



## Mill Test Certificate

Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-1013** Product Size: **NPS 18 STD** Production Date: **June 24, 2013**

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

Product Standards: **ASME B36.10-2004, API 5L-44th Ed. Grade B PSL1, ASTM/ASME A/SA106-2011 Grade B/C, NACE MR0175-2009, MR0103-2010**

Product Markings: **BRI-STEEL MFG <API> 5L-0898 API 5L GR B PSL1 ASTM/ASME A/SA106 GR B/C A/SA53 GR B NPS 18 STD 0.375 InchWT HEAT BSM-1013 (PIPE # LENGTH MASS) 70.59lb/ft NDE 1000 PSI SMIS NACE MR0175 2013/06 MADE IN CANADA.**

| Product Details |           |                         |        | Non-Destructive Testing |       |        |           |        |      |      |      |      |      |           |      |             |
|-----------------|-----------|-------------------------|--------|-------------------------|-------|--------|-----------|--------|------|------|------|------|------|-----------|------|-------------|
| Heat            | Test Type | Product Size            | Pieces | Length                  | Mass  | Geiger | Res. Mag. | Visual | OD   | WT   | UT   | UT   | ET   | HydroTest | End  |             |
| BSM-1013        | Heat      | NPS 18 STD 0.375 in. WT | 9      | DRL                     | lb/ft | µR/hr  | Gauss     | Insp.  | Pass | Pass | Pass | Pass | Pass | Pass      | Pass | 32.5° Bevel |

| Chemical Analysis (WT%) |                                                                |          |      |      |       |       |      |      |      |      |      |       |       |       |        |      |      |
|-------------------------|----------------------------------------------------------------|----------|------|------|-------|-------|------|------|------|------|------|-------|-------|-------|--------|------|------|
| Heat                    | Steelmaking Method                                             | Analysis | C    | Mn   | P     | S     | Si   | Cr   | Cu   | Mo   | Ni   | V     | Ti    | Nb    | B      | CE   | CE   |
| BSM-1013                | Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed | Heat     | 0.20 | 0.93 | 0.008 | 0.004 | 0.23 | 0.03 | 0.08 | 0.01 | 0.04 | -     | -     | -     | 0.0004 | -    | -    |
|                         | Product                                                        | Product  | 0.18 | 0.88 | 0.005 | 0.004 | 0.22 | 0.03 | 0.07 | 0.01 | 0.03 | 0.002 | 0.001 | 0.001 | 0.0002 | 0.34 | 0.34 |

| Mechanical Properties |           |                    |          |                 |                           |        |               |              |     |                |
|-----------------------|-----------|--------------------|----------|-----------------|---------------------------|--------|---------------|--------------|-----|----------------|
| Heat                  | Test Type | Microstructure     | Hardness | Flattening Test | Tension Test              |        | Yield (Rt0.5) | Tensile (Rm) | Y/T | Elongation (A) |
|                       |           |                    |          |                 | HRBW                      | Pass   |               |              |     |                |
| BSM-1013              | Heat      | Ferrite & Pearlite | 73       | Pass            | Longitudinal: 38.1mm x WT | 46,400 | 71,500        | 0.65         | 45  |                |

  

| Heat     | Test     | Impact Test    | Temp °C | Impact Energy |   |   | Lateral Expansion |   |   |    |    |    |     |   |   |
|----------|----------|----------------|---------|---------------|---|---|-------------------|---|---|----|----|----|-----|---|---|
|          |          |                |         | J             | J | J | %                 | % | % | mm | mm | mm | AVG |   |   |
| BSM-1013 | Standard | Sample Details | -       | -             | - | - | -                 | - | - | -  | -  | -  | -   | - | - |

**Additional Details:**

- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with API 5L-44th Ed., ASTM/ASME A/SA106-2011, A/SA53-2012, and the purchase order requirements, and that the results meet the corresponding requirements.
- ✓ This pipe product meets 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 not come into contact with mercury during the Bri-Steel Manufacturing processes.
- ✓ This certificate represents a quality control system that is compliant with EN 10204:2004 Type 3.1.

Mill Test Certificate approved by:

2013 JUL 02

Paul Sowden, T.T.  
 Assistant QA Manager