

Mill Test Certificate

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

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

www.brichemsteel.com

Product: Seamless Carbon Steel Pipe

Product Heat Number:

BSM-1446 Product Size: 20 STD

Production Date:

Nov 27, 2013

Production Method: **Hot Expansion**

Product Heat Treatment: As-rolled

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

Certificate No.: MTR- 000648

Product Standards:

Product Markings

NPS 20 STD 0.375 INCHWT SMLS 2013/11 NDE 1000PSI

HEAT BSM-1446 (PIPE # LENGTH MASS) 78.6lb/ft ASTM/ASME A/SA106 GR B/C A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

Product: Details Non-Destructive Testing Heat Test Type Product Size Pieces Length Mass Geiger Res. Mag. Visual OD UT UT ET HydroTest End Heat Test Type Product Size Pieces Length Mass Geiger Res. Mag. Visual OD UT UT ET HydroTest End Mass Insp. WT ASTM E213 ASTM 1000 PSI/ 5 s Condition	34° Bevel	Pass	Pass	Pass	Pass	Pass	Pass	<10	Ġ	78.6	DRL	14	NPS 20 STD 0.375in. WT	Heat	BSM-1446
Product: Details Non-Destructive Testing Test Type Product Size Pieces Length Mass Geiger Res. Mag. Visual OD UT UT ET HydroTest	Condition	1000 PSI/ 5 s		ASTM E213	TW		Insp.	Gauss	μR/hr	lb/ft					
5	End	HydroTest	田	UŢ	I	OD	Visual	Res. Mag.	Geiger	Mass		Pieces		Test Type	Heat
				tive Testing	on-Destruct	N							Product: Details		

		BSM-1446	Heat	
	Degas, rully Nileo	Blast Furnace; EAF; Ladle Refining; Vacuum	Steelmaking Method	
	Product 0.23	Heat	Test Type	
	0.23	0.19	С	
	0.92	0.90	Mn	
	0.92 0.019 0.021	0.02	Р	
	0.021	4 0.009	S	Chemical
	1 0.25	0.23	Si	Chemical Analysis (wt%)
	0.08	0.08	Cr	wt%)
	0.01	0.01	Cu	
Section of the sectio	0.01		Мо	8
	0.04	0.04	Ni	
Constitution of the second	0.003		٧	
	0.005		П	
	0.001		Nb	
	0.0004		В	
	0.41		CE(IIW)	
	0.41	1	CE(CSA)	

BSM-1446		Heat	
Heat		Test Type	
Ferrite & Pearlite		Microstructure	
75 HRBW		Hardness	
Pass		Flattening Test	
Longitudinal; 38.1 mm x WT	50mm GL	Tension Test	Mechanical Properties
44,700	psi	Yield (Rt0.5)	
72,500	psi	Tensile (Rm)	
0.62	(Rt0.5/Rm)	Τ/γ	
40	%	Elongation (A)	

BSM-1446		Heat	
ı	Standard	Test	
1	Impact Test Sample Details		
•	°C	Temp	
-	J		
ı	J	Impact	
1	J	Energy	
1	AVG		
1	%		
ı	%	% Shear	
1	%	ear	
	AVG		
í	mm	es suppose to	
-	mm	Lateral Expansion	
,	mm	pansion	
,	AVG		

Additional Details:

- \checkmark We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in results meet the corresponding requirements accordance with ASTM/ASME A/SA106-2011 Grade B/C A/SA53-2012, and the purchase order requirements, and that the
- \checkmark 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:

2013 DEC 04

Paul Sowden, T.T.

Assistant QA Manager



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Seamless Carbon Steel Pipe

Product Heat Number:

BSM-1446 Product Size: 20 STD

Production Date: Nov 27, 2013

Production Method: **Hot Expansion**

As-rolled

Certificate No.: MTR- 000650

Product Standards: ASME B36.10-2004, API 5L-45th 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

Product Heat Treatment:

| CAPI > 5L-0898 API SPEC 5L NPS 20 STD 0.375 INCHWT GR B PSL1 SMLS 2013/11 NDE 1000PSI THEAT BSM-1446 (PIPE # LENGTH MASS) 78.6Ib/ft ASTM/ASME A/SA106 GR B/C A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

BSM-1446		Heat	
Heat		Test Type	
NPS 20 STD 0.375in. WT		Product Size	Product: Details
14		Pieces	
DRL		Length	
78.6	lb/ft	Mass	
<5	μR/hr	Geiger	
<10	Gauss	Res. Mag.	
Pass	Insp.	Visual	
Pass		00	Z
Pass	ΨT	TU	on-Destruc
Pass	ASTM E213	UT	Non-Destructive Testing
Pass	ASTM	ET	
Pass	1000 PSI/ 5 s Condition	HydroTest	
34° Bevel	Condition	End	

	Γ	BSN		
		BSM-1446	Heat	
	regas, rully villed	Blast Furnace; EAF; Ladle Refining; Vacuum	Steelmaking Method	
	Product	Heat	Test Type	
201 20 200 201 20	0.23	0.19	С	
	0.92	0.90	Mn	
	0.019	0.024	Р	400000
	0.021	4 0.009	S	Chemical Analysis (wt%)
	0.25	0.23	Si	Analysis (
	0.08	0.08	Cr	wt%)
	0.01	0.01	Cu	
	0.01		Mo	
The second secon	0.04	0.04	N:	
	0.003		٧	
	0.005		П	
	0.001	×	Nb	
	0.0004		В	
	0.41	Ĺ	CE(IIW)	
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BSM-1446		Heat
	Standard	Test
ī	Impact Test Sample Details	
-	°C	Temp
	J	
	J	Impact
1	J	Energy
ī	AVG	
1	%	
1	%	% Shear
	%	ear
	AVG	
r	mm	
r	mm	Lateral Expansion
1	mm	pansion
1	AVG	

Additional Details:

✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with API SL-45th Ed., ASTM/ASME A/SA106-2011 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 certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1. \checkmark This product has not come into contact with mercury during the Bri-Steel Manufacturing processes

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