



WORK / MILL TEST CERTIFICATE

F / QLY / 23 R 00

T.C.NO: JSAW / Q / XP2102000921 / F
P.O.NO: 120014
S.O.NO: 4111004979-50
INVOICE NO: XP2102000921

DATE: 21.02.2022
DATE: 23.11.2021
DATE: 01.12.2021
DATE: 21.02.2022

CUSTOMER : BHD TUBULAR

PAGE 1 OF 1

PRODUCT : HOT FINISHED QUENCHED & TEMPERED CARBON STEEL SEAMLESS PIPES
PIPE SPECIFICATION : API 5L GR. L350Q / X52Q PSL 2 / ASME SA 333 GR. 6/1, ASME SEC II PART A EDN. 2019 / ASTM A 333 GR. 6/1 - 18 / NACE MR 0175 / ISO 17945 / NACE MR 0103 / ISO 15156 & CSA 1245.1-2018 CATII SS M46C GRADE 359

PIPE DIMENSIONS (MM)		LENGTH (FEET)	END CONDITIONS	STRAIGHTNESS	HEAT NO.	QUANTITY	
OD	WT					NOS.	FEET
4.500"	0.237"	21.00	Bevelled Ends	Satisfactory	3123124	163	3423.107
4 NPS	SCH STD						
TOTAL						163	3423.107

CHEMICAL COMPOSITION:

Heat No.	Analysis	% C	% Mn	% Si	% S	% P	% Cr	% Ni	% Cu	% Mo	% V	% Nb	% Ti	% B	% Mn/C	Nb + V + Ti	% CE*
	Reqd.	0.18 Max.	0.40 - 1.35	0.10 - 0.45	0.010 Max.	0.025 Max.	0.30 MAX	0.30 MAX	0.50 MAX	0.15 Max.	0.05 Max.	0.02 Max.	0.04 Max.	0.001 Max.	5 Min.	0.15 Max.	0.40 Max.
3123124	Heat	0.17	1.14	0.30	0.003	0.018	0.02	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.001	7	0.01	0.37
	Product	0.17	1.13	0.29	0.003	0.017	0.02	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.001	7	0.01	0.37
	Product	0.18	1.12	0.28	0.004	0.016	0.02	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.001	6	0.01	0.37

MECHANICAL TESTS:

Heat No.	TENSILE TEST			OTHER TESTS					
	Y. S. (0.5% EUL)	U.T.S.	% E G.L. = 50.00 mm	HARDNESS TEST	YS / UTS Ratio	HYDROSTATIC TEST (100%)	FLATTENING TEST	NOT TEST (100%)	
	Longitudinal Tensile Specimen Dia 25.40 mm & GL: 50.0 mm								
	Reqd.	360 - 530 MPa	460 - 625 MPa						27.00% Min.
3123124	Obtained	391	554	28	156 - 158	0.71	Satisfactory	Satisfactory	Satisfactory
		387	499	32	148 - 150	0.78			

Impact Test (Joule)				% SHEAR AREA ** (85% Min)			
Sample Orientation: Transverse							
Test Type: Charpy V Notch (As Per ASTM E 23)							
Size: L x W x T: 55 x 10 x 5 mm							
T-5-14J at (-46°C)							
Sample 1	Sample 2	Sample 3	Avg.	Sample 1	Sample 2	Sample 3	Avg.
42	36	44	41	86	85	86	86

Remarks:

- Marking on Pipes : JSAW API SPEC. 5L / ASME SA 333 GR. 6/1 / ASTM A 333 GR. 6/1 / NACE MR 0175 / ISO 17945 / NACE MR 0103 / ISO 15156 & CSA 1245.1-18 4.500" (114.30 MM) OD X 0.237" (6.02 MM) WT (4 NPS SCH STD) L360Q / X52Q PSL 2 GR. 359 CATII M46C SS 5MIL(S) HQ 21 FEET LENGTH 20.7 MPa HEAT NO. 3123124 10.79 lb/ft HFS PIPE NO. PO NO. 120014 MADE IN INDIA.
- Steel Making Process : EAF-LRF-VD-CCM, Fully Killed.
- Heat Treatment : Austenitising Temperature : 900°C, Soaking Time : 40 Minutes, Quenching Media : Water Quench, Tempering Temperature : 560°C, Soaking Time : 60 Minutes
- Visual Inspection : Satisfactory
- Steel Supplier & Location : Jindal Steel and Power Limited, Raigarh - 496001, Chhattisgarh, India.
- Pipe Manufacturer & Location : Jindal Saw Limited, Sinnar - 422113, Dist. : Nashik, Maharashtra, India.
- * CE = C + F [(Mn/6) + (Si/24) + (Cu/15) + (Ni/20) + (Cr+Mo+V+Nb/5) + 58] F=0.94 C=0.17
- ** % Shear area is calculated as per ASTM A 370-20, Table 8 by measuring the length and width of the brittle portion of the fracture surface.

T.C. AS PER EN10204 - 3.1

We hereby certify that the material herein described has been manufactured, sampled, tested & inspected in accordance with above standard and specification & satisfy the requirements.

Authorized Signatory
VIVEK GAIKWAD (Asst. Manager - Quality)

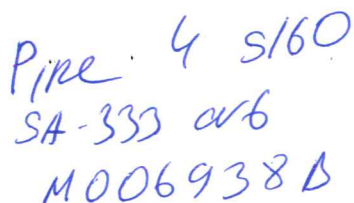
CHECK FOR ORIGINAL WATER MARK



VERIFIED TO:
ASME SEC. II
20.4 ED, 8

June 02, 2024

Pipe 4 STD SA-333 or 6
HT 3123124



FSR INC

VERIFIED TO:
ASME SEC. II PART A
20 2 ED, 9
Sep 16, 2005

JINDAL SAW LTD.

F / QLY / 23 R 00

F.C.NO: JSAW / Q / XP2202001119 / C(R1)	DATE: 24.12.2022
P.O.NO: 45002283	DATE: 24.08.2022
S.O.NO: 4111005275-100	DATE: 29.08.2022
INV.NO: XP2202001119	DATE: 01.12.2022

PAGE 1 OF 1

: VAN LEEUWEN PIPE AND TUBE (CANADA) INC.

