511,0	30,5	52,0	151 - 158	0,0	0,0	KV	-10	74	71	77	1	0,0

HEAT CODE	HEAT	ITEM	MATERIAL IN ACCORDANCE TO	HEAT TREATMENT	FURNACE	ORIGIN	Our Ref.
5CT	08/74670	007	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	EUROPE	092052
UOX	77173	040	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	EUROPE	091081
1UOX	74536	040	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	EUROPE	091072
1UOX	74536	040	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	EUROPE	091072
UOX	77173	040	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	EUROPE	091081
1UOX	74536	040	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	EUROPE	091072
UE8	76177	040	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	EUROPE	041038
IRO	09/36516	100	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	EUROPE	092096
IPS	09/78934	099	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	EUROPE	092094
4U6	AD1814	039	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	EUROPE	092079

NOTES ASME B16.11/05 - ANSI B31.1/B31.3 - IML STD - ANSI B1.1-B18.2.2 - NACE MR0175 ISO 15156/1 - NACE MR0103 - MSS SP 83 - SUPPLIED MATERIAL MEETS SPECIFICATIONS AND P.O. REQUIREMENTS

INSPECTION AUTORITY	QUALITY CONTROL DEPARTMENT	MANUFACTURER'S SYMBOL	MANUFACTURER'S SYMBOL
	BORIS FIZZOTTI	FITTINGS IML	STUDBOLTS

2" 1500 RF XS Flange HT→ 74330

AUG 18 2010
RJV

METALFAR

PRODOTTI INDUSTRIALI S.P.A.
23861 CESANA BRIANZA (LC) ITALY
Tel. 031.655441 - Fax 031.655149
MATERIAL TEST DEPARTMENT
SALA PROVE ED ANALISI MATERIALI

COMPANY WITH QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV = ISO 9001 : 2000 =

FORGED FLANGES & FITTINGS LTD
CASTLE HOUSE - STATION ROAD
NEW BARNET/HERTF. GB

INSPECTION CERTIFICATE EN 10204/3.1

CERTIFICATO DI COLLAUDO

N.: 1614/ 24/04/2009
INVOICE / *FATTURA:* 1182/ 23/04/2009
S.: 58102
DEL. NOTE / *BOLLA:* 2069/ 23/04/2009

PAG.: 12

HEAT CODE / COD. COLATA	HEAT / COLATA	ITEM / POS.	YOUR P.O. / VS. ORDINE	OUR REFERENCE / NS. ORDINE	QUANTITY / QUANTITÀ	DESCRIPTION / DESCRIZIONE	DIM. ACCORDANCE TO / DIM. IN ACCORDO A	VISUAL & DIMENSIONAL / VISIVO E DIMENSIONALE
	74330	0022	3545	09001227 0035	90	W/N 1500 RF 2" XS A105 7531788	ASME/ANSI B16.5	SATISFACTORY

HEAT CODE / COD. COLATA	HEAT / COLATA	ITEM / POS.	MATERIAL / MATERIALE	C %	Si %	Mn %	S %	P %	Cr %	Ni %	Mo %	Ti %	Cu %	V %	Nb %	N %	Al %	C.E. %	ORIGIN / ORIGINE
	74330	0022	ASTM A 105	0.200	0.220	0.960	0.013	0.013	0.070	0.050	0.010	0.008	0.160	0.002	0.001	0.000	0.023	0.390	EUROPE

HEAT CODE / COD. COLATA	HEAT / COLATA	ITEM / POS.	TEST SPECIMEN mm² PROVETTA mm — SECTION / Sezione	LENGHT / Lunghezza	YIELD POINT / Snervamento N/mm² ≥ 0,2 %	TENSILE STRENGHT / Rottura N/mm² ≥	ELONGATION / Allungamento % ≥	REDUCTION OF AREA / Contrazione % ≥	HARDNESS / Durezza Hb	BEND TEST / Piega	FLATTENING TEST / Schacciam.	IMPACT TEST - Resilienza Joule / cm² — U.M.	TYPE / TIPO 10x10 mm	°C	1	2	3	SHAPE / FORMA 1 - ⌀ 2 - □	S	W	X	YIELD POINT / SNERVAMENTO N/mm² ≥ 1,0 %	OUR. REF
	74330	0022	126.60	50.80	334.0	540	33.0	58.0	164-166	0.0	0.0		KV	20	86	88	88	1				0.0	

HEAT CODE / COD. COLATA	HEAT / COLATA	ITEM / POS.	MATERIAL IN ACCORDANCE TO / MATERIALE IN ACCORDO A	HEAT TREATMENT / TRATTAMENTO TERMICO
	74330	0022	ASTM/ASME A 105/SA 105 M - 05	NORMALIZED AT 920 C - COOLED IN STILL AIR ELECTRIC FURNACE

VERIFIED TRUE COPY
OF ORIGINAL
FORGED FLANGES &
FITTINGS LIMITED

F2: CHARPY TEST SPECIMEN RESULT AS 10X10mm
ATERIAL IN ACCORDANCE WITH NACE MR-0175/2003
009

QUALITY CONTROL DEPARTMENT / UFFICIO CONTROLLO QUALITÀ	INSPECTION AUTHORITY / ENTE UFFICIALE COLLAUDO	MANUFACTURER'S SYMBOL / MARCHIO PRODUZIONE
BRACCHI FLAVIO		MFF

MILL TEST REPORTS

Bonney Forge
14496 Croghan Pike
Mt. Union, PA 17066

CERTIFIED MILL TEST REPORT

Midfield 11/10/10

LOT NO.	CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS
57345	36-3/4 X 1/2" 3M A105N Elbolet Threaded

C	0.200	MN	1.020	P	0.006	S	0.022	SI	0.210
NI	0.020	CR	0.060	MO	0.010	CU	0.090	CO	0.003
V	0.000	AL	0.022	Nb	0.012				
CE(LONG FORMULA) = 0.391									
T/S(PSI) 75000 Y/S(PSI) 50250 EL(%) 32.750 RA(%) 66.750									
BRINELL HARDNESS(BHN): 130									

1. THE MATERIAL SUPPLIED MEETS THE REQUIREMENTS OF NACE MRO175/ISO 15156-2.
2. THE MATERIAL SUPPLIED WAS INSPECTED AND MANUFACTURED IN ACCORDANCE WITH EN DIN 10204:2004 EDITION TYPE 3.1 INSPECTION DOCUMENT.
3. CERTIFYING ASTM A105-09 / ASME SA105-07 EDITION.
4. THE MATERIAL SUPPLIED IDENTIFIED AS A105N WAS NORMALIZED IN ACCORDANCE WITH ASTM A105 HEAT TREATING REQUIREMENTS.

THIS DOCUMENT HAS BEEN ELECTRONICALLY SUBMITTED.

1/2" 3M ELBOW ver. 57345

P.O.# 111422-00 Item# 1

HEAT NUMBER : 57689
TRANS AM PIPING PRODUCTS - REV'D BY:
Shipment/Seq #: S 9 - 1196 3

3/4X1-36 CL 3000 FS SCRD ELBOW
PIPET A105N

INTERNATIONAL
WFI
NUCLEAR PRODUCTS
Manufacturer of Piping and Pressure Vessel Components
4407 Haygood St - Houston, TX 77022
Phone: 713-695-3633 Fax: 713-695-3528
A Bonney Forge Company

Sold To: TRANS AM PIPING PRODUCTS
LTD
9335 ENDEAVOR DRIVE S.E.
CALGARY AB T3S 0A1

Mtr #: 168,623

PO #: CI-09-192

Sales Order #: C000903239 Date: 04/03/2009

This product has not come in direct contact with mercury or any of its compounds, nor with any mercury-containing device employing a single boundary of containment. No welding performed.
We certify that the contents of this report are correct and accurate, and that all test results and operations performed by WFI or its subcontractors are in compliance with the material specification and requirements of the referenced code or standard, and that the material conforms to the dimensional requirements of the order. This document is in accordance with EN10204 3.1.

