



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0747** Product Size: **NPS 16 STD** Production Date: **February 26, 2013**

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

Product Standards: **ASME B36.10-2004, API SL-44th Ed. Grade B PSL1, ASTM/ASME A/SAS106-2011 Grade B/C NDE, A/SAS3-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010**

Product Markings: **.BRI-STEEL MFG <API> SL-0898 API SL GR B PSL1 ASTM/ASME A/SAS106 GR B/C A/SAS3 GR B NPS 16 STD 0.375 inch WT HEAT BSM-0747 (PIPE # LENGTH MASS) 62.58lb/ft NDE 1140 PSI SMIS NACE MR0175 2013/02 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-0747 | Heat | NPS 16 STD 0.375 in. WT | 29 | DRL | 62.58 | µR/hr | Gauss | Insp. | Pass | Pass | Pass | Pass | Pass | Pass | 37.5° Bevel |

| Chemical Analysis (wt%) | | | | | | | | | | | | | | | | | |
|-------------------------|-----------------------------------------------------------------|----------|------|------|-------|-------|------|------|------|------|------|-------|-------|-------|--------|------|------|
| Heat | Steelmaking Method | Analysis | C | Mn | P | S | Si | Cr | Cu | Mo | Ni | V | Ti | Nb | B | CE | CE |
| BSM-0747 | Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed | Heat | 0.20 | 0.87 | 0.012 | 0.004 | 0.23 | 0.04 | 0.06 | 0.01 | 0.04 | - | - | - | 0.0003 | - | - |
| | | Product | 0.21 | 0.90 | 0.011 | 0.005 | 0.25 | 0.04 | 0.06 | 0.01 | 0.03 | 0.003 | 0.001 | 0.002 | 0.0002 | 0.38 | 0.39 |

| Mechanical Properties | | | | | | | | | | | |
|-----------------------|-----------|--------------------|---------------|-----------------|---------------------------|-------------------------|-------------------|-------------------|------------------|----------------|------------------|
| Heat | Test Type | Microstructure | Hardness HRBW | Flattening Test | Tension Test | | Yield (Rt0.5) psi | Yield (Rp0.2) psi | Tensile (Rm) psi | Y/T (Rt0.5/Rm) | Elongation (A) % |
| | | | | | 50mm GL | Transverse: 38.1mm x WT | | | | | |
| BSM-0747 | Heat | Ferrite & Pearlite | 75 | Pass | Longitudinal: 38.1mm x WT | | 45,300 | 44,400 | 72,500 | 0.62 | 41 |

Additional Details:

- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing Inc. in accordance with API SL-44th Ed., ASTM/ASME A/SAS106-2011, A/SAS3-2012 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:

Kenton Dechant
 2013 Mar 14

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