



Mill Test Certificate

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

Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-1058** Product Size: **NPS 16 XS** Production Date: **July 9, 2013**

Production Method: **Hot Expansion** Product Heat Treatment: **As-rolled**

Product Standards: **ASME B36.10-2004, ASTM/ASME A/SA106-2011 Grade B/C NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010**

Product Markings: **BRI-STEEL MFG ASTM/ASME A/SA106 GR B/C A/SA53 GR B NPS 16 XS 0.5 inchWT HEAT BSM-1058 (PIPE # LENGTH MASS) 82.77lb/ft NDE SMLS NACE MR0175 2013/07 MADE IN CANADA.**

Product Details				Non-Destructive Testing										
Heat	Test Type	Product Size	Pieces	Length	Mass lb/ft	Geiger μ R/hr	Res.Mag. Gauss	Visual Insp.	OD Pass	UT WT Pass	UT ASTM E213 Pass	ET ASTM E309 Pass	HydroTest	End Condition
BSM-1058	Heat	NPS 16 XS 0.5 in.WT	7	DRL	82.77	<5	<20	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 (IIW)	CE (CSA)
BSM-1058	Blast Furnace: EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.18	0.91	0.012	0.012	0.23	0.03	0.06	0.01	0.04	-	-	-	0.0003	-	-
		Product	0.20	0.90	0.015	0.006	0.24	0.03	0.07	0.01	0.04	0.003	0.001	0.001	0.0001	0.37	0.37

Mechanical Properties												
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %				
BSM-1058	Heat	Ferrite & Pearlite	74	Pass	46,000	73,000	0.63	45				
Heat	Test Standard	Impact Test Sample Details	Temp $^{\circ}$ C	Impact Energy J	% Shear	AVG	mm	Lateral Expansion mm	AVG			
BSM-1058	-	-	-	J	%	AVG	mm	mm	AVG			

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/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: *[Signature]*
 Paul Sowden, T.T.
 Assistant QA Manager
 2013 JUL 15

*Note that this product was hydrotested to 1000 psi for 5 seconds.



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Production Method: **Hot Expansion** Product Heat Treatment: **As-rolled**

Product Standards: **ASME B36.10-2004, API 5L-44th Ed. Grade B PSL1, ASTM/ASME A/SA106-2011 Grade B/C NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010**

Product Markings: **BRI-STEEL MFG <API> 5L-0898 API 5L GR B PSL1 ASTM/ASME A/SA106 GR B/C A/SA53 GR B NPS 16 XS 0.5 inchWT HEAT BSM-1058 (PIPE # LENGTH MASS) 82.77lb/ft NDE 1500 PSI SMLS NACE MR0175 2013/07 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	UT ASTM E213	ET ASTM E309	HydroTest 1500 psi/5s	End Condition
BSM-1058	Heat	NPS 16 XS 0.5 in.WT	7	DRL	82.77	<5	<20	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 (IIW)	CE (CSA)
			BSM-1058	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.18	0.91	0.012	0.012	0.23	0.03	0.06	0.01	0.04	-	-	0.0003
Product		Product	0.20	0.90	0.015	0.006	0.24	0.03	0.07	0.01	0.04	0.003	0.001	0.001	0.0001	0.37	0.37

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-1058	Heat	Ferrite & Pearlite	74	Pass			46,000	73,000	0.63	45
Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy			Lateral Expansion			
				J	J	AVG	%	%	AVG	mm
BSM-1058	-	-	-	-	-	-	-	-	-	-

Additional Details:

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