




# Mill Test Certificate

Bri-Steel Manufacturing  
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Product: Seamless Carbon Steel Pipe      Product Heat Number: BSM-2506      Product Size: NPS 16 STD      Production Date: Aug 27, 2015  
 Production Method: Hot Expansion      Product Heat Treatment: ThermoMechanical Formed      Certificate No.: MTR- 001920  
 Product Standards: ASME B36.10-2004, API 5L-45th Ed. GradeB/X42 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 16 STD 0.375 INCHWT GRB/X42 PSL1 SMLS 2015/08 NDE 1680PSI  
 HEAT BSM-2506 (PIPE # LENGTH MASS) 62.58lb/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 μR/hr | Res. Mag. Gauss | Visual Insp. | OD   | UT WT | UT ASTM E213 | ET ASTM E309 | HydroTest 1680PSI/ 5 s | End Condition |  |
| BSM-2506         | Heat      | NPS 16 STD 0.375in. WT | 8      | DRL                     | 62.58      | <5           | <20             | Pass         | Pass | Pass  | Pass         | Pass         | Pass                   | 32° Bevel     |  |

| Heat | Steelmaking Method | Test Type | Chemical Analysis (wt%) |  |       |       |      |       |       |      |      |      |       |       |       |         |         |       |
|------|--------------------|-----------|-------------------------|--|-------|-------|------|-------|-------|------|------|------|-------|-------|-------|---------|---------|-------|
|      |                    |           | C                       | Min  | P     | S     | SI   | Cr    | Cu    | Mo   | Ni   | V    | Ti    | Nb    | B     | CE(IIW) | CE(CSA) |       |
|      |                    |           | BSM-2506                | Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed | Heat  | 0.16  | 1.17 | 0.010 | 0.002 | 0.25 | 0.01 | 0.01 | 0.01  | 0.01  | 0.02  | 0.050   | 0.001   | 0.001 |
|      |                    | Product   | 0.17                    | 1.16   | 0.009 | 0.004 | 0.29 | 0.03  | 0.01  | 0.01 | 0.01 | 0.02 | 0.055 | 0.002 | 0.001 | 0.0002  | 0.38    | 0.38  |
|      |                    |           | 0.16                    | 1.15   | 0.009 | 0.003 | 0.27 | 0.03  | 0.01  | 0.01 | 0.01 | 0.02 | 0.055 | 0.002 | 0.001 | 0.0002  | 0.37    | 0.37  |

| Mechanical Properties |           |                    |          |                 |                            |                   |                  |                |                  |
|-----------------------|-----------|--------------------|----------|-----------------|----------------------------|-------------------|------------------|----------------|------------------|
| Heat                  | Test Type | Microstructure     | Hardness | Flattening Test | Tension Test 2 in. GL      | Yield (Rt0.5) psi | Tensile (Rm) psi | V/T (Rt0.5/Rm) | Elongation (A) % |
| BSM-2506              | Heat      | Ferrite & Pearlite | 84 HRBW  | Pass            | Longitudinal; 1.5 in. x WT | 53,000            | 78,000           | 0.68           | 42               |

| Heat     | Test Standard | Impact Test Sample Details | Temp °C | Impact Energy |   |   |     | Lateral Expansion |   |   |     |    |    |    |     |   |
|----------|---------------|----------------------------|---------|---------------|---|---|-----|-------------------|---|---|-----|----|----|----|-----|---|
|          |               |                            |         | J             | J | J | AVG | %                 | % | % | AVG | mm | mm | mm | AVG |   |
| BSM-2506 | -             | -                          | -       | -             | - | - | -   | -                 | - | - | -   | -  | -  | -  | -   | - |

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, 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, and 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:

*T. Lam* Sept 10/2/2015

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