



# Mill Test Certificate

Bri-Steel Manufacturing Inc.  
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Product: Seamless Carbon Steel Pipe

Product Heat Number: BSM-2372

Product Size: 18STD

Production Date: Apr 29, 2015

Production Method: Hot Expansion

Product Heat Treatment: As-rolled

Certificate No.: MTR- 001754

Product Standards: ASME B36.10-2004, API 5L-45th Ed. Grade B PSL1, ASTM/ASME A106-2014/SA106-2013 Grade B/C NDE, A53-2012/SA53-2013 Grade B Type S, NACE MR0175-2009 MR0103-2012

Product Markings



<API & L/C No.> API SPEC 5L NPS 18 STD 0.375 INCHWT 70.59LB/FT GR B PSL1 SMLS 2015/04 NDE 1000PSI  
HEAT BSM-2372 (PIPE # LENGTH MASS) 70.59lb/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 lb/ft              | Geiger $\mu$ R/hr | Res. Mag. Gauss | Visual Insp. | OD   | UT WT | UT ASTM E213 | ET ASTM E309 | HydroTest 1000 PSI/ 5 s | End Condition |
| BSM-2372         | Heat      | NPS 18 STD 0.375in. WT | 4      | DRL    | 70.59                   | <5                | <20             | Pass         | Pass | Pass  | Pass         | Pass         | Pass                    | 32.5° Bevel   |

| Steelmaking Method |   | Chemical Analysis (wt%) |      |      |       |       |      |      |      |      |      |       |       |        |
|--------------------|---|-------------------------|------|------|-------|-------|------|------|------|------|------|-------|-------|--------|
| Heat               | Test Type   | C                       | Mn   | P    | S     | Si    | Cr   | Cu   | Mo   | Ni   | V    | Ti    | Nb    | B      |
| BSM-2372           | Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed | Heat                    | 0.17 | 1.16 | 0.020 | 0.007 | 0.28 | 0.03 | 0.04 | 0.01 | 0.01 | 0.049 | 0.001 | 0.0001 |
|                    |   | Product                 | 0.17 | 1.16 | 0.012 | 0.006 | 0.28 | 0.03 | 0.04 | 0.01 | 0.01 | 0.048 | 0.022 | 0.001  |
|                    |   |                         | 0.18 | 1.15 | 0.010 | 0.007 | 0.27 | 0.02 | 0.04 | 0.01 | 0.01 | 0.056 | 0.024 | 0.0005 |

| Mechanical Properties |           |                    |          |                 |                            |                      |                     |                   |                     |
|-----------------------|-----------|--------------------|----------|-----------------|----------------------------|----------------------|---------------------|-------------------|---------------------|
| Heat                  | Test Type | Microstructure     | Hardness | Flattening Test | Tension Test<br>2 in. GL   | Yield (Rt0.5)<br>psi | Tensile (Rm)<br>psi | Y/T<br>(Rt0.5/Rm) | Elongation (A)<br>% |
| BSM-2372              | Heat      | Ferrite & Pearlite | 79 HRBW  | Pass            | Longitudinal; 1.5 in. x WT | 47,700               | 72,000              | 0.66              | 39                  |

| Heat     | Test Standard | Impact Test Sample Details | Temp °C | Impact Energy |   |   |     | % Shear |   |   |     | Lateral Expansion |    |    |     |
|----------|---------------|----------------------------|---------|---------------|---|---|-----|---------|---|---|-----|-------------------|----|----|-----|
|          |               |                            |         | J             | J | J | AVG | %       | % | % | AVG | mm                | mm | mm | AVG |
| BSM-2372 | -             | -                          | -       | -             | - | - | -   | -       | - | - | -   | -                 | -  | -  | -   |

## Additional Details:

✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with API 5L-45th Ed., ASTM/ASME A106-2014/SA106-2013 Grade B/C A53-2012/SA53-2013, and the purchase order requirements, and that the results meet the corresponding requirements. Bri-Steel Manufacturing is registered and certified to ISO-9001:2008 and API Q1.

✓ This pipe product meets the sour service requirements of NACE MR0175/ISO 15156-2:2009 Annex A2 for Region 3 Sour Service-2009 NACE MR0103-2012 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:

Tonya Lam, C.E.T.  
Assistant QA Manager

*Ilana* May 10 2015