



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-1376 Production Date: Nov 04, 2013
 Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 000591
 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: NPS 18 SCH 120 1.375 INCHWT SMLS 2013/11 NDE
 HEAT BSM-1376 (PIPE # LENGTH MASS) 244.1lb/ft ASTM/ASME A/SA106 GR B A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

| Product: Details | | | | Non-Destructive Testing | | | | | | | | | | | |
|------------------|-----------|-----------------------------|--------|-------------------------|------------|-------------------|-----------------|--------------|------|-------|--------------|---------|-----------|---------------|--|
| Heat | Test Type | Product Size | Pieces | Length | Mass lb/ft | Geiger μ R/hr | Res. Mag. Gauss | Visual Insp. | OD | UT WT | UT ASTM E213 | ET ASTM | HydroTest | End Condition | |
| BSM-1376 | Heat | NPS 18 SCH 120 1.375/in. WT | 1 | DRL | 244.1 | <5 | <10 | Pass | Pass | Pass | Pass | Pass | Pass | Plain End | |

| Heat | Steelmaking Method | Test Type | Chemical Analysis (wt%) | | | | | | | | | | | | | | |
|----------|---|-----------|-------------------------|------|-------|-------|------|------|------|------|------|-------|-------|-------|--------|---------|---------|
| | | | C | Mn | P | S | Si | Cr | Cu | Mo | Ni | V | Ti | Nb | B | CE(IIW) | CE(CSA) |
| BSM-1376 | Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed | Heat | 0.21 | 0.93 | 0.001 | 0.004 | 0.34 | 0.06 | 0.06 | 0.02 | 0.03 | 0.005 | 0.002 | 0.001 | 0.0003 | - | - |
| | | Product | 0.21 | 0.94 | 0.012 | 0.004 | 0.31 | 0.06 | 0.06 | 0.02 | 0.02 | 0.003 | 0.002 | 0.001 | 0.0003 | 0.39 | 0.39 |

| Mechanical Properties | | | | | | | | | |
|-----------------------|-----------|--------------------|----------|-----------------|-----------------------------|-------------------|------------------|----------------|------------------|
| Heat | Test Type | Microstructure | Hardness | Flattening Test | Tension Test 50mm GL | Yield (Rt0.5) psi | Tensile (Rm) psi | Y/T (Rt0.5/Rm) | Elongation (A) % |
| BSM-1376 | Heat | Ferrite & Pearlite | 74 HRBW | Pass | Longitudinal; 19.05 mm x WT | 39,400 | 69,500 | 0.57 | 47 |

| Heat | Test Standard | Impact Test Sample Details | Temp °C | Impact Energy | | | % Shear | | | Lateral Expansion | | |
|----------|---------------|----------------------------|---------|---------------|---|-----|---------|---|-----|-------------------|----|-----|
| | | | | J | J | AVG | % | % | AVG | mm | mm | AVG |
| BSM-1376 | - | - | - | - | - | - | - | - | - | - | - | - |

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 Grade B 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-2009 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 Nov 13

Paul Sowden, T.T.
 Assistant QA Manager