



# Mill Test Certificate

Bri-Steel Manufacturing Inc.  
 2125-64 Avenue, Edmonton, AB Canada T6P 1Z4  
 Tel: 001 (780) 469-6603  
 Fax: 001 (780) 469-6986  
 www.brichemsteel.com

Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0191** Product Size: **NPS 20 XS** Production Date: **February 1, 2012**

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 20 XS ASTM/ASME A/SA106 GR B/C A/SA53 GR B HEAT BSM-0191 (PIPE # LENGTH MASS) NDE 1260PSI 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-0191	Heat	20	XS	9	DRL	104.10	µR/hr	Gauss	Insp.	Pass	Pass	ASTM E213	ASTM E309	1260 psi/5s	Condition
							<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-0191	Heat	0.21	0.90	0.018	0.014	0.24	0.03	0.11	0.02	0.04	0.003	0.001	0.002	0.0002	0.38	0.39
		Blast Furnace; EAF; Ladle Refining; Vacuum Degass														

Mechanical Properties										
Heat	Test Type	Microstructure	Hardness	Flattening Test	Tension Test	Yield (Rt0.5)	Yield (Rp0.2)	Tensile (Rm)	V/T	Elongation (A)
BSM-0191	Heat	Ferrite & Pearlite	HRBW	Pass	50mm GI, 38mm x WT	psi	psi	psi	0.64	49
			76		Transverse	46,600	45,500	73,000	0.64	
					Longitudinal	44,300	44,600	72,500	0.61	45

**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/SA106-2010, 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:

*Kenton Dechant*  
 2012 Feb 16

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