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.bri-steel.com

Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2118 Product Size: 24STD Production Date: Nov 05, 2014

Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 001446

Product Standards: ASME B36.10-2004, API 5L-45th Ed. Grade B/X42 PSL1, CSA Z245.1-2007 Grade 241/290 CAT 1, ASTM/ASME A106-2014/SA106-2013 Grade B/C NDE, A53-2012/SA53-2013 Grade B Type S, NACE MR0175-2009 MR0103-2012

Product Markings: <API & L/C No.> API SPEC 5L NPS 24 STD 0.375 INCHWT GR B/X42 PSL1 SMLS 2014/11 NDE 1470PSI
HEAT BSM-2118 (PIPE # LENGTH MASS) 94.62lb/ft CSA Z245.1 GR 241/290 CAT 1 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 1470 PSI/ 5 s	End Condition
BSM-2118	Heat	NPS 24 STD 0.375in. WT	17	DRL	94.62	<5	<10	Pass	Pass	Pass	Pass	Pass	Pass	Plain End

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-2118	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.19	0.98	0.008	0.004	0.20	0.07	0.03	0.01	0.02	0.001				-	-
		Product	0.20	0.97	0.012	0.006	0.22	0.09	0.04	0.01	0.04	0.003	0.002	0.001	0.0006	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-2118	Heat	Ferrite & Pearlite	78 HRBW	Pass	Longitudinal; 38.1 mm x WT	43,300	72,500	0.60	42

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy				% Shear				Lateral Expansion			
				J	J	J	AVG	%	%	%	AVG	mm	mm	mm	AVG
BSM-2118	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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., CSA Z245.1-2007 Grade 241/290 CAT 1, ASTM/ASME A106-2014/SA106-2013 Grade B/C A53-2012/SA53-2013, 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 MR0103-2012 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:

T. Lam NOV/10/2014

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

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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-2118 Product Size: 24STD Production Date: Nov 05, 2014

Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 001451

Product Standards: ASME B36.10-2004, API 5L-45th Ed. Grade B/X42 PSL1, ASTM/ASME A106-2014/SA106-2013 Grade B/C NDE, A53-2012/SA53-2013 Grade B Type S, NACE MR0175-2009 MR0103-2012

Product Markings <API & L/C No.> API SPEC 5L NPS 24 STD 0.375 INCHWT GR B/X42 PSL1 SMLS 2014/11 NDE 1180PSI
HEAT BSM-2118 (PIPE # LENGTH MASS) 94.62lb/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 1180 PSI/ 5 s	End Condition
BSM-2118	Heat	NPS 24 STD 0.375in. WT	17	DRL	94.62	<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)
BSM-2118	Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed	Heat	0.19	0.98	0.008	0.004	0.20	0.07	0.03	0.01	0.02	0.001				-	-
		Product	0.20	0.97	0.012	0.006	0.22	0.09	0.04	0.01	0.04	0.003	0.002	0.001	0.0006	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-2118	Heat	Ferrite & Pearlite	78 HRBW	Pass	Longitudinal; 38.1 mm x WT	43,300	72,500	0.60	42

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy				% Shear				Lateral Expansion			
				J	J	J	AVG	%	%	%	AVG	mm	mm	mm	AVG
BSM-2118	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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 A106-2014/SA106-2013 Grade B/C A53-2012/SA53-2013, 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 MR0103-2012 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:

T. Lam NOV/13/2014

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