HOT FINISHED QUENCHED & TEMPERED CARBON STEEL SEAMLESS PIPES

API 5L GR. L360Q / X52Q FSL 2 / ASTM A106 GR B - 190 / ASME SA 106 GR B / ASME SA 333 GR. 6 (ASME SEC II PART A EDN 2021) / ASTM A 333 GR. 6-1B/

: GPCHCY213

HSBC BANK

CIF EDMONTON SEAMLESS CARBON STEEL PIPES ACCORDING TO ANSI B36.10

PIPE DIMENSIONS		LENGTH (FEET)	END CONDITIONS	STRAIGHTNESS	HEAT NO.	QUANTITY	
OD	WT					NOS.	FEET
4.500 "	0.531 "	38	Beveled Ends	Satisfactory	MO087381	25	949.965
4 NPS	SCH 160				TOTAL	25	949.965

Heat No.	Analysis	% C	% Mn	% Si	% S	% P	% Cr	% Ni	% Cu	% Mo	% V	% Nb	% Ti	% B	% Al	% Cu+Nb+V+Mo+Ti	% Nb+V+Ti	% Mn/C	% C
	Reqd.	0.18 Max	0.27 - 1.35	0.10 - 0.50	0.010 Max	0.025 Max	0.30 Max	0.40 Max	0.40 Max	0.15 Max	0.08 Max	0.07 Max	0.04 Max	0.001 Max	.		0.15 Max	.	0.40 Max
M0069358	Heat	0.15	1.13	0.29	0.008	0.010	0.02	0.01	0.01	<0.01	0.01	<0.01	<0.01	<0.001	0.032	0.04	0.01	5	0.38
	Product	0.17	1.12	0.29	0.009	0.012	0.02	0.01	0.01	<0.01	0.01	<0.01	<0.01	<0.001	0.031	0.04	0.01	7	0.37
	Product	0.18	1.13	0.30	0.008	0.011	0.02	0.01	0.01	0.01	<0.01	0.01	<0.01	<0.001	0.032	0.04	0.01	5	0.38

Heat No.	TENSILE TEST			OTHER TESTS				
	Y. S. (0.5% EL)	U.T.S.	% E G.L. = 50.00 mm	HARDNESS TEST	YS / UTS Ratio	HYDROSTATIC TEST (100%)	FLATTENING TEST	
	Longitudinal Tensile specimen width 24.4 mm							
	Reqd.	310 - 530 MPa	410 - 425 MPa	30.00% Min.	200 HBW Max.	0.93 Max.	20.7 Mpa (3000 PSI) for 10 seconds Minimum	As Per Spec.
M0069303	Observed Mpa	449	578	38	164 - 166	0.78	Satisfactory	Satisfactory
	Observed Psi	65122	83631					
	Observed Mpa	428	552	36	158 - 160	0.78		
	Observed Psi	62075	80060					

Impact Test (Joule)				% SHEAR AREA ** (85% Min)			
Sample Orientation: Transverse							
Test Type: Charpy V Notch (As Per ASTM E 23)							
Size: L x W x T: 55 x 10 x 10 mm T-10-27J of (45 C)							
Sample 1	Sample 2	Sample 3	Avg	Sample 1	Sample 2	Sample 3	Avg
14.4	14.2	14.0	14.2	B6	B7	B9	B8

[illegible]

T.C. AS PER EN10204 - 3.1

We hereby certify that the material herein described has been manufactured, sampled, tested & inspected in accordance with above standard and specification & satisfy the requirements.

Authorized Signatory
VIVEK GAIKWAD (Asst. Manager - Quality)

Check for Original Water Mark

Corporate Office: Jindal Centre, 12 Bhikaji Cama Place, New Delhi - 110066, India
28, Shivaji Marg, Najafgarh Road, New Delhi- 110015, India • Phone: +91 (11) 66463827, 66463544

Order#: 1069662 PO#: 23STK - 177 Seq: 4
 Comco Part#: FL 4 15 R W 160 LFC Part Description: Flanges 4" (114.3mm O.D.) 1500# RAISED FACE WELD NECK SCH 160 A/SA350-LF2 CL1
 Heat#: B00538E Mill: ST&H Corporation

CERTIFICATE OF INSPECTION & TEST

(EN 10204 3.1)



Certificate No. MJM1107-02/03
 Customer COMCO PIPE & SUPPLY COMPANY
 Contract No. E1-15951
 Date : APR. 06. 2023

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

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

Spec. For Material ASME SA350 LF2 CL1-21/ASTM A350 LF2 CL1-18, CSA Z245.12-21 Gr.248 Cat. II M45C SS, NACE MR0175-2021/ISO15156-2:2020-ANNEX A, NACE MR0103/ISO17945:2015
 Heat Treatment NORMALIZED 930°C X 6.0Hrs & A.C

ITEM / SIZE	Q'ty	Heat No./ Batch No.	Size of Test Specimen		Tension Test					Hardness		Charpy Impact Test (10X10mm Specimen Size)				
			TRANSVERSE		Y.S MPa	T.S MPa	E.L %	R.A %	Test (HB)	Indiv. 20J	Ave.	Notch V	Temp. -46°C			
			D	GL										Max Min	197	
			mm	mm												
1500LBS WN RF S160 2"	100	B00538E	12.5	50.0	365	520	30	76.5	148	150	64	53	65	60		
1500LBS WN RF S160 3"	170	B00538E	12.5	50.0	365	520	30	76.5	148	150	64	53	65	60		
1500LBS WN RF S160 4"	40	B00538E	12.5	50.0	365	520	30	76.5	148	150	64	53	65	60		
1500LBS WN RF XXH 3"	15	B00538E	12.5	50.0	365	520	30	76.5	148	150	64	53	65	60		
900LBS WN RF S160 3"	30	B00538E	12.5	50.0	365	520	30	76.5	148	150	64	53	65	60		
900LBS WN RF XH 3"	70	B00538E	12.5	50.0	365	520	30	76.5	148	150	64	53	65	60		
BLANK		BLANK														
BLANK		BLANK														

Heat No./ Batch No.	Chemical Composition (%) * H : Heat Analysis P : Product Analysis																UT
	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb	Al	B	GRAIN	Mn/C	CE	
	0.300	0.300	1.350	0.020	0.030	0.400	0.300	0.120	0.400	0.080	0.020	0.020			5.000	0.430	
	0.130	0.130	0.600														
B00538E	H	0.185	0.239	1.270	0.012	0.003	0.015	0.020	0.003	0.009	0.002	0.001	0.024	0.0004	6.864	0.403	PT
	P	0.174	0.246	1.270	0.013	0.003	0.016	0.022	0.004	0.009	0.002	0.001	0.026	0.0004	7.298	0.392	Visual & DIM
GOOD																	

