



# Mill Test Certificate

Bri-Steel Manufacturing Inc.  
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Product: Seamless Carbon Steel Pipe      Product Heat Number: BSM-1605      Production Date: Feb 05, 2014  
Production Method: Hot Expansion      Product Heat Treatment: As-rolled      Certificate No.: MTR- 001499  
Product Standards: ASME B36.10-2004, ASTM/ASME A106-2014/SA106-2013 Grade B NDE, A53-2012/SA53-2013 Grade B Type S, NACE MR0175-2009 MR0103-2012

## Product Markings



NPS 20 SCH 100 1.281 INCHWT SMLS 2014/02 NDE  
HEAT BSM-1605 (PIPE # LENGTH MASS) 256.1lb/ft ASTM/ASME A/SA106 GR B A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

Product: Details					Non-Destructive Testing									
Heat	Test Type	Product Size	Pieces	Length	Mass lb/ft	Geiger $\mu$ R/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM	HydroTest	End Condition
BSM-1605	Heat	NPS 20 SCH 100 1.281in. WT	3	DRL	256.1	<5	<10	Pass	Pass	Pass	Pass	Pass	*	Plain End

Chemical Analysis (wt%)																	
Heat	Steelmaking Method	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(CSA)
			Heat	0.19	0.85	0.006	0.008	0.21	0.04	0.06	0.01	0.03				0.0002	-
		Degas: Fully Killed Product	0.19	0.83	0.008	0.009	0.21	0.05	0.06	0.02	0.03	0.002	0.001	0.000	0.0002	0.35	0.35
BSM-1605	Blast Furnace: EAF; Ladle Refining: Vacuum Degas; Fully Killed																

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 50mm GL	Yield (Rt0.5) psi	Tensile (Rm) psi	V/T (Rt0.5/Rm)	Elongation (A) %
Heat	Heat	Ferrite & Pearlite	70 HRBW	Pass	Longitudinal; 19.05 mm x WT	35,200	66,500	0.53	48
BSM-1605									

Heat	Test Standard	Impact Test Sample Details	Temp $^{\circ}$ C	Impact Energy					% Shear					Lateral Expansion				
				J	J	J	AVG	%	%	%	AVG	mm	mm	mm	mm	mm	mm	AVG
BSM-1605	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

## 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 A106-2014/SA106-2013 Grade B A53-2012/SA53-2013, and the purchase order requirements, and that the results meet the corresponding requirements. Bri-Steel Manufacturing is registered and certified to ISO-9001:2008 and API Q1.

Mill Test Certificate approved by:

✓ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service-2009 NACE MR0103-2012 Section 2.1

*T. Lam* Dec 10/2014

✓ No weld repairs have been performed on this product.

Tonya Lam, C.E.T.  
Assistant QA Manager

✓ 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.