

Mill Test Certificate

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

Tel: 001 (780) 469-6603

Fax: 001 (780) 469-6986

www.brichemsteel.com

Production Date: May 13, 2013

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

Product:

Seamless Carbon Steel Pipe

Product Heat Number:

BSM-0904

Product Size:

NPS 20 XS

Product Standards: ASME B36.10-2004, API 5L-44th Ed. Grade B PSL1, ASTM/ASME A/SA106-2011 Grade B/C NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010

Product Markings: BRI-STEEL MFG <API> 5L-0898 API 5L GR B PSL1 ASTM/ASME A/SA106 GR B/C A/SA53 GR B NPS 20 XS 0.5 inchWT HEAT BSM-0904 (PIPE # LENGTH MASS) 104.11b/ft NDE

1260 PSI SMLS NACE MR0175 2013/05 MADE IN CANADA.

E	Т		Т
BSM-0904	Heat		
Heat	Test Type		
NPS 20 XS 0.5 in.WT	Product Size		Product Detail
14	Pieces		ls
DRL	Length		
104.10	lb/ft	Mass	
\$	μR/hr	Geiger	
<20	Gauss	Res.Mag.	
Pass	Insp.	Visual	
Pass	OD		Non-E
Pass	WT	TU	Destructive 1
Pass	ASTM E213 /	TU	esting
Pass	STM E309	ET	
Pass	1260 psi/5s	HydroTest	
32.5° Bevel	Condition	End	

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	BSM-0904	Heat	
Vacuum Degas; Fully Killed	Blast Furnace; EAF; Ladle Refining;	Steelmaking Method	
Product	Heat	Analysis	
0.21	0.19	n	
0.89	0.84	Mn	
0.024	0.018	P	
0.024 0.011	0.008	S	Chemical
0.24	0.23	Si	Analysis (wt%)
0.08	0.07	Cr	(wt%)
0.01	0.01	Си	
0.00		Mo	
0.04	0.04	<u>z</u> .	
0.002	·	<	
0.002		П	
0.001	-	Nb	
0.0001	-	В	
0.38	ı	(IIW)	
0.39	1	(CSA)	

				Mechar	Mechanical Properties				
			Hardness		Tension Test	Yield (Rt0.5)	Tensile (Rm)	Т/А	Elongation (A)
Heat	Test Type	Microstructure	HRBW	Flattening Test	50mm GL	psi	psi	(Rt0.5/Rm)	%
BSM-0904 Heat	Heat	Ferrite & Pearlite	78	Pass	Longitudinal; 38.1mm x WT	45,000	72,000	0.63	49

	Test	Impact Test	Temp		Impact	Energy			% Shear	ear			Lateral E	l Expansion	
Heat	Standard	Sample Details	Oē	_	_	_	AVG	%	%	%	AVG	mm	mm	mm	AVG
BSM-0904		1	c	1	1	.1	,	,	1	1	ı	t	,	,	,

Additional Details:

- and that the results meet the corresponding requirements. Inc. in accordance with API 5L-44th Ed., ASTM/ASME A/SA106-2011, A/SA53-2012, and the purchase order 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 meets 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 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.



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

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NPS 20 TRUE40 Production Date: May 13, 2013

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

Product:

Seamless Carbon Steel Pipe

Product Heat Number:

BSM-0904

Product Size:

Product Standards: ASME B36.10-2004, API 5L-44th Ed. Grade B PSL1, ASTM/ASME A/SA106-2011 Grade B/C NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010

Product Markings: NDE 1370 PSI SMLS NACE MR0175 2013/05 MADE IN CANADA. BRI-STEEL MFG <API> 5L-0898 API 5L GR B PSL1 ASTM/ASME A/SA106 GR B/C A/SA53 GR B NPS 20 TRUE40 0.594 inchWT HEAT BSM-0904 (PIPE # LENGTH MASS) 122.91b/ft

BSM-0904	Heat		
Heat	Test Type		
NPS 20 TRUE40 0.594 in.WT	Product Size		Product Detail
14	Pieces		S
DRL	Length		
122.90	lb/ft	Mass	
S	μR/hr	Geiger	
<20	Gauss	Res.Mag.	
Pass	Insp.	Visual	
Pass	OD		Non-E
Pass	WT	TU	estructive T
Pass	ASTM E213	TU	esting
Pass	ASTM E309	ET	
Pass	1370 psi/5s	HydroTest	
Plain End	Condition	End	

						Chemical ,	al Analysis (wt%	(wt%)									
																CE	CE
Heat	Steelmaking Method	Analysis	C	Mn	Р	S	Si	Cr	Cu	Mo	<u>Z</u> .	<	∄	Nb	В	(W)	(CSA)
BSM-0904	Blast Furnace; EAF; Ladle Refining;	Heat	0.19	0.84	0.018	0.008	0.23	0.07	0.01		0.04	t	1	,	1	1	1
000	Vacuum Degas; Fully Killed	Product	0.21	0.89	0.024	0.011	0.24	0.08	0.01	0.00	0.04	0.002	0.002	0.001	0.0001	0.38	0.39

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BSM-0904	Heat		
Heat	Test Type		
Ferrite & Pearlite	Microstructure		
78	HRBW	Hardness	
Pass	Flattening Test		Mechar
Longitudinal; 38.1mm x WT	50mm GL	Tension Test	Mechanical Properties
45,000	psi	Yield (Rt0.5)	
72,000	psi	Tensile (Rm)	
0.63	(Rt0.5/Rm)	Т/А	
49	%	Elongation (A)	

		т —	_
	BSM-0904	Heat	
	,	Standard	Test
	31	Sample Details	Impact Test
		De	Temp
	-	J	
	1	j	Impact
	1	_	Energy
		AVG	
	,	%	
	1	%	% Shea
		%	ear
		AVG	
	1	mm	
	Ļ	mm	Lateral Expansion
0.000	-	mm	oansion
	1	AVG	

Additional Details:

- and that the results meet the corresponding requirements. Inc. in accordance with API 5L-44th Ed., ASTM/ASME A/SA106-2011, A/SA53-2012, and the purchase order requirements, We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing
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- ✓ No weld repairs have been performed on this product.
- This product has not come into contact with mercury during the Bri-Steel Manufacturing processes.
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Kenton Dechant, P.Eng. Manager of Quality and R&D