REMARK
 * The material is free of weld repairs * Steel Making Process - Electric Arc Furnace
 * Fully killed and Fine Grain Practice * RAW MATERIAL - BAOTOU STEEL
 * CE Value for Product Analysis is 0.391 as per CSA Z245.12-21(B00538E)

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.
 ST-801-14-02

Witnessed by / H. J. LEE

Manager of Q.A Dept. / J. M. KIM
 ST&H CORPORATION



Flange 4" 1500 S160
 SA-350 LF2 CL1
 B00538E

VERIFIED TO:
 ASME SEC. II PART A
 2014 ED. 3
 Sep 12, 2013

CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)



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



Certificate No. MJM1108B-02/06
Customer TRANS AM PIPING PRODUCTS LTD
Contract No. CI-23-170 (2ND)
Spec. For Material ASME SA350 LF2 CL1-21, ASTM A350 LF2 CL1-18, CSA Z245.12-21 Gr 248 Cat. II-21, NACE MR0175-2021/ISO15156-2:2020, NACE MR0103/ISO17945:2015
Heat Treatment 930°C NORMALIZED & Cooled in still Air

Date : JUN. 05. 2023

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

Dimensional Inspection ASME B16.5 - 2020, Flange Face Roughness=125 - 250 uin AARH

ITEM / SIZE	Q'ty	Heat No./ Batch No.	Size of Test Specimen		Tension Test					Hardness		Charpy Impact Test (10X10mm Specimen Size)					
			TRANSVERSE		Y.S MPa	T.S MPa	E.L %	R.A %	Test (HB)	197	Indiv. 16J	Ave. 20J	V	Notch	Temp. -46°C		
			D	GL												Max	Min
			mm	mm													
CA1500WR1604		1500LBS WN RF S160 4"			BB0723E	12.5	50.0	317	507	34	75.5	152	154	52	68	53	58
CA1500WRXXH3		1500LBS WN RF XXH 3"			BB0723E	12.5	50.0	317	507	34	75.5	152	154	52	68	53	58
CA150BR12		150LBS BL RF 12"			BB0723G	12.5	50.0	321	514	35	73	151	154	55	56	71	61
CA150KR1600.75		150LBS SW RF S160 3/4"			BB0723G	12.5	50.0	321	514	35	73	151	154	55	56	71	61
CA150TR0.75		150LBS TH RF 3/4"			BB0723G	12.5	50.0	321	514	35	73	151	154	55	56	71	61
CA150WRSTD3		150LBS WN RF STD 3"			BB0723G	12.5	50.0	321	514	35	73	151	154	55	56	71	61
CA300KRXXH1		300LBS SW RF XXH 1"			BB0723G	12.5	50.0	321	514	35	73	151	154	55	56	71	61
CA300WRSTD3		300LBS WN RF STD 3"			BB0723G	12.5	50.0	321	514	35	73	151	154	55	56	71	61

Heat No./ Batch No.	Chemical Composition (%) * H : Heat Analysis P : Product Analysis																	UT	
	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb	Al	B	Ti	Grain	Mn/C	CE		
Max	0.300	0.300	1.350	0.035	0.040	0.400	0.300	0.120	0.400	0.080	0.020	0.020				5.000	5.000	0.430	
	Min	0.150	0.600																
H	0.183	0.253	1.290	0.010	0.002	0.013	0.023	0.004	0.008	0.001	0.001	0.027	0.0004	0.003			7.049	0.405	
P	0.175	0.245	1.270	0.014	0.005	0.007	0.022	0.004	0.009	0.002	0.001	0.022	0.0003	0.004	8.0	7.257	0.393	PT	
H	0.183	0.253	1.290	0.010	0.002	0.013	0.023	0.004	0.008	0.001	0.001	0.027	0.0004	0.003			7.049	0.405	
P	0.171	0.243	1.260	0.014	0.005	0.007	0.022	0.004	0.009	0.001	0.001	0.022	0.0003	0.004	8.0	7.368	0.387	Visual & DIM	GOOD

REMARK
* Fully killed and Fine Grain Practice
* Impact Test performed according to ASTM A370-2021

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.
ST-801-14-02



Witnessed by / H. J. LEE

Manager of QA Dept. / J. M. KIM
ST&H CORPORATION

Flange 4" d.1500 RFWN S160
BB0723E

VERIFIED TO:
ASME SEC. II PART A
2024 ED. 9
SEP 12, 2023

CERTIFICATE OF INSPECTION & TEST (EN 10204 3.1)

ST&H CORPORATION

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



Certificate No. MJM1108B-03/06
Customer TRANS AM PIPING PRODUCTS LTD
Contract No. CI-23-170 (2ND)
Spec. For Material ASME SA350 LF2 CL1-18, CSA Z245.12-21 Gr 248 Cat. II-21, NACE MR0175-2021/ISO15156-2:2020, NACE MR0103/ISO17945:2015
Heat Treatment 930°C NORMALIZED & Cooled in still Air

Date : JUN. 05. 2023

Certified to ISO9001 / ISO14001:2015, PED2014/68/EU by LRQA
Dimensional inspection ASME B16.5 - 2020, Flange Face Roughness=125 - 250 uin AARH

ITEM / SIZE			Q'ty	Heat No./ Batch No.	Size of Test		Tension Test				Hardness		Charpy Impact Test (10X10mm Specimen Size)			
					Specimen		Y.S MPa	T.S MPa	E.L %	R.A %	Test (HB)	197	Indiv. 16J	Ave. 20J	Notch V	Temp -46°C
					D mm	GL mm										
CA300WRSTD4	300LBS WN RF STD 4"	BB0723G	12.5	50.0	321	514	35	73	151	154	55	56	71	61		
CA300WRSTD6	300LBS WN RF STD 6"	BB0723G	12.5	50.0	321	514	35	73	151	154	55	56	71	61		
CA300WRXH2	300LBS WN RF XH 2"	BB0723G	12.5	50.0	321	514	35	73	151	154	55	56	71	61		
CA300WRXH4	300LBS WN RF XH 4"	BB0723G	12.5	50.0	321	514	35	73	151	154	55	56	71	61		
CA300WRXH6	300LBS WN RF XH 6"	BB0723G	12.5	50.0	321	514	35	73	151	154	55	56	71	61		
CA600WRSTD3	600LBS WN RF STD 3"	BB0723G	12.5	50.0	321	514	35	73	151	154	55	56	71	61		
CA600WRSTD4	600LBS WN RF STD 4"	BB0723G	12.5	50.0	321	514	35	73	151	154	55	56	71	61		
CA600WRSTD6	600LBS WN RF STD 6"	BB0723G	12.5	50.0	321	514	35	73	151	154	55	56	71	61		

