

## Mill Test Certificate

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

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

www.brichemsteel.com

Seamless Carbon Steel Pipe

Hot Expansion

Product Heat Number:

Product Heat Treatment:

As-rolled

Production Date: Feb 26, 2014

BSM-1668 Product Size: 16XS

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

Certificate No.: MTR- 000917

**Product Markings** 

Product Standards: Production Method:

| API & L/C No.> API SPEC 5L NPS 16 XS 0.500 INCHWT GR B/X42 PSL1 SMLS 2014/02 NDE 2240PSI

HEAT BSM-1668 (PIPE # LENGTH MASS) 82.77lb/ft ASTM/ASME A/SA106 GR B/C A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

	BSM-1668		Heat	
	Heat		Test Type	
	NPS 16 XS 0.500in. WT		Product Size	Product: Details
	14		Pieces	
	DRL		Length	
	82.77	lb/ft	Mass	
	<5	μR/hr	Geiger	
	<10	Gauss	Res. Mag.	
	Pass	Insp.	Visual	
100	Pass		OD	N
	Pass	TW	IN	on-Destruc
	Pass	ASTM E213 ASTM	TU	Non-Destructive Testing
100	Pass		ET	
	Pass	2240 PSI/ 5 s Condition	HydroTest	
	32.5° Bevel	s Condition	End	

	BSM-1668	Heat	
Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed		Steelmaking Method	
Product	Heat	Test Type	
0.21	0.20	С	
0.91	0.92	Mn	
0.011	0.012	Р	
0.011 0.004	0.003	S	Chemical
0.26	0.25	Si	Chemical Analysis (wt%)
0.06	0.06	Cr	wt%)
0.08	0.07	Cu	
0.01	0.01	Mo	
0.04	0.04	Ni	
0.003		٧	
0.001		П	
0.001		Иb	
0.0003	0.0004	В	
0.39	1	CE(IIW)	
0.39	-	CE(CSA)	

BSN			
BSM-1668		Heat	
Heat		Test Type	
Ferrite & Pearlite		Microstructure	
78 HRBW		Hardness	
Pass		Flattening Test	
Longitudinal; 38.1 mm x WT	50mm GL	Tension Test	Mechanical Properties
45,400	psi	Yield (Rt0.5)	
74,500	psi	Tensile (Rm)	
0.61	(Rt0.5/Rm)	Υ/Τ	
44	%	Elongation (A)	

BSM-1668 -	Standard	Heat
T many	Sample Details	impact i est
1	റ്	lemp
,	J	
i	J	Impact
ı	J	Energy
r	AVG	
ľ	%	
-	%	% Shear
ı	%	near
1	AVG	
ı	mm	
E E	mm	Lateral Expansion
Ę	mm	xpansion
r	AVG	

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

Mill Test Certificate approved by:

Kenton Dechant, P.Eng. Manager of Quality and R&D



## Mill Test Certificate

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Product: Seamless Carbon Steel Pipe

**Product Heat Number:** 

BSM-1668 Product Size: 16 X 0.475

Feb 26, 2014

Production Method: **Hot Expansion** 

Product Standards:

**Product Heat Treatment:** 

As-rolled

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

Production Date:

Certificate No.: MTR- 000918

**Product Markings** | CAPI & L/C No. > API SPEC 5L NPS 16 X 0.475 INCHWT GR B/X42 PSL1 SMLS 2014/02 NDE 2240PSI MANUFACTURENCE HEAT BSM-1668 (PIPE # LENGTH MASS) 78.63Ib/ft ASTM/ASME A/SA106 GR B/C A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

	BSM-1668		Heat	800
	Heat		Test Type	
	NPS 16 X 0.475in. WT		Product Size	Product: Details
	14		Pieces	
	DRL		Length	
	78.63	lb/ft	Mass	
	<5	μR/hr	Geiger	
	<10	Gauss	Res. Mag.	
	Pass	Insp.	Visual	
	Pass		OD	N
	Pass	TW	TU	Non-Destructive Testing
A STATE OF THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NAMED IN COLUMN	Pass	ASTM E213 ASTM	TU	ive Testing
The second of the second	Pass	ASTM	ET	
	Pass	2240 PSI/ 5	HydroTest	
	32.5° Bevel	5 <sub>S</sub> Condition	End	

		BSM-1668	Heat	
			at	
	regas, runy runeo	Blast Furnace; EAF; Ladle Refining; Vacuum	Steelmaking Method	
	Product	Heat	Test Type	
Committee	0.21	0.20	С	
	0.91	0.92	Mn	
	0.011	0.012	P	
	0.004	0.003	S	Chemical Analysis (wt%)
-	0.26	0.25	Si	Analysis (
	0.06	0.06	Cr	wt%)
	0.08	0.07	Cu	
	0.01	0.01	Mo	
	0.04	0.04	N:	
	0.003		٧	
	0.001		Ti	
	0.001		Nb	
	0.0003	0.0004	В	
	0.39	-	CE(IIW)	
	0.39	-	CE(CSA)	

BSM-1668 Heat Ferrite & Pearlite 78 HRBW Pass Longitudinal; 38.1 mm x WT	50mm GL	Heat Test Type Microstructure Hardness Flattening Test Tension Test Yi	Mechanical Properties
V			
Pass		ening Test	Me
Longitudinal; 38.1 mm x WT	50mm GL	Tension Test	echanical Properties
45,400	psi	Yield (Rt0.5)	
74,500	psi	Tensile (Rm)	
0.61	(Rt0.5/Rm)	Υ/Τ	
44	%	Elongation (A)	

BSM-1668		Heat
t	Standard	Test
1	Sample Details	Impact Test
1	°C	Temp
	_	
t	L	Impact
1	J	: Energy
T.	AVG	
	%	
ı	%	% Shear
	%	near .
ï	AVG	
ı	mm	
ı	mm	Lateral Expansion
	mm	pansion
r	AVG	

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Manager of Quality and R&D Kenton Dechant, P.Eng.