



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-1637

Product Size: 18XS

Production Date: Feb 13, 2014

Production Method: Hot Expansion

Product Heat Treatment: As-rolled

Certificate No.: MTR- 000877

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 18 XS 0.500 INCHWT GR B/X42 PSL1 SMLS 2014/02 NDE 1990PSI
HEAT BSM-1637 (PIPE # LENGTH MASS) 93.45lb/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 μ R/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM	HydroTest 1990 PSI/ 5 s	End Condition
BSM-1637	Heat	NPS 18 XS 0.500in. WT	4	DRL	93.45	<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
BSM-1637	Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed	Heat	0.20	0.92	0.009	0.013	0.23	0.06	0.09	0.01	0.07			0.0003
		Product	0.20	0.89	0.009	0.016	0.23	0.06	0.10	0.01	0.06	0.002	0.001	0.0003

Mechanical Properties							
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test 50mm GL	Yield (Rt0.5) psi	Tensile (Rm) psi
BSM-1637	Heat	Ferrite & Pearlite	74 HRBW	Pass	Longitudinal; 38.1 mm x WT	44,800	73,500

Heat	Test	Impact Test Sample Details	Temp °C	Impact Energy				% Shear				Lateral Expansion			
BSM-1637	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 19

Paul Sowden, T.T.
Assistant QA Manager



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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-1637 Product Size: 18 X 0.450 Production Date: Feb 13, 2014
Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 000878
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 18 X 0.450 INCHWT SMLS 2014/02 NDE 1990PSI
HEAT BSM-1637 (PIPE # LENGTH MASS) 84.35lb/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 µB/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM	HydroTest 1990PSI/ 5 s	End Condition 34° Bevel
BSM-1637	Heat	NPS 18 X 0.450in. WT	4	DRL	84.35	<5	<10	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)	
			Heat	0.20	0.92	0.009	0.013	0.23	0.06	0.09	0.01	0.07					0.0003	-
		Product	0.20	0.89	0.009	0.016	0.23	0.06	0.10	0.01	0.06	0.002	0.001	0.001	0.0003	0.37	0.37	
BSM-1637	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-1637	Heat	Ferrite & Pearlite	74 HRBW	Pass	Longitudinal, 38.1 mm x WT	44,800	73,500	0.61	45

Heat	Test Standard	Impact Test Sample Details	Temp °C	Impact Energy J			% Shear			Lateral Expansion mm		
				J	J	J	%	%	%	mm	mm	mm
BSM-1637	-	-	-	-	-	-	-	-	-	-	-	-

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 20

Paul Sowden, T.T.
Assistant QA Manager