



# Mill Test Certificate

**Bri-Steel Manufacturing Inc.**  
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Product: **Seamless Carbon Steel Pipe**

Product Heat Number: **BSM-0352**

Product Size: **NPS 16 STD**

Production Date: **May 30, 2012**

Production Method: **Hot Expansion**

Product Heat Treatment: **As-rolled**

Product Standards: **ASTM/ASME A/SA106-2011 Grade B/C, A/SA53-2012 Grade B Type S, NACE MR0175-2009**

Product Markings: **.BRI-STEEL MFG NPS 16 STD ASTM/ASME A/SA106 GR B/C A/SA53 GR B HEAT BSM-0352 (PIPE # LENGTH MASS) 62.58lb/ft NDE 1140PSI NACE MR0175 2012/05 MADE IN CANADA.**

| Product Details |           |     |     | Non-Destructive Testing |        |            |                   |                 |              |         |            |              |              |                       |               |
|-----------------|-----------|-----|-----|-------------------------|--------|------------|-------------------|-----------------|--------------|---------|------------|--------------|--------------|-----------------------|---------------|
| Heat            | Test Type | NPS | SCH | Pieces                  | Length | Mass lb/ft | Gelger $\mu R/hr$ | Res. Mag. Gauss | Visual Insp. | OD Pass | UT WT Pass | UT ASTM E213 | ET ASTM E309 | HydroTest 1140 psi/5s | End Condition |
| BSM-0352        | Heat      | 16  | STD | 10                      | DRL    | 62.58      | <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   | CE |
|          |           | Blast Furnace; EAF; Ladle Refining; Vacuum Degass | 0.21 | 0.87 | 0.010 | 0.004 | 0.23 | 0.03 | 0.03 | 0.01 | 0.03 | 0.002 | 0.002 | 0.002 | 0.0003 | 0.37 | 0.38 |    |
| BSM-0352 | Heat      |   |      |      |       |       |      |      |      |      |      |       |       |       |        |      |      |    |

| Mechanical Properties |           |                |               |                 |                    |    |                   |                   |                  |                |                  |      |                    |            |              |        |        |        |        |      |    |
|-----------------------|-----------|----------------|---------------|-----------------|--------------------|----|-------------------|-------------------|------------------|----------------|------------------|------|--------------------|------------|--------------|--------|--------|--------|--------|------|----|
| Heat                  | Test Type | Microstructure | Hardness HRBW | Flattening Test | Tension Test       |    | Yield (Rp0.2) psi | Yield (Rp0.2) psi | Tensile (Rm) psi | Y/T (Rt0.5/Rm) | Elongation (A) % |      |                    |            |              |        |        |        |        |      |    |
|                       |           |                |               |                 | Ferrite & Pearlite | 77 |                   |                   |                  |                |                  | Pass | 50mm GL; 38mm x WT | Transverse | Longitudinal | 46,200 | 44,400 | 73,500 | 73,500 | 0.63 | 41 |
| BSM-0352              | Heat      |                |               |                 |                    |    |                   |                   |                  |                |                  |      |                    |            |              |        |        |        |        |      |    |

**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/SA53-2012 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 June 13  
 Kenton Dechant, P. Eng.  
 Manager of Quality and R&D