



Bri-Steel Manufacturing Inc.
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Mill Test Certificate

Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-1070** Product Size: **NPS 16 SCH 100** Production Date: **July 18, 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 16 SCH 100 1.031 inchWT HEAT BSM-1070 (PIPE # LENGTH MASS) 164.8lb/ft NDE SMILS NACE MR0175 2013/07 MADE IN CANADA.**

Product Details				Non-Destructive Testing											
Heat	Test Type	Product Size	Pieces	Length	Mass	Geiger	Res. Mag.	Visual	OD	WT	UT	UT	ET	HydroTest	End Condition
BSM-1070	Heat	NPS 16 SCH 100 1.031 in. WT	4	DRL	164.80 lb/ft	<5 µR/hr	<20 Gauss	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	CE
BSM-1070	Blast Furnace: EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.20	0.85	0.011	0.005	0.28	0.04	0.06	0.01	0.02	0.005	0.001	0.001	0.0001	-	-
		Product	0.21	0.90	0.013	0.003	0.30	0.05	0.07	0.01	0.03	0.004	0.002	0.001	0.0002	0.38	0.39

Mechanical Properties											
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test	Yield (Rt0.5)	Tensile (Rm)	Y/T	Elongation (A)		
BSM-1070	Heat	Ferrite & Pearlite	HRBW 77	Pass	50mm GL	psi	psi	(Rt0.5/Rm)	%		
					Longitudinal: .19, 1mm x WT	49,700	73,000	0.68	51		
Heat	Test	Impact Test	Temp	Impact Energy		% Shear		Lateral Expansion			
BSM-1070	Standard	Sample Details	°C	J	J	%	%	mm	mm	mm	AVG
			-	-	-	-	-	-	-	-	-

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 JUL 18