



# Mill Test Certificate

**Bri-Steel Manufacturing Inc.**  
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0251** Product Size: **NPS 20 TRUE80** Production Date: **March 8, 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 20 TRUE80 ASTM/ASME A/SA106 GR B/C A/SA53 GR B HEAT BSM-0251 (PIPE # LENGTH MASS) NDE NH 1000PSI 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-0251        | Heat      | 20  | TRUE80 | 7                       | DRL    | lb/ft  | µR/hr  | Gauss     | Insp.  | Pass | Pass | Pass | Pass | 1000 psi/5s | Condition   |
|                 |           |     |        |                         |        | 208.90 | <5     | <20       | Pass   | Pass | Pass | ---  | Pass | *           | 37.5° Bevel |

|          |           | Chemical Analysis (wt%)                          |      |       |       |      |      |      |      |      |       |       |       |        |      |      |
|----------|-----------|--|------|-------|-------|------|------|------|------|------|-------|-------|-------|--------|------|------|
| Heat     | Test Type | Steelmaking Method                               |      |       |       |      |      |      |      |      |       |       |       |        |      |      |
|          |           | Blast Furnace; EAF; Ladle Refining; Vacuum Degas |      |       |       |      |      |      |      |      |       |       |       |        |      |      |
| BSM-0251 | Heat      | C  | Mn   | P     | S     | Si   | Cr   | Cu   | Mo   | Ni   | V     | Ti    | Nb    | B      | CE   | CE   |
|          |           | 0.20   | 0.85 | 0.009 | 0.007 | 0.23 | 0.05 | 0.09 | 0.01 | 0.03 | 0.003 | 0.002 | 0.001 | 0.0001 | 0.36 | 0.37 |

| 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-0251              | Heat      | Ferrite & Pearlite | 73       | Pass            | Longitudinal | 40,800 | 40,500        | 69,500        | 0.59         | 54  |                |

**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.
- \* The hydrotest was performed at a test pressure lower than recommended by ASTM/ASME A/SA106 and A/SA53

Mill Test Certificate approved by:

*Kenton Dechant*  
 2012 Mar 21

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