



## Mill Test Certificate

Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-1048** Product Size: **NPS 22 STD** Production Date: **July 4, 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-0898 API 5L GR B PSL1 ASTM/ASME A/SA106 GR B/C A/SA53 GR B NPS 22 STD 0.375 inchWT HEAT BSM-1048 (PIPE # LENGTH MASS) 86.61lb/ft NDE 800 PSI SMIS NACE MR0175 2013/07 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-1048	Heat	NPS 22 STD 0.375 in. WT	3	DRL	86.61 lb/ft	µR/hr	Gauss	Insp.	OD	WT	ASTM E213	ASTM E309	800 psi/5s	Condition
						<5	<20	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-1048	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.21	0.96	0.010	0.010	0.22	0.04	0.06	0.02	0.03	-	-	-	-	0.0003	-
		Product	0.23	0.98	0.011	0.011	0.22	0.04	0.06	0.02	0.03	0.004	0.001	0.001	0.0002	0.41	0.42

Mechanical Properties										
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test	Yield (RT0.5)	Tensile (Rm)	V/T	Elongation (A)	
BSM-1048	Heat	Ferrite & Pearlite	HRBW	Pass	50mm GL	psi	psi	(RT0.5/Rm)	%	
			76	Pass	Longitudinal; 38.1mm x WT	43,700	71,500	0.61	46	
Heat	Test	Impact Test	Temp	Impact Energy	% Shear	Lateral Expansion	AVG	mm	mm	AVG
BSM-1048	Standard	Sample Details	°C	J	%	mm	mm	mm	mm	AVG
			-	-	-	-	-	-	-	-

**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*

2013 JUL 09

Paul Sowden, T.T.  
 Assistant QA Manager