



# Mill Test Certificate

Bri-Steel Manufacturing Inc.  
 2125-64 Avenue, Edmonton, AB Canada T6P 1Z4  
 Tel: 001 (780) 469-6603  
 Fax: 001 (780) 469-6986  
 www.bri-steel.com

Product: Seamless Carbon Steel Pipe      Product Heat Number: BSM-1302      Production Date: Oct 09, 2013  
 Production Method: Hot Expansion      Product Heat Treatment: As-rolled      Certificate No.: MTR- 000511  
 Product Standards: ASME B96.10-2004, ASTM/ASME A/SA333-2013 Grade 6 L(TM45C) A106-2014/SA106-2013 Grade B/C NDE, AS3-2012/SA53-2013 Grade B Type S, NACE MR0175-2009 MR0103-2012  
 Product Markings: NPS 18 TRUE 80 0.940 INCHWT SMLS 2013/10 NDE  
 HEAT BSM-1302 (PIPE # LENGTH MASS) 170 8lb/ft ASTM/ASME A/SA333 GR 6 L(TM45C) 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 lb/ft	Gelger µR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM	Hydro Test	End Condition
BSM-1302	Heat	NPS 18 TRUE 80 0.940In. WT	4	DRL	170.8	<5	<10	Pass	Pass	Pass	Pass	Pass	*	Plain End

Steelmaking Method		Chemical Analysis (wt%)														
Heat	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(CSA)
BSM-1302	Blast Furnace, FAF, Ladle Refining, Vacuum Degass, Fully Killed	0.20	0.91	0.013	0.002	0.32	0.04	0.06	0.01	0.02	0.002	0.001	0.001	0.0002	-	-
	Product	0.21	0.92	0.018	0.006	0.32	0.05	0.06	0.01	0.03	0.003	0.001	0.001	0.0001	0.38	0.38

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 50mm GL	Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
BSM-1302	Heat	Ferrite & Pearlite	76 HRBW	Pass	Longitudinal, 19.05 mm x WT	45,100	70,000	0.64	50

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy			% Shear			Lateral Expansion					
				J	J	J	%	%	%	mm	mm	mm	AVG		
BSM-1302	ASTM A333	CVN Long 10 x 10 mm	-45	46.0	44.5	28.0	39.5	5	5	0	3	0.92	0.90	0.32	0.71

**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/SA333-2013 Grade 6 L(TM45C) A106-2014/SA106-2013 Grade B/C AS3-2012/SA53-2013, and the purchase order requirements, and that the results meet the corresponding requirements. Bri-Steel Manufacturing is registered and certified to ISO-9001:2008 and API Q1.

✓ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex AZ for Region 3 Sour Service-2009 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.

✓ 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:

*Tanya Lam, C.E.T.*  
 Assistant QA Manager

Product: Seamless Carbon Steel Pipe      Product Heat Number: BSM-1302      Production Date: Oct 09, 2013  
 Product Size: 18T80



# Mill Test Certificate

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Product: Seamless Carbon Steel Pipe      Product Heat Number: BSM-1302      Product Size: 18 TRUE 80      Production Date: Oct 09, 2013  
 Production Method: Hot Expansion      Product Heat Treatment: As-rolled      Certificate No.: MTR- 000511  
 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: NPS 18 TRUE 80 0.940 INCH WT SMLS 2013/10 NDE  
 HEAT BSM-1302 (PIPE # LENGTH MASS) 170.8lb/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 lb/ft	Geiger $\mu$ R/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM	HydroTest	End Condition	
BSM-1302	Heat	NPS 18 TRUE 80 0.940in. WT	4	DRL	170.8	<5	<10	Pass	Pass	Pass	Pass	Pass	Pass	*	Plain End

Heat	Steelmaking Method	Test Type	Chemical Analysis (wt%)														
			C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(CSA)
BSM-1302	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.20	0.91	0.013	0.002	0.32	0.04	0.06	0.01	0.02	0.002	0.001	0.001	0.0002	-	-
		Product	0.21	0.92	0.018	0.006	0.32	0.05	0.06	0.01	0.03	0.003	0.001	0.001	0.0001	0.38	0.38

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 50mm GL	Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
BSM-1302	Heat	Ferrite & Pearlite	76 HRBW	Pass	Longitudinal; 19.05 mm x WT	45,100	70,000	0.64	50

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy			% Shear			Lateral Expansion			
				J	J	J	%	%	%	mm	mm	mm	AVG
BSM-1302	-	-	-	-	-	-	-	-	-	-	-	-	-

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/SA106-2011 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.
- ✓ 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:  
  
 2013 OCT 18  
 Paul Sowden, T.T.  
 Assistant QA Manager