



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0991** Product Size: **NPS 20 SCH 60** Production Date: **June 13, 2013**

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

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

Product Markings: **BRI-STEEL MFG ASTM/ASME A/SA106 GR B/C A/SA53 GR B NPS 20 SCH 60 0.812 inchWT HEAT BSM-0991 (PIPE # LENGTH MASS) 166.4lb/ft NDE SMLS NACE MR0175 2013/06 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 Condition
BSM-0991	Heat	NPS 20 SCH 60 0.812 in.WT	8	DRL	166.40 lb/ft	µR/hr	Gauss	Insp.	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	CE
BSM-0991	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.18	0.91	0.011	0.006	0.24	0.05	0.07	0.01	0.04	-	-	-	0.0005	-	-
		Product	0.20	0.88	0.013	0.009	0.26	0.06	0.07	0.01	0.04	0.004	0.001	0.001	0.0002	0.37	0.38

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test	Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
BSM-0991	Heat	Ferrite & Pearlite	75	Pass	50mm GL Longitudinal; 38.1mm x WT	42,800	70,500	0.61	51
Heat	Test Standard	Impact Test Sample Details	Temp °C	J	Impact Energy	% Shear	AVG	mm	Lateral Expansion
BSM-0991	-	-	-	-	J	-	AVG	mm	mm

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 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: *Paul Sowden*
 Paul Sowden, T.T.
 Assistant QA Manager
 2013 JUN 14