

Product:

Seamless Carbon Steel Pipe

Production Method:

Hot Expansion

## Mill Test Certificate

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

Tel: 001 (780) 469-6603 Fax: 001 (780) 469-6986

www.bri-steel.com

Product Size: NPS 14 TRUE 40 Production Date: Mar 03, 2014

ThermoMechanical Formed Certificate No.: MTR- 002042

Product Standards: ASME B36.10M-2015, ASTM/ASME NDE, A53-2012/SA53-2013 Grade B Type S, NACE MR0175-2009 MR0103-2012

Product Heat Number: Product Heat Treatment:

BSM-1680

**Product Markings** 



NPS 14 TRUE 40 0.438 INCHWT SMLS 2014/03 NDE

HEAT BSM-1680 (PIPE # LENGTH MASS) 63.67lb/ft ASTM/ASME A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

	The state of the s																	
		Product: Details	ails								No	on-Destru	Non-Destructive Testing					
Heat	Test Type	Product Size	ַם	Pieces	Length	Mass	Geiger	Res. Mag.		Visual	OD	TU	LI	$\exists$	티	HydroTest	Test	End
						lb/ft	µR/hr	Gauss		Insp.		TW	ASTM E213 ASTM E309	3 ASTI	M E309		_	Condition
BSM-1680	Heat	NPS 14 TRUE 40 0.438in. WT	. WT	10	DRL	63.67	<5	<10		Pass	Pass	Pass	Fail	7	Pass	,	w	33° Bevel
						CI	nemical An	Chemical Analysis (wt%)	3)									
Heat	Stee	Steelmaking Method	Test Type	)	Mn	q	S	Si	<u>۲</u>	5	M <sub>o</sub>	Ζ.	<	=	N <sub>D</sub>	В	CE(IIW)	CE(IIW) CE(CSA)

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									rties	Mechanical Properties	Mechani							
r	ŧ	,	,	,	1		,	,		1	t		,					
0.40	0.39	0.0004	0.001	0.001	0.003	0.04	0.01	0.08	0.06 0.08	0.91 0.010 0.003 0.26	0.003	0.010	0.91	0.22	Product 0.22		0.77	
0.38	0.37	0.0004	,	,	ı	0.04	0.01	0.07	0.06	0.25	0.003	0.012	0.92	0.20	Heat	Blast Furnace; EAF; Ladle Refining; Vacuum Degas: Fully Killed		BSM-1680
CE(CSA)	CE(IIW)	В	Nb	Ti	٧	Z.	Mo	ū	ଦ	Si	S	P	Μn	C	Test Type	Steelmaking Method	1	Heat

BSM-1680		Heat
Heat		Test Type
Ferrite & Pearlite		Microstructure
78 HRBW		Hardness
Pass		Flattening Test
Longitudinal; 1.5 in. x WT	2 in. GL	Tension Test
42,600	psi	Yield (Rt0.5)
75,000	psi	Tensile (Rm)
0.57	(Rt0.5/Rm)	Τ/Υ
47	%	Elongation (A)

BSM-1680		Heat
1	Standard	Test
	Sample Details	Impact Test
,	)°C	Temp
	<u></u>	
1	J	Impact
١	<u>_</u>	Energy
r	AVG	
J	%	
τ	%	% Shear
,	%	ear
,	AVG	
1	mm	
ř	mm	Lateral Ex
ī	mm	pansion
	AVG	

## Additional Details:

- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with Steel Manufacturing is registered and certified to ISO-9001:2008, API Q1, and PED 97/23/EC. ASTM/ASME A53-2012/SA53-2013, and the purchase order requirements, and that the results meet the corresponding requirements. Bri-
- This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service , and NACE MR0103-2012 Section 2.1
- ✓ No weld repairs have been performed on this product.
- This product has not come into contact with mercury during the Bri-Steel Manufacturing processes
- $\checkmark$  This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.

Mill Test Certificate approved by:

Diffe Jan 11

Kenton Dechant, P.Eng.

