




# Mill Test Certificate

Bri-Steel Manufacturing  
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Product: Seamless Carbon Steel Pipe      Product Heat Number: BSM-2930      Product Size: NPS 18 STD      Production Date: Oct 27, 2016  
 Production Method: Hot Expansion      Product Heat Treatment: Normalizing Forming      Certificate No.: MTR- 003019  
 Product Standards: ASME B36.10M-2015, API SL-45th Ed. Grade X42 PSL1, ASTM/ASME A106-2014/SA106-2015 Grade B/C NDE, AS3-2012/SA53-2015 Grade B Type S, NACE MR0175/ISO 15156-2:2009 MR0103/ISO 17495:2015  
 Product Markings:  <API & L/C No. > API SPEC 5L NPS 18 STD 0.375 INCHWT GR X42 PSL1 SMLS 2016/10 NDE 1490PSI  
 HEAT BSM-2930 (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 | Geliger | Res. Mag. Gauss | Visual Insp. | OD   | UT (WT)                 | UT        | ET        | HydroTest   | End Condition |  |  |  |  |  |
| BSM-2930         | Heat      | NPS 18 STD 0.375in. WT | 7      | DRL    | 70.59      | <5      | ~18             | Pass         | Pass | ASTM E114               | ASTM E213 | ASTM E309 | 1490PSI/ 5s | 32° Bevel     |  |  |  |  |  |

| Heat     | Test Type | Steelmaking Method  | Chemical Analysis (wt%) |         |      |      |       |       |       |       |       |       |      |      |      |      |      |      |       |       |       |       |       |       |        |       |        |      |         |   |            |  |         |  |
|----------|-----------|---|-------------------------|---------|------|------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|--------|-------|--------|------|---------|---|------------|--|---------|--|
|          |           |   | C                       |         | Mn   |      | P     |       | S     |       | Si    |       | Cr   |      | Cu   |      | Mo   |      | Ni    |       | V     |       | Ti    |       | Nb     |       | B      |      | CE(I/W) |   | CE(I/W)Max |  | CE(CSA) |  |
|          |           |   | Heat                    | Product | 0.21 | 0.21 | 0.92  | 0.91  | 0.013 | 0.011 | 0.005 | 0.004 | 0.23 | 0.24 | 0.03 | 0.03 | 0.01 | 0.01 | 0.01  | 0.01  | 0.004 | 0.003 | 0.001 | 0.001 | 0.001  | 0.001 | 0.0003 | 0.37 | -       | - | 0.38       |  |         |  |
| BSM-2930 | Heat      | Blast Furnace, EAF, Ladle Refining, Vacuum Degasi, Fully Killed (at TRCO China) | 0.21                    | 0.21    | 0.91 | 0.91 | 0.011 | 0.011 | 0.004 | 0.004 | 0.25  | 0.25  | 0.03 | 0.03 | 0.01 | 0.01 | 0.01 | 0.01 | 0.003 | 0.003 | 0.001 | 0.001 | 0.001 | 0.001 | 0.0004 | 0.37  | -      | -    | 0.38    |   |            |  |         |  |

| Mechanical Properties |           |                    |          |                 |                            |                   |                  |                |                  |
|-----------------------|-----------|--------------------|----------|-----------------|----------------------------|-------------------|------------------|----------------|------------------|
| Heat                  | Test Type | Microstructure     | Hardness | Flattening Test | Tension Test 2 in. GL      | Yield (Rt0.5) psi | Tensile (Rm) psi | Y/T (Rt0.5/Rm) | Elongation (A) % |
| BSM-2930              | Heat      | Ferrite & Pearlite | 78 HRBW  | Pass            | Longitudinal; 1.5 in. x WT | 44 400            | 72 500           | 0.61           | 41               |

| Heat     | Test Standard | Result | Impact Test Sample Details | Temp °C | Impact Energy Min. (J) | Impact Energy Results (J) | Shear (%) | Lateral Expansion (mm) |
|----------|---------------|--------|----------------------------|---------|------------------------|---------------------------|-----------|------------------------|
| BSM-2930 | -             | -      | -                          | -       | (3 Tests) AVG          | (3 Tests) AVG             | -         | (3 Tests) AVG          |

**Additional Details:**

- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with API SL-45th Ed. X42 ASTM/ASME A106-2014/SA106-2015, AS3-2012/SA53-2015, and the purchase order requirements, and that the results meet the corresponding requirements. Bri-Steel Manufacturing is registered and certified to ISO-9001:2008 (APIQR-1584), API Q1, and PED 2014/68/EU.

Mill Test Certificate approved by:

- ✓ 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/ISO 17495:2015 Section 13.1

- ✓ 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.

*T. Lam* *Nov 10 / 2016*

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