

Mill Test Certificate

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

Fax: 001 (780) 469-6986 www.brichemsteel.com Tel: 001 (780) 469-6603

Product: Seamless Carbon Steel Pipe

Product Heat Number:

BSM-0436

Product Size:

NPS 16 TRUE80

Production Date:

August 2, 2012

Production Method: Hot Expansion

Product Heat Treatment:

As-rolled

Product Standards: ASTM/ASME A/SA106-2011 Grade B/C, A/SA53-2012 Grade B Type S, NACE MR0175-2009

Product Markings: .BRI-STEEL MFG NPS 16 TRUE80 ASTM/ASME A/SA106 GR B/C A/SA53 GR B HEAT BSM-0436 (PIPE # LENGTH MASS) 136.51b/ft NDE NH NACE MR0175 2012/08 MADE IN CANADA.

Product Details Wall Heat Test Type NPS Thickness Pieces BSM-0436 Heat Test Type NPS TRUE80 NPS TRUE80 NPS NASS Pieces Length DRL 136.50 Chemical Analysis (wt%) Non-Destructive Testing UT UT ET HydroTest HydroTest HydroTest Chemical Analysis (wt%)	_	Т	1				Т
Product Details Non-Destructive Testing				BSM-0436	Heat		
Product Details Non-Destructive Testing Wall Mass Geiger Res.Mag. Visual UT UT ET HydroT Thickness Pieces Length lb/ft μR/hr Gauss Insp. OD WT ASTM E213 ASTM E309 Pass Pass Pass Pass Pass				Heat	Test Type		
Non-Destructive Testing Non-Destructive Testing Non-Destructive Testing HydroT Pieces Length lb/ft μR/hr Gauss Insp. OD WT ASTM E213 ASTM E309 14 DRL 136.50 <5 <20 Pass Pass Pass Pass Pass Pass				16	NPS		
Non-Destructive Testing Non-Destructive Testing Non-Destructive Testing HydroT Pieces Length lb/ft μR/hr Gauss Insp. OD WT ASTM E213 ASTM E309 14 DRL 136.50 <5 <20 Pass Pass Pass Pass Pass Pass				TRUE80	Thickness	Wall	Product Detai
Mass Geiger Res.Mag. Visual UT UT ET HydroT Ib/ft μR/hr Gauss Insp. OD WT ASTM E213 ASTM E309 136.50 <5 <20 Pass Pass Pass Pass Chemical Analysis (wt%)				14	Pieces		ls
Geiger Res.Mag. Visual UT UT ET HydroT UT Gauss Insp. OD WT ASTM E213 ASTM E309 Chemical Analysis (wt%)				DRL	Length		
Visual UT UT ET HydroT Insp. OD WT ASTM E213 ASTM E309 Pass Pass Pass Pass				136.50	lb/ft	Mass	
Visual UT UT ET HydroT Insp. OD WT ASTM E213 ASTM E309 Pass Pass Pass Pass		Chemical A		%	μR/hr	Geiger	
Non-Destructive Testing UT UT UT OD WT ASTM E213 ASTM E309 Pass Pass Pass Pass Pass Pass Pass Pas		nalysis (wt%)	ei Ji	<20	Gauss	Res.Mag.	
nn-Destructive Testing UT UT WT ASTM E213 ASTM E309 Pass Pass Pass			(A	Pass	Insp.	Visual	
ET HydroT E213 ASTM E309 Pass				Pass	OD		Non-l
ET HydroT E213 ASTM E309 Pass				Pass	WT	T	Destructive -
HydroT					ASTM E213	TU	[esting
HydroT				Pass	ASTM E309	ET	
	2			1		HydroTest	
End Condition Plain End				Plain End	Condition		

Heat

Steelmaking Method

Analysis

Μ

몽

	_			_	т .	_	
	BSM-0436 Heat	Heat				0	RSM-0436
	Heat	Test Type				Vacuum De	Blast Furnace; E
	Ferrite & Pearlite	Microstructure				Vacuum Degas; Fully Killed Product 0.19 0.86 0.006 0.004 0.21	Blast Furnace; EAF; Ladle Refining;
	·lite	re				Product	Heat
	7:	HRBW	Hardness			0.19	0.19
		×	ness			0.86	0.88
	Pass	Flatteni				0.006	0.88 0.006 0.003
	SS	Flattening Test		Mechan		0.004	0.003
I ongitudinal: 38 1mm x WT	Transver		Te	Mechanical Properties		0.21	0.23
nal: 38 1r	Transverse; 38.1mm x WT	50mm GL	Tension Test	rties		0.06	0.06
TW x mr	m x WT		7			0.06	0.06
47 000	56,000	psi	Yield (Rt			0.04	0.03
	Ō		0.5) Y			0.03	0.03
47 000	54,500	psi	ield (Rt0.5) Yield (Rp0.2) Tensile (Rm)			0.002 0.001	1
71	72	1	2) Tens			0.001	1
71 000	72,000	psi	ile (Rm)			0.001	1
99.0	0.78	(Rt0.5/Rm	Τ/Υ			0.001 0.0003 0.36	0.0005
		י)	Elonga			0.36	
51	46	%	Elongation (A)			0.36	,

