



# Mill Test Certificate

**Bri-Steel Manufacturing Inc.**  
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0112** Product Size: **NPS 18 STD** Production Date: **2011 Nov 23**

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

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

Product Markings: **.BRI-STEEL MFG NPS 18 STD ASTM/ASME A/SA106 GR B/C A/SA53 GR B HEAT BSM-0112 (PIPE # LENGTH MASS) NDE 1030PSI NACE MR0175 2011/11 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 1030 psi/5s | End Condition |
| BSM-0112        | Heat      | 18  | STD | 1                       | DRL    | 70.59      | <5                | <20             | Pass         | Pass | Pass  | ---          | Pass         | Pass                  | 37.5° Bevel   |

| Steelmaking Method |           | Chemical Analysis (wt%) |      |       |       |      |      |      |      |      |       |       |       |        |          |          |
|--------------------|-----------|-------------------------|------|-------|-------|------|------|------|------|------|-------|-------|-------|--------|----------|----------|
| Heat               | Test Type | C                       | Mn   | P     | S     | Si   | Cr   | Cu   | Mo   | Ni   | V     | Ti    | Nb    | B      | CE (IIV) | CE (CSA) |
| BSM-0112           | Heat      | 0.21                    | 0.87 | 0.014 | 0.009 | 0.22 | 0.03 | 0.11 | 0.02 | 0.03 | 0.002 | 0.001 | 0.001 | 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 | V/T (Rt0.5/Rm) | Elongation (A) % |
|                       |           |                    |               |                 | 50mm GL; 38mm x WT | Transverse |                   |                   |                  |                |                  |
| BSM-0112              | Heat      | Ferrite & Pearlite | 79            | Pass            | Longitudinal       | 47,000     | 46,800            | 46,800            | 74,500           | 0.63           | 38               |

**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/SA106-2010, 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.
- ✓ 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:

  
 2012 Jan 20

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