Certified Material Test Report

Heat Code: 57689

Material: A/SA105N 01

Item	Quantity	Description
1		36 - 1 X 3/4 3M TEP A/SA105N

Chemical Composition

Ladle	C	CR	CU	MN	MO	Nb	NI	P
	0.210	0.03	0.080	1.05	0.010	0.011	0.02	0.007
	S	SI	V					
	0.020	0.20	0.002					

Carbon Equivalency: Ladle 0.40

Product	C	CR	CU	MN	MO	NB	NI	P
	0.000	0.00	0.000	0.00	0.000	0.000	0.00	0.000
	S	SI	V					
	0.000	0.00	0.000					

	Tensile PSI	Yield PSI	Elong %	RA %	Hardness	
Product	74,375	50,250	32.10	63.50	130 BHN	130 BHN

1. IN ACCORDANCE WITH NACE SPEC MR0175-2002
NORMALIZED @ 1650 DEG F & AIR COOLED

Marie Dehmer
Quality Assurance Representative

1 x 3/4" 3M# A/Elbows 57689

3" 90 01583J

ORIGINAL

Purchaser: CCTF CORPORATION
Order No.: 4027286
Invoice No.: ZXL10A0260C

INSPECTION CERTIFICATE

ZIBO WEL-FIT METAL PRODUCTS CO., LTD
NO. 18, LUSHAN ROAD, LINZI, ZIBO, P.R.CHINA 255418

Date: AUG 02,2010
Certificate No: ZXL10A0260C
Certificate to: EN10204-2004 3.1

Material Specification: ASTM A234-07/ASME SA234 WPB NACE MR0175-05
Specification for Inspection: ASME B16.9-07
Visual and Dimensional Inspection: GOOD
Hardness: Max 197HB <197HB
Cu+Ni+Cr+Mo: < op =1.00%
Cr+Mo: < op =0.32%
MT(5):GOOD
RT(5):
IGC(5):
PMI(5):

Product Description	Heat I.D.	Quantity (Pcs)	Tension Test (1) YS Mpa	TS Mpa	E %	Chemical Composition % C	Si	Mn	P	S	Cr	Mo	Ni	Cu	V	Nb	CE(2)	Heat Treatment (3)	Raw Material Type (4)	Raw Material Manufacturer (6)
			240	415	30		0.10	0.29												
				585		0.30		1.06	0.050	0.058	0.40	0.15	0.400	0.400	0.08		0.45			
LR 45 ELBOW XS WPB 6860020	3/4	00521	20	325	505	32	0.20	0.21	0.52	0.010	0.006	0.060	0.002	0.030	0.050	-	-	0.30	HF	1	XSP
LR 45 ELBOW XS WPB 1400	1	00628	15	325	505	32	0.22	0.21	0.52	0.009	0.006	0.060	0.001	0.010	0.050	-	-	0.32	HF	1	XSP
LR 45 ELBOW XS WPB 1426	1 1/4	00731E	15	305	505	30	0.18	0.23	0.53	0.009	0.006	0.030	0.005	0.010	0.030	-	-	0.28	HF	1	XSP
LR 45 ELBOW XS WPB 1442	1 1/2	00937	100	310	505	30	0.20	0.22	0.51	0.015	0.007	0.040	-	0.040	0.090	-	-	0.30	HF	1	XSP
LR 45 ELBOW XS WPB 1469	2	01182	100	305	505	31	0.20	0.30	0.58	0.012	0.019	0.054	-	0.020	0.018	-	-	0.31	HF	1	LCP
LR 45 ELBOW XS WPB 1485	2 1/2	01362E	50	315	515	30	0.20	0.23	0.53	0.011	0.007	0.030	0.01	0.010	0.030	-	-	0.30	HF	1	XSP
LR 45 ELBOW XS WPB 1507	3	01579	60	330	560	32	0.18	0.20	0.55	0.008	0.006	0.050	-	0.020	0.030	-	-	0.29	HF	1	LJH
LR 45 ELBOW XS WPB 1566	5	02281	10	305	505	30	0.18	0.17	0.50	0.017	0.016	0.053	-	0.031	0.077	-	-	0.28	HF	1	XSP
LR 45 ELBOW XS WPB 1582	6	02562J	15	245	485	30	0.19	0.25	0.52	0.010	0.004	0.030	-	0.020	0.060	-	-	0.29	HF	1	TJP
LR 45 ELBOW XS WPB 1604	8	03003	5	270	470	30	0.19	0.24	0.49	0.009	0.006	0.030	0.010	0.020	0.080	-	-	0.29	HF	1	TJP
LR 45 ELBOW XS WPB 0810	10	03419	5	330	495	30	0.21	0.24	0.51	0.010	0.007	0.040	0.020	0.020	0.060	-	-	0.31	HF	1	TJP
LR 90 ELBOW STD WPB 0233	1/2	00452	100	305	490	30	0.19	0.21	0.51	0.016	0.015	0.060	-	0.060	0.190	-	-	0.30	HF	1	XSP
LR 90 ELBOW STD WPB 0250	3/4	00519	150	320	495	30	0.20	0.24	0.42	0.013	0.013	0.020	0.004	0.010	0.020	-	-	0.28	HF	1	XSP
LR 90 ELBOW STD WPB 0276	1	00618E	200	310	500	32	0.20	0.21	0.51	0.011	0.007	0.040	0.010	0.010	0.060	-	-	0.30	HF	1	XSP
LR 90 ELBOW STD WPB 0292	1 1/4	00744J	3000	315	500	30	0.19	0.22	0.55	0.010	0.007	0.060	0.004	0.040	0.100	-	-	0.30	HF	1	XSP
LR 90 ELBOW STD WPB 0314	1 1/2	00952J	1400	355	510	31	0.19	0.21	0.52	0.010	0.001	0.030	0.001	0.010	0.100	-	-	0.29	HF	1	XSP
LR 90 ELBOW STD WPB 0314	1 1/2	00951J	400	315	515	30	0.21	0.23	0.55	0.014	0.008	0.030	0.007	0.010	0.030	-	-	0.31	HF	1	XSP
LR 90 ELBOW STD WPB 0381	3	01583J	1074	355	515	30	0.19	0.26	0.51	0.010	0.003	0.070	0.001	0.030	0.110	-	-	0.30	HF	1	XSP
LR 90 ELBOW STD WPB 0381	3	01583	6	300	500	31	0.19	0.24	0.42	0.012	0.023	0.060	-	0.020	0.024	-	-	0.27	HF	1	LCP
LR 90 ELBOW STD WPB 0403	3 1/2	01824	25	315	490	30	0.19	0.19	0.52	0.009	0.005	0.050	-	0.040	0.110	-	-	0.30	HF	1	XSP

Note: (1) YS=Yield Strength TS=Tensile Strength E=Elongation (2) CE=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15
Note: (3) HF: Hot formed (620~980 °C) and cooled in still air. S: Cold formed and normalized (900 °Cx0.5HR), cooled in still air. SA: Cold formed and solution annealed at 1050 °C±10°C, water quenched.
(4) 1=Seamless Pipe 2=Welded Pipe 3=Steel Plate. Note: (5) IGC=Intergrannular Corrosion Test to ASTM A262 E PMI=Positive Material Inspection RT=Radiographical Test MT=Magnetic Particle Test
Note: (6) XSP=XISHAN PIPE CORP LCP=LIANCHENG XINGTAI LJH=Liaocheng Jinhuitong TJP=TPCO

We hereby certify that the products detailed herein have been manufactured and inspected in accordance with the specifications concerned and also with the purchaser's requirements and that the test results shown herein are correct. This material was manufactured, tested, and inspected without mercurial contamination.

