

Mill Test Certificate

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Product: Seamless Carbon Steel Pipe

Production Method:

Hot Expansion

Product Heat Number:

BSM-1678 Product Size: 14XS

Production Date: Feb 27, 2014

Product Heat Treatment: As-rolled

Certificate No.: MTR- 000930

Product Standards: ASME B36.10-2004, ASTM/ASME A/SA106-2013 Grade B NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009 MR0103-2010

Product Markings NPS 14 XS 0.500 INCHWT SMLS 2014/02 NDE

TEAM DEPARED HEAT BSM-1678 (PIPE # LENGTH MA\$S) 72.09Ib/ft ASTM/ASME A/SA106 GR B A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

	Pass	Pass	Pass	Pass	Pass	<10	<5	72.09	DRL	12	NPS 14 XS 0.500in. WT	Heat	BSM-1678
	ASTM	ASTM E213 ASTM	WT		Insp.	Gauss	μR/hr	lb/ft					
HydroTest	田	TU	UT	OD	Visual	Res. Mag.	Geiger	Mass	Length	Pieces	Product Size	Test Type	Heat
		Non-Destructive Testing	on-Destruc	No							Product: Details		

Heat Steelmaking Method Test Type C Mn P S Si Cr Cu Mo Ni V Ti Nb B CE(IW) CE(CSA)	_	_		1	_	_	_	_
Test Type C Mn P S Si Cr Cu Mo Ni V Ti Nb B		Heat				BSM-1678	Heat	
Test Type C Mn P S Si Cr Cu Mo Ni V Ti Nb B		Test Type			Degas; Fully Nilled	Blast Furnace; EAF;	Steelm	
Chemical Analysis (wt%) C Mn P S Si Cr Cu Mo Ni V Ti Nb B 0.18 0.91 0.011 0.003 0.24 0.03 0.07 0.01 0.04 0.003 0.001 0.003 0.21 0.92 0.010 0.004 0.26 0.05 0.09 0.01 0.04 0.003 0.001 0.001 0.003 Mechanical Properties Yield (Rt0.5) Tensile (Rm) Y/T Somm GL Yield (Rt0.5) Tensile (Rm) Y/T		Microstructure				Ladle Refining; Vacuum	aking Method	
Chemical Analysis (wt%) C Mn P S Si Cr Cu Mo Ni V Ti Nb B 0.18 0.91 0.011 0.003 0.24 0.03 0.07 0.01 0.04 0.003 0.001 0.003 0.21 0.92 0.010 0.004 0.26 0.05 0.09 0.01 0.04 0.003 0.001 0.001 0.003 Mechanical Properties Yield (Rt0.5) Tensile (Rm) Y/T Somm GL Yield (Rt0.5) Tensile (Rm) Y/T		Han			Product	Heat	Test Type	
Cr Cu Mo Ni V Ti Nb B 0.03 0.07 0.01 0.04 0.003 0.001 0.003 0.05 0.09 0.01 0.04 0.003 0.001 0.001 0.003 rties rties Yield (Rt0.5) Tensile (Rm) Y/T psi (Rt0.5/Rm)		dness			0.21	0.18	С	
Cr Cu Mo Ni V Ti Nb B 0.03 0.07 0.01 0.04 0.003 0.001 0.003 0.05 0.09 0.01 0.04 0.003 0.001 0.001 0.003 rties rties Yield (Rt0.5) Tensile (Rm) Y/T psi (Rt0.5/Rm)		Flatten			0.92		Mn	
Cr Cu Mo Ni V Ti Nb B 0.03 0.07 0.01 0.04 0.003 0.001 0.003 0.05 0.09 0.01 0.04 0.003 0.001 0.001 0.003 rties rties Yield (Rt0.5) Tensile (Rm) Y/T psi (Rt0.5/Rm)		ing Test			0.010	0.011	Р	
Cr Cu Mo Ni V Ti Nb B 0.03 0.07 0.01 0.04 0.003 0.001 0.003 0.05 0.09 0.01 0.04 0.003 0.001 0.001 0.003 rties rties Yield (Rt0.5) Tensile (Rm) Y/T psi (Rt0.5/Rm)			Mechani		0.004	0.003	S	Chemical
Yr Cu Mo Ni V Ti Nb B 03 0.07 0.01 0.04 0.003 0.001 0.003 0.001 0.001 0.0003 05 0.09 0.01 0.04 0.003 0.001 0.001 0.0003 Test Yield (Rt0.5) Tensile (Rm) Y/T GL psi (Rt0.5/Rm)	50	Ten	cal Prope			0.24	iS	Analysis (
Mo Ni V Ti Nb B 0.01 0.04 0.003 0.001 0.001 0.0003 Yield (Rt0.5) Tensile (Rm) Y/T psi psi (Rt0.5/Rm)	mm GL	sion Test	ties		0.05	80.0	Cr	wt%)
Mo Ni V Ti Nb B 0.01 0.04 0.003 0.001 0.001 0.0003 Yield (Rt0.5) Tensile (Rm) Y/T psi psi (Rt0.5/Rm)					0.09	0.07	Cu	
V Ti Nb B 0.0003 0.003 0.001 0.001 0.0003 Tensile (Rm) Y/T psi (Rt0.5/Rm)		Yiel			0.01	0.01		
V Ti Nb B 0.0003 0.003 0.001 0.001 0.0003 Tensile (Rm) Y/T psi (Rt0.5/Rm)	psi.	d (Rt0.5)			0.04	0.04	Ni	
B 0.0003 0.0003		-			0.003		٧	
B 0.0003 0.0003	Si.	e (Rm)			0.001		Τi	
B 0.0003 0.0003	(Rt0.5/	۲/۲			0.001		Nb	
CE(IIW) CE(CSA) 0.38	Rm)				0.0003	0.0003	В	
CE(CSA) - - 0.38	%	Elongation			0.38	ı	CE(IIW)	
		on (A)			0.38	1	CE(CSA)	

BSM-1678		Heat		BSM-1678		1000
. 70		at	100	578		_
	Standard	Test		Heat		. cac i ypc
	ird		50 6.00	Ferrite & Pearlite		ואזוכו סטנו מכנמו כ
The second secon	Samp	lmp		earlite		מכיני
	Sample Details	Impact Test		75 HRBW		1101011033
	°C	Temp		Pass		i determine
-						2
) J	lm		Longit		
		Impact Energy	pact Ener	Longitudinal; 38.1 mm x WT	50mm GL	וכווטוסוו ובטנ
	J	rgy % Shear				1000
	AVG		% Shear			
	%					-
	%			40,200	psi	וכום (וינטים)
	%			69		
	AVG			69,000	psi	Citation (citation)
100000000000000000000000000000000000000	mm			0.58	(Rt0.5/Rm)	.,.
27.00	mm	Lateral E	Lateral Expansion	8	Rm)	
	mm	xpansion		42	%	1101800011 (11)
	AVG					4.1

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/SA106-2013 Grade B 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.
- \checkmark 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:

os outer 2014 MAR 6

Assistant QA Manager Paul Sowden, T.T.