

Mill Test Certificate

2125-64 Avenue, Edmonton, AB Canada T6P 1Z4 Bri-Steel Manufacturing Inc.

Tel: 001 (780) 469-6603

Fax: 001 (780) 469-6986 www.brichemsteel.com

Product: Seamless Carbon Steel Pipe Product Heat Number:

BSM-1058

Product Size:

NPS 16 XS

Production Date:

July 9, 2013

Production Method: Hot Expansion

Product Heat Treatment: As-rolled

Product Standards: ASME B36.10-2004, ASTM/ASME A/SA106-2011 Grade B/C NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010

Product Markings: BRI-STEEL MFG ASTM/ASME A/SA106 GR B/C A/SA53 GR B NPS 16 XS 0.5 inchWT HEAT BSM-1058 (PIPE # LENGTH MASS) 82.771b/ft NDE SMLS NACE MR0175 2013/07 MADE IN CANADA.

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OCOT-IAICA	DCM 10E0	Heat		
near	E 0 2 +	Test Type		
NPS 10 AS 0.5 III.WI	NDC 16 VC OF IN WIT	Product Size		Product Detail
,	7	Pieces		S
טאר	ם כ	Length		
02.//	77 70	lb/ft	Mass	
S	7	μR/hr	Geiger	
07.5	000	Gauss	Res.Mag.	
Pass	0000	Insp.	Visual	
rdss	222	OD		Non-E
PdSS	0	WT	TU	n-Destructive Testi
rdss	0.00	ASTM E213	T	[esting
rdss	Dass	ASTM E213 ASTM E309	EI	
	*		HydroTest	
22.3 bevel	32 50 0000	Condition	End	

						Chemical Analysis (wt%)	Analysis	(wt%)									
																Œ	CE
Heat	Steelmaking Method	Analysis	С	Mn	Ρ	S	Si	Cr	Cu	Мо	Z.	<	ı	Nb	В	(IIW)	(CSA)
BSM_1058	Blast Furnace; EAF; Ladle Refining;	Heat	0.18	0.91	0.012	0.012	0.23	0.03	0.06	0.01	0.04		ı		0.0003		1
OCOT-IAICO	Vacuum Degas; Fully Killed	Product	0.20	0.90	0.015	0.006	0.24	0.03	0.07	0.01	0.04	0.003	0.001	0.001	0.0001	0.37	0.37

Mechanical Properties Heat Test Type Microstructure Hardness Flattening Test 50mm GL yield (Rt0.5) Tensile (Rm) Y/T Elongation (A) BSM-1058 Heat Ferrite & Pearlite 74 Pass Longitudinal; 38.1mm x WT 46,000 73,000 0.63 45
Mechanical Properties Hardness Tension Test Yield (Rt0.5) Tensile (Rm) Yield (Rt0.5) Tensile (Rm) Plattening Test 50mm GL psi psi (74 Pass Longitudinal; 38.1mm x WT 46,000 73,000
Mechanical Properties
Tension Test Yield (Rt0.5) Tensile (Rm)
n Test Yield (Rt0.5) Tensile (Rm) (Rm) n GL psi psi (38.1mm x WT 46,000 73,000 (
73,000
e (Rm) (si (
Y/T Elongation (A) (Rt0.5/Rm) % 0.63 45
Elongation (A) %

					1									
	ı			ı		,	ı	ı	t	1	T	*	1	BSM-1058
% AVG mm mr		% A1	%		%	%	AVG	J	J	J	2C	Sample Details	Standard	Heat
ar Latera	ar	3r	J.	% Shea	%			t Energy	Impact		Temp	Impact Test	Test	

Additional Details:

- results meet the corresponding requirements. Inc. in accordance with ASTM/ASME A/SA106-2011, A/SA53-2012, and the purchase order requirements, and that the We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing
- Service, and NACE MR0103-2010 Section 2.1. √ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour
- No weld repairs have been performed on this product.
- This product has not come into contact with mercury during the Bri-Steel Manufacturing processes.
- √ This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.
- *Note that this product was hydrotested to 1000 psi for 5 seconds.

Mill Test Certificate approved by:

Paul Sowden, T.T.

Assistant QA Manager



Mill Test Certificate

Bri-Steel Manufacturing Inc.