WEL-FIT METAL PRODUCTS CO., LTD. QUALITY ASSURANCE MANAGER

General Note:The analysis for the elements with an amount of less than 0.02% is reported as "<0.02" represented by a"-" above.

3"S 40 ELBOW

09P0004

SEP 20 2010

SEP 20 2010

Purchaser : NATIONAL OILWELL VARCO

INSPECTION CERTIFICATE

TO EN10204 3.1

Thai Benkan Co., Ltd.
58 Soi Watkrunai, Bangkru, Prapadaeng,
Samutprakarn, 10130 Thailand.

E-No.	Purchase Order No.	Job No.	D M Y	Certificate No.
MB-831	EO0013KD/BKT		08/04/2010	T- 2010140134

No.		MFG. No. (Heat Identification No.)	Specification for Material Made from Seamless Pipe	Specification for Inspection	Visual Examination	Dimensional Inspection
			ASTM A234-07/ASME SA234-07 Gr.WPB CSA Z245.11-05 Gr.241 CAT I SS NACE MR0175/ISO 15156-2 : 2003	ASME B16.9-2007	Good	Good
			Product & Size (T:*1)	Quantity	Heat Treatment (Note 1)	Hardness Actual Data
1		10A00001	90 EL WPB 1 S40	100	A	HB : 120 - 135
2		09P00004	90 EL WPB 3 S40	500/700	A	HB : 115 - 145
3		10C00009	90 EL WPB 4 S40	20/200	A	HB : 115 - 145
4		10A00022	90 ES WPB 4 S40	20	A	HB : 115 - 145
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.		%	HARDNESS MAX
Max.			10	29										240	415	30	197 HB : GOOD
Material Heat No.		30		106	50	58	40	40	40	15	80	20			585		RAW MATERIAL SUPPLIER
1	782757	17	18	84	13	5	23	12	7	2	2	2	36	358	507	43	Silcotub SA
2	28442	21	18	66	10	1	5	4	5	4	1	1	34	319	486	31	Siderca S.A.I.C.
3	28442	21	18	66	10	1	5	4	5	4	1	1	34	285	472	32	Siderca S.A.I.C.
4	J9KA913	18	17	84	17	4	1	2	7	2	0	0	34	320	489	59	Sumitomo Metal industries,Ltd.
5																	

(Note 1) A : Hot formed with final temperature between 620 °C-980°C, Air Cooling N : Normalizing 910°Cx0.5 HR. Air Cooling *N : Normalizing 910°Cx0.5 HR. Air Cooling (Specification for material made from plate) S : Stress Relieving 675° Cx0.5 HR. Air Cooling
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.

109982 Quality Assurance Manager
Thai Benkan Co., Ltd.

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

AUG 18 2010
RJV

2" SCH 160 HT # 7G4995
ELBOW

PURCHASER : SEYBOLD
STANDARD : ASTM A234 WPB-07 / ASME SA234 WPB-04

INSPECTION CERTIFICATE

RIGID INDUSTRIES CO., LTD.

8, MEI-CHUNG RD. NIAO-SONG,
KAOHSIUNG HSIEN, 83301 TAIWAN
TEL: 886-77310527~8
FAX: 886-77315887

DATE: 2007 - 11 - 26
ORDER NO: 6660/4880365
P.I. NO: 7E06-2
CERTIFI. NO: 808

MATERIALS : ASTM A106 Gr.B (SEAMLESS PIPE)
INSP. SPEC. : ASME B16.9 - 03

ACCORDING TO EN10204/DIN50049/3.1

ITEM NO.	PRODUCT & SIZE			QUANTITY PCS	MFG NO.	VISUAL & DIMENTIONAL INSPECTION	HARDNESS MAX 197 HB	HEAT TREATMENT (NOTE)	MAGNETIC PARTICLE EXAMINATION	IMPACT TEST (J)
1	ELL 90 LR	2"	160	100	7G4995	GOOD	129 - 135	A		7515146
2	CON-RED	3X1.1/2"	STD	20	7G2650	GOOD	126 - 130	N		7513194
3	TEE	1.1/4"	STD	25	7F1515 (7F)	GOOD	142 - 146	N	GOOD	7511698
4	TEE	8"	STD	50	7A1691	GOOD	140 - 171	N	GOOD	7511876
5	TEE	10"	STD	80	7H4279	GOOD	159 - 163	N	GOOD	7511892
6	ELL 90 SR	4"	STD	350	7D3078	GOOD	137 - 138	A		7510730

ITEM NO.	MATERIAL CHARGE NO.	CHEMICAL COMPOSITION %											PHYSICAL TEST			
		C x100	Si x100	Mn x100	P x1000	S x1000	Cu x100	Ni x100	Cr x100	Mo x100	V x100	Nb x1000	Y S KSI	T S KSI	E %	C.E X100
	STANDARD MIN.		10	29									35.0	60.0		
	STANDARD MAX.	30		135	50	58	40	40	40	15	8	20		95.0		50
1	0723195	18	25	70	9	5	7	2	1	3	1	<1	55.1	79.1	33.5	31
2	318050	18	25	56	9	3	4	3	3	1	<1	<1	47.0	71.1	34.0	28
3	0710215	14	25	66	13	7	9	3	2	2	<1	<1	42.8	66.0	32.5	26
4	J6LB191	11	27	125	13	4	2	2	11	<1	<1	<1	47.6	68.7	44.8	34
5	0730479	15	18	70	10	9	8	3	4	<1	<1	<1	46.4	75.5	38.0	28
6	J6L4978	12	28	134	13	3	2	3	12	1	<1	<1	50.9	71.9	61.0	37

(NOTE): A: HOT FORMED WITH FINAL TEMPERATURE BETWEEN 520℃-980℃,AIR COOLING.
N: NORMALIZING AT TEMPERATURE 880℃X0.5HR,AIR COOLING.
NACE MR-01-75 & NACE MR 0103 : SATISFACTORY

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

Ou E Lan
MANAGER OF Q.A. DEPT.