Heat No./ Batch No.	Chemical Composition (%) * H : Heat Analysis P : Product Analysis														UT
	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Nb	Al	B	Ti	
	Max Min	0.300 0.150	1.350 0.600	0.035 0.008	0.040 0.002	0.400 0.013	0.300 0.023	0.120 0.004	0.400 0.008	0.080 0.001	0.020 0.001	0.020 0.027	0.002 0.0004	0.004 0.004	
BB0723G	H P	0.183 0.171	0.253 0.243	1.290 1.260	0.010 0.014	0.002 0.005	0.007 0.007	0.004 0.004	0.009 0.009	0.001 0.001	0.001 0.001	0.022 0.022	0.0003 0.0003	0.004 0.004	GOOD
															Visual & DIM

REMARK * Fully killed and Fine Grain Practice
* Impact Test performed according to ASTM A370-2021

We hereby certify that the material herein has been made and tested in accordance with the above specification and also with the requirements called for by the above order.
ST-801-14-02



Witnessed by / H. J. LEE

Manager of QA Dept. / J. M. KIM
ST&H CORPORATION

Flange 4" d. 300
SA-350 LF2 CL1
BB0723G

VERIFIED TO:
ASME SEC. II PART A
2014 ED, 9
Oct 11, 2023



METALFAR PRODOTTI INDUSTRIALI SPA
23861 CESANA BRIANZA (LC) - ITALY
VIA G. PARINI, 28
PHONE + 39 031 655441 - FAX +39 031 655149
certificate@metalfaritaly.com

A01

COMPANY WITH
MANAGEMENT SYSTEM
CERTIFIED BY DNV
= ISO 9001 =
= ISO 14001 =

INSPECTION CERTIFICATE EN 10204:2004 / 3.1

A02

Nr^{A03} 2015-C_MFF-01730 Data / Dated 02.04.2015^{A02}

SEYBOLD INTERNATIONAL CORP.
20 Holly Street, Suite 205
TORONTO M4S3B1

CA

Ordine / PO 7009483
Item 011
DDT / Delivery note 2015-3E301-0001378
Packing List 2015-3E401-0001219
Fattura / Invoice 2015-3E401-0001219
Ns. rif. / Our ref. 2014-3E201-0003448-0011

A03

Dest. VAN LEEUWEN
EDMONTON
ALBERTA

A05

CA

Cod. colata ^{B07} Heat Code	Nr. colata ^{B07} Heat Nr	Quantità ^{B08} Quantity	Descrizione ^{B01 - (B03 - B11)} Description
	14/35300 ✓	40,00	WIN 300 RF 4" STD LF2CL1 ✓

Mat. in acc. a / Mat. in acc. to^{B02} ASTM/ASME A 350/SA 350 M - 14 ASME CODE SECT. II, PART A, ED. 2013
ASTM A350 LF2 CL1 ✓
NACE MR-0175/2009 ISO 15156 - SOUR SERVICE
NACE MR-0103/2012 - SOUR SERVICE
CSA Z245.12 GRADE 248 CAT.II SOUR SERVICE
Q.A.S.IN ACCORD WITH PRESS.EQUIPM.DIRECT.97/23/EC(PED) ANNEX I, PARAGRAPH 4.3
CERT.4687-2014-CE-ITA-ACCREDIA

Elementi / Elements ^(C01 - C02)	C	Si	Mn	S	P	Cr	Ni	Mo	Ti	Cu	V	Nb	N
LADLE ANALYSIS	0,180	0,220	0,940	0,010	0,012	0,130	0,060	0,010	0,018	0,160	0,002	0,001	0,009
	Al	B							CE LF	CE SF	F1	F2	PREN
LADLE ANALYSIS	0,029	0,000							0,380	0,337	0,362	0,140	--

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

Provetta Test specimen	Forma ^{C10} Shape	*C ^{C03}	Snervamento>0,2% ^{C11} Yield Strength>0,2%	Snervamento>1,0% ^{C11} Yield Strength>1,0%	Rottura ^{C12} Tensile	Allungamento ^{C13} Elongation	Contrazione ^{C15} Reduction of area
Sez/Sect mm2 L. mm	1=O - 2=□		MPa	MPa	MPa	%	%
126,60 50,80	1	20	335,0	--	510,0	34,0	66,0

DUREZZA / HARDNESS^{C22}

HBW

Tipo/Type^{C43}

Provetta / Test Specimen

RESILIENZA / IMPACT TEST

*C^{C03}

1-Joule^{C42}

2-Joule^{C42}

3-Joule^{C42}

Media/Average^{C43}

154,0 - 158,0

KV

10x10 mm

-46

70

76

72

72,7

Treat. Term. / Heat treatment^{C20} NORMALIZED AT 930° C - COOLED IN STILL AIR ✓ ELECTRIC FURNACE

Dlm in acc. a / Dlm. acc. to^{B11} ASME/ANSI B16.5-2013 ✓
ASME/ANSI B36.10M-2004

Finitura / Roughness 125/250 MICROINCHI AARH

Marchatura in acc. ^{B04} Marking in acc. to	MSS SP25 Ed. 2013	Vis. & Dlm.	SATISFACTORY	Origine Origin of Steel	EUROPEAN UNION
---	-------------------	-------------	--------------	----------------------------	----------------

Note / Notes

100% MANUFACTURED IN ITALY
MANUFACTURING IN ACCORDANCE WITH ORDER AND SPECIFICATION

4" 300# RFWN STD SA-350 LF2 CL1
HT# 14/35300



VERIFIED TO:
ASME SEC. II PART A
2014 ED.

