



# Mill Test Certificate

**Bri-Steel Manufacturing Inc.**  
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0208** Product Size: **NPS 20 STD** Production Date: **February 14, 2012**

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

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

Product Markings: **.BRI-STEEL MFG NPS 20 STD ASTM/ASME A/SAA106 GR B/C A/SAS3 GR B HEAT BSM-0208 (PIPE # LENGTH MASS) NDE 910PSI NACE MR0175 2012/02 MADE IN CANADA.**

Product Details						Non-Destructive Testing									
Heat	Test Type	NPS	SCH	Pieces	Length	Mass lb/ft	Gelger μR/hr	Res.Mag. Gauss	Visual Insp.	OD Pass	UT WT Pass	UT ASTM E213 ---	ET ASTM E309 Pass	HydroTest 910 psi/5s Pass	End Condition 37.5° Bevel
BSM-0208	Heat	20	STD	1	DRL	78.60	<5	<20	Pass	Pass	Pass	Pass	Pass	Pass	Pass

		Steelmaking Method		Chemical Analysis (wt%)														
Heat	Test Type	Blast Furnace; EAF; Ladle Refining; Vacuum Degass		C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE (IIW)	CE (CSA)
BSM-0208	Heat			0.21	0.91	0.014	0.011	0.26	0.03	0.14	0.02	0.04	0.003	0.001	0.002	0.0002	0.38	0.39

Mechanical Properties											
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test		Yield (Rt0.5) psi	Yield (Rp0.2) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
BSM-0208	Heat	Ferrite & Pearlite	78	Pass	50mm GL, 38mm x WT	Transverse	44,400	43,800	75,500	0.59	38
					Longitudinal		48,700	48,400	75,000	0.65	39

**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.

Mill Test Certificate approved by:

*[Signature]*  
 Kenton Dechant, P. Eng.  
 Manager of Quality and R&D