103841

SEP 0 8 2010
RJV

2" 1500/900 XXS HT 381A9
Flange

CLIENTE / Customer / Client

CCTF CORPORATION (EDMONTON)
5407 - 53 AVENUE NW
EDMONTON, AB T6B 3G2
CANADA

CERTIFICADO DE INSPECCION

Inspection Certificate - Certificat de Réception

DIN EN 10204 / 3.1
ISO 10474 / 3.1

FECHA / Date: 02/02/2010
N.º / No.: 129892
HOJA / Page: 1

SGS 1922164 SGS 5000236

ULMA FORJA, S.COOP.
B° Zubillaga, 3 - Apdo. 14
20560 OÑATI (Gipuzkoa) SPAIN
Tel.: 34 - 943 780562
Fax: 34 - 943 781806
E-mail: ulma@ulmapiping.com

PRODUCTO / Article - Produit: FLANGES

SU PEDIDO N.º / Your Order No. / Votre Cde. N.º: 4887141-00

DE / of. - de: 01/12/2009

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

NORMAS APLICABLES / Requirements - Normes Applicables: ASME B16.5-09

MATERIAL CORRESPONDIENTE / Material Correspondent - Qualité: ASTM A105N-05 / ASME SA105N-05

MODO DE FUSION (*) / Steel Making - Elaboration de l'acier: E = Elec. Y = Oxigeno básico

NACE MR0175 / ISO15156-2 : 2005
NACE MR0103 : 2007
CSA-Z245.12-05 GR246 CAT I

MARCA DEL FABRICANTE / Mark of factory / Marque du fabricant: 76564

DEPARTAMENTO / Section / Département: QUALITY ASSURANCE

PARTIDA / Item / Poste	CANTIDAD / Quantity / Quantité	DESCRIPCION / Description / Description	OBSERVACIONES / Remarks / Observations (*)	COLADA N.º / Heat No / N.º Coulée	RESISTENCIA / T.Strength / Resist Rupt. N/mm2	LIMITE ELAST. / Y.Strength / Limite Elast. N/mm2	ALARGAM. / Elongation / Allongement Lo 4 d %	ESTRICCION / Red. Area / Striction %	RESILIENCIA / Impact test / Résilience Joules	PROBETA / SPECIMEN MEDIA / Average / Moyenne	°C	DUREZA / Hardness / Dureté HB
10 7530309	2	WN 15 150LB STD/30 FF A105N	NE	4A0	515	317	30,60	58,00				149 156
52 7531591	8	WN 6 900LB S160 RF A105N	NE	311A9	512	306	28,40	53,20				149 155
55 7531745	12	BLIND 6 900LB RF A105N	NE	248A9	497	303	28,60	52,70				147 154
57 7531915	33	WN 2 1500LB XXS RTJ A105N	NE	381A9	518	314	30,00	55,80				149 155
62 7532431	36	BLIND 3 1500LB RTJ A105N	NE	9T0	518	297	28,20	51,30				150 156
66 7532377	17	WN 3 1500LB XXS RTJ A105N	NE	162A9	519	316	30,40	56,40				150 155
66 7532377	31	WN 3 1500LB XXS RTJ A105N	NE	2T0	523	310	28,60	53,00				150 157

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

COLADA N.º / Heat No / N.º Coulée	C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	Nb %	V %	Cu %	Al %	Ti %	N %	CEq %
162A9	0,210	0,200	0,870	0,007	0,001	0,110	0,100	0,040	0,007	0,001	0,310	0,034	0,000	0,000	0,413
248A9	0,190	0,230	0,830	0,015	0,007	0,070	0,070	0,010	0,003	0,005	0,140	0,024	0,000	0,000	0,359
2T0	0,210	0,180	0,850	0,013	0,016	0,060	0,110	0,010	0,005	0,001	0,370	0,000	0,000	0,000	0,398
311A9	0,160	0,180	0,910	0,018	0,002	0,060	0,080	0,010	0,002	0,002	0,230	0,027	0,000	0,000	0,367
381A9	0,200	0,300	0,820	0,010	0,004	0,050	0,100	0,040	0,007	0,001	0,280	0,029	0,000	0,000	0,386
4A0	0,210	0,230	0,840	0,010	0,003	0,070	0,060	0,030	0,007	0,001	0,220	0,032	0,000	0,000	0,380
9T0	0,190	0,170	0,820	0,015	0,020	0,050	0,060	0,010	0,005	0,001	0,340	0,000	0,000	0,000	0,367

- Las dimensiones y la condición superficial se hallaron satisfactorias.
- Dimension and surface condition were found acceptable.
- Les dimensions et état 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 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

HT 10/72145 2"xS 600

METALFAR
PRODOTTI INDUSTRIALI S.P.A.
STAMPAGGIO A CALDO DI ACCIAI COMUNI - LEGATI E INOSSIDABILI

SEDE AMMINISTRATIVA E STABILIMENTO:
23861 CESANA BRIANZA (LC) - Italy
Via G. Parini, 28
Tel. +39 031.655441
Fax +39 031.655149
quality.mff@tiscali.com

SALA PROVE E ANALISI MATERIALI / MATERIAL TEST DEPARTMENT

COMPANY WITH QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV = ISO 9001:2008 =

CERTIFICATO DI COLLAUDO SECONDO EN 10204 - 3.1 INSPECTION CERTIFICATE

GLOBAL GAEL SERVICE LTD Unit 1E, Block 71, The Plaza Nangor Road DUBLIN 12 IE	Certif. N. 3562 Del/Dated 07.09.2010 Fattura / Invoice N. 2462 Del/Dated 03.09.2010 DDT / Dol Note N. 4588 Del/Dated 03.09.2010 Ns.Ord. / Our ref. N. Del/Dated

COD. COL. HEAT CODE	COLATA HEAT	POS. ITEM	VS.ORDINE YOUR REFERENCE	Q.TA' Q.TY	DESCRIZIONE DESCRIPTION	DIM.IN ACC. A DIM. ACCORDANCE TO	VISIVO E DIMENS. VIS. & DIMENS.
	10/72145	045	591/CCTF EDM	256,00	W/N 600 RF 2" XS A105	ASME/ANSI B16.5	SATISFACTORY

MATERIALE / MATERIAL	C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
ASTM A105	0,195	0,190	1,120	0,005	0,010	0,120	0,040	0,010	0,021	0,140	0,003	0,002	0,000	0,031	0,420

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns.Rif. OUR REF.
126,60	50,80	1	363,0	569,0	30,0	57,0	170,0 - 174,0	KV	20	84	84	88	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 09
TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR
FORNO / FURNACE: ELECTRIC FURNACE
ORIGINE / ORIGIN: EUROPE

COD. COL. HEAT CODE	COLATA HEAT	POS. ITEM	VS.ORDINE YOUR REFERENCE	Q.TA' Q.TY	DESCRIZIONE DESCRIPTION	DIM.IN ACC. A DIM. ACCORDANCE TO	VISIVO E DIMENS. VIS. & DIMENS.
	10/72145	045	591/CCTF EDM	256,00	W/N 600 RF 2" XS A105	ASME/ANSI B16.5	SATISFACTORY

MATERIALE / MATERIAL	C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
ASTM A105	0,195	0,190	1,120	0,005	0,010	0,120	0,040	0,010	0,021	0,140	0,003	0,002	0,000	0,031	0,420

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns.Rif. OUR REF.
126,60	50,80	1	363,0	569,0	30,0	57,0	170,0 - 174,0	KV	20	84	84	88	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 105/SA 105 M - 09
TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 920 C - COOLED IN STILL AIR
FORNO / FURNACE: ELECTRIC FURNACE
ORIGINE / ORIGIN: EUROPE

COD. COL. HEAT CODE	COLATA HEAT	POS. ITEM	VS.ORDINE YOUR REFERENCE	Q.TA' Q.TY	DESCRIZIONE DESCRIPTION	DIM.IN ACC. A DIM. ACCORDANCE TO	VISIVO E DIMENS. VIS. & DIMENS.
	75242	067	591/CCTF EDM	64,00	S/W 300 RF 1" 80 LF2CL1	ASME/ANSI B16.5	SATISFACTORY

MATERIALE / MATERIAL	C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%
ASTM A350 LF2 CL1/2	0,185	0,240	1,050	0,010	0,009	0,080	0,050	0,010	0,019	0,120	0,023	0,001	0,000	0,026	0,393