Manager of Quality and R&D



## Mill Test Certificate

Bri-Steel Manufacturing Inc. 2125-64 Avenue, Edmonton, AB Canada T6P 124

Fax: 001 (780) 469-6986 Tel: 001 (780) 469-6603

www.brichemsteel.com

Product: Seamless Carbon Steel Pipe

Product Heat Number:

BSM-1680 Product Size: 14XS

Production Date:

Mar 03, 2014

Production Method: Hot Expansion

Product Heat Treatment:

As-rolled

Certificate No.: MTR- 000929

ASME B36.10-2004, ASTM/ASME A/SA106-2013 Grade B/C NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009 MR0103-2010

Product Standards:

**Product Markings** 

NPS 14 XS 0.500 INCHWT SMLS 2014/03 NDE

\*\*\*TEEL\*\* NPS 14 XS 0.500 INCHWT SMLS 2014/03 NDE

\*\*\*TEEL\*\* NPS 14 XS 0.500 INCHWT SMLS 2014/03 NDE

\*\*\*TEEL\*\* NPS 14 XS 0.500 INCHWT SMLS 2014/03 NDE

\*\*\*TEEL\*\* NPS 14 XS 0.500 INCHWT SMLS 2014/03 NDE

BSM-1680 H		Heat Test	
Heat		Test Type	
NPS 14 XS 0.500in. WT		Product Size	Product: Details
10		Pieces	
DRL		Length	
72.09	lb/ft	Mass	
<b>~</b> 5	μR/hr	Geiger	
<10	Gauss	Res. Mag.	
Pass	Insp.	Visual	
Pass		OD	N
ssed	TW	TU	Non-Destructive Testing
Pass	ASTM E213 ASTM	UT	tive Testing
Pass	ASTM	ET	
,		HydroTest	
32.5° Bevel	Condition	End	

Product 0.22 0.91 0.010 0.003 0.26 0.06 0.08 0.01 (	ace; EAF; Ladle Refining; Vacuum Heat 0.20 0.92 0.012 0.003 0.25 0.06 0.07 0.01	Heat Steelmaking Method Test Type C Mn P S Si Cr Cu Mo	Chemical Analysis (wt%)
_			vt%)
0.04	0.04	N.	
0.003 0.001		٧ ٦	
***************************************		Nb	
0.001 0.0004 0.	0.0004	B CE(IIV	
0.39 0.39	t	(IIW) CE(CSA)	

			, , , , ,						
47	0.57	75.000	42.600	Longitudinal: 38.1 mm x WT	Pass	78 HRBW	Ferrite & Pearlite	Heat	BSM-1680
%	(Rt0.5/Rm)	psi	psi	50mm GL					
Elongation (A)	Y/T	Tensile (Rm)	Yield (Rt0.5)	Tension Test	Flattening Test	Hardness	Microstructure	Test Type	Heat
				Mechanical Properties					

	BSM-1680		Heat
	î	Standard	Test
	,	Sample Details	Impact Test
	-	2°	Temp
-	ı	J	
-		J	Impact
-		J	Energy
The state of the s		AVG	
	ı	%	
The state of the s	-	%	% Shear
-	L	%	ear
	ì	AVG	
Name and Address of the Owner, when the Owner, which the Owne	٠	mm	
ACCOUNT TO THE PARTY OF THE PAR	3	mm	Lateral Ex
	٢	mm	pansion
	ı	AVG	

## Additional Details:

- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with ASTM/ASME A/SA106-2013 Grade B/C A/SA53-2012, and the purchase order requirements, and that the results meet the corresponding requirements.
- √ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service-2009 NACE MR0103-2010 Section 2.1
- No weld repairs have been performed on this product.
- $\checkmark$  This product has not come into contact with mercury during the Bri-Steel Manufacturing processes
- $\checkmark$  This certificate represents a quality control system that is compliant with EN 10204;2004 Type 3.1.

Mill Test Certificate approved by:

2) ander 2014 MAR 6

Paul Sowden, T.T. Assistant QA Manager