



# Mill Test Certificate

**Bri-Steel Manufacturing Inc.**  
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-1116** Product Size: **NPS 18 TRUE40** Production Date: **July 30, 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 18 TRUE40 0.562 inchWT HEAT BSM-1116 (PIPE # LENGTH MASS) 104.8lb/ft NDE 1500 PSI SMILS NACE MR0175 2013/07 MADE IN CANADA.**

Product Details				Non-Destructive Testing										
Heat	Test Type	Product Size	Pieces	Length	Mass lb/ft	Geiger $\mu$ R/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM E309	HydroTest 1500 psi/5s	End Condition
BSM-1116	Heat	NPS 18 TRUE40 0.562 in.WT	24	DRL	104.80	<5	<20	Pass	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 (IIW)	CE (CSA)
BSM-1116	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.18	0.94	0.008	0.005	0.22	0.07	0.07	0.03	0.03	-	-	-	0.0005	-	-
		Product	0.21	0.95	0.010	0.006	0.22	0.06	0.06	0.03	0.03	0.003	0.001	0.001	0.0002	0.39	0.40

Mechanical Properties										
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test Pass	Tension Test		Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
					50mm GL	Longitudinal: 38.1mm x WT				
BSM-1116	Heat	Ferrite & Pearlite	76	Pass			46,100	73,000	0.63	47
Heat	Test Standard	Impact Test Sample Details	Temp $^{\circ}$ C	Impact Energy		% Shear		Lateral Expansion		
				J	AVG	%	AVG	mm	mm	mm
BSM-1116	-	-	-	-	-	-	-	-	-	-

**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 Aug 8

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