

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-1707 Product Size: 18STD

Production Method: **Hot Expansion Product Heat Treatment:** As-rolled Certificate No.: MTR- 000967

Production Date:

Mar 18, 2014

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 | STEEL | <API & L/C No. > API SPEC 5L NPS 18 STD 0.375 INCHWT GR B PSL1 SMLS 2014/03 NDE 1490PSI MANUACHUERUS HEAT BSM-1707 (PIPE # LENGTH MASS) 70.59lb/ft ASTM/ASME A/SA106 GR B/C A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

	-		ı
	Heat		
	Test Type		
	Product Size	Product: Details	
	Pieces	20.000	
	Length		
lb/ft	Mass		
μR/hr	Geiger	300 300 300	
Gauss	Res. Mag.		
Insp.	Visual		
	OD	No	
TW	IN	Non-Destructive Testin	
ASTM E213 ASTM 1490 PSI/	UT	tive Testing	
ASTM	ΕT		
1490 PSI/	HydroTest		
5 s	_		
Condition	End		

BSM-1707

Heat

NPS 18 STD 0.375in. WT

6

DRL

70.59

S

<10

Pass

Pass

Pass

Pass

Pass

Pass

34° Bevel

		BSM-1707	Heat	
	Degas; rully killed	Blast Furnace; EAF; Ladle Refining; Vacuum	Steelmaking Method	
	Product	Heat	Test Type	
	0.22	0.20	С	
	0.83	0.85	Mn	
	0.018	0.020	P	
	810.0	0.010	S	Chemical
	0.25	0.23	Si	Chemical Analysis (wt%)
	0.10	0.07	Cr	wt%)
	0.01	0.01	Cu	
	0.01		Mo	
	0.05	0.05	Ni	
	200.0		٧	
	0.003		11	
	0.001		Nb	
	0.0004		В	
	0.38		CE(IIW)	
-	0.38	1	CE(CSA)	

1	_		-	
	BSM-1707		Heat	
	Heat		Test Type	
2000 000	Ferrite & Pearlite		Microstructure	
	77 HRBW		Hardness	
	Pass		Flattening Test	
	Longitudinal; 38.1 mm x WT	50mm GL	Tension Test	Mechanical Properties
100000000000000000000000000000000000000	42,900	psi	Yield (Rt0.5)	
100000000000000000000000000000000000000	72,000	psi	Tensile (Rm)	
	0.60	(Rt0.5/Rm)	Υ/Τ	S
	43	%	Elongation (A)	

Heat	Test	Impact Test	Temp		Impact	Energy			% Shear	ear			Lateral Expansion	(pansion	
	Standard	Sample Details	၁ိ	J	J	J	AVG	%	%	%	AVG	mm	mm	mm	AVG
BSM-1707	•	_	_		-	E	ı			1	ı			,	

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.
- \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.
- \checkmark This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.

Mill Test Certificate approved by:

psonden 2014 MAR 25

Paul Sowden, T.T.

Assistant QA Manager



Mill Test Certificate

2125-64 Avenue, Edmonton, AB Canada T6P 1Z4 Bri-Steel Manufacturing Inc.

Fax: 001 (780) 469-6986 Tel: 001 (780) 469-6603

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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-1707 Product Size: 18 X 0.350

Production Method: **Hot Expansion Product Heat Treatment:** As-rolled Certificate No.: MTR- 000968

Production Date:

Mar 18, 2014

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

NERI-STEEL NPS 18 X 0.350 INCHWT SMLS 2014/03 NDE 1490PSI

ACTUAL MARCHING MEAT BSM-1707 (PIPE # LENGTH MASS) 65.88lb/ft ASTM/ASME A/SA106 GR B/C A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

BSM-1707		Heat	
Heat		Test Type	
NPS 18 X 0.350in. WT		Product Size	Product: Details
6		Pieces	
DRL		Length	
65.88	lb/ft	Mass	
<5	μR/hr	Geiger	
<10	Gauss	Res. Mag.	
Pass	Insp.	Visual	
Pass		9	No
Pass	WT	TU	on-Destruct
Pass	ASTM E213 ASTM	TU	Non-Destructive Testing
Pass	ASTM	ET	2
Pass	1490 PSI/ 5	HydroTest	
34° Bevel	S Condition	End	

Deg	BSM-1707 Blast	Heat	
Degas, runy nineu	Blast Furnace; EAF; Ladle Refining; Vacuum	Steelmaking Method	
Product 0.22	Heat	Test Type	
0.22	0.20 0.85	С	
0.83	0.85	Mn	
0.018 0.013 0.25	0.020 0.010 0.23	þ	
0.013	0.010	S	Chemical
0.25		Si	Chemical Analysis (wt%)
0.10	0.07	Cr	wt%)
0.01	0.01	Cu	
0.01		Мо	
0.05	0.05	N:	
0.002		٧	
0.003		Ti	
0.001		Nb	
0.0004 0.38		В	
	1	CE(IIW)	
0.38	,	CE(CSA)	

33	BSM-1707		Heat	
	Heat		Test Type	
	Ferrite & Pearlite		Microstructure	
	77 HRBW		Hardness	
	Pass		Flattening Test	
	Longitudinal; 38.1 mm x WT	50mm GL	Tension Test	Mechanical Properties
10000000000000000000000000000000000000	42,900	psi	Yield (Rt0.5)	
	72,000	psi	Tensile (Rm)	
	0.60	(Rt0.5/Rm)	Υ/Τ	
	43	%	Elongation (A)	

İ	В		
	BSM-1707		Heat
	=	Standard	Test
	£.	Sample Details	Impact Test
	1	°C	Temp
	-	J	
	ı	ſ	Impact
	t	J	Energy
	-	AVG	
	F	%	
	ı	%	% Shear
	-	%	ear
	1	AVG	
	1	mm	
	٠	mm	Lateral Expansion
	·	mm	pansion
	,	AVG	

Additional Details:

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- \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
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2014 MAR 25

Paul Sowden, T.T. Assistant QA Manager