

Mill Test Certificate

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

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www.brichemsteel.com

Production Date: July 16, 2013

Product:

Seamless Carbon Steel Pipe

Product Heat Number:

BSM-1082

Product Size:

NPS 16 SCH 120

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 SCH 120 1.219 inchWT HEAT BSM-1082 (PIPE # LENGTH MASS) 192.3Ib/ft NDE SMLS NACE MR0175 2013/07 MADE IN CANADA.

BS			
BSM-1082	Heat		
Heat	Test Type		
NPS 16 SCH 120 1.219 in.WT	Product Size		Product Detail
2	Pieces		5
DRL	Length		
192.30	lb/ft	Mass	
\$	μR/hr	Geiger	
<20	Gauss	Res.Mag.	
Pass	Insp.	Visual	
Pass	OD		Non-E
Pass	WT	TU	estructive 1
Pass	ASTM E213	LI	esting
Pass	ASTM E309	ET	
1		HydroTest	
Plain End	Condition	End	

(wt%))								CE
Si	Chemical Analysis (w	Chemical Analysis (wt%) P S Si Cr	Chemical Analysis (wt%) P S Si Cr Cu O 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Chemical Analysis (wt%) P S Si Cr Cu Mo	Chemical Analysis (wt%) P S Si Cr Cu Mo Ni	Chemical Analysis (wt%) P S Si Cr Cu Mo Ni V	Chemical Analysis (wt%) P S Si Cr Cu Mo Ni V Ti	Chemical Analysis (wt%) P S Si Cr Cu Mo Ni V Ti Nb	Chemical Analysis (wt%) P S Si Cr Cu Mo Ni V Ti Nb B (
alys Si .28	alys Si .28	alysis (wt%) Si Cr .28 0.04 C	Alysis (wt%) Si Cr Cu .28 0.04 0.06	Si Cr Cu 28 0.04 0.06	Si Cr Cu Mo 28 0.04 0.06 0.01	Si Cr Cu Mo Ni	Si Cr Cu Mo Ni V 0.06 0.01 0.02 0.004	Si Cr Cu Mo Ni V Ti	Si Cr Cu Mo Ni V Ti Nb B (0.04 0.06 0.01 0.02 0.004 0.002 0.001 0.0003
alys Si .28	nalysis (w Si 0.28	nalysis (wt%) Si Cr 0.28 0.04	nalysis (wt%) Si Cr Cu 0.28 0.04 0.06	nalysis (wt%) Si	nalysis (wt%) Si Cr Cu Mo Ni 0.28 0.04 0.06 0.01 0.02	nalysis (wt%) Si Cr Cu Mo Ni V 0.28 0.04 0.06 0.01 0.02 0.004	nalysis (wt%) Si Cr Cu Mo Ni V Ti 0.28 0.04 0.06 0.01 0.02 0.004 0.002 0.29 0.04 0.06 0.01 0.02 0.004 0.002	nalysis (wt%) Si Cr Cu Mo Ni V Ti Nb 0.28 0.04 0.06 0.01 0.02 0.004 0.002 0.001	Nalysis (wt%) Si Cr Cu Mo Ni V Ti Nb B 0.28 0.04 0.06 0.01 0.02 0.004 0.002 0.001 0.0003
	(wt%) Cr 0.04		Cu Cu 0.06	Cu Mo	Cu Mo Ni 0.05 0.01 0.02) Cu Mo Ni V 4 0.06 0.01 0.02 0.004	Cu Mo Ni V Ti 14 0.06 0.01 0.02 0.004 0.002	Cu Mo Ni V Ti Nb 14 0.06 0.01 0.02 0.004 0.002 0.001) Cu Mo Ni V Ti Nb B (

Heat Test Type Microstructure Hardness Flattening Test 50mm GL Yield (Rt0.5) Tensile (Rm) Y/T Elon BSM-1082 Heat Ferrite & Pearlite 77 Pass Longitudinal; 19.1mm x WT 40,600 72,000 0.56		BSN	-		
Test Type Microstructure Hardness Flattening Test Ferrite & Pearlite 77 Pass Longitudinal; 19.1mm x WT 40,600 72,000		1-1082	leat		
Hardness Hattening Test Flattening Test Flatte			Test Type		
Flattening Test Congitudinal; 19.1mm x WT 40,600 72,000		Ferrite & Pearlite	Microstructure		
Tension Test Yield (Rt0.5) Tensile (Rm)		77	HRBW	Hardness	
n Test Yield (Rt0.5) Tensile (Rm) n GL psi psi (Rtt) 9.1mm x WT 40,600 72,000		Pass	Flattening Test		iviechar
Rt0.5) Tensile (Rm) (Rt) si psi (Rt) 600 72,000		Longitudinal; 19.1mm x WT	50mm GL	Tension Test	lical Properties
e (Rm) ssi (Rt)		40,600	psi	-	
Y/T Elon (Rt0.5/Rm) 0.56		72,000	psi	Tensile (Rm)	
Elo	8	0.56	(Rt0.5/Rm)	1/4	
ngation (A) %	The second secon	50	%	Elongation (A)	

Test	st	Impact Test	Temp		Impact	Energy			% S	% Shear			Lateral E	l Expansio
Heat Stand	lard	Sample Details	Эē	_	J	_	AVG	%	%	%	AVG	mm	mm	$\overline{}$
C801-1083		i.	ı	е	r	1			,	,	,	1	'	\rightarrow

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.
- $\checkmark~$ This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.

Mill Test Certificate approved by:

Paul Sowden, T.T.

Assistant QA Manager