



Bri-Steel Manufacturing Inc.
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Mill Test Certificate

Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0461** 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 5L-44th Ed. Grade B PS1, ASTM/ASME A/SA106-2011 Grade B, A/SA53-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010**

Product Markings: **.BRI-STEEL MFG-APP-5L-0898 API 5L GR B PS1L ASTM/ASME A/SA106 GR B A/SA53 GR B NPS 18 STD HEAT BSM-0461 (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	Galiger	Res. Mag.	Visual Insp.	OD	UT WT	UT	ET	Hydrotest	End Condition
BSM-0461	Heat	18	STD	15	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	CE
BSM-0461	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	Product	0.22	0.87	0.011	0.015	0.22	0.06	0.08	0.01	0.07	-	-	-	0.0004	-	-
				0.21	0.87	0.011	0.014	0.21	0.05	0.09	0.02	0.06	0.002	0.001	0.001	0.0002	0.38	0.39

Mechanical Properties											
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test		Yield (Rp0.5)	Yield (Rp0.2)	Tensile (Rm)	Y/T	Elongation (A)
BSM-0461	Heat	Ferrite & Pearlite	78	Pass	50mm GL	Transverse; 38.1mm x WT	psi	psi	psi	(Rt0.5/Rm)	%
					Longitudinal; 38.1mm x WT		45,200	44,900	72,000	0.63	37
											41

Additional Details:

- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with API 5L-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
 Kenton Dechant, P. Eng.
 Manager of Quality and R&D