



# Mill Test Certificate

Bri-Steel Manufacturing Inc.  
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Product: Seamless Carbon Steel Pipe      Product Heat Number: BSM-1616      Production Date: Feb 06, 2014  
Production Method: Hot Expansion      Product Heat Treatment: As-rolled      Certificate No.: MTR- 000855  
Product Standards: ASME B36.10-2004, ASTM/ASME A/SA106-2013 Grade B/C NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009 MR0103-2010

## Product Markings



NPS 22 X 0.450 INCHWT SMLS 2014/02 NDE 1720PSI  
HEAT BSM-1616 (PIPE # LENGTH MASS) 103.5lb/ft ASTM/ASME A/SA106 GR B/C 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	UT	ET	HydroTest	End Condition
BSM-1616	Heat	NPS 22 X 0.450in. WT	2	DRL	103.5	<5	<10	Pass	Pass	Pass	Pass	Pass	Pass	32.5° Bevel

Steelmaking Method		Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(CSA)
BSM-1616	Blast Furnace, EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.21	0.85	0.015	0.016	0.22	0.04	0.01		0.04						-
		Product	0.22	0.92	0.019	0.017	0.25	0.06	0.01	0.00	0.04	0.003	0.002	0.001	0.0003	0.39	0.39

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 50mm GL	Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
BSM-1616	Heat	Ferrite & Pearlite	75 HRBW	Pass	Longitudinal; 38.1 mm x WT	45,700	73,500	0.62	42

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy					% Shear					Lateral Expansion			
				J	J	J	AVG	%	%	%	AVG	mm	mm	mm	mm	mm	AVG
BSM-1616	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

## 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/SA106-2013 Grade B/C 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-2009 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*  
2014 FEB 12

Paul Sowden, T.I.  
Assistant QA Manager