



# 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-1622

Product Size: 20XS

Production Date: Feb 11, 2014

Production Method: Hot Expansion

Product Heat Treatment: As-rolled

Certificate No.: MTR- 000848

Product Standards: ASME B36.10-2004, API 5L-45th Ed. Grade B/X42 PSL1, ASTM/ASME A/SA106-2013 Grade B/C NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009 MR0103-2010

Product Markings



<API> 5L-0898 API SPEC 5L NPS 20 XS 0.500 INCHWT GR B/X42 PSL1 SMLS 2014/02 NDE 1890PSI

HEAT BSM-1622 (PIPE # LENGTH MASS) 104.1lb/ft ASTM/ASME A/SA106 GR B/C A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

Product: Details					Non-Destructive Testing									
Heat	Test Type	Product Size	Pieces	Length	Mass lb/ft	Geiger $\mu$ R/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM	HydroTest 1890 PSI/ 5 s	End Condition 34° Bevel
BSM-1622	Heat	NPS 20 XS 0.500in. WT	8	DRL	104.1	<5	<10	Pass	Pass	Pass	Pass	Pass	Pass	Pass

Chemical Analysis (wt%)																	
Heat	Steelmaking Method	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)	CE(CSA)
BSM-1622	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.20	0.85	0.020	0.006	0.29	0.07	0.01		0.04					-	-
		Product	0.21	0.90	0.020	0.007	0.29	0.07	0.01	0.00	0.04	0.002	0.002	0.001	0.0003	0.38	0.38

Mechanical Properties													
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 50mm GL	Yield (Rt0.5) psi	Tensile (Rm) psi	V/T (Rt0.5/Rm)	Elongation (A) %				
BSM-1622	Heat	Ferrite & Pearlite	74 HRBW	Pass	Longitudinal; 38.1 mm x WT	46,300	73,500	0.63	41				

Heat	Test	Impact Test Sample Details	Temp °C	Impact Energy				% Shear				Lateral Expansion			
BSM-1622	Standard	-	-	J	J	J	AVG	%	%	%	AVG	mm	mm	mm	AVG
				-	-	-	-	-	-	-	-	-	-	-	-

## 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-45th Ed., ASTM/ASME A/SA106-2013 Grade B/C 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-2009 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:

*Paul Sowden*  
2014 FEB 12

Paul Sowden, T.T.  
Assistant QA Manager



# 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-1622 Product Size: 20 X 0.450 Production Date: Feb 11, 2014  
Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 000854  
Product Standards: ASME B36.10-2004, ASTM/ASME A/SA106-2013 Grade B/C NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009 MR0103-2010

## Product Markings



NPS 20 X 0.450 INCHWT SMLS 2014/02 NDE 1890PSI  
HEAT BSM-1622 (PIPE # LENGTH MASS) 93.69lb/ft ASTM/ASME A/SA106 GR B/C A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

Product: Details					Non-Destructive Testing									
Heat	Test Type	Product Size	Pieces	Length	Mass lb/ft	Geiger $\mu$ R/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM	HydroTest 1890 PSI/ 5 s	End Condition
BSM-1622	Heat	NPS 20 X 0.450in. WT	8	DRL	93.69	<5	<10	Pass	Pass	Pass	Pass	Pass	Pass	34° Bevel

Chemical Analysis (wt%)														
Heat	Steelmaking Method	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb
			Heat	0.20	0.85	0.020	0.006	0.29	0.07	0.01	0.04			
			Product	0.21	0.90	0.020	0.007	0.29	0.07	0.01	0.00	0.04	0.002	0.002
BSM-1622	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed													

Mechanical Properties									
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 50mm GL	Yield (Rt0.5) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
BSM-1622	Heat	Ferrite & Pearlite	74 HRBW	Pass	Longitudinal; 38.1 mm x WT	46,300	73,500	0.63	41

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy					Lateral Expansion				
				J	J	J	AVG	%	%	%	AVG	mm	mm
BSM-1622	-	-	-	-	-	-	-	-	-	-	-	-	-

## Additional Details:

✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with ASTM/ASME A/SA106-2013 Grade B/C 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-2009 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:

*Paul Sowden*  
2014 FEB 12

Paul Sowden, T.T.  
Assistant QA Manager