



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-1179** Product Size: **NPS 14 SCH 120** Production Date: **August 23, 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 14 SCH 120 1.094 inchWT HEAT BSM-1179 (PIPE # LENGTH MASS) 150.7lb/ft NDE SMIS NACE MR0175 2013/08 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-1179	Heat	NPS 14 SCH 120 1.094 In.WT	4	DRL	lb/ft 150.70	µR/hr <5	Gauss <20	Insp. Pass	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-1179	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.19	0.94	0.014	0.002	0.29	0.05	0.06	0.01	0.02	0.002	0.002	0.001	0.0003	-	-
		Product	0.22	0.94	0.018	0.003	0.30	0.06	0.06	0.01	0.03	0.004	0.002	0.001	0.0001	0.40	0.41

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test	Yield (Rt0.5)	Tensile (Rm)	Y/T	Elongation (A)
BSM-1179	Heat	Ferrite & Pearlite	HRBW 78	Pass	50mm GL Longitudinal; 19.1mm x WT	psi 46,000	psi 72,000	(Rt0.5/Rm) 0.64	% 46
Heat	Test Standard	Impact Test Sample Details	Temp °C	J	Impact Energy	% Shear	AVG	mm	Lateral Expansion
BSM-1179	-	-	-	-	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*

2013 AUG 29

Paul Sowden, T.T.
Assistant QA Manager