



## Mill Test Certificate

**Bri-Steel Manufacturing Inc.**  
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0623** Product Size: **NPS 20 STD** Production Date: **January 2, 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 NDE, A/SA53-2012 Grade B Type S, NACE MR0175-2009, MR0103-2010**

Product Markings: **.BRI-STEEL MFG <API> 5L-0898 API 5L GR B PSL1 ASTM/ASME A/SA106 GR B A/SA53 GR B NPS 20 STD HEAT BSM-0623 (PIPE # LENGTH MASS) 78.6lb/ft NDE 910 PSI SMLS NACE MR0175 2013/01 MADE IN CANADA.**

| Product Details |           |     |                | Non-Destructive Testing |        |            |                         |                 |              |      |       |              |              |                      |               |
|-----------------|-----------|-----|----------------|-------------------------|--------|------------|-------------------------|-----------------|--------------|------|-------|--------------|--------------|----------------------|---------------|
| Heat            | Test Type | NPS | Wall Thickness | Pieces                  | Length | Mass lb/ft | Geiger $\mu\text{R/hr}$ | Res. Mag. Gauss | Visual Insp. | OD   | UT WT | UT ASTM E213 | ET ASTM E309 | HydroTest 910 psi/5s | End Condition |
| BSM-0623        | Heat      | 20  | STD            | 1                       | DRL    | 78.60      | <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 (IIW) | CE (CSA) |
| BSM-0623                | Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed | Heat     | 0.19 | 0.92 | 0.010 | 0.009 | 0.24 | 0.03 | 0.08 | 0.01 | -    | -     | -     | -     | 0.0003 | -        | -        |
|                         |   | Product  | 0.19 | 0.89 | 0.009 | 0.013 | 0.22 | 0.03 | 0.09 | 0.02 | 0.04 | 0.003 | 0.001 | 0.001 | 0.0003 | 0.36     | 0.36     |

| Mechanical Properties |           |                    |               |                 |                         |                           |                   |                   |                  |                |                  |
|-----------------------|-----------|--------------------|---------------|-----------------|-------------------------|---------------------------|-------------------|-------------------|------------------|----------------|------------------|
| Heat                  | Test Type | Microstructure     | Hardness HRBW | Flattening Test | Tension Test            |                           | Yield (Rt0.5) psi | Yield (Rp0.2) psi | Tensile (Rm) psi | V/T (Rt0.5/Rm) | Elongation (A) % |
|                       |           |                    |               |                 | 50mm GL                 | Pass                      |                   |                   |                  |                |                  |
| BSM-0623              | Heat      | Ferrite & Pearlite | 78            | Pass            | Transverse; 38.1mm x WT | Longitudinal; 38.1mm x WT | 47,000            | 47,100            | 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 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 Jan 10

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