



# 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-0293**      Product Size: **NPS 18 STD**      Production Date: **April 19, 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 18 STD ASTM/ASME A/SA106 GR B/C A/SA53 GR B HEAT BSM-0293 (PIPE # LENGTH MASS) 70.59lb/ft NDE 1030PSI NACE MR0175 2012/04 MADE IN CANADA.**

Product Details					Non-Destructive Testing										
Heat	Test Type	NPS	SCH	Pieces	Length	Mass lb/ft	Geiger $\mu$ R/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM E309	HydroTest 1030 psi/5s	End Condition
BSM-0293	Heat	18	STD	5	DRL	70.59	<5	<20	Pass	Pass	Pass	---	Pass	Pass	37.5° Bevel


		Chemical Analysis (wt%)														
Heat	Test Type	Steelmaking Method														
		Blast Furnace; EAF; Ladle Refining; Vacuum Degas														
BSM-0293	Heat	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE (IIV)	CE (CSA)
		0.22	0.88	0.008	0.005	0.24	0.03	0.09	0.02	0.03	0.002	0.001	0.002	0.0001	0.39	0.39

Mechanical Properties											
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test		Yield (Rt0.5) psi	Yield (Rp0.2) psi	Tensile (Rm) psi	Y/T (Rt0.5/Rm)	Elongation (A) %
					50mm GL; 38mm x WT	Transverse					
BSM-0293	Heat	Ferrite & Pearlite	77	Pass	50mm GL; 38mm x WT	Transverse	46,700	45,100	77,500	0.60	40
						Longitudinal	49,000	48,800	77,500	0.63	39

**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:

  
 2012 May 2  
 Kenton Dechant, P.Eng.  
 Manager of Quality and R&D