



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-1380** Product Size: **NPS 18 STD** Production Date: **November 12, 2013**
 Production Method: **Hot Expansion** Product Heat Treatment: **As-rolled** MTR#: **601**
 Product Standards: **ASME B36.10-2004, A/SA333-2011 Grade 6, ASTM/ASME A/SAL106-2011 Grade B NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010**

Product Markings: **BRI-STEEL MANUFACTURING INC.** NPS 18 STD 0.375 INCHWT SMLS 2013/11 NDE PAULSEN PIPE PO# 10330
 HEAT BSM-1380 (PIPE# LENGTH WEIGHT) 70.59lb/ft ASTM/ASME A/SA333 GR 6 A/SAL106 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	Geiger	Res. Mag.	Visual	OD	WT	UT	ET	HydroTest	End Condition
BSM-1380	Heat	NPS 18 STD 0.375 in. WT	1	DRL	70.59 lb/ft	<5 µR/hr	<20 Gauss	Pass	Pass	Pass	Pass	Pass	Pass	32.5" Bevel

Chemical Analysis (wt%)																	
Heat	Steelmaking Method	Analysis	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE	CE
BSM-1380	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.10	1.08	0.014	0.004	0.26	0.11	0.09	0.03	0.04	0.038	-	-	-	-	-
		Product	0.12	1.06	0.016	0.004	0.26	0.11	0.09	0.04	0.04	0.035	0.020	0.002	0.0001	0.35	0.30

Mechanical Properties										
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test		Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
					50mm GL	Longitudinal; 38.1mm x WT				
BSM-1380	Heat	Ferrite & Pearlite	77	Pass			53,000	66,500	0.80	44

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy			% Shear			Lateral Expansion					
				J	J	J	%	%	%	AVG	mm	mm	mm	AVG	
BSM-1380	A/SA333	CVN Longitudinal (X-Y) 10X8	-45°C	242	299	250	263	100	100	100	100	-	-	-	-

Additional Details:
 ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with ASTM/ASME A/SA333-2011, A/SA106-2011, A/SA53-2012, and the purchase order requirements, and that the results meet the corresponding requirements.
 ✓ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service, and NACE MR0103-2010 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:

Paul Sowden
 2013 NOV 14

Paul Sowden, T.T.
 Assistant QA Manager