



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0806** Product Size: **NPS 20 TRUE80** Production Date: **April 3, 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 20 TRUE80 1.031 inchWT HEAT BSM-0806 (PIPE # LENGTH MASS) 208.9lb/ft NDE SMLS NACE MR0175 2013/04 MADE IN CANADA.**

Product Details				Non-Destructive Testing											
Heat	Test Type	Product Size	Pieces	Length	Mass lb/ft	Geiger µR/hr	Res. Mag. Gauss	Visual Insp.	OD	WT	UT	UT	ET	HydroTest	End Condition
BSM-0806	Heat	NPS 20 TRUE80 1.031 in. WT	9	DRL	208.90	<5	<20	Pass	Pass	Pass	Pass	Pass	Pass	*	Plain End

Heat		Steelmaking Method	Chemical Analysis (wt%)														
BSM-0806	Test Type	Analysis	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE (IIW)	CE (CSA)
Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	Product	0.10	1.08	0.008	0.002	0.26	0.09	0.07	0.02	0.02	0.002	0.002	0.001	0.0002	-	-
			0.14	1.08	0.015	0.004	0.25	0.10	0.06	0.03	0.02	0.003	0.002	0.001	0.0001	0.35	0.33

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %	
BSM-0806	Heat	Ferrite & Pearlite	71	Pass	46,900	65,000	0.72	59	

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy				Lateral Expansion						
				J	J	J	AVG	mm	mm	mm	AVG			
BSM-0806	A/SA333	CVN Longitudinal (X-Y) 10x10	-45°C	298	298	298	298	100	100	100	100	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.

Mill Test Certificate approved by:

[Signature]
 2013 Apr 12

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

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