



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0799** Product Size: **NPS 24 TRUE80** Production Date: **March 28, 2013**

Production Method: **Hot Expansion** Product Heat Treatment: **Hot Worked (845 - 945°C) & Air-Cooled**

Product Standards: **ASME B36.10-2004, ASTM/ASME A/SA106-2011 Grade B NDE, A/SA53-2012 Grade B Type S, A/SA333-2011 Grade 6, NACE MR0175-2009, MR0103-2010**

Product Markings: **.BRI-STEEL MFG ASTM/ASME A/SA333 GR 6 A/SA106 GR B A/SA53 GR B NPS 24 TRUE80 1.219 inchWT HEAT BSM-0799 (PIPE # LENGTH MASS) 296.4lb/ft NDE SMLS NACE MR0175 2013/03 MADE IN CANADA.**

Product Details						Non-Destructive Testing								
Heat	Test Type	Product Size	Pieces	Length	Mass	Geiger	Res. Mag.	Visual	OD	UT	UT	ET	HydroTest	End
BSM-0799	Heat	NPS 24 TRUE80 1.219 in. WT	6	DRL	lb/ft 296.40	µR/hr <5	Gauss <20	Insp. Pass	Pass	Pass	Pass	Pass	*	Plain End

Chemical Analysis (wt%)																		
Heat	BSM-0799	Steelmaking Method Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Analysis											CE (IIW)	CE (CSA)			
			C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti			Nb	B	
			0.12	1.07	0.014	0.002	0.27	0.04	0.06	0.01	0.02	0.004	0.002			0.001	0.0003	-
			Product	0.12	1.09	0.016	0.003	0.27	0.04	0.08	0.01	0.03	0.004	0.002	0.001	0.0002	0.32	0.28

Mechanical Properties														
Heat	Test Type	BSM-0799	Microstructure	Hardness HRBW	Flattening Test	Tension Test				Yield (Rt0.5) psi	Yield (Rp0.2) psi	Tensile (Rm) psi	V/T (Rt0.5/Rm)	Elongation (A) %
						50mm GL	Transverse: 19.1mm x WT	Longitudinal: 19.1mm x WT	46,700					
Heat	Heat		Ferrite & Pearlite	73	Pass					49,000	49,000	66,000	0.74	55

Heat	Test Standard	BSM-0799	Impact Test Sample Details CVN Longitudinal (X-Y) 10X10	Temp °C	Impact Energy			AVG	%	%	%	AVG	Lateral Expansion			
					J	J	J						mm	mm	mm	mm
	A/SA333			-45°C	298	297	298	298	100	100	100	100	unbroken	unbroken	unbroken	unbroken

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/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.

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

Mill Test Certificate approved by:

2013 Apr 9

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