

## Mill Test Certificate

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

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www.brichemsteel.com

Production Date: June 17, 2013

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

Product:

Seamless Carbon Steel Pipe

Product Heat Number:

BSM-0993

Product Size:

NPS 20 SCH 60

Product Standards: ASME B36.10-2004, 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 ASTM/ASME A/SA106 GR B/C A/SA53 GR B NPS 20 SCH 60 0.812 inchWT HEAT BSM-0993 (PIPE # LENGTH MASS) 166.4lb/ft NDE SMLS NACE MR0175 2013/06 MADE IN CANADA.

Product Details  Non-Destructive Testing  Non-Destructive Testing  Non-Destructive Testing  Non-Destructive Testing  Fig. 4 (Signal of the structive Testing)  Non-Destructive Testing  Non-Destruc	_	Т	-	Т
Product Details  Mass Geiger Res.Mag. Visual UT UT ET HydroTest Product Size Pieces Length Ib/ft µR/hr Gauss Insp. OD WT ASTM E213 ASTM E309  NPS 20 SCH 60 0.812 in.WT 10 DRL 166.40 <5 <20 Pass Pass Pass Pass Pass *	BSM-0993	Heat		
oduct Details  Non-Destructive Testing  Non-Destructive Testing  Non-Destructive Testing  HydroTest  Size Pieces Length Ib/ft μR/hr Gauss Insp. OD WT ASTM E213 ASTM E309  Non-Destructive Testing  Non-Destructive Testing  Non-Destructive Testing  Non-Destructive Testing  Non-Destructive Testing  Non-Destructive Testing  HydroTest  Size Pass Pass Pass Pass Pass Pass Pass Pas	Heat	Test Type		
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Res.Mag. Visual UT UT ET HydroTest Gauss Insp. OD WT ASTM E213 ASTM E309	166.40	lb/ft	Mass	
Non-Destructive Testing  Visual  UT  UT  ET  HydroTest  ASTM E309  Pass	5	μR/hr	Geiger	
Non-Destructive Testing  UT UT ET HydroTest OD WT ASTM E213 ASTM E309  Pass Pass Pass Pass Pass Pass	<20	Gauss	Res.Mag.	
Dn-Destructive Testing  UT  UT  ET  HydroTest  WT  ASTM E213  ASTM E309  Pass  Pass  Pass  Pass  Pass  Pass	Pass	Insp.	Visual	
Pass Pass *	Pass	00		Non-
3 JT ET HydroTest A E213 ASTM E309 ASS Pass *	Pass	TW	UT	Destructive
HydroTest 309	Pass	ASTM E213	T	Testing
HydroTest End Condition * Plain End	Pass	ASTM E309	ET	
End Condition Plain End	*		HydroTest	2000
	Plain End	Condition	End	

						Chemical .	Analysis (wt%	(wt%)									
	10						157.5									CE	CE
Heat	Steelmaking Method	Analysis	0	Mn	Р	S	Si	<del>ر</del>	U.	Mo	Ζ.	<	=1	S	В	(W)	(CSA)
BSM-0993	Blast Furnace; EAF; Ladle Refining;	Heat	0.20	0.89	0.015	0.005	0.26	0.06	0.01	0.01	0.05	•	1	ı	0.0003	,	
	Vacuum Degas; Fully Killed	Product	0.21	0.86	0.015	0.009	0.25	0.05	0.07	0.01	0.04	0.003	0.001	0.001	0.0001	0.37	0.38

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BSM-0993	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
41,200	psi	Yield (Rt0.5)	
71,000	psi	Tensile (Rm)	
0.58	(Rt0.5/Rm)	1/λ	
49	%	Elongation (A)	

	BSM-0993	Heat	
	-	Standard	Test
	1	Sample Details	Impact Test
	1	O.	Temp
	-	_	
	ı	١	Impact
	,	٦	Energy
	-	AVG	
		%	
	ı	%	% Shea
		%	hear
	-	AVG	
	t	mm	
	r	mm	Lateral Ex
1		mm	kpansion
	1	AVG	

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

Mill Test Certificate approved by:

Paul Sowden, T.T.

Assistant QA Manager