



# Mill Test Certificate

**Bri-Steel Manufacturing Inc.**  
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Product: **Seamless Carbon Steel Pipe**      Product Heat Number: **BSM-0949**      Product Size: **NPS 24 TRUE80**      Production Date: **May 30, 2013**

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

Product Standards: **ASME B36.10-2004, ASTM/ASME A/SA106-2011 Grade B NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010**

Product Markings: **BRI-STEEL MFG ASTM/ASME A/SA106 GR B A/SA53 GR B NPS 24 TRUE80 1.219 inchWT HEAT BSM-0949 (PIPE # LENGTH MASS) 296.4lb/ft NDE SMIS NACE MR0175 2013/05 MADE IN CANADA.**

| Product Details |           |                           |        | Non-Destructive Testing |        |        |           |        |      |      |      |      |           |               |           |
|-----------------|-----------|---------------------------|--------|-------------------------|--------|--------|-----------|--------|------|------|------|------|-----------|---------------|-----------|
| Heat            | Test Type | Product Size              | Pieces | Length                  | Mass   | Geiger | Res. Mag. | Visual | OD** | UT   | UT   | ET   | HydroTest | End Condition |           |
| BSM-0949        | Heat      | NPS 24 TRUE80 1.219 in.WT | 3      | DRL                     | 296.40 | µR/hr  | Gauss     | Insp.  | Pass | Pass | Pass | Pass | Pass      | *             | Plain End |

| Chemical Analysis (wt%) |  |          |      |      |       |       |      |      |      |      |      |       |       |       |        |          |          |
|-------------------------|--|----------|------|------|-------|-------|------|------|------|------|------|-------|-------|-------|--------|----------|----------|
| Heat                    | Steelmaking Method   | Analysis | C    | Mn   | P     | S     | Si   | Cr   | Cu   | Mo   | Ni   | V     | Ti    | Nb    | B      | CE (IIW) | CE (CSA) |
| BSM-0949                | Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed | Heat     | 0.20 | 0.93 | 0.013 | 0.002 | 0.29 | 0.07 | 0.04 | 0.03 | 0.02 | 0.001 | 0.002 | 0.001 | 0.0002 | -        | -        |
|                         |  | Product  | 0.21 | 0.89 | 0.009 | 0.003 | 0.28 | 0.05 | 0.06 | 0.02 | 0.03 | 0.004 | 0.001 | 0.001 | 0.0001 | 0.38     | 0.39     |

| Mechanical Properties |           |                    |               |                 |              |                           |                   |                  |                |                  |
|-----------------------|-----------|--------------------|---------------|-----------------|--------------|---------------------------|-------------------|------------------|----------------|------------------|
| Heat                  | Test Type | Microstructure     | Hardness HRBW | Flattening Test | Tension Test |                           | Yield (Rt0.5) psi | Tensile (Rm) psi | Y/T (Rt0.5/Rm) | Elongation (A) % |
|                       |           |                    |               |                 | 50mm GL      | Longitudinal; 19.1mm x WT |                   |                  |                |                  |
| BSM-0949              | Heat      | Ferrite & Pearlite | 73            | Pass            |              |                           | 44,500            | 66,500           | 0.67           | 51               |

  

| Heat     | Test Standard | Impact Test Sample Details | Temp °C | Impact Energy |   |     | % Shear |   |     | Lateral Expansion |    |    |     |   |
|----------|---------------|----------------------------|---------|---------------|---|-----|---------|---|-----|-------------------|----|----|-----|---|
|          |               |                            |         | J             | J | AVG | %       | % | AVG | mm                | mm | mm | AVG |   |
| BSM-0949 | -             | -                          | -       | -             | - | -   | -       | - | -   | -                 | -  | -  | -   | - |

**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 meets 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 not come into contact with mercury during the Bri-Steel Manufacturing processes.
- ✓ This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.

\*Note that this product was hydrotested to 1000 psi for 5 seconds.  
 \*\*OD Tolerances as per API

Mill Test Certificate approved by: *Paul Sowden*

*2013 VUN 05*

Paul Sowden, T.T.  
 Assistant QA Manager