Additional Details:

- Inc. in accordance with ASTM/ASME A/SA106-2011, A/SA53-2012 and the purchase order requirements, and that the results meet the corresponding requirements. We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing
- Service, and NACE MR0103-2010 Section 2.1. √ This pipe product meet the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour
- No weld repairs have been performed on this product. This product has no mercury contamination
- This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.

Mill Test Certificate approved by:

2012 Aug 20

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



Mill Test Certificate

Bri-Steel Manufacturing Inc.

2125-64 Avenue, Edmonton, AB Canada T6P 1Z4 Fax: 001 (780) 469-6986 www.brichemsteel.com Tel: 001 (780) 469-6603

Product: Seamless Carbon Steel Pipe

Product Heat Number:

BSM-0436

Product Size:

NPS 16 SCH 60

Production Date: August 2, 2012

Production Method: **Hot Expansion**

Product Standards:

Product Heat Treatment: As-rolled

ASTM/ASME A/SA106-2011 Grade B/C, A/SA53-2012 Grade B Type S, NACE MR0175-2009

Product Markings: .BRI-STEEL MFG NPS 16 SCH 60 ASTM/ASME A/SA106 GR B/C A/SA53 GR B HEAT BSM-0436 (PIPE # LENGTH MASS) 107.5Ib/ft NDE NH NACE MR0175 2012/08 MADE IN CANADA.

BSM-0436	Heat		
Heat	Test Type		
16	NPS		q
SCH 60	Thickness	Wall	Product Detail
14	Pieces		S
DRL	Length		
107.50	lb/ft	Mass	
<5	μR/hr	Geiger	
<20	Gauss	Res.Mag.	
Pass	Insp.	Visual	
Pass	OD		Non-E
Pass	WT	T	Destructive
	ASTM E213	TU	esting
Pass	ASTM E309	ET	
		HydroTest	
Plain End	Condition	End	

	Blast Furnace;	Heat Stee		
Vacuum Degas; Fully Killed	ace; EAF; Ladle Refining;	Steelmaking Method		
Product	Heat	Analysis		
0.19	0.19	0		
0.86	0.88	Mn		
0.006	0.006	Ъ		
0.006 0.004	0.003	S		Chemical
0.21	0.23	Si		Chemical Analysis (wt%)
0.06	0.06	Ç		(wt%)
0.06	0.06	Cu		
0.04	0.03	Mo		
0.03	0.03	N:		
0.002		<		
0.001	ı	=		
0.001		Nb		
0.0003	0.0005	В		
0.36	1	(WII)	CE	
0.36		(CSA)	Œ	

BSM-0436 Heat Ferrite & Pearlite 71 Pass Transverse; 38.1mm x WT 56,000 54,500 72,000 0.78 46	pe Microstructure HRBW Flattening Test 50mm GL psi psi (Rt Ferrite & Pearlite 71 Pass Transverse; 38.1mm x WT 56,000 54,500 72,000	Hardness Tension Test Yield (Rt0.5) Yield (Rp0.2) Tensile (Rm) Y/T Elongation (A	Mechanical Properties		ilongation (A %	Y/T E (Rt0.5/Rm) 0.78	Tensile (Rm) psi 72,000	Yield (Rp0.2) psi 54,500	Yield (Rt0.5) psi 56,000	Tension Test 50mm GL Transverse; 38.1mm x WT		Hardness HRBW 71	Microstructure Ferrite & Pearlite	Test Type Heat	Heat BSM-0436
---	--	--	-----------------------	--	--------------------	-----------------------------	-------------------------------	--------------------------------	--------------------------------	--	--	------------------------	--------------------------------------	-------------------	------------------

Additional Details:

results meet the corresponding requirements. Inc. in accordance with ASTM/ASME A/SA106-2011, A/SA53-2012 and the purchase order requirements, and that the We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing

Service, and NACE MR0103-2010 Section 2.1 This pipe product meet the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour

 \checkmark No weld repairs have been performed on this product. This product has no mercury contamination

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.