



# Mill Test Certificate

**Bri-Steel Manufacturing Inc.**  
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0278** Product Size: **NPS 24 STD** Production Date: **March 29, 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 24 STD ASTM/ASME A/SA106 GR B/C A/SAS3 GR B HEAT BSM-0278 (PIPE # LENGTH MASS) 94.62lb/ft NDE 740PSI NACE MR0175 2012/03 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-0278        | Heat      | 24  | STD | 4                       | DRL    | 94.62 | µR/hr  | Gauss     | Insp.  | Pass | Pass | Pass | Pass | Pass      | Condition   |
|                 |           |     |     |                         |        |       | <5     | <20       | Pass   | Pass | Pass | ---  | Pass | Pass      | 37.5° Bevel |

|          |           | Chemical Analysis (wt%)                           |      |       |       |      |      |      |      |      |       |       |       |        |      |      |
|----------|-----------|---|------|-------|-------|------|------|------|------|------|-------|-------|-------|--------|------|------|
| Heat     | Test Type | Steelmaking Method                                |      |       |       |      |      |      |      |      |       |       |       |        |      |      |
|          |           | Blast Furnace; EAF; Ladle Refining; Vacuum Degass |      |       |       |      |      |      |      |      |       |       |       |        |      |      |
| BSM-0278 | Heat      | C   | Mn   | P     | S     | Si   | Cr   | Cu   | Mo   | Ni   | V     | Ti    | Nb    | B      | CE   | CE   |
|          |           | 0.21  | 0.89 | 0.012 | 0.011 | 0.24 | 0.03 | 0.12 | 0.02 | 0.04 | 0.003 | 0.001 | 0.001 | 0.0001 | 0.38 | 0.39 |

| Mechanical Properties |           |                    |          |                 |              |              |               |               |              |      |                |
|-----------------------|-----------|--------------------|----------|-----------------|--------------|--------------|---------------|---------------|--------------|------|----------------|
| Heat                  | Test Type | Microstructure     | Hardness | Flattening Test | Tension Test |              | Yield (Rt0.5) | Yield (Rp0.2) | Tensile (Rm) | Y/T  | Elongation (A) |
|                       |           |                    |          |                 | HRBW         | Pass         |               |               |              |      |                |
| BSM-0278              | Heat      | Ferrite & Pearlite | 78       | Pass            | Longitudinal | Longitudinal | 51,500        | 51,500        | 75,000       | 0.62 | 44             |
|                       |           |                    |          |                 |              |              | 51,500        | 51,500        | 75,000       | 0.69 | 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/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:

*[Signature]*  
 2012 April

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