

Product:

Mill Test Certificate

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

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

www.bri-steel.com

Seamless Carbon Steel Pipe **Product Heat Number:** BSM-1304 Product Size: 18T80 Production Date: Oct 09, 2013

Production Method: Hot Expansion **Product Heat Treatment:** As-rolled Certificate No.: MTR-000512

Product Standards: ASME B36.10-2004, ASTM/ASME A/SA333-2013 Grade 6 LT(M45C) A106-2014/SA106-2013 Grade B/C NDE, A53-2012/SA53-2013 Grade B Type S, NACE MR0175-2009 MR0103-

Product Markings

NPS 18 TRUE 80 0.940 INCHWT SMLS 2013/10 NDE

HEAT BSM-1304 (PIPE # LENGTH MASS) 170.8lb/ft ASTM/ASME A/SA333 GR 6 LT(M45C) A/SA106 GR B/C A/SA53 GR B NACE MR0175/MR0103 MADE IN

BSM-1304		Heat	
304			
Heat		Test Type	
NPS 18 TRUE 80 0.940in. WT		Product Size	Product: Details
5		Pieces	
DRL		Pieces Length	
170.8	lb/ft	Mass	
&	μR/hr		
<10	Gauss	Res. Mag.	
Pass	Insp.	Visual	
Pass		OD	No
Pass	WT	TU	n-Destruct
Pass	ASTM E213	TU	Non-Destructive Testing
Pass	ASTM	ΕT	
*		HydroTest	
Plain End	Condition	End	

Heat Steelmaking Method Test Type C Mn P S Si Cr Cu Mo Ni V Ti Nb B CE(IW) CE(CSA) BSM-1304 Blast Furnace; EAF; Ladle Refining; Vacuum Heat 0.22 0.90 0.012 0.002 0.05 0.05 0.01 0.02 0.001 0.003 - - Begas; Fully Killed Product 0.21 0.91 0.022 0.05 0.05 0.05 0.01 0.03 0.001 0.001 0.001 0.38 0.38	_	7	_		_	_
Chemical Analysis (wt%) Test Type C Mn P S Si Cr Cu Mo Ni V Ti Nb B CE(IIW) Heat 0.22 0.90 0.012 0.002 0.32 0.05 0.06 0.01 0.02 0.002 0.001 0.0003 - Product 0.21 0.91 0.022 0.005 0.30 0.05 0.06 0.01 0.03 0.001 0.001 0.0001 0.38				BSM-1304	Heat	
C Mn P S Si Cr Cu Mo Ni V Ti Nb B CE(IIW) 0.22 0.90 0.012 0.002 0.32 0.05 0.06 0.01 0.02 0.002 0.001 0.0003 - 0.21 0.91 0.022 0.05 0.30 0.06 0.01 0.03 0.004 0.001 0.001 0.38			Degas, runy nineu	Blast Furnace; EAF; Ladle Refining; Vacuum	Steelmaking Method	
C Mn P S Si Cr Cu Mo Ni V Ti Nb B CE(IIW) 0.22 0.90 0.012 0.002 0.32 0.05 0.06 0.01 0.02 0.002 0.001 0.0003 - 0.21 0.91 0.022 0.05 0.30 0.06 0.01 0.03 0.004 0.001 0.001 0.38			Product	Heat	Test Type	
Cu Mo Ni V Ti Nb B CE(IIW) 0.06 0.01 0.02 0.002 0.002 0.001 0.0003 - 0.06 0.01 0.03 0.004 0.001 0.001 0.0001 0.38			0.21	0.22	С	
Cu Mo Ni V Ti Nb B CE(IIW) 0.06 0.01 0.02 0.002 0.002 0.001 0.0003 - 0.06 0.01 0.03 0.004 0.001 0.001 0.0001 0.38			0.91	0.90	Mn	
Cu Mo Ni V Ti Nb B CE(IIW) 0.06 0.01 0.02 0.002 0.002 0.001 0.0003 - 0.06 0.01 0.03 0.004 0.001 0.001 0.0001 0.38			0.022	0.012	Р	
Cu Mo Ni V Ti Nb B CE(IIW) 0.06 0.01 0.02 0.002 0.002 0.001 0.0003 - 0.06 0.01 0.03 0.004 0.001 0.001 0.0001 0.38	Machani		0.005	0.002	S	Chemical
Cu Mo Ni V Ti Nb B CE(IIW) 0.06 0.01 0.02 0.002 0.002 0.001 0.0003 - 0.06 0.01 0.03 0.004 0.001 0.001 0.0001 0.38	20000		0.30	0.32	Si	Analysis (
Mo Ni V Ti Nb B CE(IIW) 0.01 0.02 0.002 0.002 0.001 0.0003 - 0.01 0.03 0.004 0.001 0.001 0.0001 0.38	-		0.05	0.05	Cr	wt%)
Ni V Ti Nb B CE(IIW) 0.02 0.002 0.002 0.001 0.0003 - 0.03 0.004 0.001 0.001 0.0001 0.38	0.0000000000000000000000000000000000000		0.06	0.06	Cu	
V Ti Nb B CE(IIW) 0.002 0.002 0.001 0.0003 - 0.004 0.001 0.0001 0.38			0.01	0.01	Mo	
Ti Nb B CE(IIW) 0.002 0.001 0.0003 - 0.001 0.0001 0.38			0.03	0.02	Ni	
Nb B CE(IIW) 0.001 0.0003 - 0.001 0.0001 0.38			0.004	0.002	٧	
Nb B CE(IIW) 0.001 0.0003 - 0.001 0.0001 0.38			0.001	0.002	Ti	
B CE(IIW) 0.0003 - 0.0001 0.38			0.001		Nb	
			0.0001	0.0003	В	
CE(CSA) - 0.38			0.38	ī		
			0.38	r	CE(CSA)	

			_
BSM-1304		Heat	
Heat		Test Type	
Ferrite & Pearlite		Microstructure	
77 HRBW		Hardness	
Pass		Flattening Test	
Longitudinal; 19.05 mm x WT	50mm GL	Tension Test	Mechanical Properties
47,400	psi	Yield (Rt0.5)	
71,000	psi	Tensile (Rm)	
0.67	(Rt0.5/Rm)	Υ/Τ	
51	%	Elongation (A)	

BSM-1304		Heat
ASTM A333	Standard	Test
CVN long 10 x 10 mm	Sample Details	Impact Test
-45	°C	Temp
28.5	L	
15.0	J	Impact Energ
26.5	J	Energy
23.3	AVG	
0	%	10.00
0	%	% Shear
0	%	ear
0	AVG	
0.32	mm	
0.18	mm	Lateral E
0.35	mm	_ateral Expansion
0.28	AVG	

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/SA333-2013 Grade 6 LT(M45C) A106-2014/SA106-2013 Grade B/C A53-2012/SA53-2013, and the purchase order requirements, and that the results meet the corresponding requirements. Bri-Steel Manufacturing is registered and certified to ISO-9001:2008

√ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service-2009 NACE MR0103-2012 Section 2.1

✓ No weld repairs have been performed on this product.

 \prime 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

Product: Seamless Carbon Steel Pipe Product Heat Number:

BSM-1304

Product Size: 18T80

Production Date:

Oct 09, 2013

Mill Test Certificate approved by:

Kenton Dechant, P.Eng.

Manager of Quality and R&D