




# Mill Test Certificate

Bri-Steel Manufacturing  
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Product: Seamless Carbon Steel Pipe      Product Heat Number: BSM-1677      Product Size: NPS 14 TRUE 40      Production Date: Feb 27, 2014  
Production Method: Hot Expansion      Product Heat Treatment: ThermoMechanical Formed      Certificate No.: MTR- 002060  
Product Standards: ASME B36.10M-2015, ASTM/ASME A333-2015/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 14 TRUE 40 0.438 INCHWT SM1S 2014/02 NDE  
HEAT BSM-1677 (PIPE # LENGTH MASS) 63.67lb/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 $\mu$ R/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM E309	HydroTest	End Condition
BSM-1677	Heat	NPS 14 TRUE 40 0.438in. WT	31	DRL	63.67	<5	<10	Pass	Pass	Pass	Pass	Pass		34° Bevel

Heat		Steelmaking Method	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(CSA)
BSM-1677		Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.18	0.91	0.012	0.012	0.23	0.03	0.06	0.01	0.04	-	-	-	0.0005	0.35	0.35
			Product	0.20	0.91	0.013	0.012	0.24	0.03	0.07	0.01	0.03	0.003	0.001	0.001	0.0003	0.37	0.37
				0.20	0.91	0.013	0.012	0.24	0.03	0.07	0.01	0.03	0.003	0.001	0.001	0.0003	0.37	0.37

## Mechanical Properties

Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 2 in. GL	Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
BSM-1677	Heat	Ferrite & Pearlite	74 HRBW	Pass	Longitudinal; 1.5 in. x WT	41,800	72,000	0.58	41
				Pass	Longitudinal; 1.5 in. x WT	41,800	72,000	0.58	41

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy				% Shear			Lateral Expansion		
				J	J	J	AVG	%	%	%	mm	mm	mm
BSM-1677	ASTM A333	CVN long 10 x 10 mm	-45	25.0	17.5	26.0	22.8	0	0	0	0.46	0.16	0.41


## Additional Details:

✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with ASTM/ASME A333-2015/SA333-2013, A106-2014/SA106-2013, 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, API Q1, and PED 97/23/EC.

✓ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service, and 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.
- \* Note that this product was hydrotested to 1000 psi for 5 seconds.

Mill Test Certificate approved by:

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