

Mill Test Certificate

Bri-Steel Manufacturing Inc.

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Product: Seamless Carbon Steel Pipe

Product Heat Number: BSM-0147

Product Size:

NPS 18 XS

Production Date:

2011 Dec 15

Production Method: **Hot Expansion**

Product Heat Treatment: As-rolled

Product Standards: ASTM/ASME A/SA106-2010 Grade B/C, A/SA53-2010 Grade B Type S, NACE MR0175-2009

Product Markings: .BRI-STEEL MFG NPS 18 XS ASTM/ASME A/SA106 GR B/C A/SA53 GR B HEAT BSM-0147 (PIPE # LENGTH MASS) NDE 1370PSI NACE MR0175 2011/11 MADE IN CANADA.

Heat Test Type NPS SCH Pieces Length Mass µR/hr Gauss Insp. OD WT ASTM E213 ASTM E309 1370 psi/5s Condition SMM-0147 Heat 18 XS 1 DRL 3626 LB <5 <20 Pass Pass Pass Pass Pass 37.5° Bevel			_		Т
Product Details Non-Destructive Testing Non-Destructive Testing Non-Destructive Testing HydroTest NPS SCH Pieces Length Mass μR/hr Gauss Insp. OD WT ASTM E213 ASTM E309 1370 psi/5s 18 XS 1 DRL 3626 LB <5 <20 Pass Pass Pass Pass Pass		BSM-0147	Heat		
Product Details Non-Destructive Testing Non-Destructive Testing HydroTest SCH Pieces Length Mass μR/hr Gauss Insp. OD WT ASTM E213 ASTM E309 1370 psi/5s XS 1 DRL 3626 LB <5 <20 Pass Pass Pass Pass Pass		Heat	Test Type		
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VE Testing UT ET HydroTest ASTM E213 ASTM E309 1370 psi/5s Pass Pass Pass		Pass	OD		Non-I
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ET HydroTest 5TM E309 1370 psi/5s Pass Pass			ASTM E213	TU	esting
HydroTest End 1370 psi/5s Condition Pass 37.5° Bevel		Pass	=	티	
End Condition 37.5° Bevel		Pass	1370 psi/5s	HydroTest	
	j	37.5° Bevel	Condition	End	

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BSM-0147	Heat		
Heat	Test Type		
Refining; Vacuum Degas	Blast Furnace; EAF; Ladle	Steelmaking Method	
0.20	С		
0.92	Mn		
0.018	Р		
0.012	S		Chemica
0.012 0.24	Si		l Analysis (wt%)
0.03	Cr		(wt%)
0.13	Cn		
0.02	Mo		
0.04	Z.		
0.003	<		
0.001	⊐		
0.001	Nb		
0.0001	В		
0.37	(IIW)	æ	
0.38	(CSA)	Э	

		B	Г		Γ
		BSM-0147 Heat	Heat		
		Heat	Test Type		
		Ferrite & Pearlite	Microstructure		
		77	HRBW	Hardness	
		Pass	Flattening Test		Mechan
	Longitudinal	Transverse	50mm GL; 38mm x WT	Tension Test	Mechanical Properties
20 00 00 00 00 00 00 00 00 00 00 00 00 0	45,900	47,100	psi	Yield (Rt0.5)	
Annual Control of the	44,700	45,200	psi	Yield (Rp0.2)	
	72,500	73,000	psi	Tensile (Rm)	
	0.63	0.65	(Rt0.5/Rm)	Т/ү	
	39	44	%	Elongation (A)	

Additional Details:

Inc. in accordance with ASTM/ASME A/SA106-2010, A/SA53-2010 and the purchase order requirements, and that the results meet the corresponding requirements. ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing

This pipe product meet 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 no mercury contamination.

Service, and NACE MR0103-2010 Section 2.1.

 $\checkmark~$ This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1

Mill Test Certificate approved by:

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

2012 Jan 11