



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0915** Product Size: **NPS 20 TRUE40** Production Date: **May 16, 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 TRUE40 0.594 inchWT HEAT BSM-0915 (PIPE # LENGTH MASS) 122.9lb/ft NDE 1370 PSI SMLS NACE MR0175 2013/05 MADE IN CANADA.**

Product Details				Non-Destructive Testing											
Heat	Test Type	Product Size	Pieces	Length	Mass lb/ft	Geiger HR/hr	Res. Mag. Gauss	Visual Insp.	OD Pass	UT WT Pass	UT ASTM E213 Pass	ET ASTM E309 Pass	HydroTest 1370 psi/5s Pass	End Condition	
BSM-0915	Heat	NPS 20 TRUE40 0.594 in. WT	6	DRL	122.90	<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-0915	Blast Furnace: EAF; Ladle Refining: Vacuum Degass: Fully Killed	Heat	0.19	0.84	0.018	0.008	0.23	0.07	0.01	-	0.04	-	-	-	-	-	-
		Product	0.22	0.88	0.024	0.009	0.25	0.07	0.01	0.00	0.04	0.003	0.002	0.001	0.0001	0.39	0.39

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) %		Lateral Expansion		
BSM-0915	Heat	Ferrite & Pearlite	77	Pass	50mm GL	38.1mm x WT	44,900	72,500	0.62	49				
Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy J	Impact Energy J	AVG	%	%	%	AVG	mm	mm	mm	AVG
BSM-0915	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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 May 31

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