



Bri-Steel Manufacturing Inc.
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Mill Test Certificate

Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0904** Product Size: **NPS 20 XS** Production Date: **May 13, 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 Type S, NACE MR0175-2009, MR0103-2010**

Product Markings: **BRI-STEEL MFG <API> 5L-0898 API 5L GR B PSL1 ASTM/ASME A/SA106 GR B/C A/SA53 GR B NPS 20 XS 0.5 inchWT HEAT BSM-0904 (PIPE # LENGTH MASS) 104.1lb/ft NDE 1260 PSI SM1S NACE MR0175 2013/05 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	HydroTest	End Condition
BSM-0904	Heat	NPS 20 XS 0.5 in. WT	14	DRL	104.10	<5	<20	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 (IIW)	CE (CSA)
BSM-0904	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.19	0.84	0.018	0.008	0.23	0.07	0.01	-	0.04	-	-	-	-	-	-
		Product	0.21	0.89	0.024	0.011	0.24	0.08	0.01	0.00	0.04	0.002	0.002	0.001	0.0001	0.38	0.39

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test 50mm GL	Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
BSM-0904	Heat	Ferrite & Pearlite	78	Pass	Longitudinal; 38.1mm x WT	45,000	72,000	0.63	49

Heat	Test Standard	Impact Test Sample Details	Temp $^{\circ}$ C	Impact Energy			Lateral Expansion		
				J	J	J	mm	mm	mm
BSM-0904	-	-	-	-	-	-	-	-	-

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:

[Signature]
 2013 May 22

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

