



# Mill Test Certificate

Bri-Steel Manufacturing  
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Product: Seamless Carbon Steel Pipe      Product Heat Number: BSM-3048      Product Size: NPS 20 STD      Production Date: Feb 13, 2017  
 Production Method: Hot Expansion      Product Heat Treatment: Normalizing Forming      Certificate No.: MTR- 003162  
 Product Standards: ASME B36.10M-2015, API 5L-45th Ed. GradeB PSL1, ASTM/ASME A106-2014/SA106-2015 Grade B 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 20 STD 0.375 INCHWT GRB PSL1 SMLS 2017/02 NDE 800PSI  
 HEAT BSM-3048 (PIPE # LENGTH MASS) 78.71lb/ft ASTM/ASME 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	Gelger µR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT (WT) ASTM E114	UT ASTM E213	ET ASTM E309	HydroTest 800PSI/ 5s	End Condition
BSM-3048	Heat	NPS 20 STD 0.375in. WT	1	DRL	78.71	<5	<10	Pass	Pass	Pass	Pass	N12.5 Pass	Pass	35° Bevel

Heat	BSM-3048	Steelmaking Method Blast Furnace: EAF; Ladle Refining: Vacuum Degas: Fully Killed (at IPSCO China)	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	0.19	0.92	0.012	0.005	0.25	0.03	0.01	0.01	0.01	0.01	0.003	0.001	0.001	0.0001	0.35	-
						0.22	0.92	0.014	0.007	0.25	0.03	0.01	0.00	0.01	0.003	0.001	0.0002	0.38	-	0.39

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-3048	Heat	Ferrite & Pearlite	78 HRBW	Pass	Longitudinal: 1.5 in. x WT	44 800	75 500	0.59	41

Heat	Test Standard	Result	Impact Test Sample Details	Temp °C	Impact Energy Min. (J) (3 Tests) AVG	Impact Energy Results (J) (3 Tests) AVG	Shear (%) (3 Tests) AVG	Lateral Expansion (mm) (3 Tests) AVG
BSM-3048	-	-	-	-	-	-	-	-

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-9001:2008 (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*  
 Feb/22/2017

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