



# Mill Test Certificate

Bri-Steel Manufacturing  
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Product: Seamless Carbon Steel Pipe      Product Heat Number: BSM-3189      Production Date: Jul 11, 2017  
 Production Method: Hot Expansion      Product Heat Treatment: Normalizing Forming      Certificate No.: MTR- 003405  
 Product Standards: ASME B36.10M-2015, API 5L-45th Ed. GradeB PSL1, ASTM/ASME 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



<API & L/C No.> API SPEC 5L NPS 20 STD 0.375 INCHWT GRB PSL1 SMLS 2017/07 NDE 900PSI  
 HEAT BSM-3189 (PIPE # LENGTH MASS) 78.71lb/ft ASTM/ASME 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	Geiger	Res. Mag.	Visual	OD	UT (WT)	UT	ET	HydroTest	End				
BSM-3189	Heat	NPS 20 STD 0.375in. WT	11	DRL	78.71	<5	<10	Pass	Pass	ASTM E114	ASTM E213	ASTM E309	900PSI/ 5s	Pass				
Chemical Analysis (wt%)																		
Heat	Steelmaking Method	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(IIW)Max	CE(CSA)
BSM-3189	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed (at TPCCO China)	Heat	0.15	1.26	0.015	0.005	0.33	0.04	0.03	0.01	0.02	0.039	0.002	0.004	0.0006	0.38	-	0.37
		Product	0.16	1.28	0.016	0.005	0.35	0.04	0.03	0.01	0.02	0.040	0.004	0.001	0.0005	0.39	-	0.39
			0.16	1.27	0.015	0.006	0.34	0.04	0.03	0.01	0.02	0.040	0.002	0.001	0.0005	0.39	-	0.39

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test	Yield (Rt0.5)	Tensile (Rm)	Y/T	Elongation (A)
BSM-3189	Heat	Ferrite & Pearlite	82 HRBW	Pass	Longitudinal, 1.5 in. x WT 2 in. GL	psi 53 000	psi 77 000	0.69	39

Heat	Test	Standard	Result	Impact Test	Temp °C	Impact Energy Min. (J)	Impact Energy Results (J)	Shear (%)	Lateral Expansion (mm)
BSM-3189	-	-	-	Sample Details	-	(3 Tests) AVG	(3 Tests) AVG	(3 Tests) AVG	(3 Tests) AVG

**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 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.

Mill Test Certificate approved by:  
  
 Tonya Lam, P. Tech (Eng.)  
 Assistant QA Manager  
 July 17/2017