

Bri-Steel Manufacturing Inc.

2125-64 Avenue, Edmonton, AB Canada T6P 1Z4

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

www.brichemsteel.com

BSM-0126 Product Size: NPS 20 STD Production Date: 2011 Dec 05

Production Method: Hot Expansion Product Heat Treatment: As-rolled

Product:

Seamless Carbon Steel Pipe

Product Heat Number:

Product Standards: ASTM/ASME A/SA106-2010 Grade B/C, A/SA53-2010 Grade B Type S, NACE MR0175-2009

Product Markings: .BRI-STEEL MFG NPS 20 STD ASTM/ASME A/SA106 GR B/C A/SA53 GR B HEAT BSM-0126 (PIPE # LENGTH MASS) NDE 910PSI NACE MR0175 2011/11 MADE IN CANADA.

<u></u>	Г		Г
BSM-0126	Heat		
Heat	Test Type		
20	NPS		P
STD	SCH		roduct Detai
ъ	Pieces		ils
DRL	Length		
2987 LB	Mass		
\$	μR/hr	Geiger	
<20	Gauss	Res.Mag.	
Pass	Insp.	Visual	
Pass	OD		Non-E
Pass	TW	TU	estructive 1
	ASTM E213	TU	esting
Pass	ASTM E309	ET	
Pass	910 psi/5s	HydroTest	
37.5° Bevel	Condition	End	

	_		Γ-
BSM-0126	Heat		
Heat	Test Type		
Refining; Vacuum Degas	Blast Furnace; EAF; Ladle	Steelmaking Method	
0.20	C		
0.86	Mn		
0.014	P		
0.86   0.014   0.006	S		Chemical
0.24	Si		Chemical Analysis (wt%)
0.04	Cr		(wt%)
0.12	Cu		
0.03	Mo		
0.04	<u>Z</u> .		
0.002	<		
0.001	=		
0.001	Nb		
0.0002	В		
0.37	(IIW)	æ	
85.0	(CSA)	æ	

	_	r	_	_
	BSM-0126	Heat		
	Heat	Test Type		
	Ferrite & Pearlite	Microstructure		
	79	HRBW	Hardness	
	Pass	Flattening Test		Mechan
Longitudinal	Transverse	Flattening Test 50mm GL; 38mm x WT	Tension Test	Mechanical Properties
50,500	48,500	psi	Yield (Rt0.5)	
50,000	47,600	psi	Yield (Rp0.2)	
76,500	77,500	psi	Tensile (Rm)	
0.66	0.63	(Rt0.5/Rm)	Τ/Υ	
39	39	%	Elongation (A)	

Additional Details:

✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with ASTM/ASME A/SA106-2010, A/SA53-2010 and the purchase order requirements, and that the results meet the corresponding requirements.

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:

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

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## Bri-Steel Manufacturing Inc.

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Fax: 001 (780) 469-6986

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Product: Seamless Carbon Steel Pipe

Product Heat Number:

Product Size:

NPS 20 STD

Production Method: Hot Expansion

Product Heat Treatment: As-rolled

BSM-0132

Production Date: 2011 Dec 06

Product Standards: ASTM/ASME A/SA106-2010 Grade B/C, A/SA53-2010 Grade B Type S, NACE MR0175-2009

Product Markings: .BRI-STEEL MFG NPS 20 STD ASTM/ASME A/SA106 GR B/C A/SA53 GR B HEAT BSM-0132 (PIPE # LENGTH MASS) NDE 910PSI NACE MR0175 2011/11 MADE IN CANADA.

		Т		_
	BSM-0132	Heat		
	Heat	Test Type		
	20	NPS		P
	STD	SCH		roduct Detai
	2	Pieces		ils
	DRL	Length		
	6280 LB	Mass		
	Ġ	μR/hr	Geiger	
	<20	Gauss	Res.Mag.	
	Pass	Insp.	Visual	
	Pass	OD		Non-De
200	Pass	WT	TU	-Destructive T
		ASTM E213	TU	esting
	Pass	ASTM E309	EI	
	Pass	ASTM E309 910 psi/5s	HydroTest	
	37.5° Bevel	s Condition	End	

