



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0609** Product Size: **NPS 20 SCH 120** Production Date: **December 13, 2012**

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

Product Standards: **ASME B36.10-2004, ASTM/ASME A/SA106-2011 Grade B NDE, A/SAS3-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010**

Product Markings: **.BRI-STEEL MFG ASTM/ASME A/SA106 GR B A/SAS3 GR B NPS 20 SCH 120 HEAT BSM-0609 (PIPE # LENGTH MASS) 296.4lb/ft NDE SMIS NACE MR0175 2012/12 MADE IN CANADA.**

Product Details						Non-Destructive Testing									
Heat	Test Type	NPS	Wall Thickness	Pieces	Length	Mass lb/ft	Geiger μ R/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM E309	HydroTest	End Condition
BSM-0609	Heat	20	SCH 120	6	DRL	296.40	<5	<20	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-0609	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	0.18	1.00	0.015	0.002	0.30	0.04	0.09	0.01	0.03	0.005	0.003	0.001	0.0001	-
		Product	0.20	0.99	0.017	0.005	0.28	0.03	0.10	0.01	0.04	0.004	0.003	0.001	0.0002	0.38	0.39

Mechanical Properties												
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test					Y/T	Elongation (A) %	
					50mm GL		Yield (Rp0.2) psi	Yield (Rp0.2) psi	Tensile (Rm) psi			Y/T (Rt0.5/Rm)
					Transverse; 19.1mm x WT	Longitudinal; 19.1mm x WT						
BSM-0609	Heat	Ferrite & Pearlite	76	Pass	46,700	47,000	69,500	69,500	68,500	0.67	51	
					41,400	40,400	68,500	68,500	68,500	0.60	49	

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/SAS3-2012 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:


 2013 Jan 8
 Kenton Dechant, P. Eng.
 Manager of Quality and R&D