



Mill Test Certificate

Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-1487** Product Size: **NPS 16 STD** Production Date: **December 23, 2013**

Production Method: **Hot Expansion** Product Heat Treatment: **As-rolled** MTR: **691**

Product Standards: **ASME B36.10-2004, API 5L-44th Ed. Grade B PSL1, A/SA333-2011 Grade 6, 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** **<API> 5L-0898 API SPEC 5L NPS 16 STD 0.375 INCHWT GR B PSL1 SMLS 2013/12 NDE 1150PSI** **MADE IN CANADA**
HEAT BSM-1487 (PIPE LENGTH WEIGHT) 62.58lb/ft ASTM/ASME A/SA333 GR 6 A/SA106 GR B /C A/SA53 GR B NACE MR0175/MR0103

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	Hydro Test	End Condition	
BSM-1487	Heat	NPS 16 STD 0.375 in. WT	8	DRL	62.58	<5	<20	Pass	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 (IIV)	CE (CSA)
BSM-1487	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.18	1.12	0.014	0.007	0.32	0.15	0.03	-	0.02	0.050	-	-	-	-	-
		Product	0.20	1.10	0.017	0.018	0.31	0.07	0.02	0.01	0.06	0.049	0.006	0.001	0.0003	0.41	0.42

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) %
					50mm GL	Longitudinal; 38.1mm x WT		psi	psi		
BSM-1487	Heat	Ferrite & Pearlite	77	Pass	60,500	75,000	0.81				44

Heat	Test Standard	Impact Test Sample Details	Temp 9C	Impact Energy			% Shear			Lateral Expansion					
				J	J	AVG	%	%	AVG	mm	mm	mm	AVG		
BSM-1487	A/SA333	CVN Longitudinal (X-Y) 10x8	-459C	98	102	135	111	55	60	70	62	1.94	1.98	2.01	1.98

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/SA333-2011, 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, T.T.
Assistant QA Manager