



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0811** Product Size: **NPS 20 STD** Production Date: **April 8, 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 NDE, A/SAS3-2012 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/SAS3 GR B NPS 20 STD 0.375 inchWT HEAT BSM-0811 (PIPE # LENGTH MASS) 78.6lb/ft NDE 910 PSI SMLS NACE MR0175 2013/04 MADE IN CANADA.**

Product Details				Non-Destructive Testing											
Heat	Test Type	Product Size	Pieces	Length	Mass lb/ft	Geliger $\mu R/hr$	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT	ET	HydroTest	End Condition	
BSM-0811	Heat	NPS 20 STD 0.375 in. WT	3	DRL	78.60	<5	<20	Pass	Pass	Pass	Pass	Pass	Pass	37.5° 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)
		Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat															
BSM-0811		0.20	0.88	0.009	0.014	0.21	0.04	0.09	0.01	0.06	-	-	0.0005	-	0.0001	0.0001	0.37	0.38

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) %								
					Pass	Longitudinal; 38.1mm x WT				% Shear	AVG	mm	mm	mm	AVG			
BSM-0811	Heat	Ferrite & Pearlite	77	Pass	44,000	71,000	0.62	38										
Heat	Test Standard	Impact Test Sample Details	Temp $^{\circ}C$	J	J	J	AVG	%	AVG	mm	mm	mm	AVG					
BSM-0811			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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/SAS3-2012, 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:

Kenton Dechant
 2013 April 12

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