PROVETTA / TEST SPECIMEN SEZ. mm2 SECT. mm2	LUNG. mm LENGHT mm	FORMA SHAPE 1=○ 2=□	SNERVAMENTO YIELD POINT N/mm2 >=0,2%	ROTTURA TENSILE STRENGHT N/mm2 >=	ALLUNGAMENTO ELONGATION %>=	CONTRAZIONE REDUCTION OF AREA %>=	DUREZZA HARDNESS HB	RESILIENZA / IMPACT TEST - JOULE/cm2 TIPO / TYPE 10x10mm	°C	1	2	3	SNERVAMENTO YIELD POINT N/mm2 >=1,0%	Ns.Rif. OUR REF.
126,60	50,80	1	337,0	544,0	33,0	57,0	164,0 - 166,0	KV	-50	69	69	62	0,0	

MATERIALE IN ACCORDO A / MATERIAL IN ACC. TO: ASTM/ASME A 350/SA 350 M - 07
TRATTAMENTO TERMICO / HEAT TREATMENT: NORMALIZED AT 930 C - COOLED IN STILL AIR
FORNO / FURNACE: ELECTRIC FURNACE
ORIGINE / ORIGIN: EUROPE

NOTE / NOTES: MANUFACTURING IN ACCORDANCE WITH ORDER AND SPECIFICATION
MATERIAL IN ACCORDANCE WITH NACE MR-0175/2003 ISO 15156
MATERIAL IN ACCORDANCE WITH NACE MR-0103/2007

UFFICIO CONTROLLO QUALITA' QUALITY CONTROL DEPARTEMENT	ENTE UFFICIALE DI COLLAUDO INSPECTION AUTHORITY	MARCHIO PRODUZIONE MANUFACTURER'S SYMBOL
S. Corti		MFF

3x2 TEE HT # 50N10265

Purchaser : CE Franklin Ltd.

INSPECTION CERTIFICATE

TO EN10204 3.1

Thai Benkan Co., Ltd.
58 Soi Watkrunai, Bangkru, Prapadaen
Samutprakarn, 10130 Thailand.

E-No.	Purchase Order No.	Job No.	D M Y	Certificate No.
MB-223	P/O 1803477-OR-2100		28/04/2008	T- 2008200308

No.		MFG. No. (Heat Identification No.)	Specification for Material Made from Seamless Pipe ASTM A234-06a/ASME SA234-04 Gr. WPB CSA Z245.11 GR241 CAT I NACE MR0175-2003	Specification for Inspection		Visual Examination	Dimensional Insp
				ASME B16.9-2003		Good	Good
			Product & Size (T:*1)	Quantity	Heat Treatment (Note 1)	Symbol No.	Hardness Actu
1	11736041	07C10307	T WPB 3 X 1 1/2 S40	10	N	7512651	HB : 125 - 140
2	1173675	08C10026	T WPB 12 X 6 STD	10	S	7513038	HB : 120 - 150
3	11755666	08B10826	T WPB 4 X 3 S80	50	N	7513518	HB : 130 - 145
4	16131116	50N10265	T WPB 3 X 2 STD/XS	200	N	7510418	HB : 115 - 145
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.		%	HARDNESS MAX
Max.			10	29										240	415	30	197 HB : GOOD
Material Heat No.		30		106	50	58	40	40	40	15	80	20	43		655		
1	J6K7114	18	19	67	13	6	3	3	5	1	TR	1	31	288	495	36	
2	9-06179	19	24	84	17	1	2	1	3	<1	2	<1	34	332	474	43	
3	68M8880	16.8	27	75	14	5	13	10	5	1.4	22	1	33	337	492	42	
4	J7LC235	11	24	132	7	3	2	2	11	TR	TR	TR	35	324	465	42	
5																	

Note 1) A : Hot formed with final temperature between 620 °C-980°C, Air Cooling N : Normalizing 910°Cx0.5 HR. Air Cooling *N : Normalizing 910°Cx0.5 HR. Air Cooling (Specification for material made from plate) S) Stress Relieving 675° Cx0.5 HR. Air Co

THE RESULTS OF THE TESTS AND INSPECTIONS MEET THE REQUIREMENTS.

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

MAGNETIC PARTICLE EXAMINATION FOR TEE 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.

Quality Assurance Manager
Thai Benkan Co., Ltd.

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

orm TZ-6A/2

ALLIED P.O. 2543503

3+2 Conc HT→ 04238-2X
S-40/80

INSPECTION CERTIFICATE

AWAJI MATERIA (THAILAND) CO.,LTD.

81,MOO4, PRAKASA ROAD, TAMBOL BANGMUANG, AMPHUR MUANG
SAMUTPRAKARN THAILAND 10270, Tel : (662)701-5226

Date : MAY 7, 2010

Certificate No. T10-5342

Purcheser : ALLIED FITTING CANADA

MADE FROM SEAMLESS STEEL PIPE

Order No.	Job No.	Product	Raw Material Pipe Maker
30810AAW/WPB/2		CARBON STEEL BUTT WELDING FITTINGS	SUMITOMO METAL INDUSTRIES, LTD.

Inspection Standard	Material Standard					*3
ASME B16.9-07 ASTM A960-08a NACE MR-0175-03, MR 0103-05	ASTM A234-07 WPB ASME SA234-07 WPB except nuclear usage CSA Z245.11-09, GR.241 CAT.I	Appearance	GOOD	Dimension	GOOD	

Manufacturing No.	Product code	Material	Article & Size	Quantity	Note.
D4238-2X		WPB	STD x XS REDUCERS CONCENTRIC 3" x 2"	250 Pcs.	"ALL FITTING MANUFACTURED BY AWAJI MATERIA (THAILAND) CO.,LTD. ARE PRODUCED FROM A106 GR.B SEAMLESS PIPE"

	Chemical Composition (%)																	*1 Mechanical Test			Hardness
Specification	C	Si	*2Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Ti	B	Ca	N	Al	C.E.	Y.S.	T.S.	E	
Min.	X100	X100	X100	X1000	X1000	X100	X100	X100	X100	X100	X100	X100	X10000	X10000	X1000	X1000	X100	MPa		%	HB
Max.	-	10	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240	415	25.5	-
Pipe Charge No.	30	-	106	50	58	40	40	40	15	8	2	2	5	85	8	-	-	-	855	-	197
J9LC050	19	19	62	15	3	1	2	3	1	0	0	0	1	9	9	15	31	340	505	35.2	144

$$C.E. = C + \frac{Mn}{6} + \frac{Cr+Mo+V}{5} + \frac{Ni+Cu}{15}$$

Inspection Certificate : ACCORDING TO EN 10204, 3.1 : 2004

ISO 9001: 2008 Manufacturing Company
Certified by BV, Certificate No. TH10000101

*1 Y.S.= Yield Strength, T.S. = Tensile Strength, E = Elongation,

*3 UT = Ultrasonic thickness inspection,

*2 For each reduction of 0.01% below the specified carbon(C) Maximum, an increase of 0.06% manganese(Mn) above specified maximum will be permitted, up to a maximum of 1.35% as per foot note D of ASTM A234/A234M-07 Table 1.

ELBOW / Forming temperature 780℃— 930℃ and cooled in still air

TEE, REDUCER & CAP / Normalizing : 900℃

AT-24(2)12

"We hereby certify that the material described herein has been duly inspected and conforms to the standard as specified above.

