



# Mill Test Certificate

Bri-Steel Manufacturing  
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Product: Seamless Carbon Steel Pipe      Product Heat Number: BSM-2509      Product Size: NPS 18 STD      Production Date: Aug 31, 2015  
 Production Method: Hot Expansion      Product Heat Treatment: ThermoMechanical Formed      Certificate No.: MTR- 001925  
 Product Standards: ASME B36.10-2004, API 5L-45th Ed. GradeB/X42 PSL1, 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: <API & L/C No.> API SPEC 5L NPS 18 STD 0.375 INCHWT GRB/X42 PSL1 SMLS 2015/08 NDE 1490PSI  
 HEAT BSM-2509 (PIPE # LENGTH MASS) 70.59lb/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 E309	HydroTest 1490PSI/ 5 s	End Condition			
															Heat	Product	C
BSM-2509	Heat	NPS 18 STD 0.375in. WT	4	DRL	70.59	<5	<20	Pass	Pass	Pass	Pass	Pass	Pass	31° Bevel			
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-2509	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.16	1.16	0.010	0.002	0.27	0.01	0.01	0.01	0.02	0.050	0.001	0.001	0.0001	0.37	0.36
		Product	0.17	1.17	0.009	0.003	0.29	0.03	0.01	0.01	0.02	0.055	0.002	0.001	0.0002	0.39	0.39
			0.17	1.16	0.009	0.003	0.30	0.03	0.01	0.01	0.02	0.055	0.002	0.001	0.0002	0.38	0.38

Mechanical Properties

Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test		Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
					2 in. GL	1.5 in. x WT				
BSM-2509	Heat	Ferrite & Pearlite	83 HRBW	Pass	Longitudinal; 1.5 in. x WT	Longitudinal; 1.5 in. x WT	52,500	76,500	0.69	41
				Pass			49,400	75,500	0.65	41

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy			% Shear			Lateral Expansion						
				J	J	J	%	%	%	mm	mm	mm	mm	mm	mm	mm
BSM-2509	ASTM A333	CVN Long 10 x 7.5 mm	-48	78.0	100.0	88.0	88.7	20	40	30	30	30	1.80	2.18	1.94	1.97

Additional Details:  
 ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with API 5L-45th Ed., ASTM/ASME A/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 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, 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.

Mill Test Certificate approved by:

*T. Lam*      *Sept 10/31/2015*

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