



# Mill Test Certificate

Bri-Steel Manufacturing  
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Product: Seamless Carbon Steel Pipe      Product Heat Number: BSM-2637      Product Size: NPS 24 TRUE 80      Production Date: Feb 03, 2016  
 Production Method: Hot Expansion      Product Heat Treatment: As Rolled      Certificate No.: MTR- 002080  
 Product Standards: ASME B36.10M-2015, ASTM/ASME A333-2015/SA333-2013 Grade 6 LT(M45C) A106-2014/SA106-2013 Grade B NDE, A53-2012/SA53-2013 Grade B Type S, NACE MR0175-2009  
 MR0103-2012  
 Product Markings: NPS 24 TRUE 80 1.219 INCHWT SMLS 2016/02 NDE 2100PSI  
 HEAT BSM-2637 (PIPE # LENGTH MASS) 296.4lb/ft ASTM/ASME A/SA333 GR 6 LT(M45C) 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 $\mu$ R/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM E309	HydroTest 2100PSI/ 5 s	End Condition	
BSM-2637	Heat	NPS 24 TRUE 80 1.219in. WT	4	DRL	296.4	<5	<20	Pass	Pass	Pass	Pass	-	Pass	Plain End	

Heat	BSM-2637	Steelmaking Method Blast Furnace; LF; Ladle Refining; Vacuum Degass; Fully Killed	Chemical Analysis (wt%)																
			Test Type		C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(CSA)
			Heat	Product	0.16	1.18	0.010	0.002	0.26	0.02	0.01	0.01	0.01	0.02	0.001	0.001	0.001	0.0001	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-2637	Heat	Ferrite & Pearlite	75 HRBW	Pass	Longitudinal; 0.5 in. Round Bar Longitudinal; 0.5 in. Round Bar	47,600	68,500	0.69	37
				Pass		40,900	64,000	0.64	36

Heat	Test Standard	ASTM A333	Impact Test Sample Details CVN Long 10 x 10 mm	Temp °C	Impact Energy				% Shear				Lateral Expansion			
					J	J	J	AVG	%	%	%	AVG	mm	mm	mm	mm
BSM-2637				-45	132.0	290.0	125.0	182.3	40	100	40	60	1.82	unbroken	1.76	1.79

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.

Mill Test Certificate approved by:  
  
 Tonya Lam, C.E.T.  
 Assistant QA Manager  
 Feb 10 2016