



# 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-0473**      Product Size: **NPS 20 XS**      Production Date: **September 17, 2012**  
 Production Method: **Hot Expansion**      Product Heat Treatment: **As-rolled**

Product Standards: **ASME B36.10-2004, API SL-44th Ed, Grade B PS11, 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 4-API 5L-GR B PS11 ASTM/ASME A/SA106 GR B A/SA53 GR B NPS 20 XS HEAT BSM-0473 (PIPE # LENGTH MASS) 104.1lb/ft NDE 1100PSI SMS NACE MR0175 2012/09 MADE IN CANADA.**

Product Details				Non-Destructive Testing											
Heat	Test Type	NPS	Wall Thickness	Pieces	Length	Mass	Gelger	Res. Mag.	Visual Insp.	OD	UT	UT	ET	HydroTest	End Condition
BSM-0473	Heat	20	XS	26	DRL	104.10	<5	<20	Pass	Pass	Pass	Pass	Pass	Pass	37.5° Bevel

Heat	Steelmaking Method	Chemical Analysis (wt%)															
		Analysis		C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE (IIV)
BSM-0473	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.19	0.85	0.009	0.015	0.28	0.05	0.11	0.01	0.07	-	-	-	0.0004	-	-
		Product	0.21	0.87	0.011	0.010	0.24	0.05	0.11	0.01	0.06	0.002	0.001	0.002	0.0002	0.38	0.39

Mechanical Properties											
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test		Yield (Rp0.5) psi	Yield (Rp0.2) psi	Tensile (Rm) psi	V/T (R0.5/Rm)	Elongation (A) %
					50mm GL	Transverse; 38.1mm x WT					
BSM-0473	Heat	Ferrite & Pearlite	77	Pass	Longitudinal; 38.1mm x WT		44,500	44,100	72,000	0.62	42
							46,200	46,200	72,000	0.64	47

- 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:  
  
 2012 Sept 25  
 Kenton Dechant, P.Eng.  
 Manager of Quality and R&D



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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0473** Product Size: **NPS 20 XS** Production Date: **September 17, 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/C NDE, A/SAS3-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010**

Product Markings: **.BRI-STEEL MFG-APP-5L-0899 API 5L GR B PSL1 ASTM/ASME A/SA106 GR B/C A/SAS3 GR B NPS 20 XS HEAT BSM-0473 (PIPE # LENGTH MASS) 104.1lb/ft NDE 1100PSI SWLS 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	WT	UT ASTM E213	ET ASTM E309	HydroTest 1100 psi/5s	End Condition
BSM-0473	Heat	20	XS	26	DRL	104.10	<5	<20	Pass	Pass	Pass	Pass	Pass	Pass	37.5° Bevel

Chemical Analysis (wt%)																			
Heat	BSM-0473	Steelmaking Method	Analysis											CE	CE (CSA)				
			Blast Furnace; EAF; Ladle Refining;	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V			Ti	Nb	B	CE (IIW)
			Vacuum Degas; Fully Killed	0.19	0.85	0.009	0.015	0.28	0.05	0.11	0.01	0.07	-			-	-	0.0004	-
			Product	0.21	0.87	0.011	0.010	0.24	0.05	0.11	0.01	0.06	0.002	0.001	0.002	0.0002	0.38	0.39	

Mechanical Properties											
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test		Yield (Rp0.5) psi	Yield (Rp0.2) psi	Tensile (Rm) psi	Y/T (R10.5/Rm)	Elongation (A) %
					50mm GL	38.1mm x					
BSM-0473	Heat	Ferrite & Pearlite	77	Pass	Longitudinal;		46,200	46,200	72,000	0.64	47

**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/SAS3-2012 and the purchase order requirements, and that the results meet the corresponding requirements.
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- ✓ 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:

*Kenton Dechant*  
 2014 Sept 14  
 Kenton Dechant, P. Eng.  
 Manager of Quality and R&D