



Bri-Steel Manufacturing Inc.
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Mill Test Certificate

Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0785** Product Size: **NPS 14 SCH 140** Production Date: **March 25, 2013**
 Production Method: **Hot Expansion** Product Heat Treatment: **As-rolled** Certificate No.: **0090**

Product Standards: **ASME B36.10-2004, ASTM/ASME A/SA333-2010 Grade 6, 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/SA333 GR 6 LT(M45C) A/SA106 GR B/C A/SA53 GR B NPS 14 SCH 140 1.25 inchWT HEAT BSM-0785 (PIPE # LENGTH MASS) 170.2lb/ft NDE SMLS NACE MR0175/MR0103 2013/03 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-0785	Heat	NPS 14SCH 140 1.25 in.WT	9	DRL	lb/ft 170.20	µR/hr <5	Gauss <20	Insp. Pass	Pass	Pass	Pass	Pass	Pass	---

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-0785	Blast Furnace; EAF; Ladle Refining;	Heat	0.21	0.88	0.015	0.003	0.30	0.05	0.05	0.01	0.02	0.003	0.002	0.001	0.0003	-	-
	Vacuum Degass; Fully Killed	Product	0.18	0.91	0.017	0.003	0.31	0.06	0.05	0.03	0.02	0.004	0.002	0.001	0.0001	0.36	0.36

Mechanical Properties											
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test		Yield (Rp0.2) psi	Yield (Rp0.2) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
					50mm GL	19.1mm x WT					
BSM-0785	Heat	Ferrite & Pearlite	76	Pass	Transverse; 19.1mm x WT	47,900	59,000	56,000	74,000	0.80	43
					Longitudinal; 19.1mm x WT	47,900	47,600	71,500	0.67	52	

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy			% Shear			Lateral Expansion						
				J	J	J	%	%	%	mm	mm	mm	mm	mm	mm	
BSM-0785	A333-6	CVN Longitudinal (X-Y) 10x10mm	-45°C	45	50	33	42	5	5	5	5	5	0.73	0.77	0.62	0.71
				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/SA333-2010, 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]
 2016 July 8

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