



# Mill Test Certificate

Bri-Steel Manufacturing Inc.  
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Product: Seamless Carbon Steel Pipe      Product Heat Number: BSM-2256      Product Size: 20S140      Production Date: Feb 24, 2015  
Production Method: Hot Expansion      Product Heat Treatment: As-rolled      Certificate No.: MTR- 001598  
Product Standards: ASME B36.10-2004, ASTM/ASME A/SA333-2013 Grade 6 LT(M45C) A106-2014/SA106-2013 Grade B/C NDE, A53-2012/SA53-2013 Grade B Type S, NACE MR0175-2009 MR0103-2012  
Product Markings: NPS 20 SCH 140 1.750 INCHWT SMLS 2015/02 NDE  
HEAT BSM-2256 (PIPE # LENGTH MASS) 34.1.1lb/ft ASTM/ASME A/SA333 GR 6 LT(M45C) 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 μR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM	HydroTest	End Condition
BSM-2256	Heat	NPS 20 SCH 140 1.750in. WT	2	DRL	341.1	<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	1.03	0.006	0.001	0.28	0.11	0.11	0.03	0.07	0.003	0.001	0.001	0.0001	-
		Product	0.18	1.03	0.006	0.002	0.28	0.12	0.11	0.03	0.06	0.005	0.002	0.001	0.0002	0.39	0.39

Mechanical Properties										Yield (Rt0.5) psi			Tensile (Rm) psi			Y/T (Rt0.5/Rm)			Elongation (A) %		
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 50mm GL					psi			psi			(Rt0.5/Rm)			%		
BSM-2256	Heat	Ferrite & Pearlite	75 HRBW	Pass	Longitudinal; 19.05 mm x WT					46,400			71,000			0.65			53		

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy J			% Shear			Lateral Expansion mm			AVG		
BSM-2256	ASTM A333	CVN Long 10 x 10 mm	-45	82.0	109.5	114.0	101.8	30	35	45	37	1.32	1.70	1.82	1.61

## 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/SA333-2013 Grade 6 LT(M45C) A106-2014/SA106-2013 Grade B/C 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.
- ✓ 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
- ✓ 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.

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Mill Test Certificate approved by:

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

*Tonya Lam* Feb 27/2015