BSM-0132	Heat		
)132			
Heat	Test Type		
Refining; Vacuum Degas	Blast Furnace; EAF; Ladle	Steelmaking Method	
0.20	C	12.11	
0.86	Mn		
0.011	Р		
0.009	S		Chemical
0.21	Si		Analysis (wt%)
0.03	Cr		(wt%)
0.13	Cu		
0.02	Mo		
0.04	Z.		
0.003	<		
0.001	=		
0.001	МР		
0.0002	8		
0.36	(IW)	CE	
0.37	(CSA)	æ	

	BSM-0132 Heat	Heat		
	Heat	Test Type		
	Ferrite & Pearlite	Microstructure		
	78	HRBW	Hardness	
	Pass	Flattening Test		Mechan
Longitudinal	Transverse	Flattening Test 50mm GL; 38mm x WT	Tension Test	Mechanical Properties
48,800	45,900	psi	Yield (Rt0.5)	
48,700	46,400	psi	Yield (Rp0.2)	
75,000	76,500	psi	Tensile (Rm)	
0.65	0.60	(Rt0.5/Rm)	Т/4	
42	41	%	Elongation (A)	

#### Additional Details:

- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with ASTM/ASME A/SA106-2010, A/SA53-2010 and the purchase order requirements, and that the results meet the corresponding requirements.
- Service, and NACE MR0103-2010 Section 2.1.  $\checkmark~$  This pipe product meet the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour
- $\checkmark~$  This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.

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

Mill Test Certificate approved by:

Kenton Dechant, P.Eng.

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Manager of Quality and R&D



## **Bri-Steel Manufacturing Inc.**

2125-64 Avenue, Edmonton, AB Canada T6P 1Z4 Tel: 001 (780) 469-6603

Fax: 001 (780) 469-6986

www.brichemsteel.com

Product: Seamless Carbon Steel Pipe

Product Heat Number: BSM-0134

Product Size:

NPS 20 STD

Production Date: 2011 Dec 07

Production Method: Hot Expansion

Product Heat Treatment: As-rolled

Product Standards: ASTM/ASME A/SA106-2010 Grade B/C, A/SA53-2010 Grade B Type S, NACE MR0175-2009

Product Markings: .BRI-STEEL MFG NPS 20 STD ASTM/ASME A/SA106 GR B/C A/SA53 GR B HEAT BSM-0134 (PIPE # LENGTH MASS) NDE 910PSI NACE MR0175 2011/11 MADE IN CANADA.

Product Details  Non-Destructive Testing  Non-Destructive Testing  Non-Destructive Testing  Non-Destructive Testing  HydroTest End  HydroTest End  Figure Res.Mag. Visual  Heat Pest Type NPS SCH Pieces Length Mass μR/hr Gauss Insp. OD WT ASTM E213 ASTM E309 910 psi/5s Condition  Non-Destructive Testing  HydroTest End  ASTM E309 910 psi/5s Condition  Pass Pass Pass 97.5° Bevel	Г	Т		Т
Product Details  Non-Destructive Testing  Non-Destructive Testing  Non-Destructive Testing  HydroTest  Figure 1	BSM-0134	Heat		
Product Details  Non-Destructive Testing  Non-Destructive Testing  Fig. Visual UT UT ET HydroTest UT SCH Pieces Length Mass μR/hr Gauss Insp. OD WT ASTM E213 ASTM E309 910 psi/5s Co Pass Pass Pass Pass Pass 97.1	Heat	Test Type		
Petails  Non-Destructive Testing  HydroTest  Fieces Length Mass μR/hr Gauss Insp. OD WT ASTM E213 ASTM E309 910 psi/5s Co  1 DRL 3144 LB <5 <20 Pass Pass Pass Pass 97.9	20	NPS		
S Onn-Destructive Testing  Geiger Res.Mag. Visual UT UT ET HydroTest Pieces Length Mass μR/hr Gauss Insp. OD WT ASTM E213 ASTM E309 910 psi/5s Co  1 DRL 3144 LB <5 <20 Pass Pass Pass Pass 97.9	STD	SCH		roduct Deta
Non-Destructive Testing  Geiger Res.Mag. Visual UT UT ET HydroTest h Mass μR/hr Gauss Insp. OD WT ASTM E213 ASTM E309 910 psi/5s Co  3144 LB <5 <20 Pass Pass Pass Pass 93.	1	Pieces		ils
Hon-Destructive Testing         Geiger       Res.Mag.       Visual       UT       UT       ET       HydroTest         μR/hr       Gauss       Insp.       OD       WT       ASTM E213       ASTM E309       910 psi/5s       Co         <5	DRL	Length		
Res.Mag. Visual UT UT ET HydroTest Gauss Insp. OD WT ASTM E213 ASTM E309 910 psi/5s Co	3144 LB	Mass		
Non-Destructive Testing           Visual         UT         UT         ET         HydroTest           Insp.         OD         WT         ASTM E213 ASTM E309 910 psi/5s         Co           Pass         Pass         Pass         Pass         937.1	6	μR/hr	Geiger	
Non-Destructive Testing           UT         UT         ET         HydroTest           OD         WT         ASTM E213         ASTM E309         910 psi/5s         Co           Pass         Pass          Pass         Pass         37.1	<20	Gauss	Res.Mag.	
UT         UT         ET         HydroTest           WT         ASTM E213         ASTM E309         910 psi/5s         Co           Pass          Pass         Pass         37.9	Pass	Insp.	Visual	
ve Testing  UT  ET  HydroTest  ASTM E213 ASTM E309 910 psi/5s Co  Pass  Pass  Pass  37.1	Pass	OD		Non-I
ET HydroTest  2213 ASTM E309 910 psi/5s Co  Pass Pass 37.1	Pass	WT	TU	Destructive T
HydroTest 309 910 psi/5s Co		ASTM E213	UT	esting
HydroTest 910 psi/5s Co Pass 37.1	Pass	ASTM E309	ET	
1710	Pass	910 psi/5	HydroTest	
	37.5° Bevel		End	