Surveyor to

Chief of Inspection Section S.MAEKAWA

JUL 2 5 2010
RJV

RECEIVED
NOV 2 9 2010

49P20010 3x2 S80 conc
PO# 21673 ITEM 104
05 to 14 06K00068 - 2 1/2 S 160
ELBOW.

INSPECTION CERTIFICATE

TO EN10204 3.1

Thai Benkan Co., Ltd.
58 Soi Watkrunai, Bangkru, Prapadaeng,
Samutprakarn, 10130 Thailand.

Purchaser : VAN LEEUWEN PIPE AND TUBE (CANADA) INC.

D M Y: 30/05/2007 Certificate No.: T- 2007040252

E-No.	Purchase Order No.	Job No.
MA-862	45000722	

No.		MFG. No. (Heat Identification No.)	Specification for Material Made from Seamless Pipe: ASTM A234-05a/ASME SA234 WPB NACE MR0175/ISO 15156-2003 * CSA Z245.11 Gr. 241 Cat I SOUR SERVICE*	Specification for Inspection: ASME B16.9-2003	Visual Examination: Good	Dimensional Inspect: Good
			Product & Size (T:*1)	Quantity	Heat Treatment (Note 1)	Item No.
1		49P20010	RC WPB 3 X 2 STD/XS	100	N	24379
2		06K00068	90 EL-WPB 2 1/2 S160	5	A	26499
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.		%	HARDNESS MAX
Min.														240	415	30	197 HB : GOOD
Max.			10	29											655		
Material Heat No.		30		106	50	58	40	40	40	15	80	20	45				
1	49525	20	18	66	10	2	2	2	3	2	1	1	32	286	451	34	
2	J6L3394	19	18	73	13	7	2	2	4	0	0	0	32	308	473	58	
3																	
4																	
5																	

(Note 1) A : Hot formed with final temperature between 620 °C-980°C, Air Cooling N : Normalizing 910°Cx0.5 HR. Air Cooling *N : Normalizing 910°Cx0.5 HR. Air Cooling (Specification for material made from plate) S : Stress Relieving 675° Cx0.5 HR. Air C

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.

Quality Assurance Manager
Thai Benkan Co., Ltd.

CERTIFIED MILL TEST REPORT

The Best Value
Price, Quality, Service
All The Time.

LOG NO. 209541 PAGE 1

BONNEY FORGE
P.O. BOX 330 • U.S. RTE 522 SOUTH • MOUNT UNION, PA 17066-0330
(814) 542-2545 • (800) 345-7546 • FAX (814) 542-4906
www.bonneyforge.com

CUSTOMER: CCTF - DIV OF EMCO CORPORATION **Date** 08/30/04

CUSTOMER'S Order No.: 4640821-00 **Bonney Order No** 98510

SHIPPED TO: CCTF - DIV OF EMCO CORPORATION 267924

5407 - 53 AVENUE

EDMONTON ALBERTA, T6B 3G2

ITEM	QUANTITY	LOT NO.		GRADE OR SPECIFICATION NO CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS
				SA/A105N-02
003	25	56044	7551452	11/2-11/4X1/2 3M A105N THRD T
				C .200 MN 1.000 P .012 S .024 SI .270
				NI .040 CU .180 CR .060 MO .011 V .025
				AL .001 NB .000
				CE(LONG FORMULA) = 0.40
				T/S 78000 Y/S 57000 EL 32.00 RA 64.00
				BRINELL HARDNESS1: 156 HARDNESS2: 156
005	200	56102	7551568	5 -3 X 3/4 3000 A105N THRD T
				C .200 MN 1.000 P .020 S .023 SI .260
				NI .030 CU .120 CR .060 MO .010 V .024
				AL .001 NB .000
				CE(LONG FORMULA) = 0.40
				T/S 81000 Y/S 51500 EL 35.00 RA 68.00
				BRINELL HARDNESS1: 150 HARDNESS2: 150
006	50	55954	7551576	12 -6 X 3/4 3000 A105N THRD T
				C .200 MN 1.040 P .010 S .024 SI .270
				NI .040 CU .100 CR .060 MO .010 V .024
				AL .001 NB .001
				CE(LONG FORMULA) = 0.40
				T/S 79500 Y/S 51500 EL 35.00 RA 68.00
				BRINELL HARDNESS1: 153 HARDNESS2: 150
→ 007	25	56127	7551665	5-4X1 3M A105N THRD T
				C .190 MN 1.020 P .012 S .024 SI .250
				NI .040 CU .160 CO .004 CR .060 MO .014
				V .025 AL .001 NB .000
				CE(LONG FORMULA) = 0.39
				T/S 78875 Y/S 54750 EL 30.70 RA 63.50
				BRINELL HARDNESS1: 147 HARDNESS2: 147

