

Mill Test Certificate

2125-64 Avenue, Edmonton, AB Canada T6P 124 Bri-Steel Manufacturing Inc.

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

www.brichemsteel.com

Product: Seamless Carbon Steel Pipe

Product Heat Number:

Production Method.

Hot Expansion

BSM-0471

Product Size: NPS 20 STD

Production Date:

September 13, 2012

Product Heat Treatment: As-rolled

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: .BRISTEEL MFG <API> 51-0898 API 51 GR B PSL1 ASTM/A5ME A/SA106 GR B/C A/SA53 GR B NPS 20 STD HEAT BSM-0471 (PIPE # LENGTH MASS) 78.601b/ft NDE 1100PSI SMLS NACE MR0175 2012/09 MADE IN CANADA.

BSM-0471	Heat		
Heat	Test Type		
20	NPS		
STD	Thickness	Wall	Product Detail
18	Pieces		\$
DRL	Length		
78.60	lb/ft	Mass	
<5	μR/hr	Geiger	
<20	Gauss	Res Mag	
Pass	Insp.	Visual	
Pass	00		Non-I
Pass	T.W.	TU	Destructive :
Pass	ASTM E213	UΤ	Testing
Pass	ASTM E309	13	
Pass	4 E309 1100 psi/5s	HydroTest	
37.5° Bevel	Condition	End	

0000	RSM-0471	Heat		
Vacuum Degas; Fully Killed	Blast Furnace; EAF; Ladle Refining;	Steelmaking Method		
Product	Heat	Analysis	200	
0.20	0.21	n		
0.87	0.91	M _□		
0.87 0.015 0.011	0.014	ש		
0.011	0.012	S		Chemica
0.25	0.26	Si		Chemical Analysis (wt%
0.05	0.05	Cr		(wt%)
0.11	0.10	Cu		
0.01	0.01	Mo		
0.07	0.07	Z		
0.002	ı	<		
0.001	1	11		
0.001	,	Nb		
0.0002	0.0004	В		
0.37		(IIW)	Æ	
0.38	,	(CSA)	CE	

	BSM-0471 Heat	Heat		
	Heat	Test Type	han and t	
	Ferrite & Pearlite	Microstructure		
	76	HRBW	Hardness	
	Pass	Flattening Test		Mechar
Longitudinal; 38.1mm x WT	Transverse; 38.1mm x WT	50mm GL	Tension Test	Mechanical Properties
45,800	45,300	psi	Yield (Rt0.5)	
45,800	44,900	psi	Yield (Rp0.2)	
72,000	72,500	psi	Tensile (Rm)	
0.64	0.62	(Rt0.5/Rm)	Y.	
44	44	%	Elongation (A)	

Additional Details:

and that the results meet the corresponding requirements. Inc. in accordance with API SL-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 MR01.75/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

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.

2013 April2

Manager of Quality and R&D



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Product Heat Number:

BSM-0471

Product Size:

NPS 20 XS

Production Date:

September 13, 2012

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

Product Standards: ASME 836.10-2004, API SI-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> SL-0898 API SL GR B PSL1 ASTM/ASME A/SA106 GR B/C A/SA53 GR B NPS 20 XS HEAT BSM-0471 (PIPE # LENGTH MASS) 104.11b/ft NDE 1100PSI SML5 NACE MR0175 2012/09 MADE IN CANADA.

37.5° Bevel	Pass	Pass	Pass	Pass	Pass	Pass	<20	S	104.10	DRL	18	XS	20	Heat	BSM-0471
Condition	1100 psi/5s	ASTM E309	ASTM E213	M	8	insp.	Gauss	µR/hr	lb/ft	Length	Pieces	Thickness	NPS	Test Type	Heat
End	HydroTest	9	UT	UT.		Visual	Res.Mag.	Geiger	Mass			Wall			
			Testing	Destructive 1	Non-C						\$	Product Detail			

Product 0.20 0.87 0.015 0.011 0.25 0.05 0.11 0.01	Blast Furnace; EAF; Ladle Refining; Heat 0.21 0.91 0.014 0.012 0.26 0.05 0.10 0.01	Heat Steelmaking Method Analysis C Mn P S Si Cr Cu Mo Ni		Chemical Analysis (wt%)
0.		7		
87	-	ĺη		
0.015	0.014	סי		
0.011	0.012	S		Chemical
0.25	0.26	Sí		Analysis
0.05	0.05	ð.		(wt%)
0.11	0.10	C.		
0.01	0.01	Mo		
0.07	0.07	Z		
0.002 0.001	,	<		
		T		
0.001	1	N _D		
0.0002	0.0004	В		
0.37	¥	(WII)	H	
0.38	1	(CSA)	æ	

				Mechan	nechanical Properties					
			Hardness		Tension Test	Yield (Rt0.5)	Yield (Rp0.2)	Tensile (Rm)	Υ/Τ	Elongation (A)
Heat	Test Type	Microstructure	HRBW	Flattening Test	50mm GL	psi	psi	psi	(Rt0.5/Rm)	%
BSM-0471	Heat	Ferrite & Pearlite	76	Pass	Longitudinal; 38.1mm x WT	45,800	45,800	72,000	0.64	44

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.
- $\checkmark~$ 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

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Manager of Quality and R&D



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Seamless Carbon Steel Pipe Product Heat Number: BSM-0471

Product:

NPS 20 XS Production Date: September 13, 2012

Product Size:

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

Product Standards: ASME B36.10-2004, API 51-44th Ed. Grade B PSI1, 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/5A106 GR B/C A/5A53 GR B NPS 20 XS HEAT BSM-0471 (PIPE # LENGTH MASS) 104.11b/ft NDE 1100PSI 5MLS NACE MR0175 2012/09 MADE IN CANADA.

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Condition	1100 psi/5s	ASTM E309	ASTM E213	₩T	OD	lnsp.	Gauss	μR/hr	lb/ft	Length	Pieces	Thickness	NPS	Test Type	Heat
End	HydroTest	ET	UT	UT.		Visual	Res.Mag.	Geiger	Mass			Wall			
			Testing	Destructive	Non-I						S	Product Detail			

7 460	0000 043	Heat		
Vacuum Depast Fully Killed	Blast Furnace; EAF; Ladle Refining;	Steelmaking Method		
Product	Heat	Analysis		
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0.87	0.91	Mn		
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0.87 0.015 0.011	0.012	S		Chemical
011 0.25 0.0	0.26	Si		Analysis
0.05	0.05	Cr		(wt%)
0.11	0.10	Си		
0.01	0.01	Mo		
0.07	0.07	Z.		
0.002	-	٧		
0.001	,	1		
0.001	ı	Nb		
0.001 0.0002	0.0004	œ		
0.37	ŧ	(IW)	CE	
0.38	ı	(CSA)	æ	

	0.64	72,000	45,800	45,800	Longitudinal; 38.1mm x WT					
T-	0.62	72,500	44,900		Transverse; 38.1mm x WT	Pass	76	Ferrite & Pearlite	Heat	BSM-0471 Heat
T	(Rt0.5/Rm)	psi	psi	psi	50mm GL	Flattening Test	HRBW	Microstructure	Test Type	Heat
Elongar	Υ/Τ	Tensile (Rm)	Yield (Rp0.2)	Yield (Rt0.5)	Tension Test		Hardness			
1					Mechanical Properties	Mechan				

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