



Mill Test Certificate

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

Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-1122** Product Size: **NPS 18 SCH 60** Production Date: **August 1, 2013**

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

Product Standards: **ASME B36.10-2004, 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 ASTM/ASME A/SA106 GR B/C A/SA53 GR B NPS 18 SCH 60 0.75 inchWT HEAT BSM-1122 (PIPE # LENGTH MASS) 138.2lb/ft NDE SMLS NACE MR0175 2013/08 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	UT	ET	HydroTest	End Condition	
BSM-1122	Heat	NPS 18 SCH 60 0.75 in. WT	6	DRL	138.20	<5	<20	Pass	Pass	Pass	Pass	Pass	*	Plain End	

Chemical Analysis (wt%)																		
Heat	Steelmaking Method	Analysis		C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE (IIV)	CE (CSA)
BSM-1122	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	Product	0.19	0.85	0.016	0.012	0.25	0.06	0.01	-	0.04	-	-	-	-	-	-
				0.22	0.88	0.024	0.011	0.24	0.08	0.01	0.01	0.04	0.005	0.003	0.001	0.0001	0.39	0.40

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-1122	Heat	Ferrite & Pearlite	75	Pass	50mm GL	Longitudinal; 38.1mm x WT	40,800	70,000	0.58	52	
Heat	Test Standard	Impact Test Sample Details	Temp $^{\circ}C$	Impact Energy J	Impact Energy J		% Shear	AVG	mm	Lateral Expansion mm	AVG
BSM-1122	-	-	-	-	-	-	-	-	-	-	-

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/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:

 2013 Aug 8
 Kenton Dechant, P. Eng.
 Manager of Quality and R&D

*Note that this product was hydrotested to 1000 psi for 5 seconds.