



# 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-1624

Product Size: 20 X 0.450

Production Date: Feb 11, 2014

Production Method: Hot Expansion

Product Heat Treatment: As-rolled

Certificate No.: MTR- 000864

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-1624 (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 μR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM	HydroTest 1890PSI/ 5 s	End Condition
BSM-1624	Heat	NPS 20 X 0.450in. WT	2	DRL	93.69	<5	<10	Pass	Pass	Pass	Pass	Pass	Pass	32.5° Bevel

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)
			Heat	0.20	0.88	0.012	0.008	0.26	0.04	0.01		0.01					-
		Product	0.22	0.89	0.019	0.012	0.23	0.06	0.01	0.00	0.04	0.003	0.002	0.001	0.0002	0.39	0.39
BSM-1624	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed																

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-1624	Heat	Ferrite & Pearlite	77 HRBW	Pass	Longitudinal; 38.1 mm x WT	41,900	72,000	0.58	48				

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy				% Shear				Lateral Expansion			
BSM-1624	-	-	-	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 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 13

Paul Sowden, T.T.  
Assistant QA Manager



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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-1624 Product Size: 20XS Production Date: Feb 11, 2014  
Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 000862  
Product Standards: ASME B36.10-2004, API 5L-45th Ed. Grade B 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 PSL1 SMLS 2014/02 NDE 1890PSI  
HEAT BSM-1624 (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
BSM-1624	Heat	NPS 20 XS 0.500in. WT	2	DRL	104.1	<5	<10	Pass	Pass	Pass	Pass	Pass	Pass	32.5° Bevel

Chemical Analysis (wt%)														
Heat	Steelmaking Method	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb
			Heat	0.20	0.88	0.012	0.008	0.26	0.04	0.01	0.01	0.003	0.002	0.001
			Product	0.22	0.89	0.019	0.012	0.23	0.06	0.01	0.00	0.04	0.003	0.002
BSM-1624	Blast Furnace; FAF; 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-1624	Heat	Ferrite & Pearlite	77 HRBW	Pass	Longitudinal; 38.1 mm x WT	41,900	72,000	0.58	48

Heat	Test	Impact Test Sample Details	Temp °C	Impact Energy				% Shear			Lateral Expansion		
BSM-1624	Standard	-	-	J	J	J	AVG	%	%	%	mm	mm	mm
				-	-	-	-	-	-	-	-	-	-

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