

## 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-0656

Product Size:

NPS 24 TRUE80

Production Date: January 14, 2013

Production Method:

Product Standards:

Hot Expansion Product Heat Treatment: As-rolled

Product Markings: ASME B36.10-2004, ASTM/ASME A/SA106-2011 Grade B NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010 .BRI-STEEL MFG ASTM/ASME A/SA106 GR B A/SA53 GR B NPS 24 TRUE80 HEAT BSM-0656 (PIPE # LENGTH MASS) 296.4lb/ft NDE SMLS NACE MR0175 2013/01 MADE IN CANADA.

BSM-0656	Heat		
Heat	Test Type		
24	NPS		
TRUE80	Thickness	Wall	Product Details
5	Pieces		S
DRL	Length		
296.40	lb/ft	Mass	
<b>%</b>	μR/hr	Geiger	
<20	Gauss	Res.Mag.	
Pass	Insp.	Visual	
Pass	OD		Non-L
Pass	WT	TU	estructive
Pass	ASTM E213	TU	ve Testing
Pass	ASTM E309	ET	
*		HydroTest	
Plain End	Condition	End	

	BSM-0656	Heat		
Vacuum Degas; Fully Killed	S6 Blast Furnace; EAF; Ladle Refining;	Steelmaking Method		
Product	Heat	Analysis		
0.11	0.13	0		
1.02	0.97	Μ'n		
0.018	0.011	P		
0.018 0.004	0.002	S		Chemica
0.24	0.26	Si		Chemical Analysis (wt%)
0.06	0.04	Cr		(wt%)
0.07	0.06	Cn		
0.02	0.01	Mo		
0.03	0.02	Z.		
0.004	0.003	<		
0.003	0.002	П		
0.001	0.001	Nb		
0.0002	0.0001	В		
0.31	ı	(IIW)	CE	
0.26	11	(CSA)	Œ	

	BSM-0656 Heat	Heat		
	Heat	Test Type		
	Ferrite & Pearlite	Microstructure		
	73	HRBW	Hardness	
	Pass	Flattening Test		Mechar
Longitudinal; 38.1mm x WT	Transverse; 38.1mm x WT	50mm GL	Tension Test	Mechanical Properties
46,500	45,700	psi	Yield (Rt0.5)	
46,900	43,400	psi	Yield (Rp0.2)	
65,000	66,500	psi	Tensile (Rm)	
0.72	0.69	(Rt0.5/Rm)	1/4	
59	57	%	Elongation (A)	

## 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 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
- √ This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.
- \*Note that this product was hydrotested to 1000 psi for 5 seconds.

Mill Test Certificate approved by:

Kenton Dechant, P.Eng. 2013 Jan 25

Manager of Quality and R&D



## 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

Seamless Carbon Steel Pipe

Product Heat Number: BSM-0656

Product Size:

**NPS 24 SCH60** 

Production Date: January 14, 2013

Production Method: **Hot Expansion** 

Product Standards:

Product Heat Treatment: As-rolled

**Product Markings:** .BRI-STEEL MFG ASTM/ASME A/SA106 GR B A/SA53 GR B NPS 24 SCH60 HEAT BSM-0656 (PIPE # LENGTH MASS) 296.4lb/ft NDE SMLS NACE MR0175 2013/01 MADE IN CANADA.

ASME B36.10-2004, ASTM/ASME A/SA106-2011 Grade B NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010

BSM-0656	Heat		
Heat	Test Type		
24	NPS		
SCH60	Thickness	Wall	Product Details
5	Pieces		ls
DRL	Length	,	
296.40	lb/ft	Mass	
<b>S</b>	μR/hr	Geiger	
<20	Gauss	Res.Mag.	
Pass	insp.	Visual	
Pass	OD		Non-I
Pass	WT	TU	Destructive Testin
Pass	ASTM E213	TU	Testing
Pass	ASTM E213 ASTM E309	ET	
*		HydroTest	
Plain End	Condition	End	

0.26	0.3	20002	U.UU_	0.003	0.004	0.03	20.0	0.07	0.00	0.24	U.U.TO U.UU4 U.Z4		T.02	U. 1.	FIOURCE	vacuum ocgas, runy mileu	
	2	2002	2		000	3	2	7007	200	0	000		2	0 1 1	Drodinet	Vacinim Domas: Enlly Killod	0000
	1	0.0001	0.001	0.002	0.003	0.02	0.01	0.06	0.04	0.26	0.002	0.011	0.97	0.13	Heat	Blast Furnace; EAF; Ladle Refining;	BSM-0656
(CSA)	(WII)	В	Nb	1	<	Z.	Mo	೮	亡	Si	S	P	Mn	C	Analysis	Steelmaking Method	Heat
æ	Œ										6						
									s (wt%)	Chemical Analysis (wt%)	Chemica						

	BSM-0656	Heat		
	Heat	Test Type		
	Ferrite & Pearlite	Microstructure		
	73	HRBW	Hardness	
	Pass	Flattening Test		Mechar
Longitudinal; 38.1mm x WT	Transverse; 38.1mm x WT	50mm GL	Tension Test	Mechanical Properties
46,500		psi	Yield (Rt0.5)	
46,900	43,400	psi	Yield (Rp0.2)	
65,000	66,500	psi	Tensile (Rm)	
0.72	0.69	(Rt0.5/Rm)	Υ/Τ	
59	57	%	Elongation (A)	

Additional Details:

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

results meet the corresponding requirements.

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 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

\*Note that this product was hydrotested to 1000 psi for 5 seconds.

Mill Test Certificate approved by:

Manager of Quality and R&D Kenton Dechant, P.Eng. 2013 Jan