

Mill Test Certificate

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

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

www.brichemsteel.com

Product: Seamless Carbon Steel Pipe

Product Heat Number: BSM-1338

Product Size: 16 SCH 100

Production Date: Oct 17, 2013

Production Method:

Hot Expansion

Product Heat Treatment:

As-rolled

Certificate No.: MTR- 000551

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 NBRI-STEEL NPS 16 SCH 100 1.031 INCHWT SMLS 2013/10 NDE
MANUEZGRUERWEITE HEAT BSM-1338 (PIPE # LENGTH MASS) 164.8Ib/ft ASTM/ASME A/SA106 GR B/C A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

Product: Details Non-Destructive Testing Heat Test Type Product Size Pieces Length Mass Geiger Res. Mag. Visual OD UT UT UT HydroTest End BSM-1338 Heat NPS 16 SCH 100 1.031in. WT 2 DRL 164.8 OK <10 Pass Pass <td< th=""><th>_</th><th>_</th><th></th><th>_</th></td<>	_	_		_
Product: Details Non-Destructive Testing Product Size Pieces Length Mass Geiger Res. Mag. Visual OD UT UT ET HydroTest NPS 16 SCH 100 1.031in. WT 2 DRL 164.8 OK <10	BSM-1338		Heat	
Pieces Length Mass Geiger Res. Mag. Visual OD UT UT HydroTest 2 DRL 164.8 OK <10	Heat		Test Type	
Length Mass lb/ft Geiger μR/hr Res. Mag. Gauss Visual lnsp. OD lnsp. UT lnsp. UT lnsp. UT lnsp. ASTM E213 lnsp. ASTM E213 lnsp. ASTM E213 lnsp. DRL 164.8 OK <10	NPS 16 SCH 100 1.031in. WT		Product Size	Product: Details
Mass Geiger Res. Mag. Visual OD UT UT ET HydroTest Ib/ft μR/hr Gauss Insp. WT ASTM E213 ASTM 164.8 OK <10 Pass Pass Pass Pass Pass Pass *	2		Pieces	
Hon-Destructive Testing Geiger μR/hr Res. Mag. Visual μR/hr OD UT UT ET HydroTest HydroTest OK <10	DRL		Length	
Res. Mag. Visual OD UT UT ET HydroTest Gauss Insp. WT ASTM E213 ASTM 410 Pass Pass Pass Pass Pass Pass Pass *	164.8	lb/ft	Mass	
Visual OD UT UT ET HydroTest Insp. Pass Pass Pass Pass Pass Pass Pass Pas	OK	μR/hr	Geiger	
Non-Destructive Testing OD UT UT ET HydroTest WT ASTM E213 ASTM Pass Pass Pass Pass *	<10	Gauss	Res. Mag.	
Non-Destructive Testing UT UT UT ET HydroTest WT ASTM E213 ASTM Pass Pass Pass Pass *	Pass	Insp.	Visual	
ET HydroTest 13 ASTM *	Pass		OD	No
ET HydroTest 13 ASTM *	Pass	WT	UT	n-Destruct
HydroTest *	Pass	ASTM E213	TU	ive Testing
	Pass	ASTM	ΕT	
End Condition Plain End	*		HydroTest	1
	Plain End	Condition	End	

	BSM-1338	Heat	
Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed		Steelmaking Method	
Product	Heat	Test Type	
0.21	0.20	С	
0.92	0.90	Mn	1
0.009	0.013	Р	
0.004	0.002	S	Chemical
0.32	0.33	Si	Chemical Analysis (wt%)
0.05	0.05	Cr	wt%)
0.07	0.06	Cu	
 0.01	0.01	Mo	
0.03	0.02	N:	
0.003	0.003	<	
0.002	0.002	Ti	
100.0	0.001	dN	
0.0003	0.0004	В	
0.39	t	CE(IIW)	
0.39	ī	CE(CSA)	

BSM-1338 Heat Ferrite		Heat Test Type Micro	
Ferrite & Pearlite		Microstructure	
78 HRBW		Hardness	
Pass		Flattening Test	8
Longitudinal; 19.05 mm x WT	50mm GL	Tension Test	Mechanical Properties
49,900	psi	Yield (Rt0.5)	
73,500	psi	Tensile (Rm)	
0.68	(Rt0.5/Rm)	٧/٦	
46	%	Elongation (A)	

	BSM-1338		Heat	
	1	Standard	Test	
	7	Sample Details	Impact Test	
	-	റ്	Temp	
	-	L.		
	ı	J	Impact Energy	
	ı	J		
	-	AVG		
	ı	%		
A 500 m	t	%	% Shear	
	t	%	near	
	1	AVG		
	Т	mm		
	1	mm	Lateral Ex	
	1	mm	Expansion	
SE 7.0	1	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/SA106-2011 Grade B/C A/SA53-2012, and the purchase order requirements, and that the results meet the corresponding requirements.
- √ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service-2009 NACE MR0103-2010 Section 2.1
- ✓ 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:

2013 OCT Bough アル

Paul Sowden, T.T.

Assistant QA Manager