



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.brichersteel.com

Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0805** Product Size: **NPS 20 SCH 60** Production Date: **April 2, 2013**
 Production Method: **Hot Expansion** Product Heat Treatment: **Hot Worked (845 - 945°C) & Air Cooled**
 Product Standards: **ASME B36.10-2004, ASTM/ASME A/SA106-2011 Grade B NDE, A/SA53-2012 Grade B Type S, A/SA333-2011 Grade 6, NACE MR0175-2009, MR0103-2010**

Product Markings: **.BRI-STEEL MFG ASTM/ASME A/SA333 GR 6 A/SA106 GR B A/SA53 GR B NPS 20 SCH 60 0.812 inch WT HEAT BSM-0805 (PIPE # LENGTH MASS) 166.4lb/ft NDE SMLS NACE MR0175 2013/04 MADE IN CANADA.**

Product Details				Non-Destructive Testing										
Heat	Test Type	Product Size	Pieces	Length	Mass	Gelger	Res. Mag.	Visual	OD	UT	UT	FT	HydroTest	End
BSM-0805	Heat	NPS 20 SCH 60 0.812 in. WT	13	DRL	166.40	µR/hr	Gauss	Insp.	Pass	Pass	Pass	Pass	Pass	Condition
						<5	<20	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 (Pcm)	CE (CSA)
BSM-0805	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.10	1.09	0.014	0.003	0.26	0.11	0.06	0.03	0.02	0.003	0.002	0.001	0.0001	-	-
		Product	0.11	1.10	0.011	0.004	0.26	0.10	0.06	0.03	0.02	0.003	0.002	0.001	0.0001	0.18	0.27

Mechanical Properties											
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test		Yield (Rt0.5) psi	Yield (Rp0.2) psi	Tensile (Rm) psi	V/T (Rt0.5/Rm)	Elongation (A) %
					50mm GL	Transverse: 38.1mm x WT					
BSM-0805	Heat	Ferrite & Pearlite	72	Pass	Longitudinal: 38.1mm x WT	45,500	41,400	63,000	0.67	58	

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy			% Shear			Lateral Expansion				
				J	J	AVG	%	%	AVG	mm unbroken	mm unbroken	mm unbroken	AVG	
BSM-0805	A/SA333	CVN Longitudinal (X-Y) 10X10	-45°C	298	298	298	100	100	100	100	100	unbroken	unbroken	unbroken

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

Mill Test Certificate approved by: _____
 Kerton Dechant, P. Eng.
 Manager of Quality and R&D