



Bri-Steel Manufacturing Inc.
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Mill Test Certificate

Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-1109** Product Size: **NPS 20 STD** Production Date: **July 29, 2013**

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

Product Standards: **ASME B36.10-2004, API 5L-44th Ed. Grade B PSL1, ASTM/ASME A/SA106-2011 Grade B/C, NACE MR0175-2009, MR0103-2010**

Product Markings: **BRI-STEEL MFG <API> 5L-08988 API 5L GR B PSL1 ASTM/ASME A/SA106 GR B/C A/SA53 GR B NPS 20 STD 0.375 inchWT HEAT BSM-1109 (PIPE # LENGTH MASS) 78.6lb/ft NDE 900 PSI SMILS NACE MR0175 2013/07 MADE IN CANADA.**

Product Details				Non-Destructive Testing												
Heat	Test Type	Product Size	Pieces	Length	Mass lb/ft	Geiger μ R/hr	Res. Mag. Gauss	Visual Insp.	OD	WT	UT	UT	ET	Hydro Test	End Condition	
BSM-1109	Heat	NPS 20 STD 0.375 in. WT	7	DRL	78.60	<5	<20	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	32.5° Bevel

Chemical Analysis (wt%)																	
Heat	Steelmaking Method	Analysis	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE	CE
BSM-1109	Blast Furnace: EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.19	0.90	0.024	0.009	0.23	0.08	0.01	-	0.04	-	-	-	-	(IIW)	(CSA)
		Product	0.24	0.97	0.029	0.011	0.26	0.09	0.01	0.01	0.04	0.006	0.003	0.001	0.0003	0.43	0.44

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test	Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
BSM-1109	Heat	Ferrite & Pearlite	80	Pass	50mm GL Longitudinal: 38.1mm x WT	46,800	76,500	0.61	41
Heat	Test Standard	Impact Test Sample Details	Temp $^{\circ}$ C	J	Impact Energy	% Shear	AVG	Lateral Expansion	AVG
BSM-1109	-	-	-	-	J	%	AVG	mm	mm

- Additional Details:
- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with API 5L-44th Ed., 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:

Paul Sowden

Paul Sowden, T.T.
 Assistant QA Manager

2013 JUL 31