



# Mill Test Certificate

**Bri-Steel Manufacturing Inc.**  
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0241** Product Size: **NPS 24 STD** Production Date: **March 1, 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 24 STD ASTM/ASME A/SA106 GR B/C A/SA53 GR B HEAT BSM-0241 (PIPE # LENGTH MASS) NDE 740PSI NACE MR0175 2012/03 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 740 psi/5s | End Condition |
| BSM-0241        | Heat      | 24  | STD | 3      | DRL    | 94.62                   | <5                | <20             | Pass         | Pass | Pass  | ---          | Pass         | Pass                 | 37.5° Bevel   |

| Steelmaking Method |           | Chemical Analysis (wt%)                           |      |      |       |       |      |      |      |      |      |       |       |       |        |          |          |
|--------------------|-----------|---|------|------|-------|-------|------|------|------|------|------|-------|-------|-------|--------|----------|----------|
| Heat               | Test Type | Blast Furnace; EAF; Ladle Refining; Vacuum Degass | C    | Mn   | P     | S     | Si   | Cr   | Cu   | Mo   | Ni   | V     | Ti    | Nb    | B      | CE (IIV) | CE (CSA) |
| BSM-0241           | Heat      |   | 0.20 | 0.89 | 0.015 | 0.009 | 0.26 | 0.03 | 0.12 | 0.03 | 0.04 | 0.004 | 0.001 | 0.002 | 0.0001 | 0.37     | 0.38     |

| 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) % |
| BSM-0241              | Heat      | Ferrite & Pearlite | 78            | Pass            | 50mm GI; 38mm x WT | Transverse | 43,500            | 43,000            | 73,500           | 0.59           | 41               |
|                       |           |                    |               |                 | Longitudinal       |            | 51,500            | 51,000            | 74,000           | 0.70           | 41               |

**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:

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