



# Mill Test Certificate

Bri-Steel Manufacturing  
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-3227 Product Size: NPS 18 STD Production Date: Aug 22, 2017  
 Production Method: Hot Expansion Product Heat Treatment: Normalizing Forming Certificate No.: MTR- 003486  
 Product Standards: ASME B36.10M-2015, API 5L-45th Ed. Grade X42 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 15156-2:2015 MR0103/ISO 17495:2015  
 Product Markings: <API & L/C No.> API SPEC 5L NPS 18 STD 0.375 INCHWT GR X42 PSL1 SMLS 2017/08 NDE 1490PSI  
 HEAT BSM-3227 (PIPE # LENGTH MASS) 70.69lb/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 $\mu\text{R/hr}$	Res. Mag. Gauss	Visual Insp.	OD	UT (WT)	UT	ET	HydroTest	End Condition		
BSM-3227	Heat	NPS 18 STD 0.375in. WT	11	DRL	70.69	<5	<10	Pass	Pass	Pass	ASTM E114	ASTM E213	ASTM E309	1490PSI/ 5 s	Pass	35° Bevel

Heat	BSM-3227	Steelmaking Method Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed (at TRCO China)	Chemical Analysis (wt%)																																			
			Test Type		C		Mn		P		S		Si		Cr		Cu		Mo		Ni		V		Ti		Nb		B		Mn/C		CE(IIW)		CE(IIW)Max		CE(CSA)	
			Heat	Product	0.16	0.17	1.28	1.27	0.009	0.009	0.009	0.010	0.31	0.32	0.04	0.05	0.04	0.04	0.01	0.01	0.01	0.01	0.044	0.003	0.002	0.002	0.001	0.0004	8.00	7.47	0.40	0.40	-	-	0.39	0.41		
			0.17	1.27	0.008	0.010	0.32	0.04	0.04	0.01	0.01	0.045	0.002	0.001	0.0003	7.47	0.40	-	-	0.40																		

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-3227	Heat	Ferrite & Pearlite	83 HRBW	Pass	Longitudinal: 1.5 in. x WT Longitudinal: 1.5 in. x WT	54 000	78 500	0.69	39	
				Pass		57 000	79 000	0.72	41	

Heat	Test Standard	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J)	Impact Energy Results (J)	Shear (%)	Lateral Expansion (mm)
BSM-3227	ASTM A333	Pass	CVN Long 8STR 10x7.5mm	-48	(11/11/11) 14	(3 Tests) AVG (94/89/98) 94	(50/50/50) 50	(2.04/1.90/2.06) 2.00

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., X42 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 9001:2015 (APIQR-1584), API Q1, and PED 2014/68/EU.  
 ✓ This pipe product meets the **SOUR SERVICE** requirements of ANSI/NACE MR0175/ISO 15156-2A:2015 (Annex A2 for Region 3 Sour Service), and ANSI/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.

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

*T. Lam* Aug 22/2017