



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

Mill Test Certificate

Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0315** Product Size: **NPS 20 STD** Production Date: **May 2, 2012**

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

Product Standards: **ASTM/ASME A/SAA106-2011 Grade B, A/SAS3-2010 Grade B Type S, NACE MR0175-2009**

Product Markings: **.BRI-STEEL MFG NPS 20 STD ASTM/ASME A/SAA106 GR B A/SAS3 GR B HEAT BSM-0315 (PIPE # LENGTH MASS) 78.6lb/ft NDE 910PSI NACE MR0175 2012/05 MADE IN CANADA.**

Product Details						Non-Destructive Testing									
Heat	Test Type	NPS	SCH	Pieces	Length	Mass lb/ft	Gelger $\mu R/hr$	Res.Mag. Gauss	Visual Insp.	OD	UT WT	UT	ET	HydroTest	End Condition
BSM-0315	Heat	20	STD	7	DRL	78.60	<5	<20	Pass	Pass	Pass	ASTM E213	ASTM E309	910 psi/5s	37.5° Bevel

		Chemical Analysis (wt%)														
Heat	Test Type	Steelmaking Method														
		Blast Furnace; EAF; Ladle Refining; Vacuum Degass														
BSM-0315	Heat	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE (IIW)	CE (CSA)
		0.20	0.56	0.010	0.010	0.23	0.03	0.02	0.01	0.01	0.001	0.002	0.001	0.0001	0.30	0.31

		Mechanical Properties										
Heat	Test Type	Microstructure		Hardness		Flattening Test		Tension Test				
		Ferrite & Pearlite		HRBW		Pass		50mm GL; 38mm x WT				
BSM-0315	Heat			71				Longitudinal				
								Yield (Rt0.5) psi	Yield (Rp0.2) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
								37,900	37,600	66,000	0.57	46
								41,600	41,600	65,000	0.64	45

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/SAS3-2010 and the purchase order requirements, and that the results meet the corresponding requirements.
- ✓ This pipe product meet 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 no mercury contamination.
- ✓ This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.

*Note: Pipes 001, 002 and 003 were too short to perform the hydrotest.

Mill Test Certificate approved by:

Kenton Dechant
 2012 May 10

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