



# Mill Test Certificate

Bri-Steel Manufacturing Inc.  
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-1695 Product Size: 20S60 Production Date: Mar 11, 2014  
Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 000944  
Product Standards: ASME B36.10-2004, ASTM/ASME A/SA106-2013 Grade B NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009 MR0103-2010

## Product Markings



NPS 20 SCH 60 0.812 INCHWT SMLS 2014/03 NDE  
HEAT BSM-1695 (PIPE # LENGTH MASS) 166.4lb/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-1695	Heat	NPS 20 SCH 60 0.812in. WT	3	DRL	166.4	<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	0.13	1.05	0.007	0.002	0.26	0.05	0.08	0.03	0.04	0.030			-	-
BSM-1695	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Product	0.14	1.06	0.007	0.002	0.27	0.05	0.08	0.03	0.03	0.029	0.001	0.001	0.0003	0.34	0.34

## 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-1695	Heat	Ferrite & Pearlite	73 HRBW	Pass	Longitudinal; 38.1 mm x WT	43,100	65,000	0.66	54

Heat	Test Standard	Impact Test Sample Details	Temp $^{\circ}$ C	Impact Energy					% Shear			Lateral Expansion		
				J	J	J	AVG	%	%	%	AVG	mm	mm	mm
BSM-1695	-	-	-	-	-	-	-	-	-	-	-	-	-	-

## 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 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.

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

Mill Test Certificate approved by:

  
2014 Mar 13

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