



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0686** Product Size: **NPS 24 STD** Production Date: **February 6, 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/SA106-2011 Grade B/C NDE, A/SA53-2012 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/SA106 GR B/C A/SA53 GR B NPS 24 STD HEAT BSM-0686 (PIPE # LENGTH MASS) 94.62lb/ft NDE 740 PSI SMLS NACE MR0175 2013/02 MADE IN CANADA.**

| Product Details | | | | Non-Destructive Testing | | | | | | | | | | | |
|-----------------|-----------|-----|----------------|-------------------------|--------|------------|-------------------|----------------|--------------|------|-------|--------------|--------------|----------------------|---------------|
| Heat | Test Type | NPS | Wall Thickness | Pieces | Length | Mass lb/ft | Gelger μ R/hr | Res.Mag. Gauss | Visual Insp. | OD | UT WT | UT ASTM E213 | ET ASTM E309 | HydroTest 740 psi/5s | End Condition |
| BSM-0686 | Heat | 24 | STD | 9 | DRL | 94.62 | <5 | <20 | 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 (IIV) | CE (CSA) |
| BSM-0686 | Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed | Heat | 0.20 | 0.89 | 0.016 | 0.013 | 0.23 | 0.04 | 0.07 | 0.02 | 0.04 | - | - | - | 0.0003 | - | - |
| | | Product | 0.21 | 0.89 | 0.018 | 0.013 | 0.21 | 0.04 | 0.08 | 0.02 | 0.03 | 0.005 | 0.001 | 0.001 | 0.0003 | 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 | 38.1mm x WT | | | | | |
| BSM-0686 | Heat | Ferrite & Pearlite | 77 | Pass | Transverse; 38.1mm x WT | Longitudinal; 38.1mm x WT | 46,600 | 46,700 | 72,500 | 0.64 | 42 |

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/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:

[Signature]
 2013 Feb 13

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