



# 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.brihemsteel.com

Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0415** Product Size: **NPS 18 SCH 140** Production Date: **July 12, 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 18 SCH 140 ASTM/ASME A/SA106 GR B/C A/SA53 GR B HEAT BSM-0415 (PIPE # LENGTH MASS) 274.2lb/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 $\mu$ R/hr	Res. Mag. Gauss	Visual Insp.	OD	UT WT	UT ASTM E213	ET ASTM E309	HydroTest 1000 psi/5s	End Condition
BSM-0415	Heat	18	SCH 140	10	DRL	274.20	<5	<20	Pass	Pass	Pass	---	Pass	Pass	Plain End


		Chemical Analysis (wt%)														
Heat	Test Type	Steelmaking Method														
		Blast Furnace; EAF; Ladle Refining; Vacuum Degass														
BSM-0415	Heat	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE (IIV)	CE (CSA)
		0.22	0.88	0.005	0.012	0.22	0.08	0.06	0.05	0.03	0.003	0.001	0.002	0.0004	0.40	0.41

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) %					
					Ferrite & Pearlite	77						Pass	50mm GL; 19mm x WT	Transverse	Longitudinal	62,000
BSM-0415	Heat						46,700	43,600	78,500		0.59					36

**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:

  
 2012 July 27  
 Kenton Dechant, P.Eng.  
 Manager of Quality and R&D



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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0415** Product Size: **NPS 18 SCH 120** Production Date: **July 12, 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 18 SCH 120 ASTM/ASME A/SA106 GR B/C A/SA53 GR B HEAT BSM-0415 (PIPE # LENGTH MASS) 274.2lb/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	Galger	Res. Mag.	Visual Insp.	OD	UT	UT	ET	HydroTest	End Condition
BSM-0415	Heat	18	SCH 120*	10	DRL	274.20	<5	<20	Pass	Pass	Pass	---	Pass	Pass	Plain End

Steelmaking Method		Chemical Analysis (wt%)														
Heat	Test Type	C	Mn	P	S	Si	Cr	Cu	Mo	Ni	V	Ti	Nb	B	CE (IIW)	CE (CSA)
BSM-0415	Heat	0.22	0.88	0.005	0.012	0.22	0.08	0.06	0.05	0.03	0.003	0.001	0.002	0.0004	0.40	0.41

Mechanical Properties										
Heat	Test Type	Microstructure	Hardness HRBW	Flattening Test	Tension Test	Yield (Rt0.5) psi	Yield (Rp0.2) psi	Tensile (Rm) psi	V/T (Rt0.5/Rm)	Elongation (A) %
BSM-0415	Heat	Ferrite & Pearlite	77	Pass	50mm GL, 19mm x WT Transverse Longitudinal	62,000	57,500	81,000	0.77	30

**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.

\*Note that Heat BSM-0415 Pipe 002 was downgraded to NPS 18 S120 from NPS 18 S140.

Mill Test Certificate approved by:

*Kenton Dechant*  
 2012 July 27  
 Kenton Dechant, P. Eng.  
 Manager of Quality and R&D