

## Mill Test Certificate

Bri-Steel Manufacturing Inc.

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Product: Seamless Carbon Steel Pipe

Product Heat Number: BSM-0358

Product Size:

**NPS 16 XS** 

Production Date: June 6, 2012

Production Method: **Hot Expansion** 

Product Heat Treatment: As-rolled

Product Standards: ASTM/ASME A/SA106-2011 Grade B/C, A/SA53-2012 Grade B Type S, NACE MR0175-2009

Product Markings: .BRI-STEEL MFG NPS 16 XS ASTM/ASME A/SA106 GR B/C A/SA53 GR B HEAT BSM-0358 (PIPE # LENGTH MASS) 82.771b/ft NDE 1000PSI NACE MR0175 2012/06 MADE IN CANADA.

Product Details  Non-Destructive Testing  Non		В	Т		Т
Product Details  Non-Destructive Testing  Non-Destructive Testing  Non-Destructive Testing  HydroTest  NPS SCH Pieces Length lb/ft µR/hr Gauss Insp. OD WT ASTM E213 ASTM E309 1000 psi/5s  16 XS 8 DRL 82.77 <5 <20 Pass Pass Pass Pass Pass		SM-0358	Heat		
Product Details  Non-Destructive Testing  Non-Destructive Testing  Non-Destructive Testing  HydroTest SCH Pieces Length lb/ft \(\mu \mathrm{R} \) lb/ft \(\mu \mathrm{R} \) \(\mu \mathrm{R} \) \(\mu \mathrm{R} \) lnsp. \(\mathrm{OD} \) \(\mu \mathrm{W} \) \(\mathrm{M} \) ASTM E213 \(\mathrm{ASTM} \) E309 \(\mathrm{Pass} \) \(\mathrm{Pass} \) \(\mathrm{Pass} \) \(\mathrm{R} \) \(\mathrm{N} \) \(\m		Heat	Test Type		
Non-Destructive Testing  Mass Geiger Res.Mag. Visual UT UT ET HydroTest Pieces Length lb/ft μR/hr Gauss Insp. OD WT ASTM E213 ASTM E309 1000 psi/5s  8 DRL 82.77 <5 <20 Pass Pass Pass Pass Pass		16	NPS		7
Non-Destructive Testing  Mass Geiger Res.Mag. Visual UT UT ET HydroTest Pieces Length lb/ft μR/hr Gauss Insp. OD WT ASTM E213 ASTM E309 1000 psi/5s  8 DRL 82.77 <5 <20 Pass Pass Pass Pass Pass		XS	SCH		roduct Deta
Mass Geiger Res.Mag. Visual UT UT ET HydroTest Up/ft μR/hr Gauss Insp. OD WT ASTM E213 ASTM E309 1000 psi/5s Pass Pass Pass Pass Pass Pass		00	Pieces		ils
Hon-Destructive Testing         Geiger       Res.Mag.       Visual       UT       UT       ET       HydroTest         μR/hr       Gauss       Insp.       OD       WT       ASTM E213       ASTM E309       1000 psi/5s         <5		DRL	Length		
Res.Mag. Visual UT UT ET HydroTest Gauss Insp. OD WT ASTM E213 ASTM E309 1000 psi/5s <a href="#"> Pass</a> Pass Pass Pass Pass		82.77	lb/ft	Mass	
Non-Destructive Testing  Visual  UT  UT  Insp.  OD  WT  ASTM E213  ASTM E309  1000 psi/5s  Pass  Pass  Pass  Pass  Pass  Pass  Pass  Pass		Ġ	μR/hr	Geiger	
Non-Destructive Testing  UT UT ET HydroTest OD WT ASTM E213 ASTM E309 1000 psi/5s Pass Pass Pass Pass Pass	200	<20	Gauss	Res.Mag.	
on-Destructive Testing  UT  UT  ET  HydroTest  WT  ASTM E213 ASTM E309 1000 psi/5s  Pass  Pass  Pass  Pass		Pass	Insp.	Visual	
estructive Testing  UT  UT  ET  HydroTest  WT  ASTM E213 ASTM E309 1000 psi/5s  Pass  Pass  Pass  Pass		Pass	OD		Non-l
ET HydroTest 2213 ASTM E309 1000 psi/5s Pass Pass		Pass	TW	TU	Destructive -
ET HydroTest M E309 1000 psi/5s Pass Pass			ASTM E213	TU	Testing
HydroTest 1000 psi/5s Pass		Pass	ASTM E309	EI	
		Pass	1000 psi/5s	HydroTest	
		37.5° Bevel	5	End	

BSM-0358	Heat		
8 Heat	Test Type		
Refining; Vacuum Degas	Blast Furnace; EAF; Ladle	Steelmaking Method	
0.19	С		
0.93	Mn		
0.010	Р		
0.004	S		Chemica
0.24	Si		Chemical Analysis (wt%)
0.03	Cr		(wt%)
0.05	Cu		
0.02	Mo		
0.02	Z.		
0.004	<		
0.002			
0.001	Nb		
0.0003	В	e e	
0.36	(IIW)	æ	
0.37	(CSA)	æ	

	BSM-0358 Heat	Heat		
	Heat	Test Type	8	
	Ferrite & Pearlite	Microstructure		
	73	HRBW	Hardness	
	Pass	Flattening Test		Mechar
Longitudinal	Transverse	Flattening Test 50mm GL; 38mm x WT	Tension Test	Mechanical Properties
46,000	66,500	psi	Yield (Rt0.5)	
45,900	66,500	psi	Yield (Rp0.2)	300
70,000	71,000	psi	Tensile (Rm)	
0.66	0.94	(Rt0.5/Rm)	Υ/Τ	
46	48	%	Elongation (A)	

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 meet the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour

This certificate represents a quality control system that is compliant with EN 10204;2004 Type 3.1.  $\prime$  No weld repairs have been performed on this product. This product has no mercury contamination

Mill Test Certificate approved by:

2012 June 13

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