



# Mill Test Certificate

**Bri-Steel Manufacturing Inc.**  
 2125-64 Avenue, Edmonton, AB Canada T6P 1Z4  
 Tel: 001 (780) 469-6603  
 Fax: 001 (780) 469-6986  
 www.brichemsteel.com

Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0113** 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-0113 (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    | Geiger | Res. Mag. | Visual | OD   | UT   | UT        | ET        | HydroTest   | End         |
| BSM-0113        | Heat      | 18  | STD | 1                       | DRL    | 2760 LB | µR/hr  | Gauss     | Insp.  | Pass | Pass | ASTM E213 | ASTM E309 | 1030 psi/5s | Condition   |
|                 |           |     |     |                         |        |         | <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   | CE   |
| BSM-0113           | Heat      | 0.20  | 0.86 | 0.015 | 0.010 | 0.22 | 0.03 | 0.11 | 0.01 | 0.04 | 0.003 | 0.001 | 0.001 | 0.0001 | 0.36 | 0.37 |
|                    |           | Blast Furnace; EAF; Ladle Refining; Vacuum Degass |      |       |       |      |      |      |      |      |       |       |       |        |      |      |

| Mechanical Properties |           |                    |          |                 |                    |               |               |              |      |                |
|-----------------------|-----------|--------------------|----------|-----------------|--------------------|---------------|---------------|--------------|------|----------------|
| Heat                  | Test Type | Microstructure     | Hardness | Flattening Test | Tension Test       | Yield (Rt0.5) | Yield (Rp0.2) | Tensile (Rm) | Y/T  | Elongation (A) |
| BSM-0113              | Heat      | Ferrite & Pearlite | HRBW     | Pass            | 50mm GI; 38mm x WT | psi           | psi           | psi          | 0.63 | 39             |
|                       |           |                    | 76       |                 | Transverse         | 47,700        | 45,700        | 72,500       |      |                |
|                       |           |                    |          |                 | Longitudinal       | 47,300        | 47,600        | 74,000       | 0.64 | 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/SA106-2010, 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:

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