



# Mill Test Certificate

Bri-Steel Manufacturing  
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Product: Seamless Carbon Steel Pipe      Product Heat Number: BSM-2719      Production Date: Apr 11, 2016  
 Production Method: Hot Expansion      Product Heat Treatment: As Rolled      Certificate No.: MTR- 002807  
 Product Standards: ASME B36.10M-2015, ASTM/ASME A106-2014/SA106-2013 Grade B NDE, A53-2012/SA53-2013 Grade B Type S, NACE MR0175-2009 MR0103-2012  
 Product Markings: NPS 24 TRUE 40 0.688 INCHWT SMLS 2016/04 NDE 1200PSI  
 HEAT BSM-2719 (PIPE # LENGTH MASS) 171.2lb/ft ASTM/ASME A/SA106 GR B 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 | Gelger μR/hr | Res. Mag. Gauss | Visual Insp. | OD   | UT WT | UT ASTM E213 | ET ASTM E309 | HydroTest 1200PSI/ 5s | End Condition |           |
| BSM-2719         | Heat      | NPS 24 TRUE 40 0.688in. WT | 1      | DRL                     | 171.2      | <5           | <20             | Pass         | Pass | Pass  | Pass         | Pass         | N12.5 Pass            | Pass          | Plain End |

| Heat | BSM-2719 | Steelmaking Method<br>Blast Furnace; EAF; Ladle Refining; Vacuum Degas; Fully Killed | Chemical Analysis (wt%) |         |      |      |       |       |       |      |      |      |      |       |       |       |        |         |            |         |      |
|------|----------|--|-------------------------|---------|------|------|-------|-------|-------|------|------|------|------|-------|-------|-------|--------|---------|------------|---------|------|
|      |          |  | Test Type               |         | C    | Mn   | P     | S     | Si    | Cr   | Cu   | Mo   | Ni   | V     | Ti    | Nb    | B      | CE(IIW) | CE(IIW)Max | CE(CSA) |      |
|      |          |  | Heat                    | Product | 0.19 | 0.91 | 0.002 | 0.001 | 0.31  | 0.04 | 0.09 | 0.02 | 0.03 | 0.004 | 0.002 | 0.001 | 0.0003 | 0.36    | -          | 0.37    |      |
|      |          |  |                         |         |      | 0.20 | 0.91  | 0.011 | 0.002 | 0.34 | 0.04 | 0.07 | 0.01 | 0.03  | 0.004 | 0.003 | 0.001  | 0.0003  | 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-2719              | Heat      | Ferrite & Pearlite | 80 HRBW  | Pass            | Longitudinal: 1.5 in. x WT | 49 400            | 73 500           | 0.67           | 41               |

| Heat     | Test Standard | Impact Test Sample Details | Temp °C | Impact Energy Min. (J) (3 Tests) AVG | Impact Energy (J) (3 Tests) AVG | Shear (%) (3 Tests) AVG | Lateral Expansion (mm) (3 Tests) AVG |
|----------|---------------|----------------------------|---------|--------------------------------------|---------------------------------|-------------------------|--------------------------------------|
| BSM-2719 | -             | -                          | -       | -                                    | -                               | -                       | -                                    |

**Additional Details:**

✓ We hereby certify that this pipe product was manufactured, sampled, tested and inspected by Bri-Steel Manufacturing in accordance with 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 (APIQR-1584), API Q1, and PED 97/23/EC.

✓ 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*      *May 10th 2016*

Tonya Lam, P. Tech (Eng.)  
 Assistant QA Manager