



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-0406** Product Size: **NPS 24 SCH 60** Production Date: **July 9, 2012**

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

Product Standards: **ASTM/ASME A/SAL106-2011 Grade B/C, A/SAS3-2012 Grade B Type S, NACE MR0175-2009**

Product Markings: **.BRI-STEEL WFG NPS 24 SCH 60 ASTM/ASME A/SAL106 GR B/C A/SAS3 GR B HEAT BSM-0406 (PIPE # LENGTH MASS) 238.1lb/ft NDE 1000PSI NACE MR0175 2012/07 MADE IN CANADA.**

Product Details						Non-Destructive Testing									
Heat	Test Type	NPS	Wall Thickness	Pieces	Length	Mass lb/ft	Gelger uR/hr	Res.Mag. Gauss	Visual Insp.	OD Pass	UT WT Pass	UT ASTM E213	ET ASTM E309	HydroTest 1000 psi/5s	End Condition
BSM-0406	Heat	24	SCH 60	2	DRL	238.10	<5	<20	Pass	Pass	Pass	---	Pass	Pass	Plain End

Chemical Analysis (wt%)																		
Heat	Test Type	Steelmaking Method		C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE (IIV)	CE (CSA)
BSM-0406	Heat	Blast Furnace; EAF; Ladle Refining; Vacuum Degass		0.17	0.99	0.015	0.004	0.25	0.05	0.06	0.01	0.02	0.003	0.002	0.001	0.0002	0.35	0.35

Mechanical Properties											
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test		Yield (Rt0.5) psi	Yield (Rp0.2) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
BSM-0406	Heat	Ferrite & Pearlite	76	Pass	50mm GL; 38mm x WT	Transverse	48,400	47,500	70,500	0.69	53
					Longitudinal		45,900	45,800	69,500	0.66	53

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/SAL106-2011, A/SAS3-2012 and the purchase order requirements, and that the results meet the corresponding requirements.
- ✓ This pipe product meet 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 no mercury contamination.
- ✓ This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.

Mill Test Certificate approved by:

FOR
T. Van
July 30, 2012
 Kenton Dechant, P. Eng.
 Manager of Quality and R&D