APV 25/2012



VERIFIED TO:
ASME SEC. II PART A
2014 ED, SDC

27/12/2018
185TR-301 181095

UFFICIO CONTROLLO QUALITA'
QUALITY CONTROL DEPARTMENT

Lina. Linea

ENTE UFFICIALE DI COLLAUDO
INSPECTION AUTHORITY

MARCHIO PRODUZIONE
MANUFACTURER'S SYMBOL.

CLIENTE / Customer / Client
 DNOW CANADA ULC
 P.O. BOX 4395 STATION C
 CALGARY, ALBERTA
 CANADA T2T 5N2

CERTIFICADO DE INSPECCION
 Inspection Certificate - Certificat de Reception

FECHA: 24/07/2017
 Date: 189923
 N°: 189923
 No. 189923

PRODUCTO
 Article - Produit

FLANGES
 Your Order No. 25726658
 Votre Cde. N°

DE
 al. de 22/04/2017

NORMAS APLICABLES
 Requirements - Normes Applicables

ASME B15.5-13

MATERIAL CORRESPONDIENTE
 Material Correspondent - Qualité

ASME SA350LF2CL1-2-15, ASTM A350LF2CL1-2-15
 NACE MR0175/ISO15155-02/03-15 & MR0102/ISO17495-15
 Clause 7.2.1.4, Annex A2 and SSC Region 3.
 CSA Z245-12-13 GR290 CAT II - SS (WN & BLIND FLANGES ONLY)

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

PARTIDA Item Posda	CANTIDAD Quantity Quantité	DESCRIPCION Description Description	LOTE	OBSERVACIONES Remarks Observations	COLADA N° Heat No N° Coule	ANALISIS Yield Point Yield Point N/mm2	ANALISIS Tensile Tensile N/mm2	ANALISIS Elongation Elongation %	ANALISIS Reduction of Area Reduction of Area %	RESISTENCIA Impact test Impact test Joules	CHAPY V Notch Average Average mm	DUREZA Hardness Hardness HRC
110 1076821	24	WN 8 600LB XS180 RF A350LF2	14L17	NE	A86A7	519	318	33.30	65.20	53	59	157 163
110 1076821	24	WN 8 600LB XS180 RF A350LF2	15L17	NE	A87A7	499	298	31.60	64.00	63	66	141 146
110 1076821	24	WN 8 600LB XS180 RF A350LF2	15L17	NE	A90A7	535	329	29.50	50.70	66	74	148 150
130 1765519	3	WN 4 1500LB XCS RTJ A350LF2	25H17	NE	A74A7	510	300	35.00	72.10	53	51	154 156
250 1076912	82	WN 4 300LB STD140 RF A350LF2	01L17	NE	B25A6	512	305	30.10	50.40	43	54	150 156
					A79A7	522	325	30.20	62.20	66	59	163 165

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

C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	Nb %	V %	Cu %	Al %	IT %	CEq %
0.190	0.180	1.000	0.011	0.009	0.001	0.030	0.012	0.002	0.005	0.180	0.028	0.003	0.38
0.180	0.170	1.040	0.009	0.009	0.001	0.030	0.012	0.001	0.005	0.170	0.027	0.001	0.38
0.180	0.220	0.990	0.010	0.005	0.005	0.050	0.015	0.001	0.006	0.180	0.030	0.003	0.38
0.190	0.240	1.000	0.010	0.006	0.005	0.050	0.015	0.001	0.006	0.180	0.031	0.009	0.39
0.190	0.230	0.980	0.011	0.004	0.004	0.070	0.012	0.001	0.006	0.170	0.029	0.003	0.39
0.190	0.200	0.960	0.011	0.005	0.005	0.080	0.013	0.001	0.001	0.240	0.034	0.003	0.39

(*) OBSERVACIONES
 Remarks
 Observations

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

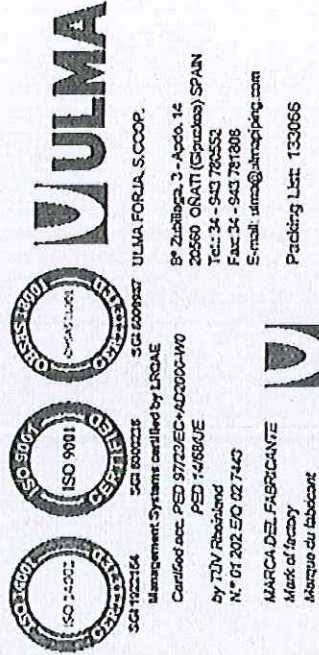
4" Flange RF WN STD
 S1-300 SA350LF2CL1
 A 79A7

VERIFIED TO:
 ASME SEC. II PART A
 20 ED.

VERIFIED TO:
 ASME SEC. II PART A
 20 ED.

APR 25/2018 576 27/08/2018 189923-200 181060

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



DEPARTAMENTO
 Department

QUALITY ASSURANCE

ULMA FORU S.COOP.
 Bº Zubiaga, 3 - Apto. 14
 20550 ONATI (Gipuzkoa) SPAIN
 Tel: 34 - 943 785552
 Fax: 34 - 943 781808
 Email: ulma@ulma.es
 Packing List: 133066

- Las dimensiones y la condición superficial se hallan satisfactorias.
 - Dimension and surface condition were found acceptable.
 - Les dimensions et l'état de surface sont satisfaisantes.

