



# Mill Test Certificate

Bri-Steel Manufacturing  
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Product: Seamless Carbon Steel Pipe    Product Heat Number: BSM-2948    Product Size: NPS 24 STD    Production Date: Nov 14, 2016  
 Production Method: Hot Expansion    Product Heat Treatment: Normalizing Forming    Certificate No.: MTR- 003040

Product Standards: ASME B36.10M-2015, API 5L-45th Ed. Grade B 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,



Product Markings: <API & L/C No.> API SPEC 5L NPS 24 STD 0.375 INCHWT GRB PSL1 SMLS 2016/11 NDE 750PSI  
 HEAT BSM-2948 (PIPE # LENGTH MASS) 94.62lb/ft ASTM/ASME A/SA333 GR 6 LT(M45C) A/SA106 GR B/C A/SA53 GR B MADE IN CANADA

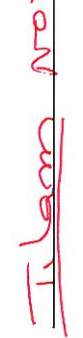
Product: Details		Non-Destructive Testing												
Heat	Test Type	Product Size	Pieces	Length	Mass lb/ft	Geiger µR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT (WT) ASTM E114	UT	ET	HydroTest	End Condition
BSM-2948	Heat	NPS 24 STD 0.375in. WT	6	DRL	94.62	<5	~22	Pass	Pass	N12.5 Pass	-	-	Pass	30° Bevel

Product: Details		Chemical Analysis (wt%)																
Heat	Test Type	Steelmaking Method	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	CE(IIW)	CE(IIW)Max	CE(CSA)	
BSM-2948	Heat	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed (at TPCO China)	0.17	1.14	0.011	0.003	0.32	0.03	0.03	0.01	0.01	0.058	0.002	0.003	0.0005	0.38	-	0.38
			0.16	1.14	0.009	0.004	0.35	0.03	0.03	0.03	0.01	0.01	0.062	0.001	0.0003	0.37	-	0.37
			0.18	1.15	0.008	0.003	0.34	0.03	0.03	0.03	0.01	0.01	0.062	0.002	0.0004	0.39	-	0.40

Product: Details		Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test	Yield (Rt0.5)	Tensile (Rm)	Y/T	Elongation (A)		
BSM-2948	Heat	Ferrite & Pearlite	0	Pass	2 in. GL	psi	psi	(Rt0.5/Rm)	%		
				Pass	Longitudinal; 1.5 in. x WT	53 000	78 000	0.68	42		
					Longitudinal; 1.5 in. x WT	49 800	77 000	0.65	44		

Heat	Test Standard	Test Result	Impact Test Sample Details	Impact Energy Min. (J)	Impact Energy Results (J)	Shear (%)	Lateral Expansion (mm)
BSM-2948	ASTM A333	Pass	CVN Long 10 x 7.5 mm	-48	(3 Tests) AVG (11/11/11) 14	(3 Tests) AVG (10/5/10) 8	(3 Tests) AVG (0.74/0.53/1.12) 0.80

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  
 ✓ 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, P. Tech (Eng.)  
 Assistant QA Manager