



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0418** Product Size: **NPS 20 SCH 60** Production Date: **July 17, 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 20 SCH 60 ASTM/ASME A/SA106 GR B/C A/SA53 GR B HEAT BSM-0418 (PIPE # LENGTH MASS) 166.4lb/ft NDE 1000PSI NACE MR0175 2012/07 MADE IN CANADA.**

Product Details						Non-Destructive Testing									
Heat	Test Type	NPS	Wall Thickness	Pieces	Length	Mass lb/ft	Geiger μ R/hr	Res. Mag. Gauss	Visual Insp.	OD Pass	UT WT Pass	UT ASTM E213	ET ASTM E309	HydroTest 1000 psi/5s	End Condition
BSM-0418	Heat	20	SCH 60	1	DRL	166.40	<5	<20	Pass	Pass	Pass	---	Pass	Pass	Plain End

		Chemical Analysis (wt%)															
Heat	Test Type	Steelmaking Method	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE (IIW)	CE (CSA)
			0.18	0.85	0.007	0.006	0.23	0.05	0.07	0.04	0.03	0.002	0.001	0.001	0.0002	0.35	0.35
BSM-0418	Heat	Blast Furnace; EAF; Ladle Refining; Vacuum Degass															

Mechanical Properties											
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test		Yield (Rp0.2) psi	Yield (Rp0.2) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
					50mm GL, 38mm x WT	Transverse					
BSM-0418	Heat	Ferrite & Pearlite	74	Pass	Longitudinal	40,500	40,900	70,000	0.58	51	

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, A/SA53-2012 and the purchase order requirements, and that the results meet the corresponding requirements.
- ✓ This pipe product meet the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service, and NACE MR0103-2010 Section 2.1.
- ✓ No weld repairs have been performed on this product. This product has no mercury contamination.
- ✓ This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.

Mill Test Certificate approved by:


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