



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-0909** Product Size: **NPS 20 XS** Production Date: **May 15, 2013**

Production Method: **Hot Expansion** Product Heat Treatment: **As-rolled** Certificate Number: **MTR-0002266**

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

Product Markings: **BRI-STEEL MFG ASTM/ASME A/SA106 GR B A/SA53 GR B NPS 20 XS 0.500 InchWT HEAT BSM-0909 (PIPE # LENGTH MASS) 104.1lb/ft NDE SMLS NACE MR0175 2013/05 MADE IN CANADA.**

Product Details				Non-Destructive Testing										
Heat	Test Type	Product Size	Pieces	Length	Mass	Gelger	Res.Mag.	Visual	OD	UT	UT	ET	HydroTest	End
BSM-0909	Heat	NPS 20 XS 0.500 In./WT	9	DRL	122.90	µR/hr	Gauss	Insp.	Pass	Pass	ASTM E213	ASTM E309	Pass	Plain End

Chemical Analysis (wt%)																	
Heat	Steelmaking Method	Analysis	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE	CE
BSM-0909	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.20	0.87	0.016	0.006	0.26	0.06	0.01	-	0.04	-	-	-	-	-	-
		Product	0.21	0.90	0.024	0.010	0.26	0.06	0.01	0.00	0.04	0.003	0.002	0.001	0.0001	0.38	0.39


Mechanical Properties										
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test		Yield (Rt0.5)	Tensile (Rm)	Y/T	Elongation (A)
BSM-0909	Heat	Ferrite & Pearlite	HRBW	Pass	50mm GL	Longitudinal; 38.1mm x WT	psi	psi	(Rt0.5/Rm)	%
			78				41,300	68,500	0.60	45
Heat	Test Standard	Impact Test	Temp	Impact Energy		% Shear		Lateral Expansion		AVG
BSM-0909	Standard	Sample Details	°C	J	J	J	AVG	mm	mm	mm
			-	-	-	-	-	-	-	-

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.

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

Mill Test Certificate approved by: _____


 2015 Jan 31
 Kenton Dechant, P.Eng.
 Manager of Quality and R&D



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Product: Seamless Carbon Steel Pipe

Product Heat Number: BSM-0909

Product Size: NPS 20 TRUE40

Production Date: May 15, 2013

Production Method: Hot Expansion

Product Heat Treatment: As-rolled

Certificate Number: MTR-000188

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

Product Markings: BRI-STEEL MFG ASTM/ASME A/SA106 GR B A/SA53 GR B NPS 20 TRUE40 0.594 inchWT HEAT BSM-0909 (PIPE # LENGTH MASS) 122.9lb/ft NDE SMILS NACE MR0175 2013/05 MADE IN CANADA.

Product Details				Non-Destructive Testing										
Heat	Test Type	Product Size	Pieces	Length	Mass	Gelger	Res Mag.	Visual	OD	UT	UT	ET	HydroTest	End
BSM-0909	Heat	NPS 20 TRUE40 0.594 In.WT	9	DRL	lb/ft	µR/hr	Gauss	Insp.	Pass	Pass	Pass	Pass	Pass	Condition
					122.90	<5	<20	Pass	Pass	Pass	Pass	Pass	Pass	Plain End

Chemical Analysis (wt%)																	
Heat	Steelmaking Method	Analysis	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE	CE
BSM-0909	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.20	0.87	0.016	0.006	0.26	0.06	0.01	-	0.04	-	-	-	-	(IIW)	(CSA)
		Product	0.21	0.90	0.024	0.010	0.26	0.06	0.01	0.00	0.04	0.003	0.002	0.001	0.0001	0.38	0.39

Mechanical Properties										
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test		Yield (Rt0.5)	Tensile (Rm)	V/T	Elongation (A)
					HRBW	50mm GL				
BSM-0909	Heat	Ferrite & Pearlite	78	Pass	Longitudinal; 38.1mm x WT	41,300	68,500	0.60	45	

Heat	Test Standard	Impact Test	Temp	Impact Energy		% Shear		Lateral Expansion					
				J	J	%	%	mm	mm	mm	mm		
BSM-0909	-	Sample Details	°C	-	-	-	-	-	-	-	-	-	-

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.
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 ✓ This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.
 *Note that this product was hydrotested to 1000 psi for 5 seconds.

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