



# Mill Test Certificate

Bri-Steel Manufacturing Inc.  
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Product: Seamless Carbon Steel Pipe

Product Heat Number: BSM-1796

Product Size: 20S160

Production Date: Apr 28, 2014

Production Method: Hot Expansion

Product Heat Treatment: As-rolled

Certificate No.: MTR- 001064

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 160 1.969 INCHWT SMLS 2014/04 NDE 2800PSI

HEAT BSM-1796 (PIPE # LENGTH MASS) 379lb/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 μR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM	HydroTest 2800 PSI/ 5 s	End Condition
BSM-1796	Heat	NPS 20 SCH 160 1.969in. WT	2	DRL	379	<5	<10	Pass	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)
BSM-1796	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.20	0.94	0.012	0.002	0.30	0.03	0.05	0.01	0.02	0.004	0.003	0.001		-	
		Product	0.21	0.91	0.008	0.005	0.30	0.04	0.06	0.01	0.03	0.002	0.001	0.001	0.0002	0.38	0.38

Mechanical Properties										Yield (Rt0.5) psi			Tensile (Rm) psi			V/T (Rt0.5/Rm)		Elongation (A) %	
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 50mm GL					38,800			67,000			0.58		52	
BSM-1796	Heat	Ferrite & Pearlite	74 HRBW	Pass	Longitudinal; 19.05 mm x WT														

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy J				AVG	% Shear				AVG	Lateral Expansion mm				AVG
BSM-1796	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

## 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.

Mill Test Certificate approved by:

*Paul Sowden*  
2014 MAY 15

Paul Sowden, T.T.  
Assistant QA Manager