

Mill Test Certificate

Bri-Steel Manufacturing 2125-64 Avenue, Edmonton, AB Canada T6P 124 Tel: 001 (780) 469-6603

Fax: 001 (780) 469-6986

www.bri-steel.com

Feb 20, 2014

Product Heat Number: BSM-1655 Product Size: NPS 16 XS Production Date:

ASME B36.10M-2015, API 5L-45th Ed. GradeB/X42 PSL1, ASTM/ASME A333-2015/SA333-2013 Grade 6 LT(M45C) A106-2014/SA106-2013 Grade B/C NDE, A53-2012/SA53-2013 Grade B Type S, NACE MR0175-2009 MR0103-2012 Hot Expansion Product Heat Treatment: ThermoMechanical Formed Certificate No.: MTR- 002063

Product Markings

Product Standards: Production Method:

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<API & L/C No.> API SPEC 5L NPS 16 XS 0.500 INCHWT GRB/X42 PSL1 SMLS 2014/02 NDE 2240PSI HEAT BSM-1655 (PIPE # LENGTH MASS) 82.771b/ft ASTM/ASME A/SA333 GR 6 LT(M45C) A/SA106 GR B/C A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

	-	17	1	7	-	, [1
		BSM-1655	1		CCGT-IAICR	1014 4077	неат	
		Degas; Fully Killed	Stee		Heat		est lype	(
		Degas; Fully Killed	Steelmaking Method		NPS 16 XS 0.500in. WT		Product Size	Product: Details
	Product	Heat	Test Type		-		- P	etails
0.20	0.20	0.19	0		18	L	Pieces	
0.96	0.96	0.94	Mn		DRL		Length	
0.009	0.009	0.010	P		82.77	lb/ft	Mass	
0.004	0.004	0.004	S	Chemical Analysis (wt%)	ŝ	µR/hr	Geiger	
0.26	0.26	0.25	Si	Inalysis (-	\vdash		
0.03	0.03	0.03	Cr	wt%)	410	Gauss	Res. Mag.	
0.09	0.09	0.07	C		Pass	insp.	Visual	
0.02	0.02	0.01	Μo		Pass		90	7
0.04	0.04	0.04	Z.		Pass	WT	TU	ion-Destri
0.004	0.004	ŧ	٧		Pass	ASTM	TU	Non-Destructive Testing
0,001	0.001		Ti		Š	E213 AS	•	ting
0.001	0.001	ı	Nb		Pass	TM E309	ET	
0.0003 0.38	0.0003	0.0005	В	400000000000000000000000000000000000000	Pass	ASTM E213 ASTM E309 2240PSI/	HydroTest	
0.38	0.38	0.36	CE(IIW)			5 5 (est	
0.39	0.39	0.37	CE(CSA)		34° Bevel	5 ₅ Condition	End	

	8SM-1655		Heat	
	Heat		lest lype	
	Ferrite & Pearlite		Microstructure	
	78 HRBW		Hardness	
Pass	Pass		Flattening Test	
Longitudinal; 1.5 in. x WT	Longitudinal; 1.5 in. x WT	2 in, GL	Tension Test	Mechanical Properties
47,000	47,000	psi	Yield (Rt0.5)	
74,500	74,500	psi	Tensile (Rm)	
0.63	0,63	(Rt0.5/Rm)	Υ/Τ	
43	43	%	Elongation (A)	

Heat	Test	Impact Test	Temp		Impact E	Energy			% Shear	ear			Lateral E	pansion	
	Standard	Sample Details	ຕໍ	_	_	٦	AVG	%	%	%	AVG	mm	mm	mm	AVG
BSM-1655	ASTM A333	CVN long 10 x 10 mm	-45	32.0	22.0	15.0	23.0	0	0	0	0	0.68	0.45	0.28	0.47

Additional Details:

- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with API 5L-45th Ed., ASTM/ASME A333-2015/SA333-2013, A106-2014/SA106-2013, A53-2012/SA53-2013, and the purchase order requirements, and that the results meet the corresponding requirements. Bri-Steel Manufacturing is registered and certified to ISO-9001:2008, API Q1, and PED 97/23/EC.
- √ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service , and NACE MR0103-2012 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:

Tonya Lam, C.E.T.

Assistant QA Manager



Mill Test Certificate

Bri-Steel Manufacturing Inc. 2125-64 Avenue, Edmonton, AB Canada T6P 124 Tel: 001 (780) 469-6603

Fax: 001 (780) 469-6986 www.brichemsteel.com

Product: Seamless Carbon Steel Pipe

Product Standards:

Production Method:

Hot Expansion

Product Heat Number:

Product Heat Treatment:

BSM-1655 Product Size: 16XS

Production Date: Feb 20, 2014

Certificate No.: MTR- 000898

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

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

TEXTERPRETARING HEAT BSM-1655 (PIPE # LENGTH MASS) 82.77lb/ft ASTM/ASME A/SA106 GR B/C A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

	BSM-1655		Heat	
	Heat		Test Type	
	NPS 16 XS 0.500in. WT		Product Size	Product: Details
	18		Pieces	
	DRL		Length	
	82.77	lb/ft	Mass	
	Ġ	μR/hr	Geiger	
	<10	Gauss	Res. Mag.	
SOUTH COMMENSATION OF THE PERSON OF THE PERS	Pass	insp.	Visual	
	Pass		90	Z
	Pass	TW	TU	Non-Destructive Testing
	Pass	ASTM E213 ASTM	UT	tive Testing
	Pass	ASTM	ET	
The second secon	Pass	2240PSI/ 5 s	HydroTest	
	34° Bevel	Condition	End	

	BSM-1655	Heat	
and the state of t	55 Blast Furnace; EAF; Ladle Refining; Vacuum Depac: Fully Killed	Steelmaking Method	
Product	Heat	Test Type	
0.20	0.19	C	
0.96	0.94	Mn	
0.009	0.010	P	
0.004	0.004	S	Chemical Analy
0.26	0.25	Si	2
0.03	0.03	Cr	s (wt%)
0.09	0.07	Си	
0.02	0.01	Mo	
0.04	0.04	Z.	
0.004		<	
0.001		Ti	
0.001		Мþ	
0.0003	0.0005	В	
0.38	1	CE(IIW)	
0.38	,	CE(CSA)	

					viechanical Properties				
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test	Yield (Rt0.5)	Tensile (Rm)	1/4	Elongation (A)
					50mm GL	psi	psi	(Rt0.5/Rm)	%
BSM-1655	Heat	Ferrite & Pearlite	78 HRBW	Pass	Longitudinal; 38.1 mm x WT	47,000	74,500	0.63	43
	-								

BSM-1655		Heat
t	Standard	Test
1	Sample Details	Impact Test
ı	റ്	Temp
	_	
t	J	Impact
,	_	Energy
	AVG	
•	%	
,	%	% Shear
ı	%	ear
,	AVG	
,	mm	
1	mm	Lateral Ex
•	mm	spansion
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 SL-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 certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1. √This product has not come into contact with mercury during the Bri-Steel Manufacturing processes

Mill Test Certificate approved by:

2014 FEB 25

Assistant QA Manager Paul Sowden, T.T.