



Mill Test Certificate

Bri-Steel Manufacturing Inc.
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Product: Seamless Carbon Steel Pipe Product Heat Number: BSM-1342 Production Date: Oct 17, 2013
 Production Method: Hot Expansion Product Heat Treatment: As-rolled Certificate No.: MTR- 000555
 Product Standards: ASME B36.10-2004, ASTM/ASME A/SA106-2011 Grade B/C NDE, A/SA53-2012 Grade B Type 5, NACE MR0175-2009 MR0103-2010

Product Markings: NPS 16 SCH 120 1.219 INCHWT SMLS 2013/10 NDE
 HEAT BSM-1342 (PIPE # LENGTH MASS) 192.3lb/ft ASTM/ASME A/SA106 GR B/C A/SA53 GR B NACE MR0175/MR0103 MADE IN CANADA

| Product: Details | | | | Non-Destructive Testing | | | | | | | | | | |
|------------------|-----------|----------------------------|--------|-------------------------|-------|--------|-----------|--------|------|------|------|------|-----------|-----------|
| Heat | Test Type | Product Size | Pieces | Length | Mass | Gelger | Res. Mag. | Visual | OD | UT | UT | ET | HydroTest | End |
| BSM-1342 | Heat | NPS 16 SCH 120 1.219in. WT | 1 | DRL | 192.3 | <5 | Gauss | Insp. | Pass | Pass | Pass | Pass | Pass | Plain End |

| Chemical Analysis (wt%) | | | | | | | | | | | | | | | | | |
|-------------------------|---|-----------|------|------|-------|-------|------|------|------|------|------|-------|-------|-------|--------|---------|---------|
| Heat | Steelmaking Method | Test Type | C | Mn | P | S | Si | Cr | Cu | Mo | Ni | V | Ti | Nb | B | CE(IIW) | CE(CSA) |
| BSM-1342 | Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed | Heat | 0.22 | 0.92 | 0.014 | 0.001 | 0.27 | 0.05 | 0.04 | 0.01 | 0.03 | 0.003 | 0.002 | 0.001 | 0.0003 | - | - |
| | | Product | 0.23 | 0.93 | 0.022 | 0.004 | 0.32 | 0.06 | 0.06 | 0.03 | 0.03 | 0.004 | 0.003 | 0.001 | 0.0003 | 0.41 | 0.41 |

| Mechanical Properties | | | | | | | | | |
|-----------------------|-----------|--------------------|----------|-----------------|--|---------------|---------------|--------------------|----------------|
| Heat | Test Type | Microstructure | Hardness | Flattening Test | Tension Test | Yield (Rt0.5) | Tensile (Rm) | Y/T | Elongation (A) |
| BSM-1342 | Heat | Ferrite & Pearlite | 76 HRBW | Pass | 50mm GL Longitudinal; 19.05 mm x WT | psi 46,800 | psi 70,000 | (Rt0.5/Rm) 0.67 | % 52 |

| Heat | Test Standard | Impact Test Sample Details | Temp °C | Impact Energy | | | % Shear | | | Lateral Expansion | | | | |
|----------|---------------|----------------------------|---------|---------------|---|---|---------|---|---|-------------------|----|----|-----|---|
| | | | | J | J | J | % | % | % | mm | mm | mm | AVG | |
| BSM-1342 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

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/C 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 OCT 24

Paul Sowden, T.T.
 Assistant QA Manager