



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0647** Product Size: **NPS 24 TRUE80** Production Date: **January 10, 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 24 TRUE80 HEAT BSM-0647 (PIPE # LENGTH MASS) 296.4lb/ft NDE SMIS NACE MR0175 2013/01 MADE IN CANADA.**

Product Details				Non-Destructive Testing												
Heat	Test Type	NPS	Wall Thickness	Pieces	Length	Mass	Geiger	Res. Mag.	Visual	OD	UT	UT	ET	HydroTest	End Condition	
BSM-0647	Heat	24	TRUE80	7	DRL	296.40	µR/hr	Gauss	Insp.	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-0647	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.15	1.03	0.020	0.002	0.34	0.07	0.06	0.03	0.02	0.007	0.003	0.001	0.0001	-	-
		Product	0.17	1.08	0.025	0.004	0.31	0.06	0.06	0.03	0.03	0.007	0.003	0.001	0.0002	0.38	0.38

Mechanical Properties											
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test		Yield (Rt0.5) psi	Yield (Rp0.2) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
					50mm GL	50mm GL					
BSM-0647	Heat	Ferrite & Pearlite	75	Pass	Transverse: 38.1mm x WT	Longitudinal: 38.1mm x WT	46,600	47,400	70,000	0.62	62

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.

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

Mill Test Certificate approved by:

[Signature]
 2013 Jan 30

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



Mill Test Certificate

Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0647** Product Size: **NPS 24 SCH60** Production Date: **January 10, 2013**

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

Product Standards: **ASME B36.10-2004, ASTM/ASME A/SAA106-2011 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 24 SCH60 HEAT BSM-0647 (PIPE # LENGTH MASS) 296.4lb/ft NDE SMIS NACE MR0175 2013/01 MADE IN CANADA.**


Product Details				Non-Destructive Testing											
Heat	Test Type	NPS	Wall Thickness	Pieces	Length	Mass	Geiger	Res. Mag.	Visual	OD	UT	UT	ET	HydroTest	End Condition
BSM-0647	Heat	24	SCH60	7	DRL	296.40	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
			Heat	0.15	1.03	0.020	0.002	0.34	0.07	0.06	0.03	0.02	0.007	0.003	0.001	0.0001	-
BSM-0647	Vacuum Degass: Fully Killed	Product	0.17	1.08	0.025	0.004	0.31	0.06	0.06	0.03	0.03	0.007	0.003	0.001	0.0002	0.38	0.38

Mechanical Properties												
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test		Yield (Rt0.5)	Yield (Rp0.2)	Tensile (Rm)	Y/T	Elongation (A)	
					50mm GL	Transverse: 38.1mm x WT						psi
BSM-0647	Heat	Ferrite & Pearlite	75	Pass	Longitudinal: 38.1mm x WT	43,600	43,800	70,000	0.62	68,500	0.68	62

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.
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Mill Test Certificate approved by: 
 Kenton Dechant, P.Eng,
 Manager of Quality and R&D