



# 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.brihemsteel.com

Product: Seamless Carbon Steel Pipe    Product Heat Number: BSM-1422    Product Size: 16 XS    Production Date: Nov 20, 2013  
 Production Method: Hot Expansion    Product Heat Treatment: As-rolled    Certificate No.: MTR- 000632  
 Product Standards: ASME B36.10-2004, API 5L-45th 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: <API> 5L-0898 API SPEC 5L NPS 16 XS 0 500 INCHWT GR B PSL1 SM15 2013/11 NDE 1500PSI  
 HEAT BSM-1422 (PIPE # LENGTH MASS) 82.77lb/ft ASTM/ASME A/SA106 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 1500PSI/ 5 s	End Condition
BSM-1422	Heat	NPS 16 XS 0.500in. WT	22	DRL	82.77	OK	<5	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	B	CE(I/W)	CE(C/S)
BSM-1422	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.19	0.86	0.010	0.005	0.24	0.04	0.06	0.01	0.04				0.0004		
		Product	0.22	0.96	0.009	0.003	0.26	0.03	0.09	0.02	0.04	0.003	0.002	0.001	0.0002	0.39	0.39

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-1422	Heat	Ferrite & Pearlite	77 HRBW	Pass	Longitudinal; 38.1 mm x WT	43,700	73,000	0.60	43

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy			% Shear			Lateral Expansion				
				J	J	J	%	%	%	mm	mm	mm	AVG	
BSM-1422	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**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/SA106-2011 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:  
  
 2013 NOV 28

Paul Sowden, T.T.  
 Assistant QA Manager



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Product: Seamless Carbon Steel Pipe      Product Heat Number: BSM-1422      Production Date: Nov 20, 2013  
 Production Method: Hot Expansion      Product Heat Treatment: As-rolled      Certificate No.: MTR- 001348  
 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



NPS 16 X 0.475 INCHWT SMLS 2013/11 NDE  
 HEAT BSM-1422 (PIPE # LENGTH MASS) 78.63lb/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	Gelger μR/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM	HydroTest	End Condition
BSM-1422	Heat	NPS 16 X 0.475in. WT	22	DRL	78.63	<5	<10	Pass	Pass	Pass	Pass	Pass	-	34° Bevel

Heat	BSM-1422	Steelmaking Method Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Chemical Analysis (wt%)														
			Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE(IIW)
Heat	Product	Heat	0.19	0.86	0.010	0.005	0.24	0.04	0.06	0.01	0.04	0.003	0.002	0.001	0.0002	0.39	0.39
Product	Product	Product	0.22	0.96	0.009	0.003	0.26	0.03	0.09	0.02	0.04	0.003	0.002	0.001	0.0002	0.39	0.39

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-1422	Heat	Ferrite & Pearlite	77 HRBW	Pass	Longitudinal: 38.1 mm x WT	43,700	73,000	0.60	43

Heat	BSM-1422	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy				% Shear				Lateral Expansion					
					J	J	J	AVG	%	%	%	AVG	mm	mm	mm	AVG		
Heat	Product	Heat	Heat	Product	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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. Bri-Steel Manufacturing is registered and certified to ISO-9001:2008 and API Q1.

✓ 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:

*Tonya Lam*      *Sept/19/2014*

Tonya Lam, C.E.T.  
 Assistant QA Manager