



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

## Mill Test Certificate

Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0812** 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/SA53-2012 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/SA53 GR B NPS 20 STD 0.375 inchWT HEAT BSM-0812 (PIPE # LENGTH MASS) 78.6lb/ft NDE 910 PSI SMIS NACE MR0175 2013/04 MADE IN CANADA.**

Product Details						Non-Destructive Testing									
Heat	Test Type	Product Size	Pieces	Length	Mass	Geiger	Res. Mag.	Visual	UT	UT	ET	HydroTest	End		
BSM-0812	Heat	NPS 20 STD 0.375 in. WT	6	DRL	lb/ft 78.60	µR/hr <5	Gauss <20	Insp. Pass	OD Pass	WT Pass	ASTM E213 Pass	ASTM E309 Pass	910 psi/5s Pass	Condition 37.5° Bevel	

Chemical Analysis (wt%)																
Heat	Steelmaking Method	Analysis														
		C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE	CE
BSM-0812	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.19	0.86	0.009	0.016	0.22	0.05	0.10	0.01	0.07	-	-	0.0003	-	-
		Product	0.21	0.85	0.010	0.021	0.22	0.05	0.10	0.01	0.07	0.001	0.001	0.001	0.0002	0.37

Mechanical Properties										
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test		Yield (Rt0.5) psi	Tensile (Rm) psi	V/T (Rt0.5/Rm)	Elongation (A) %
					50mm GI	Longitudinal; 38.1mm x WT				
BSM-0812	Heat	Ferrite & Pearlite	78	Pass	AVG	AVG	44,100	71,500	0.62	38
BSM-0812	Test Standard	Impact Test		Temp °C	Impact Energy		% Shear		Lateral Expansion	
		Sample Details	Temp		J	J	%	%	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:

*[Signature]*  
 2013 April 12

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