




# Mill Test Certificate

Bri-Steel Manufacturing  
 2125-64 Avenue, Edmonton, AB Canada T6P 1Z4  
 Tel: 001 (780) 469-6603  
 Fax: 001 (780) 469-6986  
 www.bri-steel.com

Product: Seamless Carbon Steel Pipe      Product Heat Number: BSM-2584      Product Size: NPS 16 STD      Production Date: Nov 18, 2015  
 Production Method: Hot Expansion      Product Heat Treatment: ThermoMechanical Formed      Certificate No.: MTR- 002011  
 Product Standards: ASME B36.10M-2015, ASTM/ASME A/SA333-2013 Grade 6 LT(M45C) A106-2014/SA106-2013 Grade B/C NDE, A53-2012/SA53-2013 Grade B Type S, NACE MR0175-2009 MR0103-2012  
 Product Markings: NPS 16 STD 0.375 INCHWT SMLS 2015/11 NDE 1150PSI  
 HEAT BSM-2584 (PIPE # LENGTH MASS) 62.58lb/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 $\mu$ R/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT	ET	HydroTest 1150PSI/ 5 s	End Condition	
BSM-2584	Heat	NPS 16 STD 0.375in. WT	15	DRL	62.58	<5	<10	Pass	Pass	Pass	Pass	Pass	Pass	32° Bevel	

Heat	Steelmaking Method	Test Type	Chemical Analysis (wt%)															
			C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B			
			CE(IIW)	CE(CSA)														
BSM-2584	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.16	1.17	0.012	0.002	0.26	0.01	0.01	0.01	0.01	0.02	0.050	0.001	0.001	0.0001	0.37	0.36
		Product	0.16	1.13	0.010	0.004	0.28	0.03	0.01	0.01	0.01	0.02	0.053	0.002	0.001	0.0003	0.37	0.36

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-2584	Heat	Ferrite & Pearlite	83 HRBW	Pass	Longitudinal; 1.5 in. x WT	54,000	79,000	0.68	41
				Pass	Longitudinal; 1.5 in. x WT	53,500	80,000	0.67	42

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy						Lateral Expansion					
				J	J	J	AVG	%	%	%	AVG	mm	mm	mm	AVG
BSM-2584	ASTM A333	CVN Long 10 x 7.5 mm	-48	65.0	58.0	62.0	61.7	20	20	20	20	1.23	1.11	1.16	1.17

**Additional Details:**

✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with ASTM/ASME A/SA333-2013, A106-2014/SA106-2013, A53-2012/SA53-2013, and the purchase order requirements, and that the results meet the corresponding requirements. Bri-Steel Manufacturing is registered and certified to ISO-9001:2008, API Q1, and PED 97/23/EC.

✓ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service, and NACE MR0103-2012 Section 2.1

- ✓ 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:

*IT Lam* Nov 19/2015

Tonya Lam, C.E.T.  
 Assistant QA Manager