

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

www.brichemsteel.com

Seamless Carbon Steel Pipe

Product Heat Number:

BSM-1666 Product Size: 16XS

Production Date:

Feb 25, 2014

Production Method: Hot Expansion

Product Heat Treatment: As-rolled

Certificate No.: MTR-

Product Markings

Product Standards:

BRI-STEEL

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

HEAT BSM-1666 (PIPE # LENGTH MASS) 82.77lb/ft ASTM/ASME A/SA106 GR B/C A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

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

BSM-1666		Heat	
Heat		Test Type	
NPS 16 XS 0.500in. WT		Product Size	Product: Details
9		Pieces	i i
DRL		Length	
82.77	lb/ft	Mass	
<u>ئ</u>	μR/hr	Geiger	
<10	Gauss	Res. Mag.	
Pass	Insp.	Visual	
Pass		OD	N
Pass	TW	TU	Non-Destructive Testing
Pass	ASTM E213 ASTM	UΤ	tive Testing
Pass		ΕT	
Pass	2240 PSI/ 5 s Condition	HydroTest	
34° Bevel	Condition	End	

	BSM-1666	Heat	
organ, any mice	Blast Furnace; EAF; Ladle Refining; Vacuum	Steelmaking Method	
Product	Heat	Test Type	
0.22	0.23	С	
0.86	0.87	Mn	
0.016	0.011	P	
0.016 0.005	0.004	S	Chemical
0.25	0.24	Si	Chemical Analysis (wt%)
0.07	0.07	Cr	wt%)
0.07	0.06	Cu	
0.02	0.02	Мо	
0.05	0.05	N.	
0.003		٧	
0.001		Τï	
0.001		Nb	
0.0002	0.0004	В	
0.39	-	CE(IIW)	
0.39	ı	CE(CSA)	

					Mechanical Properties				
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test	Yield (Rt0.5)	Tensile (Rm)	Υ/Τ	Elongation (A)
					50mm GL	psi	psi	(Rt0.5/Rm)	%
BSM-1666	Heat	Ferrite & Pearlite	77 HRBW	Pass	Longitudinal; 38.1 mm x WT	40,500	72,500	0.56	42

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BSM-1666		Heat
ı	Standard	Test
1	Sample Details	Impact Test
,	°C	Temp
1	J	
1	J	Impact
1	J	Energy
t	AVG	
-	%	
1	%	% Shea
	%	ear
1	AVG	
,	mm	
1	mm	Lateral Expansion
1	mm	pansion
1	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.
- \checkmark This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.

Mill Test Certificate approved by:

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



Seamless Carbon Steel Pipe

Product Heat Number:

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

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BSM-1666 Product Size: 16 X 0.475 Production Date: Feb 25, 2014

Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 000915

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 | API & L/C No. > API SPEC 5L NPS 16 X 0.475 INCHWT GR B PSL1 SMLS 2014/02 NDE 2240PSI HEAT BSM-1666 (PIPE # LENGTH MASS) 78.63Ib/ft ASTM/ASME A/SA106 GR B/C A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

BSM-1666		Heat	
Heat		Test Type	
NPS 16 X 0.475in. WT		Product Size	Product: Details
9		Pieces	
DRL		Length	
78.63	lb/ft	Mass	
%	μR/hr	Geiger	
<10	Gauss	Res. Mag.	
Pass	Insp.	Visual	
Pass		OD	Z
Pass	WT	TU	on-Destruc
Pass	ASTM E213	UΤ	Non-Destructive Testing
Pass	ASTM	ET	
Pass	2240 PSI/ 5 s	HydroTest	
34° Bevel	s Condition	End	

	BSM-1666	Heat	
Cagas, rully silled	Blast Furnace; EAF; Ladle Refining; Vacuum	Steelmaking Method	
Product	Heat	Test Type	
0.22	0.23	C	
0.86	0.87	Mn	
	0.011	P	
0.016 0.005	0.004 0.24	S	Chemical Analysis (wt%)
0.25	0.24	Si	Analysis (
0.07	0.07	Cr	wt%)
0.07	0.06	Cu	
0.02	0.02	Mo	
0.05	0.05	Ni	
0.003		٧	
0.001		Ti	
0.001		Nb	
0.0002	0.0004	В	
0.39	1	CE(IIW)	
0.39	ı	CE(CSA)	9

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	BSM-1666		Heat	
	Heat		Test Type	
14	Ferrite & Pearlite		Microstructure	
	77 HRBW		Hardness	
	Pass		Flattening Test	
	Longitudinal; 38.1 mm x WT	50mm GL	Tension Test	Mechanical Properties
	40,500	psi	Yield (Rt0.5)	
0.00 0.00 0.00 0.00	72,500	psi	Tensile (Rm)	
	0.56	(Rt0.5/Rm)	Υ/Τ	
	42	%	Elongation (A)	

ı		1	,	Ł	ı			1	1	r	r		d and	1	BSM-1666
AVG	mm	mm	mm	AVG	%	%	%	AVG	J	J	L	റ്	Sample Details	Standard	
	Expansion	Lateral Ex			% Shear	% SI			t Energy	Impact		Temp	Impact Test	Test	Heat

Additional Details:

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