

## Mill Test Certificate

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

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www.brichemsteel.com

Product: Seamless Carbon Steel Pipe

**Product Standards:** Production Method:

Product Heat Number:

BSM-1186

Product Size: 20 TRUE 80

Production Date: Aug 26, 2013

Certificate No.: MTR- 000012

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 **Hot Expansion** Product Heat Treatment: As-rolled

**Product Markings** NPS 20 TRUE 80 1.031 INCHWT SMLS 2013/08 NDE

MAXUUMA MEAT BSM-1186 (PIPE # LENGTH MASS) 208.9lb/ft ASTM/ASME A/SA106 GR B/C A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

BSM-1186		Heat	
Heat		Test Type	
NPS 20 TRUE 80 1.031in. WT		Product Size	Product: Details
6		Pieces	
DRL		Length	
208.9	lb/ft	Mass	
<b>%</b>	μR/hr	Geiger	
<b>%</b>	Gauss	Res. Mag.	
Pass	Insp.	Visual	
Pass		8	Z
Pass	W <sub>T</sub>	LI	on-Destruc
Pass	ASTM E213	TD	Non-Destructive Testing
Pass	ASTM E213 ASTM E309	티	
*		HydroTest	
Plain End	Condition	End	

<u>₽</u>	Chemical Analysis (with P S Si O.016 0.006 0.32	Chemical Analysis (wt%)  P S Si Cr  0.016 0.006 0.32 0.05	Chemical Analysis (wt%)  P S Si Cr  0.016 0.006 0.32 0.05	Chemical Analysis (wt%)  P S Si Cr Cu  0.016 0.006 0.32 0.05 0.05	Chemical Analysis (wt%)  P S Si Cr Cu Mo  0.016 0.006 0.32 0.05 0.05 0.01	Chemical Analysis (wt%)  P S Si Cr Cu Mo Ni  0.016 0.006 0.32 0.05 0.05 0.01 0.03	Chemical Analysis (wt%)  P S Si Cr Cu Mo Ni V  0.016 0.006 0.32 0.05 0.05 0.01 0.03 0.003	Chemical Analysis (wt%)  P S Si Cr Cu Mo Ni V Ti Nb  0.016 0.006 0.32 0.05 0.05 0.01 0.03 0.003 0.002 0.001	Chemical Analysis (wt%)  P S Si Cr Cu Mo Ni V Ti Nb  0.016 0.006 0.32 0.05 0.05 0.01 0.03 0.003 0.002 0.001
Chemical A S 0.006 0.007	Chemical Analysis (wt S Si 0.006 0.32 0.007 0.30	Chemical Analysis (wt%) S Si Cr 0.006 0.32 0.05	Chemical Analysis (wt%) S Si Cr Cu 0.006 0.32 0.05 0.05 0.007 0.30 0.05 0.05	Chemical Analysis (wt%)  S Si Cr Cu Mo 0.006 0.32 0.05 0.05 0.01	Chemical Analysis (wt%)  S Si Cr Cu Mo Ni  0.006 0.32 0.05 0.05 0.01 0.03  0.007 0.30 0.05 0.05 0.01 0.03	Chemical Analysis (wt%)  S Si Cr Cu Mo Ni V  0.006 0.32 0.05 0.05 0.01 0.03 0.003	Chemical Analysis (wt%)  S Si Cr Cu Mo Ni V Ti  0.006 0.32 0.05 0.05 0.01 0.03 0.003 0.002  0.007 0.30 0.05 0.05 0.01 0.03 0.004 0.007	Chemical Analysis (wt%)  S Si Cr Cu Mo Ni V Ti Nb  0.006 0.32 0.05 0.05 0.01 0.03 0.003 0.002 0.001  0.007 0.30 0.05 0.05 0.01 0.03 0.004 0.007 0.001	Chemical Analysis (wt%)  S Si Cr Cu Mo Ni V Ti Nb B C 0.006 0.32 0.05 0.05 0.01 0.03 0.002 0.001 0.0001 0.007 0.30 0.05 0.05 0.01 0.03 0.004 0.007 0.001 0.0001
D	Analysis (wi Si 0.32	Analysis (wt%) Si Cr 0.32 0.05 0.30 0.05	Analysis (wt%) Si Cr Cu 0.32 0.05 0.05 0.30 0.05 0.05	Analysis (wt%) Si Cr Cu Mo 0.32 0.05 0.05 0.01 0.30 0.05 0.05 0.01	Analysis (wt%)  Si Cr Cu Mo Ni  0.32 0.05 0.05 0.01 0.03  0.30 0.05 0.05 0.01 0.03	Analysis (wt%)  Si Cr Cu Mo Ni V  0.32 0.05 0.05 0.01 0.03 0.003  0.30 0.05 0.05 0.01 0.03 0.004	Analysis (wt%)  Si Cr Cu Mo Ni V Ti  0.32 0.05 0.05 0.01 0.03 0.003 0.002  0.30 0.05 0.05 0.01 0.03 0.004 0.002	Analysis (wt%)  Si Cr Cu Mo Ni V Ti Nb  0.32 0.05 0.05 0.01 0.03 0.003 0.002 0.001  0.30 0.05 0.05 0.01 0.03 0.004 0.002 0.001	Analysis (wt%)  Si Cr Cu Mo Ni V Ti Nb B C  0.32 0.05 0.05 0.01 0.03 0.003 0.002 0.001 0.0001  0.30 0.05 0.05 0.01 0.03 0.004 0.002 0.001 0.0001
	Cr 0.05 0.05		Cu 0.05	Cu Mo 0.05 0.01 0.05 0.01	Cu Mo Ni 0.05 0.01 0.03 0.05 0.01 0.03	Cu Mo Ni V 0.05 0.01 0.03 0.003 0.05 0.01 0.03 0.004	Cu Mo Ni V Ti 0.05 0.01 0.03 0.003 0.002 0.05 0.01 0.03 0.004 0.002	Cu         Mo         Ni         V         Ti         Nb           0.05         0.01         0.03         0.003         0.002         0.001           0.05         0.01         0.03         0.004         0.002         0.001	Cu Mo Ni V Ti Nb B 0.05 0.01 0.03 0.003 0.002 0.001 0.0001 0.005 0.01 0.03 0.004 0.002 0.001 0.0001

BSM-1186		Heat	
Heat		Test Type	
Ferrite & Pearlite	The state of the s	Microstructure	
78 HRBW		Hardness	
HRBW Pass		Flattening Test	
Longitudinal; 19.05 mm x WT		Tension Test	viecnanical Properties
48,000	psi	Yield (Rt0.5)	The state of the s
73,000	psi	Tensile (Rm)	
0.66	(Rt0.5/Rm)	Υ/Τ	
49	%	Elongation (A)	

	BSM-1186		Heat
		Standard	Test
	•	Sample Details	Impact Test
		ကိ	Temp
	Ł	_	
	ı	_	Impact
	1	۲,	Energy
		AVG	
	•	%	
	1	%	% Shea
	1	%	ear
	,	AVG	
	\$ <b>1</b> )	mm	
The second secon	r	mm	Lateral Ex
	1	mm	xpansion
		AVG	

## Additional Details:

- ✓ 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
- √ 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.
- \* Note that this product was hydrotested to 1000 psi for 5 seconds.

Mill Test Certificate approved by:

Manager of Quality and R&D Kenton Dechant, P.Eng.

2013 Aug 29