***** CONTINUED ON NEXT PAGE *****

We certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by

Cris Childers

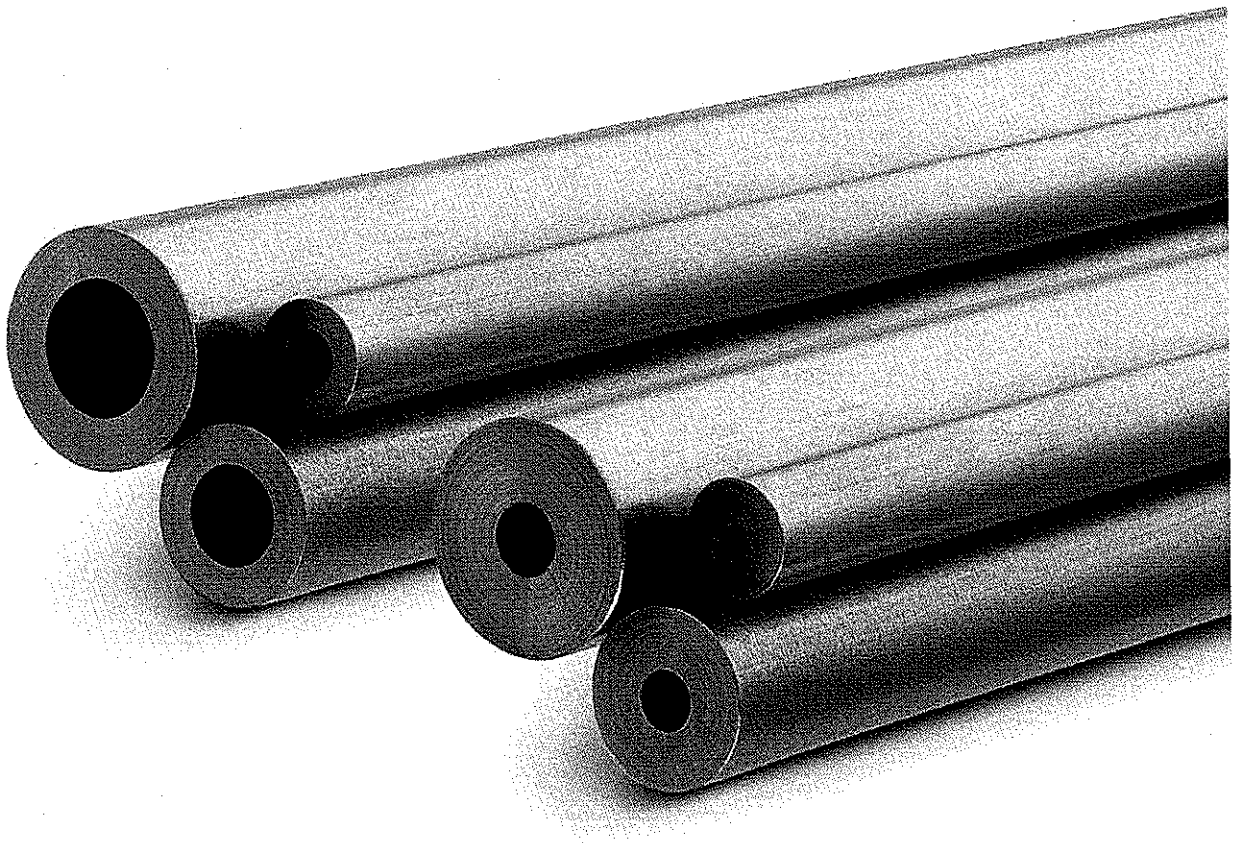
QUALITY PROCESS MANAGER

ISO 9001
Certificate Number: 30116

56127

Medium-Pressure Tubing

Heavy-Wall Annealed
Cold-Drawn 1/8-Hard



- Sizes 1/4, 3/8, and 1/2 in. outside diameter
- Working pressures up to 15 000 psig (1034 bar)
- 316 / 316L stainless steel
- Marked to indicate size, material, condition, and heat number

Swagelok®

Technical Data

Material Standards and Mechanical Properties

Cold-drawn 1/8-hard tubing is more robust and allows for reduced wall thickness and enhanced flow through the same diameter tube.

Heavy-Wall Annealed 316 / 316L Stainless Steel Seamless Tubing

Grade	UNS	Specification
316 / 316L, 1.4401 / 1.4404	S31600 / S31603	ASTM A213①, A269
		ASME SA213①
		EN 10216-5②
SUS 316LTP / SUS 316TP	—	JIS G3459

① Nominal wall thickness, not minimum wall thickness.
② Appearance in accordance with ASTM / ASME standards.

Cold-Drawn 1/8-Hard 316 / 316L Stainless Steel Seamless Tubing

Grade	UNS	Specification	Yield Strength at 0.2 % Offset③ ksi	Tensile Strength③ ksi	Elongation in 2 inches③ % min
316 / 316L, 1.4401 / 1.4404	S31600 / S31603	ASTM A213①, A269	75 to 110	105 to 140	20
		ASME SA213①			
		EN 10216-5②			

① Nominal wall thickness, not minimum wall thickness.
② Appearance in accordance with ASTM / ASME standards.
③ Exception to the standards.

Chemical Composition

Element	Specification	
	ASTM / EN	JIS
	Composition, wt. %	
Chromium	16.5 to 18.0	16.0 to 18.0
Nickel	11.0 to 13.0	12.0 to 14.0
Molybdenum	2.00 to 2.50	2.00 to 3.00
Manganese	2.00 max	
Silicon	1.00 max	
Carbon	0.030 max	
Sulfur		

Bend Radius

Minimum tube length, bend radius, and wall thickness limits required to make a 90° bend in heavy-wall annealed or cold-drawn 1/8-hard stainless steel seamless tubing are listed below.

Tube OD in.	Minimum Tube Length in. (mm)	Minimum Bend Radius in. (mm)	Wall Thickness Dimensions, in.	
			Heavy-Wall Annealed Stainless Steel Seamless	Cold-Drawn 1/8-Hard Stainless Steel Seamless
1/4	7.0 (178)	1.4 (35.6)	0.095	0.065
3/8			0.134	0.083
1/2			0.188	0.109

⚠ **Do not use hand tube bender for bending heavy-wall annealed or cold-drawn 1/8-hard stainless steel tubing. Use steel bend shoes with the Swagelok® bench top tube bender.**

Ordering Information and Dimensions

Heavy-Wall Annealed 316 / 316L Stainless Steel Seamless Tubing

ASTM / EN Tubing

Tube OD in.	Nominal Wall Thickness in.	Ordering Number	Nominal Length	Weight	Pressure Rating
Fractional Length			ft	lb/ft (kg/m)	psig (bar)
1/4	0.095	SS-T4FK-S-095-20-S	20	0.16 (0.24)	15 000 (1034)
3/8	0.134	SS-T6FK-S-134-20-S		0.35 (0.52)	
1/2	0.188	SS-T8FK-S-188-20-S		0.64 (0.95)	
Metric Length			m	kg/m (lb/ft)	bar (psig)
1/4	0.095	SS-T4FK-S-095-6M-S	6	0.24 (0.16)	1034 (15 000)
3/8	0.134	SS-T6FK-S-134-6M-S		0.52 (0.35)	
1/2	0.188	SS-T8FK-S-188-6M-S		0.95 (0.64)	

JIS Tubing

Tube OD in.	Nominal Wall Thickness in.	Ordering Number	Nominal Length m	Weight kg/m (lb/ft)	Pressure Rating bar (psig)
1/4	0.095	SS-T4FK-S-095-2MJ-S	2	0.24 (0.16)	1034 (15 000)
		SS-T4FK-S-095-4MJ-S	4		
3/8	0.134	SS-T6FK-S-134-2MJ-S	2	0.52 (0.35)	
		SS-T6FK-S-134-4MJ-S	4		
1/2	0.188	SS-T8FK-S-188-2MJ-S	2	0.95 (0.64)	
		SS-T8FK-S-188-4MJ-S	4		

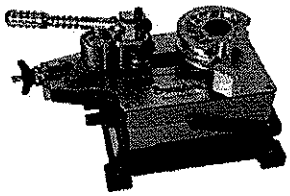
Cold-Drawn 1/8-Hard 316 / 316L Stainless Steel Seamless Tubing

ASTM / EN Tubing

Tube OD in.	Nominal Wall Thickness in.	Ordering Number	Nominal Length	Weight	Pressure Rating
Fractional Length			ft	lb/ft (kg/m)	psig (bar)
1/4	0.065	SS-T4FK-SH-065-20-S	20	0.13 (0.19)	15 000 (1034)
3/8	0.083	SS-T6FK-SH-083-20-S		0.26 (0.39)	
1/2	0.109	SS-T8FK-SH-109-20-S		0.47 (0.70)	
Metric Length			m	kg/m (lb/ft)	bar (psig)
1/4	0.065	SS-T4FK-SH-065-2M-S	2	0.19 (0.13)	1034 (15 000)
		SS-T4FK-SH-065-4M-S	4		
		SS-T4FK-SH-065-6M-S	6		
3/8	0.083	SS-T6FK-SH-083-2M-S	2	0.39 (0.26)	
		SS-T6FK-SH-083-4M-S	4		
		SS-T6FK-SH-083-6M-S	6		
1/2	0.109	SS-T8FK-SH-109-2M-S	2	0.70 (0.47)	
		SS-T8FK-SH-109-4M-S	4		
		SS-T8FK-SH-109-6M-S	6		

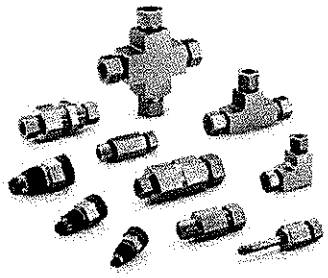
Options and Accessories

Bench Top Tube Bender



For optimal bending ability, use the Swagelok bench top bender with **steel bend shoes**. See the Swagelok *Tools and Accessories* catalog, MS-01-169, for more information.

Fittings



See the Swagelok *Medium-Pressure Gaugeable Tube Fittings and Adapter Fittings* catalog, MS-02-335, for more information.

Safe Product Selection
When selecting a product, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.

