



## 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-0470      Product Size: NPS 20 XS      Production Date: September 12, 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 <AP> SL-0899 API 5L GR B PSL1 ASTM/ASME A/SA106 GR B/C A/SAS3 GR B NPS 20 XS HEAT BSM-0470 (PIPE # LENGTH MASS) 104.1lb/ft NDE 1100PSI SMLS NACE MR0175 2012/09 MADE IN CANADA.

### Product Details

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 WT	UT ASTM E213	ET ASTM E309	HydroTest 1100 psi/5s	End Condition
BSM-0470	Heat	20	XS	47	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-0470	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.18	0.86	0.012	0.007	0.25	0.05	0.11	0.01	0.07	-	-	-	0.0004	-	-
		Product	0.20	0.85	0.015	0.014	0.25	0.05	0.12	0.01	0.07	0.002	0.001	0.001	0.0002	0.37	0.37


### Mechanical Properties

Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test				Yield (Rp0.2) psi	Tensile (Rm) psi	Y/T (Rp0.5/Rm)	Elongation (A) %
					50mm GL	Yield (Rt0.5) psi	Yield (Rp0.2) psi	Tensile (Rm) psi				
BSM-0470	Heat	Ferrite & Pearlite	76	Pass	Longitudinal; 38.1mm x WT	44,900	45,000	71,500	0.63	46		

### 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:

  
 2014 Sept 4  
 Kenton Dechant, P.Eng.  
 Manager of Quality and R&D



# Mill Test Certificate

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 Tel: 001 (780) 469-6603  
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Product: **Seamless Carbon Steel Pipe**      Product Heat Number: **BSM-0470**      Product Size: **NPS 20 XS**      Production Date: **September 12, 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/SA53-2012 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/SA53 GR B NPS 20 XS HEAT BSM-0470 (PIPE # LENGTH MASS) 104.1lb/ft NDE 1100PSI SMLS NACE MR0175 2012/09 MADE IN CANADA.**

Product Details				Non-Destructive Testing											
Heat	Test Type	NPS	Wall Thickness	Pieces	Length	Mass	Geiger	Res. Mag.	Visual	OD	UT	UT	ET	HydroTest	End Condition
BSM-0470	Heat	20	XS	47	DRL	104.10	µR/hr	Gauss	Insp.	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-0470	Blast Furnace: EAF; Ladle Refining; Vacuum Degass. Fully Killed	Heat	0.18	0.86	0.012	0.007	0.25	0.05	0.11	0.01	0.07	-	-	-	0.0004	-	-
		Product	0.20	0.85	0.015	0.014	0.25	0.05	0.12	0.01	0.07	0.002	0.001	0.001	0.0002	0.37	0.37

Mechanical Properties										
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test	Yield (Rt0.5)	Yield (Rp0.2)	Tensile (Rm)	V/T	Elongation (A)
BSM-0470	Heat	Ferrite & Pearlite	HRBW	Pass	50mm GL	psi	psi	psi		%
			76	Pass	Longitudinal: 38.1mm x WT	44,900	45,000	71,500	0.63	46

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.

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 2014 Sept 4  
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## Mill Test Certificate

Product: **Seamless Carbon Steel Pipe**      Product Heat Number: **BSM-0470**      Product Size: **NPS 20 XS**      Production Date: **September 12, 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/SAS3-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010**

Product Markings: **BRI-STEEL MFG <API> 5L GR B PSL1 ASTM/ASME A/SA106 GR B A/SAS3 GR B NPS 20 XS HEAT BSM-0470 (PIPE # LENGTH MASS) 104.1lb/ft NDE 1100PSI SMIS 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	OD	UT	UT	ET	HydroTest	End
BSM-0470	Heat	20	XS	47	DRL	104.10	µR/hr	Gauss	Insp.	Pass	Pass	Pass	Pass	Pass	37.5° Bevel

Heat		Steelmaking Method	Chemical Analysis (wt%)														
BSM-0470	Vacuum Degass, Fully Killed	SAF, Ladle Refining:	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE	CE
Heat	Product	Product	0.18	0.86	0.012	0.007	0.25	0.05	0.11	0.01	0.07	-	-	-	0.0004	-	-

Mechanical Properties										
Heat	Test Type	Microstructure	Hardness	Tension Test		Yield (Rt0.5)	Yield (Rp0.2)	Tensile (Rm)	Y/T	Elongation (A)
				HRBW	Flattening Test					
BSM-0470	Heat	Ferrite & Pearlite	76	Pass	Pass	46,500	45,300	73,000	0.64	45
						44,900	45,000	71,500	0.63	46
						Transverse: 38.1mm x WT				
						Longitudinal: 38.1mm x WT				

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