



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-0462** Product Size: **NPS 18 STD** Production Date: **September 3, 2012**

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

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

Product Markings: **.BR-STEEL MFG <AP> SL-0898 API SL GR B PSL1 ASTM/ASME A/SA106 GR B A/SA53 GR B NPS 18 STD HEAT BSM-0462 (PIPE # LENGTH MASS) 70.59lb/ft NDE 890PSI SMLS NACE MR0175 2012/09 MADE IN CANADA.**

Product Details				Non-Destructive Testing											
Heat	Test Type	NPS	Wall Thickness	Pieces	Length	Mass lb/ft	Geiger $\mu R/hr$	Res Mag. Gauss	Visual Insp.	OD	UT	UT	ET	HydroTest	End Condition
BSM-0462	Heat	18	STD	2	DRL	70.59	<5	<20	Pass	Pass	Pass	Pass	Pass	Pass	37.5" 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-0462	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.20	0.91	0.009	0.007	0.24	0.06	0.09	0.01	0.06	-	-	-	0.0004	-	-
		Product	0.21	0.91	0.010	0.009	0.23	0.06	0.10	0.01	0.03	0.002	0.001	0.002	0.0001	0.39	0.39

Mechanical Properties											
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test		Yield (Rp0.5)	Yield (Rp0.2)	Tensile (Rm)	Y/T (Rt0.5/Rm)	Elongation (A)
BSM-0462	Heat	Ferrite & Pearlite	75	Pass	50mm GL	Transverse; 38.1mm x WT	psi	psi	psi	0.60	43
					Longitudinal; 38.1mm x WT		45,900	45,900	73,000	0.63	43

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:

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