BSM	Ī		
BSM-0134	Heat		
Heat	Test Type	_	
Refining; Vacuum Degas	Blast Furnace; EAF; Ladle	Steelmaking Method	
0.20	C		
0.87	Mn		
0.010	P		
0.006	S		Chemical A
0.21	Si		na
0.04	수		lysis (wt%)
0.13	Cu		
0.02	Mo		
0.04	Z.		
0.003	<		
0.001	Ti		
0.001	Nb		
0.0002	В		
0.37	(MII)	Œ	
0.37	(CSA)	æ	

	В	Τ	-	Т
	SM-0134	Heat		
	BSM-0134 Heat	Test Type		
	Ferrite & Pearlite	Microstructure		
	76	HRBW	Hardness	
	Pass	Flattening Test		Mechan
Longitudinal	Transverse	50mm GL; 38mm x WT	Tension Test	Mechanical Properties
49,600	42,700	psi	Yield (Rt0.5)	
49,600	42,000	psi	Yield (Rp0.2)	
75,000	74,500	psi	Tensile (Rm)	
0.66	0.57	(Rt0.5/Rm)	Υ/Τ	
42	42	%	Elongation (A)	

#### Additional Details:

- results meet the corresponding requirements. Inc. in accordance with ASTM/ASME A/SA106-2010, A/SA53-2010 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:

Zoll Dec14

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



## Bri-Steel Manufacturing Inc.

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

www.brichemsteel.com

Product: Seamless Carbon Steel Pipe

Product Heat Number: BSM-0133

Product Size:

NPS 20 STD

Production Date: 2011 Dec 07

Production Method: Hot Expansion

Product Standards:

ASTM/ASME A/SA106-2010 Grade B/C, A/SA53-2010 Grade B Type S, NACE MR0175-2009

Product Heat Treatment: As-rolled

Product Markings: .BRI-STEEL MFG NPS 20 STD ASTM/ASME A/SA106 GR B/C A/SA53 GR B HEAT BSM-0133 (PIPE # LENGTH MASS) NDE 910PSI NACE MR0175 2011/11 MADE IN CANADA.

