




# Mill Test Certificate

Bri-Steel Manufacturing  
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Product: Seamless Carbon Steel Pipe      Product Heat Number: BSM-2958      Product Size: NPS 24 TRUE 80      Production Date: Nov 21, 2016  
 Production Method: Hot Expansion      Product Heat Treatment: Normalizing Forming      Certificate No.: MTR- 003058  
 Product Standards: ASME B36.10M-2015, API 5L-45th Ed. GradeB PSL1, ASTM/ASME A333-2016/SA333-2015 Grade 6 LT(M45C) A106-2014/SA106-2015 Grade B/C NDE, A53-2012/SA53-2015 Grade B Type S, NACE MR0175/ISO 15156-2:2009 MR0103/ISO 17495:2015  
 Product Markings:  <API & L/C No.> API SPEC 5L NPS 24 TRUE 80 1.219 INCHWT GRB PSL1 SM1S 2016/11 NDE 2400PSI  
 HEAT BSM-2958 (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) ASTM E114	UT ASTM E213	ET ASTM E309	HydroTest 2400PSI/ 5 s	End Condition
BSM-2958	Heat	NPS 24 TRUE 80 1.219in. WT	5	DRL	296.4	<5	<10	Pass	Pass	Pass	N12.5 Pass	-	Pass	Plain End

Heat	Test Type	Steelmaking Method	Chemical Analysis (wt%)																	
			Test Type		C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(IIW)Max	CE(CSA)
			Heat	Product	0.15	1.15	0.010	0.002	0.25	0.02	0.01	0.01	0.01	0.01	0.01	0.050	0.001	0.001	0.0001	0.36
BSM-2958	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed (at TRCO China)		0.16	1.16	0.018	0.004	0.27	0.04	0.01	0.01	0.01	0.01	0.01	0.058	0.002	0.001	0.0003	0.38	-	0.37
			0.16	1.16	0.016	0.004	0.27	0.04	0.01	0.01	0.01	0.01	0.059	0.002	0.001	0.0003	0.38	-	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-2958	Heat	Ferrite & Pearlite	79 HRBW	Pass	Longitudinal; 0.5 in. Round Bar	49 700	76 000	0.65	35
				Pass	Longitudinal; 0.5 in. Round Bar	47 900	71 500	0.67	35

Heat	Test	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)	Impact Energy Results (J)	Shear (%)	Lateral Expansion (mm)
BSM-2958	Standard	Pass	CVN Long 10 x 10 mm	-45	(3 Tests) AVG (14/14/14) 18	(3 Tests) AVG (79/66/82) 76	(3 Tests) AVG (15/10/15) 13	(3 Tests) AVG (1.30/1.00/1.37) 1.22
	ASTM A333	Pass						

**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 A333-2016/SA333-2015, A106-2014/SA106-2015, A53-2012/SA53-2015, and the purchase order requirements, and that the results meet the corresponding requirements. Bri-Steel Manufacturing is registered and certified to ISO-9001:2008 (APIQR-1584), API Q1, and PED 2014/68/EU.

✓ 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/ISO 17495:2015 Section 13.1

✓ 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* Nov 28 2016

Tonya Lam, P. Tech (Eng.)  
 Assistant QA Manager