



Bri-Steel Manufacturing Inc.
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Mill Test Certificate

Product: Seamless Carbon Steel Pipe

Product Heat Number:

BSM-1092

Product Size:

NPS 20 TRUE80

Production Date:

July 22, 2013

Production Method: Hot Expansion

Product Heat Treatment: As-rolled

Product Standards: ASME B36.10-2004, 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 ASTM/ASME A/SA106 GR B A/SA53 GR B NPS 20 TRUE80 1.031 inchWT HEAT BSM-1092 (PIPE # LENGTH MASS) 208.9lb/ft NDE SMIS NACE MR0175 2013/07 MADE IN CANADA.

| Product Details | | | | | Non-Destructive Testing | | | | | | | | | |
|-----------------|-----------|----------------------------|--------|--------|-------------------------|--------|-----------|--------|------|------|------|------|-----------|-----------|
| Heat | Test Type | Product Size | Pieces | Length | Mass | Geiger | Res. Mag. | Visual | OD | UT | UT | ET | HydroTest | End |
| BSM-1092 | Heat | NPS 20 TRUE80 1.031 in. WT | 8 | DRL | 208.90 | µR/hr | Gauss | Insp. | Pass | Pass | Pass | Pass | Pass | Plain End |

| Chemical Analysis (wt%) | | | | | | | | | | | | | | |
|-------------------------|--|----------|------|------|-------|-------|------|------|------|------|------|-------|-------|-------|
| Heat | Steelmaking Method | Analysis | C | Mn | P | S | Si | Cr | Cu | Mo | Ni | V | Ti | Nb |
| BSM-1092 | Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed | Heat | 0.20 | 0.91 | 0.012 | 0.001 | 0.30 | 0.05 | 0.05 | 0.02 | 0.02 | 0.003 | 0.002 | 0.001 |
| | | Product | 0.19 | 0.90 | 0.013 | 0.006 | 0.28 | 0.05 | 0.06 | 0.01 | 0.02 | 0.001 | 0.002 | 0.001 |

| Mechanical Properties | | | | | | | | | |
|-----------------------|-----------|--------------------|---------------|-----------------|----------------------------|--------------|--|-------------------|------------------|
| Heat | Test Type | Microstructure | Hardness HRBW | Flattening Test | | Tension Test | | Yield (Rt0.5) psi | Tensile (Rm) psi |
| | | | | Pass | Longitudinal: 19, 1mm x WT | 50mm GL | | | |
| BSM-1092 | Heat | Ferrite & Pearlite | 75 | | | | | 47,100 | 69,500 |

| Heat | Test | Standard | Impact Test Sample Details | Temp °C | Impact Energy | | | | % Shear | | | | Lateral Expansion | | | |
|----------|------|----------|----------------------------|---------|---------------|---|---|-----|---------|---|---|-----|-------------------|----|----|-----|
| | | | | | J | J | J | AVG | % | % | % | AVG | mm | mm | mm | AVG |
| BSM-1092 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

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 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.
- *Note that this product was hydrotested to 1000 psi for 5 seconds.

Mill Test Certificate approved by:

2013 JUL 25

Paul Sowden, T.T.
Assistant QA Manager