



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-0472** 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 <API> 5L-0898 API 5L GR B PSL1 ASTM/ASME A/SA106 GR B/C A/SAS3 GR B NPS 20 XS HEAT BSM-0472 (PIPE # LENGTH MASS) 104.1lb/ft NOE 1100PSI SMIS NACE MR0175 2012/09 MADE IN CANADA.**

Product Details						Non-Destructive Testing									
Heat	Test Type	NPS	Wall Thickness	Pieces	Length	Mass lb/ft	Geiger μ R/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM E309	HydroTest 1100 psi/5s	End Condition
BSM-0472	Heat	20	XS	18	DRL	104.10	<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-0472	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.19	0.85	0.009	0.015	0.28	0.07	0.11	0.01	0.05	-	-	-	0.0004	-	-
		Product	0.20	0.87	0.009	0.009	0.24	0.06	0.11	0.01	0.06	0.002	0.001	0.002	0.0002	0.37	0.38

Mechanical Properties											
Heat	Test Type	Microstructure	Hardness 118BW	Flattening Test	Tension Test 50mm GL		Yield (Rt0.5) psi	Yield (Rp0.2) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
BSM-0472	Heat	Ferrite & Pearlite	77	Pass	Transverse; 38.1mm x WT	Longitudinal; 38.1mm x WT	44,100	42,200	73,000	0.60	44
							46,300	46,300	73,500	0.63	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 5L-44th Ed., ASTM/ASME A/SA106-2011, A/SAS3-2012 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]
 2013 APR 3
 Kenton Dechant, P. Eng.
 Manager of Quality and R&D



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BSM-0472	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.19	0.85	0.009	0.015	0.28	0.07	0.11	0.01	0.05	-	-	-	0.0004	-	-
		Product	0.20	0.87	0.009	0.009	0.24	0.06	0.11	0.01	0.06	0.002	0.001	0.002	0.0002	0.37	0.38

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BSM-0472	Heat	Ferrite & Pearlite	77	Pass	Longitudinal; 38.1mm x	46,300	46,300	73,500	0.63	44

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