



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: **Seamless Carbon Steel Pipe** Product Heat Number: **BSM-1045** Product Size: **NPS 24 STD** Production Date: **July 4, 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 24 STD 0.375 inchWT HEAT BSM-1045 (PIPE # LENGTH MASS) 94.62lb/ft NDE 750 PSI SIMLS 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 | WT | UT | UT | ET | HydroTest | End |
| BSM-1045 | Heat | NPS 24 STD 0.375 in. WT | 6 | DRL | 94.62 | µR/hr | Gauss | Insp. | Pass | Pass | Pass | Pass | Pass | 750 psi/5s | Condition |
| | | | | | | <5 | <20 | Pass | Pass | Pass | Pass | Pass | Pass | | 32.5° Bevel |

| Chemical Analysis (wt%) | | | | | | | | | | | | | | | | | |
|-------------------------|--|----------|------|------|-------|-------|------|------|------|------|------|-------|-------|-------|--------|------|------|
| Heat | Steelmaking Method | Analysis | C | Mn | P | S | Si | Cr | Cu | Mo | Ni | V | Ti | Nb | B | CE | CE |
| BSM-1045 | Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed | Heat | 0.19 | 0.91 | 0.016 | 0.006 | 0.22 | 0.04 | 0.07 | 0.03 | 0.03 | - | - | - | 0.0005 | - | - |
| | | Product | 0.20 | 0.86 | 0.022 | 0.007 | 0.21 | 0.04 | 0.07 | 0.03 | 0.03 | 0.005 | 0.001 | 0.001 | 0.0002 | 0.37 | 0.37 |

| Mechanical Properties | | | | | | | | | | | | | | |
|-----------------------|-----------|--------------------|----------|-----------------|---------------------------|---------------|--------------|------------|----------------|-------------------|----|----|----|-----|
| Heat | Test Type | Microstructure | Hardness | Flattening Test | Tension Test | Yield (Rt0.5) | Tensile (Rm) | Y/T | Elongation (A) | Lateral Expansion | | | | |
| BSM-1045 | Heat | Ferrite & Pearlite | HRBW | Pass | 50mm GL | psi | psi | (Rt0.5/Rm) | % | mm | mm | mm | mm | AVG |
| | | | 75 | | Longitudinal: 38.1mm x WT | 44,700 | 67,000 | 0.67 | 40 | | | | | |
| Heat | Test | Impact Test | Temp | Impact Energy | % Shear | | | | | | | | | |
| BSM-1045 | Standard | Sample Details | °C | J | % | | | | | | | | | |
| | | | - | - | - | | | | | | | | | |

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:

Paul Sowden

Paul Sowden, T.T.
 Assistant QA Manager

2013 JUL 08