Warranty Information

Swagelok products are backed by The Swagelok Limited Lifetime Warranty. For a copy, visit swagelok.com or contact your authorized Swagelok representative.

Printed in U.S.A., GLI
March 2008, R1
MS-02-334

NATIONAL OILWELL VARCO

I.M.L.
INDUSTRIA MECCANICA LIGURE SPA

INSPECTION CERTIFICATE EN 10204:2004 / 3.1

COMPANY WITH QUALITY SYSTEM ISO 9001-2000
CERTIFIED BY RINA

SEYBOLD INTERNATIONAL CORP.
20 Holly Street, Unit 205
TORONTO M4S 3B1 CANADA CA

Certificate Nr 17339 Dated 10.03.2007
Invoice Nr 264 Dated 05.03.2007
Del. Note Nr 418 Dated 05.03.2007

16030 CASARZA LIGURE - Genova - Italy - P.zza Marco Cappelli,4 - Tel.0185.467681 - Fax 0185.466510 / MATERIAL TEST DEPARTMENT This certificate has been generated by computer and need not to be signed for validity according to DIN EN 10204

HEAT CODE	HEAT	ITEM	YOUR P.O.	OUR REFERENCE	Q.TY	DESCRIPTION	DIM. ACC. TO	VISUAL & DIMENS.
EEK	72505	028	5949	2006-2E209-0003073-028	480	FITTING HEX.H.PLUG THRD NPT 3/6M 2" A105N CODE: 4009	SEE NOTE	SATISFACTORY
FCN	74408	057	5949	2006-2E209-0003073-057	90	FITTING 90 ELB. SW 3M 2" A105N CODE: 6455	SEE NOTE	SATISFACTORY
	72475	003	5949	2006-2E209-0003073-003	200	FITTING COUPLING THRD NPT 3M 3/8" A105N CODE: 3900	SEE NOTE	SATISFACTORY
TN3	78749	032	5949	2006-2E209-0003073-032	50	FITTING TEE THRD NPT 2/3M 1/4" A105N CODE: 4033	SEE NOTE	SATISFACTORY
FCN	74408	057	5949	2006-2E209-0003073-057	12	FITTING 90 ELB. SW 3M 2" A105N CODE: 6455	SEE NOTE	SATISFACTORY
	72475	060	5949	2006-2E209-0003073-060	250	FITTING HALF COUPL THRD NPT 3M 1/4" A105N CODE: 7175	SEE NOTE	SATISFACTORY
HL5	72028	064	5949	2006-2E209-0003073-064	207	FITTING RED.TEE THRD NPT 3M 1"x1/2" A105N CODE: 45668	SEE NOTE	SATISFACTORY
HA7	78879	064	5949	2006-2E209-0003073-064	3	FITTING RED.TEE THRD NPT 3M 1"x1/2" A105N CODE: 45668	SEE NOTE	SATISFACTORY

HEAT CODE	HEAT	ITEM	MATERIAL	C%	Si%	Mn%	S%	P%	Cr%	Ni%	Mo%	Ti%	Cu%	V%	Nb%	N%	Al%	C.E.%	OTHER ELEMENTS
EEK	72505	028	ASTM A105	0,195	0,180	1,090	0,013	0,011	0,070	0,040	0,010	0,021	0,140	0,029	0,000	0,000	0,025	0,410	
FCN	74408	057	ASTM A105	0,180	0,250	0,930	0,018	0,014	0,120	0,050	0,020	0,006	0,180	0,001	0,001	0,000	0,026	0,379	
	72475	003	ASTM A105	0,210	0,220	0,890	0,026	0,015	0,100	0,050	0,010	0,000	0,170	0,001	0,001	0,000	0,012	0,395	
TN3	78749	032	ASTM A105	0,195	0,250	0,980	0,009	0,013	0,090	0,040	0,010	0,021	0,160	0,020	0,000	0,000	0,024	0,397	
FCN	74408	057	ASTM A105	0,180	0,250	0,930	0,018	0,014	0,120	0,050	0,020	0,006	0,180	0,001	0,001	0,000	0,026	0,379	
	72475	060	ASTM A105	0,210	0,220	0,890	0,026	0,015	0,100	0,050	0,010	0,000	0,170	0,001	0,001	0,000	0,012	0,395	
HL5	72028	064	ASTM A105	0,185	0,210	0,970	0,017	0,017	0,130	0,060	0,010	0,005	0,170	0,002	0,000	0,000	0,017	0,390	
HA7	78879	064	ASTM A105	0,180	0,190	0,950	0,020	0,020	0,120	0,070	0,010	0,005	0,170	0,002	0,000	0,000	0,013	0,381	

HEAT CODE	HEAT	ITEM	TEST SPECIMEN SECT. mm2	TEST SPECIMEN LENGHT mm	YIELD POINT N/mm2 >=0,2%	TENSILE STRENGHT N/mm2 >=	ELONGATION %>=	REDUCTION OF AREA %>=	HARDNESS Hb	BEND TEST	FLATTENING TEST	IMPACT TEST - JOULE/cm2 TYPE 10x10mm	°C	1	2	3	SHAPE 1=○ 2=□	YIELD POINT N/mm2 >=1,0%
EEK	72505	028	122,65	50,00	306,0	529,0	32,0	54,0	160 - 166	0,0	0,0	KV	20	98	106	110	1	0,0
FCN	74408	057	122,65	50,00	320,0	518,0	32,0	59,0	156 - 159	0,0	0,0	KV	20	104	100	105	1	0,0
	72475	003	122,65	50,00	301,0	526,0	36,0	49,0	158 - 166	0,0	0,0	KV	20	99	104	103	1	0,0
TN3	78749	032	122,65	50,00	305,0	509,0	30,0	56,0	160 - 168	0,0	0,0	KV	20	106	100	108	1	0,0
FCN	74408	057	122,65	50,00	320,0	518,0	32,0	59,0	156 - 159	0,0	0,0	KV	20	104	100	105	1	0,0
	72475	060	122,65	50,00	301,0	526,0	36,0	49,0	158 - 166	0,0	0,0	KV	20	99	104	103	1	0,0
HL5	72028	064	122,65	50,00	309,0	548,0	32,0	54,0	160 - 166	0,0	0,0	KV	20	108	104	100	1	0,0
HA7	78879	064	122,65	50,00	306,0	539,0	31,0	49,0	160 - 162	0,0	0,0	KV	20	98	99	106	1	0,0

HEAT CODE	HEAT	ITEM	MATERIAL IN ACCORDANCE TO	HEAT TREATMENT	FURNACE	STEEL MILL	Our Ref.
EEK	72505	028	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	
FCN	74408	057	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	
	72475	003	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	
TN3	78749	032	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	062022
FCN	74408	057	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	
	72475	060	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	
HL5	72028	064	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	061358
HA7	78879	064	ASME SA ASTM A105-05	Normalized at 880°-920°C / Air Cool	ELECTRIC FURNACE	RIVA ACCIAI	061086

NOTES ASME B16.11/05 - ANSI B31.1/831.3 - IML STD - ANSI B1.1-B18.2.2 - NACE MR0175 ISO 15156/1 - MSS SP 83 - SUPPLIED MATERIAL MEETS SPECIFICATIONS AND P.O. REQUIREMENTS

INSPECTION AUTORITY	QUALITY CONTROL DEPARTMENT	MANUFACTURER'S SYMBOL	MANUFACTURER'S SYMBOL
98496	BORIS FIZZOTTI	FITTINGS IML	STUDBOLTS