



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-0479** Product Size: **NPS 24 STD** Production Date: **September 24, 2012**

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

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 24 STD HEAT BSM-0479 (PIPE # LENGTH MASS) 94.62lb/ft NDE 670PSI SMIS NACE MR0175 2012/09 MADE IN CANADA.**

Product Details				Non-Destructive Testing														
Heat	Test Type	NPS	Wall Thickness	Pieces	Length	DRL	Mass lb/ft	Geiger μ R/hr	Res. Mag. Gauss	Visual Insp.	OD	WT	UT	UT	ET	HydroTest	End Condition	
BSM-0479	Heat	24	STD	30			94.62	<5	<20	Pass	Pass*	Pass	Pass	Pass	Pass	Pass	Pass	37.5° Bevel

Steelmaking Method		Chemical Analysis (wt%)														
Heat	Analysis	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE (IIW)	CE (CSA)
BSM-0479	Blast Furnace; EAF; Ladle Refining;	Heat	0.21	0.85	0.010	0.011	0.22	0.05	0.07	0.01	0.05	-	-	0.0003	-	-
	Vacuum Degass; Fully Killed	Product	0.21	0.88	0.017	0.014	0.23	0.05	0.11	0.01	0.06	0.004	0.001	0.0002	0.38	0.39

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) %
					50mm GL	Transverse; 38.1mm x WT					
BSM-0479	Heat	Ferrite & Pearlite	78	Pass	Longitudinal; 38.1mm x WT	47,900	48,000	73,000	0.65	44	

Additional Details:

- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with API SL-44th Ed., 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]
 2012 Oct 2

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

*OD Tolerances as per API SL.