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

COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV GL = ISO 9001 = = ISO 14001 =		 METALFAR PRODOTTI INDUSTRIALI SPA 23861 CESANA BRIANZA (LC) - ITALY VIA G. PARINI, 28 PHONE + 39 031 655441 - FAX +39 031 655149 certificate@metalfaritaly.com		COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY DNV GL = ISO 9001 = = ISO 14001 =																																																																																					
INSPECTION CERTIFICATE EN 10204:2004 / 3.1				Nr ^{A03} 2022-C_MFF-00807 Data / Dated 14.03.2022 ^{Z02}																																																																																					
TRANS AM PIPING PRODUCTS LTD 9335 ENDEAVOR DRIVE S.E. T3S0A1 CALGARY, ALBERTA				Ordine / PO CI-21-545 Item 028 DDT / Delivery note 2022-3E301-0000815 Packing List 2022-3E401-0000793 Fattura / Invoice 2022-3E401-0000793 Ns. rif. / Our ref. 2022-3E201-0000022-0028																																																																																					
Dest. TRANS AM PIPING PRODUCTS LTD 9335 - Endeavor Drive S.E. T3S OA1 Calgary, ALBERTA																																																																																									
Cod. colata ^{B07} Heat Code	Nr. colata ^{B07} Heat Nr	Quantità ^{B08} Quantity	Descrizione ^{B01 - (B09 - B11)} Description																																																																																						
	21/32372		W/N 1500 RF 3" 160 LF2CL1																																																																																						
Mat. in acc. a / Mat. in acc. to ^{B02} ASTM A 350M -18, ASME SA 350 M -21, ASME CODE SECT. II, PART A, ED. 2021 ASTM A350 LF2 CL1 NACE MR-0175/2015 ISO 15156-2:2015 - SS ; NACE MR-0103/2015 ISO 17945 :2015 - SS CSA Z245.12-21 GRADE 248 M46C CAT.II SS CSA Z662 :2019 Q.A.S.IN ACCORD.WITH PRESS.EQUIPM.DIRECT.2014/68/EU(PED) ANNEX I, PARAGRAPH 4.3 Cert. No.4687-2014-CE-ITA-DNV GL - Rev.02																																																																																									
Ann. mat. / Mat. remarks ^{B02} MANUFACTURED FROM FULLY KILLED STEEL AND TO FINE GRAIN PRACTICE '5' OR HIGHER STEEL PRODUCED BY "EAF" ELECTRIC ARC FURNACE PROCESS NO WELD REPAIRS PERFORMED ON MATERIAL GRAIN SIZE No.CALCULATED IN ACCORDANCE WITH ASTM E112 -13 METHOD %Mn / %C >=5																																																																																									
<table border="1"> <thead> <tr> <th>Elementi / Elements ^(C1 - C92)</th> <th>C</th> <th>Si</th> <th>Mn</th> <th>S</th> <th>P</th> <th>Cr</th> <th>Ni</th> <th>Mo</th> <th>Ti</th> <th>Cu</th> <th>V</th> <th>Nb</th> <th>N</th> </tr> </thead> <tbody> <tr> <td>LADLE ANALYSIS</td> <td>0,190</td> <td>0,250</td> <td>1,060</td> <td>0,008</td> <td>0,008</td> <td>0,120</td> <td>0,060</td> <td>0,010</td> <td>0,019</td> <td>0,150</td> <td>0,002</td> <td>0,002</td> <td>0,010</td> </tr> <tr> <td>PRODUCT ANALYSIS</td> <td>0,183</td> <td>0,236</td> <td>1,058</td> <td>0,005</td> <td>0,013</td> <td>0,131</td> <td>0,068</td> <td>0,014</td> <td>0,020</td> <td>0,133</td> <td>0,004</td> <td>0,001</td> <td>0,008</td> </tr> <tr> <td></td> <td>Al</td> <td>B</td> <td>Ca</td> <td></td> <td></td> <td></td> <td>CE LF</td> <td></td> <td>CE</td> <td></td> <td>F1</td> <td>F2</td> <td>PREN</td> </tr> <tr> <td>LADLE ANALYSIS</td> <td>0,031</td> <td>0,0002</td> <td>0,002</td> <td></td> <td></td> <td></td> <td>0,407</td> <td></td> <td>0,410</td> <td></td> <td>0,342</td> <td>0,130</td> <td>--</td> </tr> <tr> <td>PRODUCT ANALYSIS</td> <td>0,026</td> <td>0,0000</td> <td>0,002</td> <td></td> <td></td> <td></td> <td>0,403</td> <td></td> <td>0,402</td> <td></td> <td>0,350</td> <td>0,145</td> <td>--</td> </tr> </tbody> </table>						Elementi / Elements ^(C1 - C92)	C	Si	Mn	S	P	Cr	Ni	Mo	Ti	Cu	V	Nb	N	LADLE ANALYSIS	0,190	0,250	1,060	0,008	0,008	0,120	0,060	0,010	0,019	0,150	0,002	0,002	0,010	PRODUCT ANALYSIS	0,183	0,236	1,058	0,005	0,013	0,131	0,068	0,014	0,020	0,133	0,004	0,001	0,008		Al	B	Ca				CE LF		CE		F1	F2	PREN	LADLE ANALYSIS	0,031	0,0002	0,002				0,407		0,410		0,342	0,130	--	PRODUCT ANALYSIS	0,026	0,0000	0,002				0,403		0,402		0,350	0,145	--
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CE=C+F(Mn/6+Si/24+Cu/15+Ni/20+(Cr+Mo+V+Nb)/5+5B) F1=Cu+Ni+Cr+Mo+V F2=Cr+Mo																																																																																									
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Note / Notes MATERIAL 100% MANUFACTURED IN ITALY
MATERIAL IN ACCORDANCE WITH ORDER AND SPECIFICATION

CE LF = C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15
Tensile test specimen taken on heat treated sacrificial forging in transversal way to the forging direction
Impact test specimens taken on heat treated sacrificial forging in transversal way to the forging direction with the notch perpendicular to the forging surface
Hardness test performed on one forging in heat treated condition at two locations 180° apart
Normalized at 930°C -Holding time: 1 hour/ Inch. - min 1 h - Cooling from 930 °C in still air

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

Flange 3" cl. 1500 S160 RFWN
SA350LF2CL1
21/32372

VERIFIED TO:
ASME SEC. II PART A
20 ED. 9
Aug 17, 2025

MATERIAL INSPECTION CERTIFICATE

To EN10204 3.1/ISO 10474 3.1

BENKAN
THAI BENKAN CO., LTD.

