



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0249** Product Size: **NPS 20 STD** Production Date: **March 7, 2012**

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

Product Standards: **ASTM/ASME A/SA106-2011 Grade B/C, A/SA53-2010 Grade B Type S, NACE MR0175-2009**

Product Markings: **.BRI-STEEL MFG NPS 20 STD ASTM/ASME A/SA106 GR B/C A/SA53 GR B HEAT BSM-0249 (PIPE # LENGTH MASS) NDE 910PSI NACE MR0175 2012/03 MADE IN CANADA.**

Product Details				Non-Destructive Testing												
Heat	Test Type	NPS	SCH	Pieces	Length	Mass	Geiger	Res. Mag.	Visual	OD	UT	UT	ET	HydroTest	End	
BSM-0249	Heat	20	STD	4	DRL	78.60	µR/hr	Gauss	Insp.	Pass	Pass	ASTM E213	ASTM E309	910 psi/5s	Pass	37.5" Bevel

Steelmaking Method				Chemical Analysis (wt%)														
Heat	Test Type	Blast Furnace; EAF; Ladle		C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE	CE
BSM-0249	Heat	Refining; Vacuum Degass		0.21	0.89	0.012	0.008	0.26	0.03	0.11	0.03	0.04	0.003	0.001	0.001	0.0002	0.38	0.39

Mechanical Properties											
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test		Yield (Rt0.5)	Yield (Rp0.2)	Tensile (Rm)	Y/T	Elongation (A)
BSM-0249	Heat	Ferrite & Pearlite	HRBW	Pass	50mm GL, 38mm x WT	Transverse	psi	psi	psi	(Rt0.5/Rm)	%
			78		Longitudinal		43,000	42,200	72,000	0.60	35
							49,900	49,700	74,000	0.67	43

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/SA53-2010 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:


 2012 MAR 21

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