



# Mill Test Certificate

Bri-Steel Manufacturing Inc.  
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0474** Product Size: **NPS 20 STD** Production Date: **September 18, 2012**

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

Product Standards: **ASME B36.10-2004, API 5L-44th Ed. Grade B PSL1, ASTM/ASME A/SA106-2011 Grade B NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010**

Product Markings: **.BR-STEEL MFG <API> 5L-0898 API 5L GR B PSL1 ASTM/ASME A/SA106 GR B A/SA53 GR B NPS 20 STD HEAT BSM-0474 (PIPE # LENGTH MASS) 78.6lb/ft NDE 800PSI 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-0474	Heat	20	STD	26	DRL	78.60	<5	<20	Pass	Pass	Pass	Pass	Pass	Pass	37.5° Bevel

Steelmaking Method		Chemical Analysis (wt%)																														
Heat	BSM-0474	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	C		Mn		P		S		Si		Cr		Cu		Mo		Ni		V		Ti		Nb		B		CE		CE	
			Heat	Product	0.19	0.21	0.87	0.86	0.009	0.011	0.006	0.010	0.21	0.21	0.04	0.04	0.09	0.10	0.01	0.01	0.07	-	-	-	-	0.0003	-	-	0.0002	0.38	0.38	

Mechanical Properties													
Heat	BSM-0474	Test Type	Heat	Microstructure	Ferrite & Pearlite	Hardness HRBW	Tension Test		Yield (Rt0.5) psi	Yield (Rp0.2) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
							Flattening Test	Pass					
						78			48,100	48,000	75,500	0.64	40

**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:

*[Signature]*  
 2012 Sept 27  
 Kenton Dechant, P. Eng.  
 Manager of Quality and R&D