58 Moo 13 Soi Sukswat 70, Bangkru Phrapadaeng, Samutprakarn 10130, THAILAND
Telephone : 66 (0) 2463 0074, 66 (0) 463 6235-7 FAX: 66 (0) 463 6238, 66 (0) 463 8241

Purchaser Name : TRANS-AM PIPING PRODUCTS LTD.
TBC PO No. : TA-697
Benkan No. :
Customer PO No. : CI-21-245
JOB No. :

Specification for Inspection	ASTM A420/A420M-20/ASME SA420/A420M-19 WPL6 CSA Z245.11-17 Gr.241	WFG No.	64E21M120-1	Seamless or Weld	SEAMLESS	Pipe / Plate	PIPE
Starting Material	CAT II SS M45C ANSINACE MR0175/ISO15156-2:15MR0103:15	Product Description	RC WPL6 4 x 3 S160				Quantity

Specification for Inspection	ASME B16.9-2018 B16.25-2017	Heat No.	J0163473	Heat treatment	Normalizing 910 C X 40 Minutes Cooled in Still Air		
------------------------------	-----------------------------	----------	----------	----------------	--	--	--

% Chemical content	C x100	Si x100	Mn x100	P x1000	S x1000	Cu x100	NI x100	Cr x100	Mo x100	V x1000	Nb x1000	Ti x1000	B x10000	Al x10000	Ca x10000	CE x100
Required Maximum	30	40	135	35	10	40	40	30	12	80	20					40
Required Minimum		15	50													
Heat Analysis	11	30	124	10	1	1	2	12	2	0	0	10	2	37	18	35

% CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15

ORIGINAL

Tension test	Gauge length	50 mm.	Impact test	10 x 7.5 x2V	Temp.	45 C	Hardness test	Min	Max
TP Direction : Longitudinal			TP Direction : Longitudinal						
MPa	Req.Min.	Req.Max	Joule	1	2	3	HBW	Req. Max.	197
Yield Strength	241		Base	135	159	112	Fitting	141	145
Tensile Strength	415	585							
% Elongation	30								
Tension test	Gauge length	mm.							
TP Direction : Transverse									
MPa	Req.Min.	Req.Max							
Yield Strength									
Tensile Strength									
% Elongation									

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



A. Kondo

Akimitsu Kondo

Quality Assurance Manager
Thal Benkan Co., Ltd.

Form No. TZ-62V/0

VERIFIED TO:
ASME SEC. II PART A
20.24 ED, 9
Oct 11, 2023

Cone Red 4x3 S160 SA420 WPL6
64E21M120-1

TK corporation

INSPECTION CERTIFICATE

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

117-12, Noksan Saneop Daero,
Gangseo-gu, Busan,
46752 Korea
Tel : 82-51-870-6868
Fax : 82-51-831-6868

Customer	Trans Am Piping Products Ltd.		Certificate No.	20200302150	Date	2018/09/10
P.O No.	CI-18-330		Project Name	STOCK		
Job No.						
Specification for Material	ASTM/ASME A/SA420 WPL6(2015Ed.)NACE MR0175ISO 15168-2 AND NACE MR0103-2012		Starting Material	SEAMLESS PIPE		
Specification for Inspection	ASME B16.9-2012		Dimension and Visual Inspection	GOOD		
Heat Code No [HCN]	No.	Descriptions	Q'ty (Pcs)	Heat Treatment		
DK130	0068	CON REDUCER SCH160 B.W 4" x 3"		N: 910 °C		

CHEMICAL COMPOSITION(%)

Heat Code No [HCN]	Spec.	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Co	Ti	Al	Ca	B	C.E	Raw Heat No/Raw Maker
	Max.	0.30	0.35	1.35	0.035	0.025	0.40	0.30	0.12	0.40	0.080	0.020	-	-	-	-	0.40	
	Min.	-	0.15	0.50	-	-	-	-	-	-	-	-	-	-	-	-	-	
DK130	L	0.17	0.24	0.98	0.008	0.003	0.04	0.04	0.02	0.07	0.01	0.01	0.01	0.012	0.00190	0.00050	0.355	667744/TPCO
	P	0.18	0.22	0.87	0.007	0.004	0.06	0.03	0.02	0.06	0.012	0.008	0.008	0.010	0.00160	0.0003	0.342	

MECHANICAL PROPERTIES

Heat Code No [HCN]	Spec	Y.S	T.S	E.L	Hardness Test	* Impact Test(J)		
		ksi		(%)	HBW	Temp.(°C)	Size(2mm-v)	
	Max.	-	85	-	197	-50		
	Min.	35	60	30	-			
DK130	P	50.3	72.4	40.8	138 140 142	46.0 46.0 66.2	Ave.	53.4

REVISED ISSUE
2020.03.10

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

Fax: +82 51 6886 / E-mail: tkqac@tkband.co.kr

Remark: *CSA Z245.11 Gr. 241 Cat II Sour Service

*CRN No.

QA9067.2,QA9067.24,QA9067.27,QA9067.20,

QA9067.28,QA9067.25,QA9067.29,QA9067.26,

QA9067.27,QA9067.2Y,QA9067.2N,QA2535.7,QA9067.23

*MinC: Min.3.00

-DK130: 5.76

*Cr+Mo: Max.0.32

-DK130: 0.08

*Direction of Tensile Specimen: Longitudinal

*CSA Year of Edition: Z245.11-17

Size	Min	Ave
DK130 10X10X55mm	13.6	17.6

Legend:

HB: Brinell
ST: Solution Treatment
SR: Stress Relieving

N: Normalized

T: Tempered

A: Annealed

Q: Quenched

Y: 0.2% Offset Method

(G): Hot-Dip Galvanized Coating

(P): Polyethylene Coating

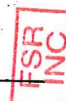
AC: Air Cool
OC: Oil Cool
WQ: Water Quenched
WC: Water Cool
B: Base
W: Weld
H: Heat
L: Ledge
P: Product

Reviewed by:

Witnessed by:

Approved by:

Head of Quality Control Dept



VERIFIED TO:
ASME SEC. II PART A

20.4 ED, 9

Oct 11, 2023

Cone Red 4x3 s160 SA420WPL6
DK130

Order#: 1069662 PO#: 23STK - 177 Seq: 3
Comco Part#: WF 4 160 S90 L6 Part Description: Weld Fittings 4" (114.3mm O.D.) SCH 160 SR 90 DEG ELBOW A/SA420-WPL6
Heat#: 61F01002 Mill: BKL - Thai Benkan

BENKAN.

Thai Benkan Co., Ltd.
38 Soi Waikrumai, Bangkru, Prapadaeng,
Samutprakan, 10130 Thailand.

D M Y Certificate No.
27/09/2016 T - 2018021652

INSPECTION CERTIFICATE

TO EN10204 3.1

Purchaser: COMICO PIPE AND SUPPLY COMPANY

E1-8977

Purchase Order No. Job No.

