



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0360** Product Size: **NPS 20 TRUE80** Production Date: **June 11, 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 20 TRUE80 ASTM/ASME A/SA106 GR B/C A/SA53 GR B HEAT BSM-0360 (PIPE # LENGTH MASS) 208.9lb/ft NDE 1000PSI NACE MR0175 2012/06 MADE IN CANADA.**

| Product Details | | | | | | Non-Destructive Testing | | | | | | | | | | |
|-----------------|-----------|-----|--------|--------|--------|-------------------------|--------|-----------|--------|--------|------|------|-----------|-----------|-------------|-----------|
| Heat | Test Type | NPS | SCH | Pieces | Length | Mass | Geiger | Res. Mag. | Visual | Visual | UT | UT | ET | HydroTest | End | |
| BSM-0360 | Heat | 20 | TRUE80 | 4 | DRL | 208.90 | µR/hr | Gauss | Insp. | Pass | OD | WT | ASTM E213 | ASTM E309 | 1000 psi/5s | Condition |
| | | | | | | | <5 | <20 | Pass | Pass | Pass | Pass | --- | Pass | Pass* | Plain End |

| | | 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 | | | | | | | | | | | | | | | | 0.17 |
| BSM-0360 | Heat | | | | | | | | | | | | | | | | | | |

| Mechanical Properties | | | | | | | | | | | |
|-----------------------|-----------|--------------------|------------------|-----------------|--------------------|------------|----------------------|----------------------|---------------------|------------------|---------------------|
| Heat | Test Type | Microstructure | Hardness HRBW | Flattening Test | Tension Test | | Yield (Rp0.2) psi | Yield (Rp0.2) psi | Tensile (Rm) psi | V/T (R0.5/Rm) | Elongation (A) % |
| | | | | | 50mm GL; 38mm x WT | Transverse | | | | | |
| BSM-0360 | Heat | Ferrite & Pearlite | 75 | Pass | | | 48,300 | 46,500 | 71,000 | 0.65 | 57 |

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.

*Note that Pipe 004 was too short to be able to perform the hydrotest.

Mill Test Certificate approved by:


 2012 June 27

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