



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.brichemsteel.com

Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0848** Product Size: **NPS 20 TRUE80** Production Date: **April 22, 2013**

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

Product Standards: **ASME B36.10-2004, ASTM/ASME A/SA106-2011 Grade B NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010**

Product Markings: **BRI-STEEL MFG ASTM/ASME A/SA106 GR B A/SA53 GR B NPS 20 TRUE80 1.031 inchWT HEAT BSM-0848 (PIPE # LENGTH MASS) 208.9lb/ft NDE SMLS NACE MR0175 2013/04 MADE IN CANADA.**

Product Details				Non-Destructive Testing											
Heat	Test Type	Product Size	Pieces	Length	Mass lb/ft	Geiger IRR/hr	Res. Mag. Gauss	Visual Insp.	OD	WT	UT	UT	ET	HydroTest	End Condition
BSM-0848	Heat	NPS 20 TRUE80 1.031 in.WT	3	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 (IIW)	CE (CSA)
BSM-0848	Blast Furnace: EAF; Ladle Refining: Vacuum Degas; Fully Killed	Heat	0.19	0.88	0.010	0.005	0.25	0.05	0.04	0.01	0.04	-	-	-	0.0004	-	-
		Product	0.20	0.85	0.009	0.007	0.24	0.05	0.04	0.01	0.04	0.002	0.001	0.001	0.0001	0.36	0.37

Mechanical Properties																			
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test 50mm GL	Yield (Rt0.5) psi	Tensile (Rm) psi	V/T (Rt0.5/Rm)	Elongation (A) %	Impact Energy			Lateral Expansion						
BSM-0848	Heat	Ferrite & Pearlite	75	Pass	Longitudinal; 38.1mm x WT	42,800	67,500	0.63	48	Temp 9C	J	J	J	AVG	mm	mm	mm	AVG	
BSM-0848	Test Standard									-	-	-	-	-	-	-	-	-	-

- 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, 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, 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.
 - ✓ This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.

Mill Test Certificate approved by:

[Signature]
 2013 Apr 24

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