E-No.	Specification for Material Made from Seamless Pipe	Specification for Inspection	Visual Examination	Dimensional Inspection															
ME-655	ASTM A420-16/ASME SA420-17 WPL6 CSA Z46.11-17 6R.241 CAT 1M6C SS	ASME B16.9-2012,B16.25-2017	Good	Good															
MFG. No.	Product & Size	(T*1)	Quantity	Hardness Actual Data															
61F01002	90 ES WPL6 4 S160		10	HBW:123,131,145															
	Material Heat No.	Chemical Composition%(Note1)	Baron (%)																
	J4KB243	Ti= 2	0.0001																
Specifi- cation	Chemical Composition %																HARDNESS MAX 197 HB : GOOD		
	#2 Tension Test																longitudinal		
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Al	V	Nb	C.E.	Y S	T S	E	Impact Test (J) longitudinal 10 X 10 X 2V AT 45 °C		
	X	100	X	X	X	X	X	100	100	X	X	X	X	MPa.	%	%			
	Min.		15	50										241	415	30	407		
Max.	30	40	135	35	40	40	40	30	12		80	20	40		585	401	AVE. 402		
	12	26	129	10	1	1	3	12	1		0	0	36	292	456	49	398		

NORMALIZING 910 C X 40 MINUTES. COOLED IN STILL AIR

(Note 1) : Specification of Ti Composition (%) : Max 11 (Ti x 100)

Material according to ANSINACE MR0175/ISO 15156-2-2015 Annex A & MR0103-2015 (SSC Region 3)

"Fully Killed and fine grain practice" "Steel making process : Basic Oxygen" Tensile test with longitudinal specimen and 50 mm. gauge length.

C.E. = C+Mn/60+(Cu+Mo+V)/5+(Ni+Cu)/15

MAGNETIC PARTICLE EXAMINATION FOR THE ONLY :

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

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

DATE 17/07/17

CSR
Rungtapa Kampranon

Quality Assurance Manager
Thai Benkan Co., Ltd.

TSR INC

VERIFIED TO:

ASME SEC. II PART A

20 21 ED, 13

sep 12, 2025

4" Elbow SR 5160 61F01002
SA-420 WPL6

Order#: 1069662 PO#: 23STK - 177 Seq: 3
 Comco Part#: WF 4 160 S90 L6 Part Description: Weld Fittings 4" (114.3mm O.D.) SCH 160 SR 90 DEG ELBOW A/SA420-WPL6
 Heat#: 61N01M047 Mill: BKL - Thai Benkan

BENKAN.

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

D M Y Certificate No.
 15/01/2019 T - 2019200113

INSPECTION CERTIFICATE

TO EN10204 3.1

Purchaser: COMCO PIPE AND SUPPLY COMPANY

Purchase Order No. E1-10531 Job No.

E-No.	Specification for Material Made from Seamless Pipe	Specification for Inspection	Visual Examination	Dimensional Inspection													
TA-195	ASTM A420-16/ASME SA420-17 WPL6 CSA Z46.11-17 GR.241 CAT B M45C SS	ASME B16.9-2012,B16.25-2017	Good	Good													
MFG. No.	Product & Size	(T+1)	Quantity	Hardness Actual Data													
61N01M047	90 ES WPL6 4 S160		10	HBW : 120,140,150													
	Material Heat No.	Chemical Composition%(Note1)	Boron (%)														
	J4KB243	Ti=2	0.0001														
Specifi- cation	Chemical Composition %													HARDNESS MAX 197 HB : GOOD			
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Al	V	Nb	C.E.	#2 Tension Test		longitudinal	
	x	x	x	x	x	x	x	x	x	x	x	x	x	Y S	T S	E	
	100	100	100	1000	1000	100	100	100	100	1000	1000	1000	100	MPa.		%	
		15	50											241	415	30	407
Min.																	
Max.	30	40	135	35	35	40	40	30	12		80	20	40		585	401	AVE 402
	12	26	129	10	1	1	3	12	1		0	0	36	292	456	49	398

NORMALIZING 910 C X 40 MINUTES. COOLED IN STILL AIR

(Note 1) : Specification of Ti Composition (%) : Max 11 (Ti x 100) Material according to ANSINACE MR0175/ISO 15156-2-2015 Annex A & MR0103-2015 (SSC Region 3)

"Fully killed and fine grain practice" "Steel making process : Basic Oxygen" Tensile test with longitudinal specimen and 50 mm. gauge length.

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

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

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

[Signature]
 Rungrapa Kampranon

Quality Assurance Manager
 Thai Benkan Co., Ltd.

VERIFIED TO:
 ASME SEC. II PART A
 2021 ED, US
 sep 24 2025

4" Elbow SR S160
 SA-420 WPL6
 61N01M047



Manufacturer of Piping and Pressure Vessel Components

4404 Haygood St - Houston, TX 77022

Phone: 713-695-3633 Fax: 713-695-3528

A Bonney Forge Company

Page 4 of 13

Sold To: VAN LEEUWEN PIPE & TUBE
2875 - 64TH AVENUE
EDMONTON AB T6P1R1
Canada

MTR #: 325,209

PO #: 45001808

Sales Order #: C001702419

Date: 03/21/2017

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.

Certified Material Test Report

Heat Code: 50078

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.

Material: A/SA350 12 LF2 CL1

Item	Quantity	Description
6	50	36 - 3 X 1 3M THP SA350LF2 CL1
7	25	2 1/2 - 1 1/4 X 1 3M THP SA350LF2 CL1

Chemical Composition

Ladle	C	Co	CR	CU	MN	MO	NB	NI
	0.2000	0.003	0.03	0.07	1.050	0.007	0.013	0.030
	P	S	SI	V				
	0.010	0.021	0.220	0.004				

Carbon Equivalency: Ladle 0.39

Product	Tensile PSI	Yield PSI	Elong %	RA %	Hardness
Charpy V-Notch Properties:	76,270	51,982	35.65	60.60	137 BHN
					139 BHN
FT LBS:	65/70/66				
		% Shear:	NB/NB/NB		MLE: NB/NB/NB

MILL/COUNTRY OF ORIGIN: ARCELORMITTAL (CANADA) - HEAT#B126045/BONNEY
FORGE (USA) - LOT#50078

NORMALIZED

1.
IN ACCORDANCE WITH ANSI/NACE MR0175/ISO 15156-2015 & ISO 17945/MR0103-2015
IAW MSS SP-97

706 1" x 2.5-1.25 CL 3000 SA350 LF2

HT# 50078

VERIFIED TO:
ASME SEC. II PART A
2011 ED, C
Oct 13, 2025

Marie Dehmer
Quality Assurance Representative