

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-1647 Product Size: 18 X 0.450

Production Date:

Feb 19, 2014

Production Method: Hot Expansion

Product Heat Treatment: As-rolled

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

Certificate No.: MTR- 000900

Product Markings

Product Standards:

NPS 18 X 0.450 INCHWT SMLS 2014/02 NDE 1990PSI

MANUFACTURING HEAT BSM-1647 (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							Z	Non-Destructive Testing	ive Testing			
Heat	Test Type	Product Size	Pieces	Length	Mass	Geiger	Res. Mag.	Visual	OD	TU	TU	ΕT	HydroTest	End
					lb/ft	μR/hr	Gauss	Insp.		TW	ASTM E213	ASTM	1990 PSI/ 5 s	Condition
BSM-1647	Heat	NPS 18 X 0.450in. WT	7	DRL	84.35	Ġ.	<10	Pass	Pass	Pass	Pass	Pass	Pass	34° Bevel

		BSM-1647	I	
		7	Heat	
	regas, runy nineu	Blast Furnace; EAF; Ladle Refining; Vacuum	Steelmaking Method	
	Product	Heat	Test Type	
	0.20	0.19	С	
	0.92	0.91	Mn	
	0.008	0.009	Р	1000
	0.003	0.004	S	Chemical Analysis (wt%)
	0.25	0.24	Si	Analysis (
	0.04	0.04	Cr	wt%)
	0.08	0.07	Cu	
	0.01	0.01	Мо	
	0.04	0.04	Ni	
	0.003		٧	
	0.002		Ti	
	0.001		Nb	
	0.0004	0.0004	В	
and an other state of the state	0.38	-	CE(IIW)	
	0.38	ı	CE(CSA)	

	BSM-1647	-1.57.58-	Heat	
	47			
	Heat		Test Type	
	Ferrite & Pearlite		Microstructure	
	77 HRBW		Hardness	
	Pass		Flattening Test	_
	Longitudinal; 38.1 mm x WT	50mm GL	Tension Test	Mechanical Properties
Account to the second s	43,100	psi	Yield (Rt0.5)	
Section 1997 The Section 1997	70,500	psi	Tensile (Rm)	
The second secon	0.61	(Rt0.5/Rm)	Υ/Τ	
Control of the contro	45	%	Elongation (A)	

Additional Details:

- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in results meet the corresponding requirements. accordance with ASTM/ASME A/SA106-2013 Grade B/C A/SA53-2012, and the purchase order requirements, and that the
- √ 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.
- \checkmark This product has not come into contact with mercury during the Bri-Steel Manufacturing processes.
- \checkmark This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.

Mill Test Certificate approved by:

2014 FEB 25

Sanden

Assistant QA Manager Paul Sowden, T.T.



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Seamless Carbon Steel Pipe Product Heat Number: BSM-1647 Product Size: 18XS Production Date:

Feb 19, 2014

Product:

Production Method: Hot Expansion **Product Heat Treatment:** As-rolled Certificate No.: MTR- 000891

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 > 51-0898 API SPEC 5L NPS 18 XS 0.500 INCHWT GR B/X42 PSL1 SMLS 2014/02 NDE 1990PSI PARTIES HEAT BSM-1647 (PIPE # LENGTH MASS) 93.45lb/ft ASTM/ASME A/SA106 GR B/C A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

		J							2	7	1			
		Product: Details							No	Non-Destructive	ive Testing			
Heat	Test Type	Product Size	Pieces	Length	Mass	Geiger	Res. Mag.	Visual	OD	TU	TU	ET	HydroTest	End
					lb/ft	μR/hr	Gauss	Insp.		WT	ASTM E213	ASTM	1990 PSI/ 5	s Condition
BSM-1647	Heat	NPS 18 XS 0.500in. WT	7	DRL	93.45	<5	<10	Pass	Pass	Pass	Pass	Pass	Pass	34° Bevel

	BSM-1647	Heat	
Degas; ruily Allied	Blast Furnace; EAF; Ladle Refining; Vacuum	Steelmaking Method	
Product	Heat	Test Type	
0.20	0.19	С	
0.92	0.91	Mn	
0.008	0.009	Р	
0.003	0.91 0.009 0.004 0.24	S	Chemical
0.25	0.24	Si	Chemical Analysis (wt%
0.04	0.04	Cr	wt%)
0.08	0.07	Cu	
0.01	0.01	Mo	
0.04	0.04	Ni	
0.003		٧	
0.002		П	
0.001		Nb	
0.0004	0.0004	В	
0.38	1	CE(IIW)	
0.38	1	CE(CSA)	

1	m			
	BSM-1647		Heat	
	Heat		Test Type	
	Ferrite & Pearlite		Microstructure	
	77 HRBW		Hardness	
200000000000000000000000000000000000000	Pass		Flattening Test	
	Longitudinal; 38.1 mm x WT	50mm GL	Tension Test	Mechanical Properties
	43,100	psi	Yield (Rt0.5)	
	70,500	psi	Tensile (Rm)	
	0.61	(Rt0.5/Rm)	Υ/Τ	
2000	45	%	Elongation (A)	

							10100								DOING TOTA
	ı	ı						,	1	ı	ı			1	RSM-1647
AVG	mm	mm	mm	AVG	%	%	%	AVG	J	J	J	ာိ	Sample Details	Standard	
	ateral Expansion	Lateral E			near	% Shea			t Energy	Impact		Temp	Impact Test	Test	Heat

Additional Details:

- \checkmark 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.
- \checkmark 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.
- \checkmark This product has not come into contact with mercury during the Bri-Steel Manufacturing processes.
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Paul Sowden, T.T.
Assistant QA Manager