



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0198** Product Size: **NPS 20 STD** Production Date: **February 8, 2012**
 Production Method: **Hot Expansion** Product Heat Treatment: **As-rolled**

Product Standards: **ASTM/ASME A/SA106-2011 Grade B/C, A/SAS3-2010 Grade B Type S, NACE MR0175-2009**

Product Markings: **.BRI-STEEL MFG NPS 20 STD ASTM/ASME A/SA106 GR B/C A/SAS3 GR B HEAT BSM-0198 (PIPE # LENGTH MASS) NDE 910PSI NACE MR0175 2012/02 MADE IN CANADA.**

Product Details				Non-Destructive Testing										
Heat	Test Type	NPS	SCH	Pieces	Length	Mass	Geiger	Res. Mag.	Visual	UT	UT	ET	HydroTest	End
BSM-0198	Heat	20	STD	13	DRL	lb/ft	µR/hr	Gauss	Insp.	OD	WT	ASTM E213	ASTM E309	Condition
						78.60	<5	<20	Pass	Pass	Pass	Pass	Pass	37.5° Bevel

Steelmaking Method		Chemical Analysis (wt%)																
Heat	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE	CE		
BSM-0198	Heat	Blast Furnace, EAF, Ladle Refining, Vacuum Degass		0.21	0.91	0.010	0.011	0.23	0.03	0.14	0.02	0.04	0.003	0.001	0.002	0.0002	0.38	0.39

Mechanical Properties									
Heat	Test Type	Hardness	Flattening Test	Tension Test	Yield (Rt0.5)	Yield (Rp0.2)	Tensile (Rm)	V/T	Elongation (A)
BSM-0198	Heat	HRBW	Pass	50mm GI, 38mm x WT	psi	psi	psi	(Rt0.5/Rm)	%
		78		Transverse	46,200	44,900	75,500	0.61	36
				Longitudinal	47,800	47,200	74,000	0.55	37

- 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/SAS3-2010 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:

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