



# Mill Test Certificate

Bri-Steel Manufacturing  
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Product: Seamless Carbon Steel Pipe      Product Heat Number: BSM-2541      Product Size: NPS 24 TRUE 80      Production Date: Sep 28, 2015  
 Production Method: Hot Expansion      Product Heat Treatment: ThermoMechanical Formed      Certificate No.: MTR- 001960  
 Product Standards: ASME B36.10-2004, API 5L-45th Ed. GradeB 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 24 TRUE 80 1.219 INCHWT GRB PSL1 SM1S 2015/09 NDE 2160PSI  
 HEAT BSM-2541 (PIPE # LENGTH MASS) 296.4lb/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	Gelger μR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM E309	HydroTest 2160PSI/ 5 s	End Condition	
BSM-2541	Heat	NPS 24 TRUE 80 1.219in. WT	4	DRL	296.4	<5	<10	Pass	Pass	Pass	Pass	Pass	Pass	Plain End	

Heat	Steelmaking Method	Test Type	Chemical Analysis (wt%)																	
			C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(I/W)	CE(CSA)			
			0.17	1.17	0.012	0.003	0.26	0.02	0.01	0.01	0.02	0.03	0.050	0.001	0.001	0.0001	0.38	0.38		
BSM-2541	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.17	1.17	0.012	0.003	0.26	0.02	0.01	0.01	0.01	0.01	0.02 <td>0.03 <td>0.070 <td>0.002 <td>0.001 <td>0.0003 <td>0.40 <td>0.41 </td></td></td></td></td></td></td>	0.03 <td>0.070 <td>0.002 <td>0.001 <td>0.0003 <td>0.40 <td>0.41 </td></td></td></td></td></td>	0.070 <td>0.002 <td>0.001 <td>0.0003 <td>0.40 <td>0.41 </td></td></td></td></td>	0.002 <td>0.001 <td>0.0003 <td>0.40 <td>0.41 </td></td></td></td>	0.001 <td>0.0003 <td>0.40 <td>0.41 </td></td></td>	0.0003 <td>0.40 <td>0.41 </td></td>	0.40 <td>0.41 </td>	0.41
		Product	0.18	1.17	0.017	0.005	0.29	0.04	0.01	0.01	0.01	0.01	0.03 <td>0.03 <td>0.070 <td>0.002 <td>0.001 <td>0.0003 <td>0.40 <td>0.41 </td></td></td></td></td></td></td>	0.03 <td>0.070 <td>0.002 <td>0.001 <td>0.0003 <td>0.40 <td>0.41 </td></td></td></td></td></td>	0.070 <td>0.002 <td>0.001 <td>0.0003 <td>0.40 <td>0.41 </td></td></td></td></td>	0.002 <td>0.001 <td>0.0003 <td>0.40 <td>0.41 </td></td></td></td>	0.001 <td>0.0003 <td>0.40 <td>0.41 </td></td></td>	0.0003 <td>0.40 <td>0.41 </td></td>	0.40 <td>0.41 </td>	0.41
			0.16	1.14	0.015	0.005	0.28	0.05	0.01	0.01	0.01	0.03 <td>0.03 <td>0.067 <td>0.002 <td>0.001 <td>0.0003 <td>0.38 <td>0.37 </td></td></td></td></td></td></td>	0.03 <td>0.067 <td>0.002 <td>0.001 <td>0.0003 <td>0.38 <td>0.37 </td></td></td></td></td></td>	0.067 <td>0.002 <td>0.001 <td>0.0003 <td>0.38 <td>0.37 </td></td></td></td></td>	0.002 <td>0.001 <td>0.0003 <td>0.38 <td>0.37 </td></td></td></td>	0.001 <td>0.0003 <td>0.38 <td>0.37 </td></td></td>	0.0003 <td>0.38 <td>0.37 </td></td>	0.38 <td>0.37 </td>	0.37	

Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 2 in. GI		Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
					Longitudinal; 0.5 in. Round Bar	Longitudinal; 0.5 in. Round Bar				
BSM-2541	Heat	Ferrite & Pearlite	81 HRBW	Pass	Pass	53,000	75,500	0.70	37	
				Pass		52,000	74,500	0.70	40	

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy			% Shear			Lateral Expansion								
				J	J	J	%	%	%	mm	mm	mm	mm	mm	mm	mm	mm	mm
BSM-2541	ASTM A333	CVN Long 10 x 10 mm	-45	74.0	74.0	75.0	74.3	15	15	15	15	15	15	1.09	1.12	1.12	1.07	1.09

**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: Tonya Lam *Sept/30/2015*

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