2125-64 Avenue, Edmonton, AB Canada T6P 1Z4 Fax: 001 (780) 469-6986 www.brichemsteel.com Tel: 001 (780) 469-6603

Production Date:

July 9, 2013

Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-1058 Product Size: **NPS 16 XS**

Production Method: Hot Expansion Product Heat Treatment: As-rolled

Product Standards: ASME B36.10-2004, API 5L-44th Ed. Grade B PSL1, ASTM/ASME A/SA106-2011 Grade B/C NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010

Product Markings: BRI-STEEL MFG <API> 5L-0898 API 5L GR B PSL1 ASTM/ASME A/SA106 GR B/C A/SA53 GR B NPS 16 XS 0.5 inchWT HEAT BSM-1058 (PIPE # LENGTH MASS) 82.77lb/ft NDE 1500 PSI SMLS NACE MR0175 2013/07 MADE IN CANADA.

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BSM-1058	Heat		
Heat	Test Type		
NPS 16 XS 0.5 in.WT	Product Size		Product Detail
7	Pieces		S
DRL	Length		
82.77	lb/ft	Mass	
S	μR/hr	Geiger	
<20	Gauss	Res.Mag.	
Pass	Insp.	Visual	
Pass	OD		Non-E
Pass	WT	TU	Destructive T
Pass	ASTM E213	TU	esting
Pass	ASTM E309	ΕT	
Pass	1500 psi/5s	HydroTest	
32.5° Bevel	Condition	End	
	Heat NPS 16 XS 0.5 in.WT 7 DRL 82.77 <5	Test Type Product Size Pieces Length lb/ft μR/hr Gauss Insp. OD WT ASTM E213 ASTM E309 1500 psi/5s Condition Heat NPS 16 XS 0.5 in.WT 7 DRL 82.77 <5 <20 Pass Pass Pass Pass Pass Pass Pass Sc. 32.5° B	Test TypeProduct SizePiecesLengthlb/ftμR/hrGaussInsp.ODWTASTM E213ASTM E3091500 psi/5sConditionHeatNPS 16 XS 0.5 in.WT7DRL82.77<5<20PassPassPassPassPassPassPassPass

						Chemical	Chemical Analysis (wt%	(wt%)									
10011																Œ	Œ
Heat	Steelmaking Method	Analysis	С	Mn	P	S	Si	Cr	Cu	Mo	Z.	<	∄	Nb	В	(IW)	(CSA)
RSM-1058	Blast Furnace; EAF; Ladle Refining;	Heat	0.18	0.91	0.012	0.012	0.23	0.03	0.06	0.01	0.04	-		,	0.0003	1	
1000	Vacuum Degas; Fully Killed	Product	0.20	0.90	0.015	0.006	0.24	0.03	0.07	0.01	0.04	0.003	0.001	0.001	0.0001	0.37	0.37

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BSM-1058	Heat		
Heat	Test Type		
Ferrite & Pearlite	Microstructure		
74	HRBW	Hardness	
Pass	Flattening Test		Mechar
Longitudinal; 38.1mm x WT	50mm GL	Tension Test	Mechanical Properties
46,000	psi	Yield (Rt0.5)	
73,000	psi	Tensile (Rm)	
0.63	(Rt0.5/Rm)	1/γ	
45	%	Elongation (A)	

				-											
1		1	ı	1	ī	ı	1	1	,		ı	ı	·	1	BSM-1058
AVG	mm	mm	mm	AVG	%	%	%	AVG	J	J	_	Эē	Sample Details	Standard	Heat
	xpansion	Lateral E			% Shear	% SI			Energy	Impact		Temp	Impact Test	Test	

Additional Details:

- and that the results meet the corresponding requirements. Inc. in accordance with API 5L-44th Ed., ASTM/ASME A/SA106-2011, A/SA53-2012, and the purchase order requirements, We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing
- Service, and NACE MR0103-2010 Section 2.1. ✓ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour
- No weld repairs have been performed on this product.
- ✓ This product has not come into contact with mercury during the Bri-Steel Manufacturing processes.
- ✓ This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.

Mill Test Certificate approved by:

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Paul Sowden, T.T.

Assistant QA Manager