



# Mill Test Certificate

**Bri-Steel Manufacturing Inc.**  
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0068** Product Size: **NPS 20 STD** Production Date: **2011 Oct 24**

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

Product Standards: **ASTM/ASME A/SA106-2010 Grade B, A/SA53-2010 Grade B Type S, NACE MR0175-2009**

Product Markings: **.BRI-STEEL MFG NPS 20 STD ASTM/ASME A/SA106 GR B A/SA53 GR B HEAT BSM-0068 (PIPE # LENGTH MASS) NDE 800PSI NACE MR0175 2011/10 MADE IN CANADA.**

| Product Details |           |     |     |        |        | Non-Destructive Testing |                 |                    |                 |      |          |                 |                 |                         |                  |
|-----------------|-----------|-----|-----|--------|--------|-------------------------|-----------------|--------------------|-----------------|------|----------|-----------------|-----------------|-------------------------|------------------|
| Heat            | Test Type | NPS | SCH | Pieces | Length | Mass                    | Geiger<br>µR/hr | Res. Mag.<br>Gauss | Visual<br>Insp. | OD   | UT<br>WT | UT<br>ASTM E213 | ET<br>ASTM E309 | HydroTest<br>800 psi/5s | End<br>Condition |
| BSM-0068        | Heat      | 20  | STD | 1      | DRL    | 2916 LB                 | <5              | <20                | Pass            | Pass | Pass     | ---             | Pass            | Pass                    | 37.5° Bevel      |


|          |           | Chemical Analysis (wt%)                          |  |      |      |       |       |      |      |      |      |      |       |       |       |        |             |             |
|----------|-----------|--|--|------|------|-------|-------|------|------|------|------|------|-------|-------|-------|--------|-------------|-------------|
| Heat     | Test Type | Steelmaking Method                               |  | C    | Mn   | P     | S     | Si   | Cr   | Cu   | Mo   | Ni   | V     | Ti    | Nb    | B      | CE<br>(IIV) | CE<br>(CSA) |
| BSM-0068 | Heat      | Blast Furnace; EAF; Ladle Refining; Vacuum Degas |  | 0.20 | 0.87 | 0.016 | 0.008 | 0.23 | 0.03 | 0.11 | 0.02 | 0.03 | 0.003 | 0.001 | 0.001 | 0.0002 | 0.36        | 0.37        |

| Mechanical Properties |           |                    |                  |                 |                                   |  |                      |                      |                     |                     |
|-----------------------|-----------|--------------------|------------------|-----------------|-----------------------------------|--|----------------------|----------------------|---------------------|---------------------|
| Heat                  | Test Type | Microstructure     | Hardness<br>HRBW | Flattening Test | Tension Test                      |  | Yield (Rt0.5)<br>psi | Yield (Rp0.2)<br>psi | Tensile (Rm)<br>psi | Elongation (A)<br>% |
| BSM-0068              | Heat      | Ferrite & Pearlite | 75               | Pass            | Transverse: 50mm GL;<br>38mm x WT |  | 49,800               | 49,800               | 76,000              | 41                  |

**Additional Details:**

- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected in accordance with ASTM/ASME A/SA106-2010, 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.
- ✓ This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.

Mill Test Certificate approved by:

  
 2011 Nov 2  
 Kenton Dechant, P.Eng.  
 Manager of Quality and R&D