



Bri-Steel Manufacturing Inc.
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Mill Test Certificate

Product: **Seamless Carbon Steel Pipe**

Product Heat Number: **BSM-0332**

Product Size: **NPS 24 XS**

Production Date: **May 17, 2012**

Production Method: **Hot Expansion**

Product Heat Treatment: **As-rolled**

Product Standards: **ASTM/ASME A/SA106-2011 Grade B/C, A/SA53-2012 Grade B Type S, NACE MR0175-2009**

Product Markings: **.BRI-STEEL MFG NPS 24 XS ASTM/ASME A/SA106 GR B/C A/SA53 GR B HEAT BSM-0332 (PIPE # LENGTH MASS) 125.5lb/ft NDE 970PSI NACE MR0175 2012/05 MADE IN CANADA.**

Product Details						Non-Destructive Testing									
Heat	Test Type	NPS	SCH	Pieces	Length	Mass lb/ft	Geiger µR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM E309	HydroTest 970 psi/5s	End Condition
BSM-0332	Heat	24	XS	10	DRL	125.50	<5	<20	Pass	Pass	Pass	---	Pass	Pass	37.5° Beve

Chemical Analysis (wt%)									
Steelmaking Method		C		Mn	P	S	Si	Cr	Cu
Heat	Test Type	Blast Furnace; EAF; Ladle	0.21		0.88	0.009	0.013	0.24	0.03
BSM-0332	Heat	Refining; Vacuum Degass							
				Mo	Ni	V	Ti	Nb	B
				0.01	0.04	0.003	0.001	0.002	0.0003
						CE			CE
						(IIW)			(CSA)
						0.37			0.38

Mechanical Properties											
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test		Yield (Rt0.5) psi	Yield (Rp0.2) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
					50mm GL, 38mm x WT	Transverse					
BSM-0332	Heat	Ferrite & Pearlite	75	Pass	Longitudinal		41,100	39,200	72,500	0.57	43
							44,600	45,300	72,500	0.62	44

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/SA106-2011, A/SA53-2012 and the purchase order requirements, and that the results meet the corresponding requirements.
- ✓ This pipe product meet 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 no mercury contamination.
- ✓ This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.

Mill Test Certificate approved by:

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

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2012 May 30