



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-0114** Product Size: **NPS 18 STD** Production Date: **2011 Nov 23**

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

Product Standards: **ASTM/ASME A/SA106-2010 Grade B/C, A/SA53-2010 Grade B Type S, NACE MR0175-2009**

Product Markings: **.BRI-STEEL MFG NPS 18 STD ASTM/ASME A/SA106 GR B/C A/SA53 GR B HEAT BSM-0114 (PIPE # LENGTH MASS) NDE 1030PSI NACE MR0175 2011/11 MADE IN CANADA.**

| Product Details | | | | Non-Destructive Testing | | | | | | | | | | | |
|-----------------|-----------|-----|-----|-------------------------|--------|----------|-----------------|--------------------|-----------------|------|----------|-----------------|-----------------|--------------------------|------------------|
| Heat | Test Type | NPS | SCH | Pieces | Length | Mass | Geiger µR/hr | Res. Mag. Gauss | Visual Insp. | OD | UT WT | UT ASTM E213 | ET ASTM E309 | HydroTest 1030 psi/5s | End Condition |
| BSM-0114 | Heat | 18 | STD | 7 | DRL | 19,700LB | <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 (I/W) | CE (CSA) |
| BSM-0114 | Heat | Blast Furnace; EAF; Ladle Refining; Vacuum Degass | | 0.20 | 0.87 | 0.012 | 0.008 | 0.21 | 0.03 | 0.10 | 0.01 | 0.03 | 0.003 | 0.001 | 0.001 | 0.0001 | 0.36 | 0.37 |

| 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 G.L; 38mm x WT | Transverse | | | | | |
| BSM-0114 | Heat | Ferrite & Pearlite | 77 | Pass | | | 46,600 | 46,600 | 73,000 | 0.64 | 42 |
| | | | | | | | 47,700 | 49,100 | 74,000 | 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 ASTM/ASME A/SA106-2010, A/SA53-2010 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:

2011 Dec 2

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