



# 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-2585    Product Size: NPS 16 STD    Production Date: Nov 18, 2015  
 Production Method: Hot Expansion    Product Heat Treatment: ThermoMechanical Formed    Certificate No.: MTR- 002012

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-2585 (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 µR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM E309	HydroTest 1150PSI/ 5 s	End Condition
BSM-2585	Heat	NPS 16 STD 0.375in. WT	1	DRL	62.58	<5	<10	Pass	Pass	Pass	Pass	Pass	Pass	32° Bevel

Chemical Analysis (wt%)																	
Heat	Steelmaking Method	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(CSA)
BSM-2585	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.16	1.18	0.010	0.002	0.26	0.01	0.01	0.01	0.02	0.050	0.001	0.001	0.0001	0.37	0.37
		Product	0.17	1.16	0.009	0.004	0.28	0.04	0.01	0.01	0.02	0.061	0.002	0.001	0.0003	0.39	0.39
			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Mechanical Properties						
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 2 in. GL	Elongation (A) %
BSM-2585	Heat	Ferrite & Pearlite	85 HRBW	Pass	Yield (Rt0.5) psi 56,500 Tensile (Rm) psi 81,000	Y/T (Rt0.5/Rm) 0.70 41

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy			% Shear			Lateral Expansion					
				J	J	J	%	%	%	mm	mm	mm	mm	mm	
BSM-2585	ASTM A333	CVN Long 10 x 7.5 mm	-48	41.0	61.0	32.0	44.7	5	10	5	7	0.90	1.22	0.70	0.94

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:

*T. Lam*    *Nov/23/2015*  
 Tonya Lam, C.E.T.  
 Assistant QA Manager



# Mill Test Certificate

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Product: Seamless Carbon Steel Pipe    Product Heat Number: BSM-2586    Product Size: NPS 16 STD    Production Date: Nov 18, 2015  
 Production Method: Hot Expansion    Product Heat Treatment: ThermoMechanical Formed    Certificate No.: MTR- 002013

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-2586 (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 µR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM E309	HydroTest 1150 PSI/ 5 s	End Condition
BSM-2586	Heat	NPS 16 STD 0.375in. WT	7	DRL	62.58	<5	<10	Pass	Pass	Pass	Pass	Pass	Pass	32° Bevel

Chemical Analysis (wt%)																	
Heat	Steelmaking Method	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(CSA)
BSM-2586	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.16	1.16	0.010	0.002	0.27	0.01	0.01	0.01	0.02	0.050	0.001	0.001	0.0001	0.37	0.36
		Product	0.17	1.15	0.009	0.004	0.30	0.03	0.01	0.01	0.02	0.054	0.002	0.001	0.0003	0.38	0.38
			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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-2586	Heat	Ferrite & Pearlite	85 HRBW	Pass	Longitudinal; 1.5 in. x WT	55,000	79,000	0.70	41
				Pass	Longitudinal; 1.5 in. x WT	54,000	77,500	0.70	42

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy			% Shear			Lateral Expansion					
				J	J	J	%	%	%	mm	mm	mm	mm	mm	mm
BSM-2586	ASTM A333	CVN Long 10 x 7.5 mm	-48	71.0	50.0	18.0	46.3	20	10	5	12	1.35	0.87	0.22	0.81

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.

*T. Lam* *NOV 23 / 2015*

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

- ✓ 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.

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