



# Mill Test Certificate

**Bri-Steel Manufacturing**  
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Product: **Seamless Alloy Steel Pipe** Product Heat Number: **BSM-2634** Product Size: **NPS 18 SCH 140** Production Date: **January 28, 2016**

Production Method: **Hot Expansion** Product Heat Treatment: **Annealed (920°C) and Tempered (750°C)** Certificate No: **002084**

Product Standards: **ASME B36.10M-2015, ASTM A335-2015a/ASME SA335-2015 GRADE P22**

Product Markings: **BRI-STEEL MFG NPS 18 SCH140 (1.562 inchWT) ASTM/ASME A/SA335 GR. P22 NDE(UT) 2800PSI SMIS 2016/01**  
**HEAT BSM-2634 (PIPE# LENGTH MASS) 274.2 lb/ft 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   | ET   | HydroTest | End Condition |
| BSM-2634        | Heat      | NPS 18 SCH140 | 1      | DRL                     | 274.20     | <5                | <20             | Pass         | Pass | Pass  | Pass | Pass | Pass      | Plain End     |

| Heat     | Steelmaking Method                                              | Chemical Analysis (wt%) |      |      |       |       |      |      |      |      |      |       |       |       |        |          |          |
|----------|-----------------------------------------------------------------|-------------------------|------|------|-------|-------|------|------|------|------|------|-------|-------|-------|--------|----------|----------|
|          |                                                                 | Analysis                | C    | Min  | P     | S     | Si   | Cr   | Cu   | Mo   | Ni   | V     | Ti    | Nb    | B      | CE (IIW) | CE (CSA) |
| BSM-2634 | Blast Furnace; EAF; Ladle Refining; Vacuum Degass; Fully Killed | Heat                    | 0.10 | 0.46 | 0.009 | 0.004 | 0.30 | 2.08 | -    | 0.94 | -    | -     | -     | -     | -      | -        | -        |
|          |                                                                 | Product                 | 0.11 | 0.41 | 0.006 | 0.003 | 0.26 | 2.11 | 0.16 | 0.96 | 0.09 | 0.003 | 0.024 | 0.003 | 0.0004 | -        | -        |
|          |                                                                 | Product                 | 0.10 | 0.41 | 0.006 | 0.007 | 0.30 | 2.13 | 0.16 | 0.97 | 0.09 | 0.003 | 0.024 | 0.003 | 0.0004 | -        | -        |

| Mechanical Properties |           |                   |               |                 |                                |                                |                   |                  |                |                  |
|-----------------------|-----------|-------------------|---------------|-----------------|--------------------------------|--------------------------------|-------------------|------------------|----------------|------------------|
| Heat                  | Test Type | Microstructure    | Hardness HRBW | Flattening Test | Tension Test                   |                                | Yield (Rt0.5) psi | Tensile (Rm) psi | Y/T (Rt0.5/Rm) | Elongation (A) % |
|                       |           |                   |               |                 | 50mm GL                        | Longitudinal, 12.7mm Round Bar |                   |                  |                |                  |
| BSM-2634              | Heat      | Ferrite & Bainite | 80            | Pass            | Longitudinal, 12.7mm Round Bar | Longitudinal, 12.7mm Round Bar | 46 600            | 74 100           | 0.63           | 36               |

- Additional Details:
- ✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with ASTM A335-2015a/ASME SA335-2015, and the purchase order requirements, and that the results meet the corresponding requirements. Bri-Steel Manufacturing is registered and certified to ISO-9001:2008, API Q1 and PED 97/23/EC.
  - ✓ 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.
  - ✓ No weld repairs have been performed on this product.

Mill Test Certificate approved by:

*[Signature]*  
 2016 Feb 10

Kenton Dechant, P.Eng.  
 Manager of Quality and R&D