



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0203** Product Size: **NPS 20 STD** Production Date: **February 13, 2012**

Production Method: **Hot Expansion** Product Heat Treatment: **As-rolled**

Product Standards: **ASTM/ASME A/SA106-2011 Grade B/C, A/SA53-2010 Grade B Type S, NACE MR0175-2009**

Product Markings: **.BRI-STEEL MFG NPS 20 STD ASTM/ASME A/SA106 GR B/C A/SA53 GR B HEAT BSM-0203 (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	OD	UT	UT	ET	HydroTest	End	
BSM-0203	Heat	20	STD	6	DRL	78.60	µR/hr	Gauss	Insp.	Pass	Pass	ASTM E213	ASTM E309	910 psi/5s	Pass	37.5° Bevel

		Chemical Analysis (wt%)															
Heat	Test Type	Steelmaking Method															
		Blast Furnace; EAF; Ladle Refining; Vacuum Degass															
BSM-0203	Heat	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE	CE	
		0.18	0.91	0.012	0.005	0.22	0.06	0.07	0.01	0.03	0.005	0.001	0.002	0.0001	0.35	(IIW)	(CSA)

Mechanical Properties															
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test					Y/T	Elongation (A)				
					HRBW	Pass	50mm GL, 38mm x WT	Yield (Rt0.5)	Yield (Rp0.2)			Tensile (Rm)	(Rt0.5/Rm)	%	
BSM-0203	Heat	Ferrite & Pearlite	77	Pass	Longitudinal	44,200	47,200	44,100	47,000	73,000	72,500	0.61	0.65	43	40

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/SA53-2010 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:

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