<u></u>	1		Т
BSM-0133	Heat		
Heat	Test Type		
20	NPS		P
STD	SCH		Product Detail
2	Pieces		ls
DRL	Length		
6288 LB	Mass		
\$	µR/hr	Geiger	
<20	Gauss	Res.Mag.	
Pass	insp.	Visual	
Pass	90		Non-I
Pass	WT	TI	Destructive :
	ASTM E213	TU	Testing
Pass	ASTM E309	ET	
Pass	910 psi/5s	HydroTest	
37.5° Bevel	Condition	End	

BSM-0133	Heat		
Heat	Test Type		
Refining; Vacuum Degas	Blast Furnace; EAF; Ladle	Steelmaking Method	
0.20	C		
0.86	Mn		
0.012	P		
0.007	S		Chemical
0.21	Si		Anal
0.03	ڻ ر		ysis (wt%)
0.14	Cı		
0.02	Mo		
0.04	Z		
0.003	<		
0.001	#		
0.001	Nb		
0.0002	В		
0.37	(WII)	æ	
0.37	(CSA)	æ	

	BSM-0133 Heat	Heat		
	Heat	Test Type		
	Ferrite & Pearlite	Microstructure		
	80	HRBW	Hardness	
	Pass	Flattening Test		Mechar
Longitudinal	Transverse	Flattening Test 50mm GL; 38mm x WT	Tension Test	Mechanical Properties
53,000	51,500	psi	Yield (Rt0.5)	
53,000	52,000	psi	Yield (Rp0.2)	
77,000	77,500	psi	Tensile (Rm)	
0.69	0.66	(Rt0.5/Rm)	Υ/Τ	
43	38	%	Elongation (A)	

#### Additional Details:

- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with ASTM/ASME A/SA106-2010, A/SA53-2010 and the purchase order requirements, and that the results meet the corresponding requirements.
- 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:

2011 Dec14

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



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Product: Seamless Carbon Steel Pipe

Product Heat Number: BSM-0135

Product Size:

NPS 20 STD

Production Date:

2011 Dec 07

Production Method: Hot Expansion

Product Heat Treatment: As-rolled

Product Standards: ASTM/ASME A/SA106-2010 Grade B/C, A/SA53-2010 Grade B Type S, NACE MR0175-2009

Product Markings: .BRI-STEEL MFG NPS 20 STD ASTM/ASME A/SA106 GR B/C A/SA53 GR B HEAT BSM-0135 (PIPE # LENGTH MASS) NDE 910PSI NACE MR0175 2011/11 MADE IN CANADA.

	BSM-0135	Heat		
	Heat	Test Type		
	20	NPS		P
	STD	SCH		Product Detail
	7	Pieces		İs
3	DRL	Length		
	22,024 LB	Mass		
	Ġ.	μR/hr	Geiger	
	<20	Gauss	Res.Mag.	
75	Pass	Insp.	Visual	
	Pass	OD		Non-Des
	Pass	WT	TU	Destructive T
		ASTM E213	TU	Testing
	Pass	ASTM E309	ET	
The state of the s	Pass	910 psi/5s	HydroTest	
	37.5° Bevel	Condition	End	

	BSN	<u></u>		
	BSM-0135	Heat		
	Heat	Test Type		
	Refining; Vacuum Degas	Blast Furnace; EAF; Ladle	Steelmaking Method	
	0.19	C		
	0.85	Mn		
	0.011	P		
	0.008	S		Chemical /
	0.21	Si		Analysis (wt%)
	0.03	Cr		(wt%)
	0.14	Cu		
	0.02	Mo		
The second secon	0.04	<u>Z</u> .		
Secretary Section 1	0.002	٧		
200	0.001	T		
Section 1	0.001	Nb		
	0.0002	В		
	0.35	(IIW)	CE	
	0.36	(CSA)	CE	

	BSM-01:	Heat		
	BSM-0135 Heat	Test Type		
	Ferrite & Pearlite	Microstructure		
	77	HRBW	Hardness	
	Pass	Flattening Test		Mechar
Longitudinal	Transverse	Flattening Test 50mm GL; 38mm x WT	Tension Test	Mechanical Properties
49,400	44,500	psi	Yield (Rt0.5)	
49,200	44,200	psi	Yield (Rp0.2)	
74,000	73,000	psi	Tensile (Rm)	
0.67	0.61	(Rt0.5/Rm)	Υ/Τ	
40	35	%	Elongation (A)	9

Additional Details:

results meet the corresponding requirements. Inc. in accordance with ASTM/ASME A/SA106-2010, A/SA53-2010 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.  $^\prime$  This pipe product meet the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour

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

 $\checkmark~$  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.

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Manager of Quality and R&D