



# Mill Test Certificate

Bri-Steel Manufacturing Inc.

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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-1097** Product Size: **NPS 20 TRUE80** Production Date: **July 23, 2013**

Production Method: **Hot Expansion** Product Heat Treatment: **As-rolled** Certificate No: **000218**

Product Standards: **ASME B36.10-2004, ASTM/ASME A/SAA106-2011 Grade B/C NDE, A/SAS3-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010**

Product Markings: **BRI-STEEL MFG ASTM/ASME A/SAA106 GR B/C A/SAS3 GR B NPS 20 TRUE80 1.031 inchWT HEAT BSM-1097 (PIPE # LENGTH MASS) 208.9lb/ft NDE SMLS NACE MR0175 2013/07 MADE IN CANADA.**

Product Details				Non-Destructive Testing											
Heat	Test Type	Product Size	Pieces	Length	Mass	Geiger	Res. Mag.	Visual	OD	WT	UT	UT	ET	HydroTest	End Condition
BSM-1097	Heat	NPS 20 TRUE80 1.031 in. WT	1	DRL	208.90	<5	<20	Pass	Pass	Pass	Pass	Pass	Pass	*	Plain End

Chemical Analysis (wt%)																	
Heat	Steelmaking Method	Analysis	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE	CE
BSM-1097	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.18	0.88	0.010	0.005	0.25	0.03	0.00	0.01	0.02	0.002	0.002	0.001	0.0002	-	-
		Product	0.21	0.93	0.016	0.009	0.30	0.05	0.06	0.02	0.03	0.004	0.002	0.001	0.0002	0.38	0.39

Mechanical Properties																
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test		Yield (Rt0.5) psi	Tensile (Rm) psi	V/T (Rt0.5/Rm)	Elongation (A) %	Impact Test					
					Pass	50mm GL					Longitudinal; 19.1mm x WT	% Shear	AVG	mm	mm	mm
BSM-1097	Heat	Ferrite & Pearlite	75	Pass	Pass	46,800	70,500	0.66	46	-	-	-	-	-	-	-
BSM-1097	Standard	Impact Test Sample Details	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**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/SAA106-2011, A/SAS3-2012, 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, and 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.

Mill Test Certificate approved by:

*[Handwritten Signature]*  
 2016 Feb 3

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

\*Note

This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1. that this product was hydrotested to 1000 psi for 5 seconds.